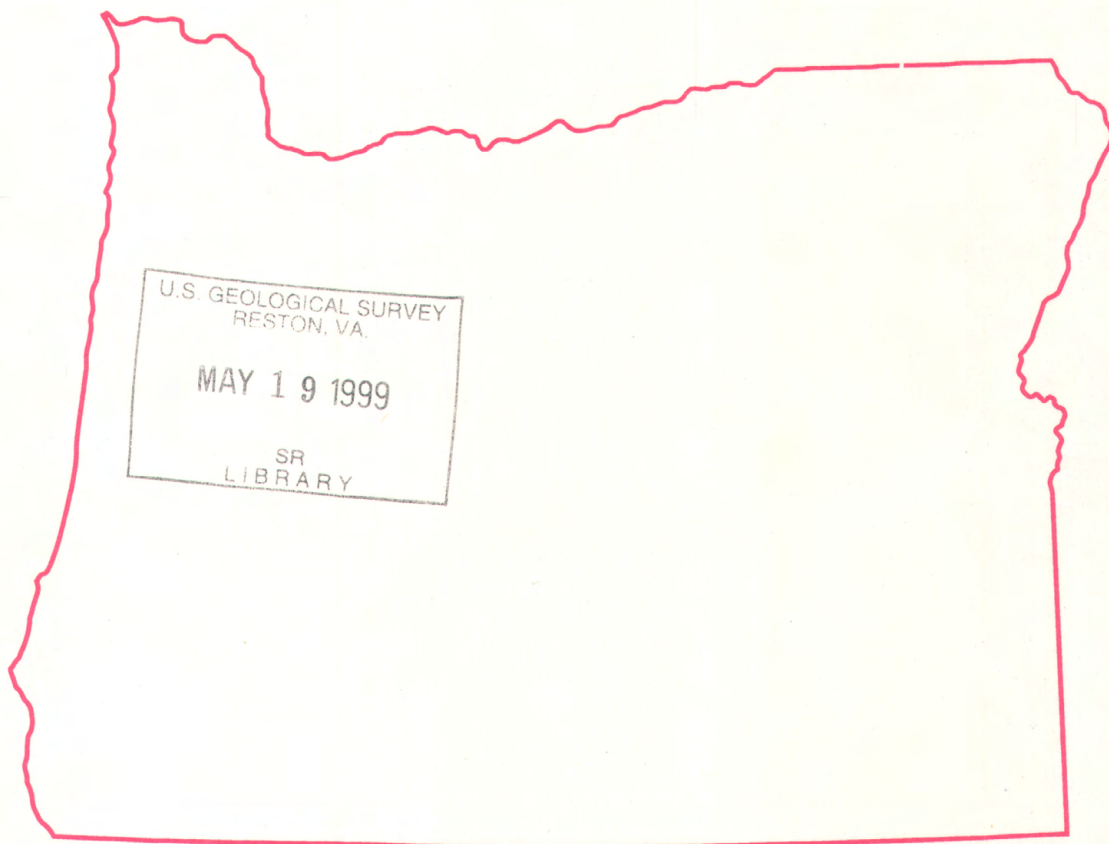


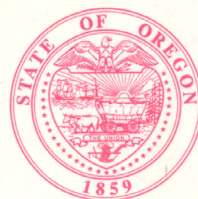
200)
Ga3
Oregon
1997



Water Resources Data Oregon Water Year 1997



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-97-1
Prepared in cooperation with other agencies



CALENDAR FOR WATER YEAR 1997

1996

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5						1	2	1	2	3	4	5	6	7
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				

1997

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4							1							1
5	6	7	8	9	10	11	2	3	4	5	6	7	8	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22
26	27	28	29	30	31		23	24	25	26	27	28		23	24	25	26	27	28	29
														30	31					

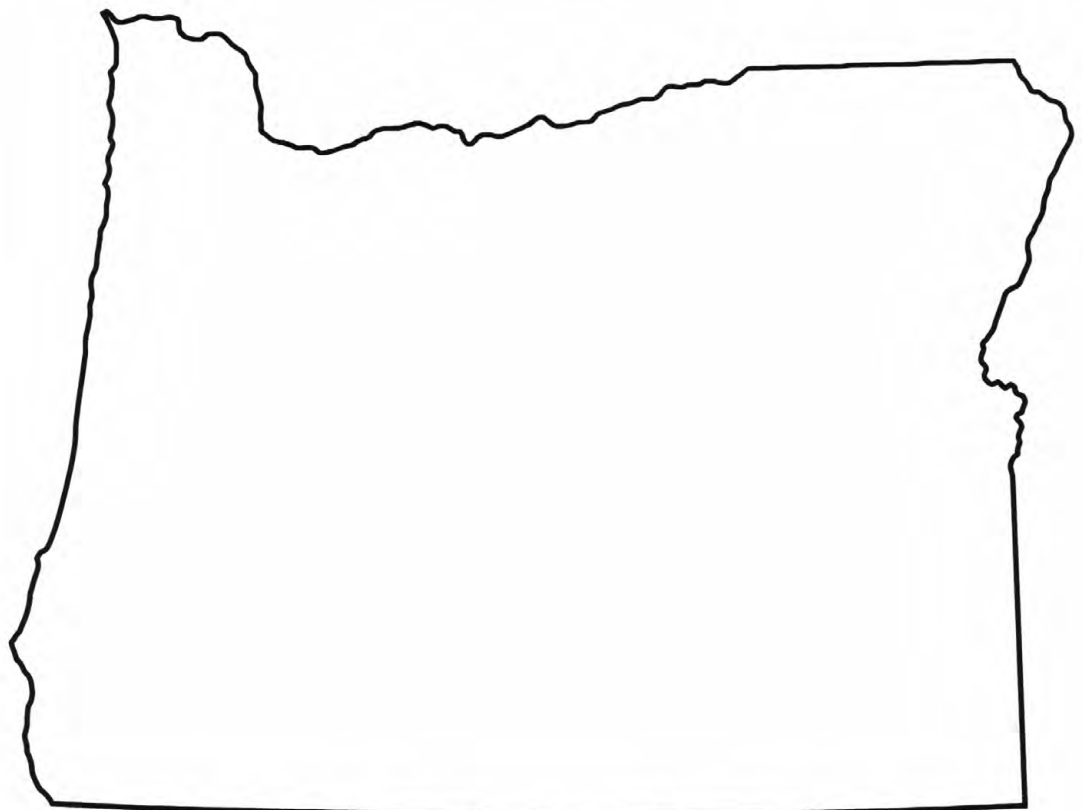
APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
		1	2	3	4	5					1	2	3	1	2	3	4	5	6	7
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
27	28	29	30				25	26	27	28	29	30	31	29	30					

[illegible]



Water Resources Data Oregon Water Year 1997

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



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-97-1
Prepared in cooperation with other agencies

U.S. DEPARTMENT OF THE INTERIOR

BRUCE BABBITT, Secretary

U.S. GEOLOGICAL SURVEY

Thomas J. Casadevall, Acting Director

For additional information:

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

**See additional USGS information on water resources of
Oregon
on the World Wide Web at
<http://oregon.usgs.gov>**

1998

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:

Rodger M. Adkins, Jeannette M. Center, Dwight D. Copeland, Douglas O. Cushman, Victor M. DeVolder, Jack D. Doyle, Micelis C. Doyle, George W. Eisele, Bruce J. Fisher, Theresa M. Frostrom, Michael A. Gentile, David L. George, Janice M. Gordon, Richard A. Hollway, Jon G. House, Matt W. Johnston, Dennis J. Kent, Richard L. Kittelson, Karl K. Lee, Maurice B. Miles, Melanie A. North, Gregory W. Olsen, Jacqueline C. Olson, Jeanette F. O'Neil, James K. Parham, John C. Risley, Michael J. Sarantou, James L. Schaefer, Kenneth A. Skach, Kurt R. Spicer, John L. Thornton, Roy E. Wellman.

This report was prepared in cooperation with other agencies under the general supervision of Dennis D. Lynch, District Chief, and T. John Conomos, Regional Hydrologist, Western Region.

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE July 1998		3. REPORT TYPE AND DATES COVERED Annual 1 Oct 96 - 30 Sept 97
4. TITLE AND SUBTITLE Water Resources Data, Oregon Water Year 1997			5. FUNDING NUMBERS	
6. AUTHOR(S) L.E. Hubbard, T.A. Herrett, J.E. Poole, G.P. Ruppert and M.L. Courts				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Geological Survey, Water Resources Division 10615 S.E. Cherry Blossom Drive Portland, OR 97216			8. PERFORMING ORGANIZATION REPORT NUMBER USGS-WDR-OR-97-1	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Geological Survey, Water Resources Division 10615 S.E. Cherry Blossom Drive Portland, OR 97216			10. SPONSORING / MONITORING AGENCY REPORT NUMBER USGS-WDR-OR-97-1	
11. SUPPLEMENTARY NOTES Prepared in cooperation with other agencies.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT This report may be purchased from: U.S. Department of Commerce, NTIS 5285 Port Royal Road Springfield, VA 22161			12b. DISTRIBUTION CODE No restrictions on distribution	
13. ABSTRACT (Maximum 200 words) Water resources data for the 1997 water year for Oregon consist of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs and water levels of wells <ul style="list-style-type: none"> • Water discharge for 189 gaging stations on streams, canals and drains. • Discharge data for 25 partial-record or miscellaneous sites and water-quality sampling sites. • Stage and (or) contents for 26 lakes and reservoirs. • Water-quality data for 54 streams, canals, lakes and wells. • Water-quality for 2 atmospheric deposition sites. • Air-temperature records for 1 data site. • Light incident for 1 record. <p>These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating States and Federal agencies in Oregon.</p>				
14. SUBJECT TERMS *Oregon, *Hydrologic data, *Surface water, *Water quality, Gaging stations, Flow rate, Lakes, Reservoirs, Chemical analyses, Sediment, Water temperatures, Turbidity, Sampling sites, Water analyses			15. NUMBER OF PAGES 442	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	

CONTENTS

	Page
Preface	III
List of surface-water stations, in downstream order, for which records are published in this volume.	VII
List of discontinued surface-water discharge or stage-only stations	XIV
List of discontinued surface-water-quality stations	XXIV
Introduction	1
Cooperation	2
Summary of hydrologic conditions	2
Surface water	2
Surface-water conditions	3
Special networks and programs	5
Explanation of the records	6
Station identification numbers	6
Downstream order system	6
Latitude-Longitude system	6
Local identifier well-numbering system	7
Records of stage and water discharge	8
Data collection and computation	8
Data presentation	10
Station manuscript	10
Data tables of daily mean values	12
Statistics of monthly mean data	12
Summary statistics	12
Identifying estimated daily discharge	14
Accuracy of the records	14
Other records available	14
Records of surface-water quality	14
Classification of records	15
Arrangement of records	15
On-site measurements and sample collection	15
Water temperature	16
Sediment	16
Laboratory measurements	16
Data presentation	17
Remark codes	18
Access to USGS water data	19
Definition of terms	19
Publications on Techniques of Water-Resources Investigations	29
Station records, surface-water	35
Chemical quality of precipitation	405
Discharge at partial-record stations and miscellaneous sites	411
Crest-stage partial-record stations	411
Miscellaneous sites	412
Index	414

ILLUSTRATIONS

	Page
Figure	
1. System for numbering wells and miscellaneous sites	7
2. Local identifier well-numbering system	8
3. Comparison of discharge at two long-term representative gaging stations during 1997 water year with median discharge for water years 1961-90 in Eastern Oregon	33
4. Comparison of discharge at two long-term representative gaging stations during 1997 water year with median discharge for water years 1961-90 in Western Oregon	34
Location of surface-water and water-quality stations in the:	
5. Oregon Great basin and Klamath River basin	36
6. Klamath River basin	38
7. Owyhee River and Malheur River basin	52
8. Burnt River, Powder River, Pine Creek, Imnaha River and Grande Ronde River basins	60
9. Burnt River and Powder River basins	61
10,11. Umatilla River and Willow Creek basins	80,81
12,13. John Day River basin	95,96
14,15. Deschutes River basin	102,103
16,17. Columbia River between the Deschutes River and Bonneville Dam, and Hood River basin	119,120
18. Columbia River between Bonneville Dam and confluence with the Willamette River and Sandy River basin	125
19. Sandy River basin	134
20. Willamette River basin, upstream from the Luckiamute River	167
21. Middle Fork Willamette River basin	168
22. Long Tom, Coast Fork Willamette and upper Willamette River basin	185
23. McKenzie River basin	192
24. Willamette River basin, downstream from the Luckiamute River	217
25. Santiam River basin	218
26. Willamette River basin from Luckiamute River downstream to the mouth	238
27. Oregon Coastal Drainages north of the Siuslaw River basin	294
28. Umpqua River, Coos River, and Coquille River basins	313
29. Umpqua River and South Fork Umpqua River basin	314
30. North Umpqua River basin	327
31. Pony Creek basin	345
32. Rogue River, and Chetco River basins	349
33. Rogue River basin, upstream from Lost Creek Reservoir	350
34. Rogue River basin, downstream from Lost Creek Reservoir	356

TABLE

Table

1. Maximum stage, discharge and estimated recurrence interval at selected stations for 1997 water year	4
--	---

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

vii

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

Letter after station name designates type of data: (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; (k) specific conductance; (at) air temperature; and (li) light incident.

	Station number	Page
THE GREAT BASIN		
MALHEUR AND HARNEY LAKES BASIN		
Donner und Blitzen River near Frenchglen (d)	10396000	37
PACIFIC SLOPE BASINS IN CALIFORNIA		
KLAMATH RIVER BASIN		
Crater Lake (Closed Basin) near Crater Lake (e,t)	11492200	39
Williamson River:		
Sprague River:		
North Fork Sprague River at powerplant, near Bly (d)	11495800	42
Sprague River near Chiloquin (d)	11501000	43
Williamson River below Sprague River, near		
Chiloquin (d)	11502500	44
Wood River:		
Annie Spring near Crater Lake (d)	11503000	45
Upper Klamath Lake near Klamath Falls (e)	11507001	46
Link River at Klamath Falls (d)	11507500	47
Klamath River at Keno (d)	11509500	48
Klamath River below John C. Boyle Powerplant, near Keno (d)	11510700	49
Klamath River below Iron Gate Dam, CA (d)	11516530	50
COLUMBIA RIVER BASIN		
Columbia River below Priest Rapids Dam, WA (d)	12472800	51
SNAKE RIVER BASIN		
OWYHEE RIVER BASIN		
Owyhee River near Rome (d)	13181000	53
Owyhee River below Owyhee Dam (d)	13183000	54
Snake River at Nyssa (d,c)	13213100	55
MALHEUR RIVER BASIN		
Malheur River below Warm Springs Reservoir, near		
Riverside (d)	13215000	57
North Fork Malheur River at Beulah (d)	13217500	58
Malheur River below Nevada Dam, near Vale (d)	13233300	59
BURNT RIVER BASIN		
Burnt River near Hereford (d)	13273000	62
POWDER RIVER BASIN		
Powder River near Sumpter (d)	13275300	63
Powder River at Baker City (d)	13277000	64
Powder River below Thief Valley Reservoir, near		
North Powder (d)	13285500	65
Eagle Creek above Skull Creek, near New Bridge (d)	13288200	66
Snake River at Hells Canyon Dam,		
Idaho-Oregon State Line (d)	13290450	67
Snake River at Johnson Bar, ID (g)	13290460	68

viii SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
COLUMBIA RIVER BASIN--Continued		
SNAKE RIVER BASIN--Continued		
IMNAHA RIVER BASIN		
Imnaha River at Imnaha (d)	13292000	69
GRANDE RONDE RIVER BASIN		
Lookingglass Creek near Looking Glass (d)	13324300	70
Wallowa River above Cross Country Canal, near Enterprise (d)	13329770	71
Lostine River near Lostine (d)	13330000	72
Lostine River at Caudle Lane, at Lostine (d)	13330050	73
Lostine River at Baker Road, near Lostine (d)	13330300	74
Bear Creek near Wallowa (d)	13330500	75
Bear Creek at Wallowa (d)	13330700	76
Wallowa River below Water Canyon, near Wallowa (d)	13331450	77
Minam River at Minam (d)	13331500	78
Grande Ronde River at Troy (d)	13333000	79
UMATILLA RIVER BASIN		
Umatilla River above Meacham Creek, near Gibbon (d)	14020000	82
Meacham Creek at Gibbon (d)	14020300	83
Moonshine Creek near Mission (d)	14020740	84
Cottonwood Creek near Mission (d)	14020760	85
Umatilla River at West Reservation Boundary, near Pendleton (d) .	14020850	86
Tutuilla Creek:		
Patawa Creek at West Reservation Boundary, near Pendleton (d)	14021980	87
McKay Creek:		
North Fork McKay Creek near Pilot Rock (d)	14022200	89
Umatilla River near Umatilla (d)	14033500	90
WILLOW CREEK BASIN		
Willow Creek above Willow Creek Lake, near Heppner (d)	14034470	91
Balm Fork near Heppner (d)	14034480	92
Willow Creek Lake at Heppner (e)	14034490	93
Willow Creek at Heppner (d)	14034500	94
JOHN DAY RIVER BASIN		
John Day River at Blue Mountain Hot Springs (d)	14036860	97
John Day River near John Day (d)	14038530	98
North Fork John Day River:		
Middle Fork John Day River at Ritter (d)	14044000	99
North Fork John Day River at Monument (d)	14046000	100
John Day River at Service Creek (d)	14046500	101
DESCHUTES RIVER BASIN		
Deschutes River at Lower Bridge, near Terrebonne (d)	14074630	104
Deschutes River near Culver (d)	14076500	105
Crooked River below Opal Springs, near Culver (d)	14087400	106
Metolius River:		
Jefferson Creek near Camp Sherman (d)	14090350	107
Whitewater River near Camp Sherman (d)	14090400	108
Metolius River near Grandview (d)	14091500	109
Lake Billy Chinook near Metolius (e,v)	14092100	110
Deschutes River near Madras (d)	14092500	111
Shitike Creek at Peters Pasture, near Warm Springs (d)	14092750	112
Shitike Creek near Warm Springs (d)	14093000	113
Warm Springs River near Simnasho (d)	14095500	114
Mill Creek near Badger Butte, near Warm Springs (d)	14096300	115

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

ix

	Station number	Page
COLUMBIA RIVER BASIN--Continued		
DESCHUTES RIVER BASIN--Continued		
Beaver Creek below Quartz Creek, near Simnasho (d)	14096850	116
Warm Springs River near Kahneeta Hot Springs (d)	14097100	117
Deschutes River at Moody, near Biggs (d)	14103000	118
Columbia River at The Dalles (d)	14105700	121
HOOD RIVER BASIN		
Hood River at Tucker Bridge, near Hood River (d)	14120000	122
Columbia River at Stevenson, WA (g)	14128600	123
Columbia River below Bonneville Dam (g)	14128870	126
Columbia River at Warrendale (c)	14128910	128
SANDY RIVER BASIN		
Sandy River near Marmot (d)	14137000	135
Bull Run River:		
Bull Run Lake near Brightwood (d)	14138560	136
Bull Run River at lower flume, near Brightwood (d,k,t)	14138720	137
Blazed Alder Creek near Rhododendron (d)	14138800	141
Bull Run River near Multnomah Falls (d,k,t)	14138850	142
Fir Creek near Brightwood (d,k,t)	14138870	146
North Fork Bull Run River near		
Multnomah Falls (d,k,t)	14138900	151
Bull Run Reservoir Number One near Bull Run (e)	14139000	156
South Fork Bull Run River:		
Cedar Creek near Brightwood (d)	14139700	157
South Fork Bull Run River near Bull Run (d,k,t)	14139800	158
Bull Run Reservoir Number Two near Bull Run (e)	14139900	163
Bull Run River near Bull Run (d)	14140001	164
Little Sandy River near Bull Run (d)	14141500	165
Sandy River below Bull Run River, near Bull Run (d)	14142500	166
WILLAMETTE RIVER BASIN		
Middle Fork Willamette River near Oakridge (d)	14144800	169
Hills Creek Lake near Oakridge (e)	14145100	170
Middle Fork Willamette River above Salt Creek, near		
Oakridge (d,t)	14145500	171
Middle Fork Willamette River below North Fork, near		
Oakridge (d)	14148000	174
Lookout Point Lake near Lowell (e)	14149000	175
Middle Fork Willamette River near Dexter (d,t)	14150000	176
Fall Creek near Lowell (d)	14150300	179
Fall Creek Lake near Lowell (e)	14150900	180
Fall Creek below Winberry Creek, near Fall Creek (d,t)	14151000	181
Middle Fork Willamette River at Jasper (d)	14152000	184
Cottage Grove Lake near Cottage Grove (e)	14153000	186
Coast Fork Willamette River below Cottage Grove Dam (d)	14153500	187
Row River above Pitcher Creek, near Dorena (d)	14154500	188
Dorena Lake near Cottage Grove (e)	14155000	189
Row River near Cottage Grove (d)	14155500	190
Coast Fork Willamette River near Goshen (d)	14157500	191
McKenzie River at Outlet of Clear Lake (d)	14158500	193
Smith River above Smith River Reservoir, near		
Belknap Springs (d)	14158790	194
Smith River Reservoir near Belknap Springs (e,v)	14158795	195
McKenzie River below Trail Bridge Dam, near		
Belknap Springs (d)	14158850	196

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
COLUMBIA RIVER BASIN--Continued		
WILLAMETTE RIVER BASIN--Continued		
South Fork McKenzie River:		
Cougar Lake near Rainbow (e)	14159400	197
South Fork McKenzie River near Rainbow (d,t)	14159500	198
Blue River below Tidbits Creek, near Blue River (d)	14161100	201
Lookout Creek near Blue River (d)	14161500	202
Blue River Lake near Blue River (e)	14162100	203
Blue River at Blue River (d,t)	14162200	204
McKenzie River near Vida (d)	14162500	207
McKenzie River below Leaburg Dam (d)	14163150	208
McKenzie River near Walterville (d)	14163900	209
Mohawk River near Springfield (d)	14165000	210
Willamette River at Harrisburg (d)	14166000	211
Long Tom River near Noti (d)	14166500	212
Fern Ridge Lake near Elmira (e)	14168000	213
Long Tom River near Alvadore (d)	14169000	214
Long Tom River at Monroe (d)	14170000	215
Willamette River at Albany (d)	14174000	216
SANTIAM RIVER BASIN		
North Santiam River (Head of Santiam River) below		
Boulder Creek, near Detroit (d)	14178000	219
Detroit Lake near Detroit (e)	14180500	220
North Santiam River at Niagara (d,t)	14181500	221
Little North Santiam River near Mehama (d)	14182500	224
North Santiam River at Mehama (d)	14183000	225
South Santiam River below Cascadia (d)	14185000	226
Quartzville Creek near Cascadia (d)	14185900	227
Green Peter Lake near Foster (e)	14186100	228
Foster Lake at Foster (e)	14186600	229
Wiley Creek near Foster (d)	14187000	230
South Santiam River near Foster (d,t)	14187200	231
South Santiam River at Waterloo (d)	14187500	234
Lebanon Santiam Canal near Lebanon (d)	14187600	235
CRABTREE CREEK BASIN		
Schafer Creek near Lacombe (d)	14188610	236
Santiam River at Jefferson (d)	14189000	237
Luckiamute River near Suver (d)	14190500	239
Willamette River at Salem (d)	14191000	240
South Yamhill River at McMinnville (d)	14194150	241
North Yamhill River:		
Haskins Creek Reservoir near McMinnville (e,v)	14195500	242
Haskins Creek below Reservoir, near McMinnville (d)	14196001	243
MOLALLA RIVER BASIN		
Bull Creek near Wilhoit (d)	14198400	244
Pudding River:		
Little Abiqua Creek near Scotts Mills (d,k,t)	14200400	245
Zollner Creek near Mount Angel (d,k,t)	14201300	249
Pudding River at Aurora (d,k,t)	14202000	253
Tualatin River:		
Henry Hagg Lake near Gaston (e,v)	14202965	257
Scoggins Creek below Henry Hagg Lake, near Gaston (d)	14202980	258
Tualatin River near Dilley (d)	14203500	259
Tualatin River at river mile 24.5, near Schools (c,k,t)	14206694	260

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

xi

	Station number	Page
COLUMBIA RIVER BASIN--Continued		
WILLAMETTE RIVER BASIN--Continued		
MOLALLA RIVER BASIN--Continued		
Fanno Creek at 56th Avenue, Portland (d)	14206900	264
Unified Sewerage agency (USA) Durham Wastewater Treatment Facility (li)	452359122454500	265
Tualatin River at Oswego Dam, near West Linn (k,ph,t,do,at) ...	14207200	267
Tualatin River at West Linn (d)	14207500	275
Willamette River above Falls, at Oregon City (g)	14207740	276
Willamette River below Falls, at Oregon City (g)	14207770	277
Clackamas River:		
Timothy Lake near Government Camp (e,v)	14208600	279
Oak Grove Fork near Government Camp (d)	14208700	280
Oak Grove Fork above Powerplant Intake (d)	14209000	281
Clackamas River above Three Lynx Creek (d)	14209500	282
Fish Creek near Three Lynx (d)	14209700	283
Clackamas River at Estacada (d)	14210000	284
Johnson Creek at Sycamore (d)	14211500	285
Johnson Creek at Milwaukie (d)	14211550	286
Willamette River at Portland (c)	14211720	287
Fairview Creek at Glisan Street, near Gresham (d)	14211814	292
Columbia Slough at Portland (d)	14211820	293
Columbia River at Beaver Army Terminal (d,c,k,t)	14246900	295
PACIFIC SLOPE BASINS IN OREGON		
NEHALEM RIVER BASIN		
Nehalem River near Foss (d)	14301000	304
WILSON RIVER BASIN		
Wilson River near Tillamook (d)	14301500	305
TRASK RIVER BASIN		
Trask River above Cedar Creek, near Tillamook (d)	14302480	306
NESTUCCA RIVER BASIN		
McGuire Lake near Fairdale (e,v)	14302800	307
Nestucca River near Fairdale (d)	14302900	308
Tucca Creek near Blaine (d)	14303200	309
SILETZ RIVER BASIN		
Siletz River at Siletz (d)	14305500	310
ALSEA RIVER BASIN		
Five Rivers:		
Lobster Creek:		
East Fork Lobster Creek near Alsea (d)	14306340	311
Alsea River near Tidewater (d)	14306500	312
UMPQUA RIVER BASIN		
South Umpqua River (Head of Umpqua River) at Tiller (d)	14308000	315
Elk Creek near Drew (d)	14308500	316
Cow Creek above Galesville Reservoir, near Azalea (d)	14308990	317
Galesville Reservoir near Azalea (e)	14308995	318
Cow Creek near Azalea (d,do)	14309000	319
South Umpqua River--Continued		
West Fork Cow Creek near Glendale (d)	14309500	322
Cow Creek near Riddle (d)	14310000	323
Lookingglass Creek at Brockway (d)	14311500	324
South Umpqua River near Brockway (d)	14312000	325
Deer Creek:		
South Fork Deer Creek near Dixonville (d)	14312170	326

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
ARE PUBLISHED IN THIS VOLUME

	Station number	Page
PACIFIC SLOPES BASINS IN OREGON--Continued		
UMPQUA RIVER BASIN--Continued		
North Umpqua River:		
Lemolo Lake near Toketee Falls (e,v)	14313000	328
North Umpqua River below Lemolo Lake, near		
Toketee Falls (d)	14313500	329
Clearwater River above Trap Creek, near Toketee Falls (d) ..	14314500	330
Fish Creek at Big Camas Ranger Station, near		
Toketee Falls (d)	14316000	331
North Umpqua River, above Copeland Creek, near		
Toketee Falls (d)	14316500	332
Steamboat Creek near Glide (d)	14316700	333
North Umpqua River above Rock Creek, near		
Glide (k,t)	14317500	334
North Umpqua River at Winchester (d)	14319500	340
Calapooya Creek:		
Gassy Creek near Nonpareil (d)	14319850	341
Calapooya Creek near Oakland (d)	14320700	342
Umpqua River near Elkton (d)	14321000	343
Elk Creek near Elkhead (d)	14321400	344
COOS RIVER BASIN		
Pony Creek at Coos Bay (d)	14324580	346
COQUILLE RIVER BASIN		
South Fork Coquille River at Powers (d)	14325000	347
Elk River above Anvil Creek, near Port Orford (d)	14327250	348
ROGUE RIVER BASIN		
Rogue River above Prospect (d)	14328000	351
Rogue River below Prospect (d,t)	14330000	352
South Fork Rogue River near Prospect (d)	14332000	355
Lost Creek Lake near McLeod (e)	14335040	357
Rogue River at McLeod (t)	14335075	358
Big Butte Creek near McLeod (d,t)	14337500	360
Rogue River near McLeod (d,t)	14337600	363
Elk Creek near Cascade Gorge (d,t)	14337800	366
Elk Creek below Alco Creek, near Trail (d,t)	14337830	369
West Branch Elk Creek near Trail (d,t)	14337870	372
Elk Creek near Trail (d,t)	14338000	375
Rogue River at Trail (t)	14338100	378
Rogue River at Dodge Bridge, near Eagle Point (d,t)	14339000	380
Bear Creek below Ashland Creek, at Ashland (d)	14354200	383
Bear Creek at Medford (d)	14357500	384
Rogue River at Raygold, near Central Point (d,t)	14359000	385
Rogue River at Grants Pass (d)	14361500	388
Applegate River:		
Applegate Lake near Copper (e)	14361900	389
Applegate River near Copper (d,t)	14362000	390
Star Gulch near Ruch (d)	14362250	393
Applegate River near Applegate (d,t)	14366000	394
Applegate River near Wilderville (d,t)	14369500	397
Rogue River near Agness (d,t)	14372300	400
Illinois River near Kerby (d)	14377100	403
CHETCO RIVER BASIN		
Chetco River near Brookings (d)	14400000	404
Crest-stage partial-record stations		411
Miscellaneous sites and special investigations		412

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			
Twentymile Creek near Adel (d)	10366000	194	1910-16;1918-19;1921-22;1941-44;1945-91
Deep Creek above Dismal Creek, near Warner Lake (d)	10366500	13.0	1918-19
Dismal Creek above Big Valley, near Warner Lake (d)	10367000	12.5	1913
Dismal Creek near Warner Lake (d)	10367500	14.0	1919
Deep Creek below Dismal Creek, near Warner Lake (d)	10368000	27	1913;1918-19
Deep Creek at Big Valley, near Lakeview (d)	10368500	76	1912-15
Camas Creek near Plush (d)	10369000	32.0	1912
Mud Creek near Plush (d)	10369500	18.0	1912;1915;1928-30
Camas Creek near Lakeview (d)	10370000	63.0	1913-15;1951-73
Crane Creek near Lakeview (d)	10370500	7.00	1914
Drake Creek near Adel (d)	10371000	67.0	1915;1923;1951-64;1966-73
Deep Creek above Adel (d)	10371500	249	1923;1930-91
Givan Canal near Adel (d)	10373000	--	1915
Deep Creek at Adel (d)	10374500	274	1910-16;1918-19;1921-22
Mud Creek Ditch at Adel (d)	10375000	--	1915
Fish Creek near Plush (d)	10376500	38.0	1914
Honey Creek at Chalstrand's ranch, near Plush (d)	10377000	56.0	1911
Snyder Creek near Plush (d)	10377500	--	1911
Twelvemile Creek near Plush (d)	10378000	37.0	1911
Honey Creek near Plush (d)	10378500	170	1911-14;1915;1921;1922;1930-91
ABERT LAKE BASIN			
Chewaucan River at damsite, near Paisley (d)	10382500	158	1913-16
Chewaucan River near Buck Mountain, near Paisley (d)	10382550	157	1983-86
Chewaucan River below Coffeepot Creek, near Paisley (d)	10382600	216	1983-86
Conn Ditch near Paisley (d)	10383500	--	1915-20
Chewaucan River near Paisley (d)	10384000	275	1912-21;1924-91
Chewaucan River at Paisley (d)	10384100	278	1905-07;1909-12
Smalls Canal at Paisley (d)	10384500	--	1914-21
Jones-Innis-ZX Ditch near Paisley (d)	10385500	--	1915-20
Chewaucan River at narrows, near Paisley (d)	10386000	380	1914-21
Chewaucan River at Hotchkiss Ford, near Paisley (d)	10386500	430	1914-20
Crooked Creek near Valley Falls (d)	10387000	--	1912-13
Ana River plus Summer Lake Canal, near Summer Lake (d)	10388001	--	1930-39;1940-42;1951-91
SUMMER LAKE BASIN			
West Fork Silver Creek near Silver Lake (d)	10389000	27	1919-23;1925-32
Silver Creek plus Silver Lake Ir Canal, near Silver Lake (d)	10390001	180	1905-07;1909-27;1928;1929-91
Bridge Creek near Silver Lake (d)	10390500	30	1922-23
Buck Creek above Timothy Creek, near Silver Lake (d)	10390800	250	1922-23
Buck Creek near Silver Lake (d)	10391000	290	1905-06;1909-10;1919-21
Duncan Creek near Silver Lake (d)	10392000	58	1922-23
Silvies River near Burns (d)	10393500	934	1903-06;1909-12;1913-17;1918-20;1921-22;1923-91
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

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MALHEUR AND HARNEY LAKES BASIN-Continued			
Kiger Creek near Diamond (d)	10399000	75	1911-13;1916-21;1930;1941
Cucamonga Creek near Diamond (d)	10399500	15	1916;1930
McCoy Creek near Diamond (d)	10400000	45	1910-11;1914;1916-21;1930;1941
Riddle Creek near Smith (d)	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 Suintex (d)	10403500	260	1904-06;1909-12;1914-23;1925-26
Chickahominy Creek near Suintex (d)	10404000	90	1917;1922
Rock Quarry Creek near Suintex (d)	10404500	--	1921;1922
Silver Creek below Suintex (d)	10405000	550	1912-13;1921-23
Silver Creek near Narrows (d)	10406000	630	1917;1919-23
ALVORD LAKE BASIN			
Trout Creek near Denio, NV (d)	10406500	88	1911-12;1922-23;1925-31;1932-91
CATLOW VALLEY BASIN			
Home Creek near Beckley (Narrows) (d)	10406300	38	1911-12;1915-17;1930
ALVORD LAKE BASIN			
Little Cottonwood Creek near Denio, NV (d)	10407000	8	1911-12
GOOSE LAKE (CLOSED BASIN)			
Dog Creek near Lakeview (d)	11338000	27	1912-13
North Draws Canal near Lakeview (d)	11339000	--	1976-81
Draws Creek near Lakeview (d)	11339500	212	1909-81
Cottonwood Creek near Lakeview (d)	11340500	32.9	1909-19;1924-81
Thomas Creek near Lakeview (d)	11341000	30	1912-17;1919;1927-31
LOST RIVER BASIN			
Miller Creek at Gerber Reservoir, near Lorella (d)	11483500	220	1905-08;1925-50
Miller Creek near Lorella (d)	11484000	270	1909-20
Lost River above Olene (d)	11484500	1,410	1915-17
Lost River at Olene (d)	11485000	1,590	1904;1907-12
Lost River Diversion Canal near Olene (d)	11486000	--	1961-68
Lost River at Wilson Bridge, near Olene (d)	11487000	1,620	1912-20
Lost River near Merrill (d)	11487500	1,670	1904-07
Lost River at Merrill (d)	11488000	1,680	1916
KLAMATH RIVER BASIN			
Williamson River below Sheep Creek, near Lenz (d)	11491400	205	1980-91
Williamson River near Silver Lake (d)	11491500	220	1917-18;1920-21
Miller Creek near Crescent (d)	11492000	23.7	1912;1914
Big Springs Creek blw Lenz Ranch, near Lenz (d)	11492400	--	1992-95
Sand Creek near Fort Klamath (d)	11492500	35	1917-22
Scott Creek near Fort Klamath (d)	11493000	10	1917-20
Williamson River near Klamath Agency (d)	11493500	1,290	1955-95
Williamson River above Spring Creek, near Klamath Agency (d)	11494000	1,330	1912-13;1918-25
Williamson River at Chiloquin (d)	11494500	1,400	1911-16;1917
South Fork Sprague River near Bly (d)	11495500	110	1925-26
North Fork Sprague River near Bly (d)	11496500	45	1917-18;1925-26
Fivemile Creek near Bly (d)	11497000	40	1917-20
Sprague River near Beatty (d)	11497500	513	1912-26;1953-91
Sycan River near Silver Lake (d)	11498000	100	1918-20
Sycan River at Sycan Marsh, near Silver Lake (d)	11498100	220	1905
Long Creek near Silver Lake (d)	11498500	40	1918-24;1927-29
Sycan River near Beatty (d)	11499000	540	1912-25
Sycan River below Snake Creek, near Beatty (d)	11499100	568	1980-91
Sprague River near Yainax (d)	11500000	1,270	1904
Sprague River at Chiloquin (d)	11502000	1,600	1911-19;1923;1925

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
KLAMATH RIVER BASIN-Continued			
Anna Creek near Fort Klamath (d)	11503500	40	1923-27
Wood River at Fort Klamath (d)	11504000	90.0	1911-36
Wood River near Fort Klamath (d)	11504100	87.7	1965-67
Crooked Creek near Fort Klamath (d)	11504200	5.68	1965-67
Fourmile Creek near Odessa (d)	11505500	10.6	1912-17
Fourmile Creek near Rocky Point (d)	11505600	105	1965-67
Varney Creek near Rocky Point (d)	11505700	7.43	1965-67
"A" Canal at Klamath Falls (d)	11507200	--	1911-50;1961-81
Keno Canal at Klamath Falls (d)	11507400	--	1967-83
Diversion from Klamath River to Lost River, near Olene (d)	11508500	--	1931-68
Spencer Creek near Keno (d)	11510000	90	1929-32
Klamath River at Spencer Bridge, near Keno (d)	11510500	4,050	1914-31
Howard Prairie Lake Outlet near Pinehurst (d)	11512920	--	1961-65
Keene Creek near Ashland (d)	11514500	12.1	1917-22;1949-65
Green Springs Powerplant Diversion near Ashland (d)	11516100	--	1961-65
OWYHEE RIVER BASIN			
Jordan Creek at DeLamar Mine, near Jordan Valley (d)	13177985	---	1994-96
Crooked Creek near Rome (d)	13181500	1,700	1950
Owyhee River above Owyhee Reservoir (d)	13182000	10,400	1929-51
Lake Owyhee near Nyssa (e)	13182500	11,160	1933-96
Owyhee River at Owyhee (d)	13184000	11,300	1890-96;1904-16; 1920-29;1980-86
MALHEUR RIVER BASIN			
Malheur River at Jone's Ranch, near Drewsey (d)	13213500	530	1914
Malheur River near Drewsey (d)	13214000	910	1920-23;1926-94
Warm Springs Reservoir near Riverside (e)	13214500	1,100	1920-91
South Fork Malheur River at Riverside (d)	13215500	630	1910-14;1919-20; 1927-29;1938
Malheur River at Riverside (d)	13216000	1,750	1909-15
North Fork Malheur River abv Beulah Reservoir, nr Beulah (d)	13216500	355	1914;1936-94
Beulah Reservoir at Beulah (e)	13217000	440	1936-96
North Fork Malheur River at Foley's Ranch, near Beulah (d)	13218000	470	1909-12;1914
North Fork Malheur River at Juntura (d)	13218500	530	1919-22;1926-32;1935-40
Malheur River near Namorf (d)	13219000	2,590	1913-23;1926-31
Malheur River near Westfall (d)	13219500	2,970	1904-05
Malheur River at Little Valley, near Hope (d)	13220000	3,010	1949-79
Malheur River near Hope (d)	13220500	3,030	1919-49
Malheur River near Little Valley (d)	13221500	3,030	1914
Malheur River at McLaughlin Bridge, near Vale (d)	13223500	3,060	1905-06
Bully Creek near Westfall (d)	13225500	160	1912-13;1923
Cottonwood Creek near Westfall (d)	13226000	82	1922-23
Bully Creek at Warm Springs, near Vale (d)	13226500	539	1903-07;1910-17; 1922-23;1964-86
Bully Creek Reservoir near Vale (e)	13226800	547	1964-96
Bully Creek near Vale (d)	13227000	570	1934-62
Bully Creek at Vale (d)	13227500	620	1904
Malheur River at Vale (d)	13228000	3,880	1890-91;1895-97; 1903-14;1919
Willow Creek near Malheur (d)	13229500	250	1912-15;1921-29
Willow Creek below reservoir, near Malheur (d)	13230500	290	1905-06;1911;1921-29
Cow Creek near Brogan (d)	13231000	75	1912-14
Willow Creek near Brogan (d)	13231500	420	1912-14
Willow Creek at Cole's Ranch, near Brogan (d)	13232000	455	1904-06
Pole Creek near Brogan (d)	13232500	14	1912
Pole Creek below Black Creek feed canal, near Brogan (d)	13233000	14	1913
Malheur River at Halliday Bridge, near Ontario (d)	13233500	4,620	1905
Malheur River near Ontario (d)	13234000	4,680	1904
BURNT RIVER BASIN			
North Fork Burnt River near Whitney (d)	13269300	110	1965-80
North Fork Burnt River at Audrey (d)	13269500	139	1915-16
Middle Fork Burnt River near Audrey (d)	13270000	9.54	1915-16
South Fork Burnt River near Unity (d)	13270500	30.9	1915-16
South Fork Burnt River above Barney Creek, near Unity (d)	13270800	38.5	1963-81
South Fork Burnt River at Hardman Ranch, near Unity (d)	13271000	44.4	1916-20;1938-41
Fleetwood Ditch near Unity (d)	13271500	--	1918-20
Sawmill Creek near Unity (d)	13272000	--	1915
Burnt River at Bridgeport (d)	13274000	600	1915-16;1931-36
Burnt River near Bridgeport (d)	13274200	650	1957-80

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
BURNT RIVER BASIN-Continued			
Burnt River near Durkee (d)	13274500	700	1931-38
Burnt River at Huntington (d)	13275000	1,093	1929-32;1957-59;1962-80
POWDER RIVER BASIN			
Powder River near 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
Thief Valley Reservoir near North Powder (e)	13285000	910	1980-96
Big Creek near Medical Springs (d)	13286000	35.5	1913-14
Goose Creek near Keating (d)	13286500	41.9	1913-14
Powder River near Richland (d)	13286700	1,310	1958-96
Eagle Creek above West Fork, near Baker (d)	13287000	18	1911
West Fork Eagle Creek near Baker (d)	13287500	15	1911
Eagle Creek near Baker (d)	13288000	42	1909-10
Eagle Creek near Newbridge (d)	13288500	170	1910-11;1914
Daly Creek near Richland (d)	13289000	40.5	1913
Powder River near Robinette (d)	13289500	1,660	1929-57
PINE CREEK BASIN			
Pine Creek near Oxbow (d)	13290190	230	1967-95
IMNAHA RIVER BASIN			
Imnaha River above Gumboot Creek (d)	13291000	99.6	1945-53
Big Sheep Creek near Joseph (d)	13291500	12.5	1920
GRANDE RONDE RIVER BASIN			
Meadow Creek near Starkey (d)	13318000	140	1932-35
Meadow Creek below Smith Creek, near Starkey (d)	13318050	33.2	1978-79
Meadow Creek above Bear Creek, near Starkey (d)	13318060	48.2	1978-79
Grande Ronde River near Hilgard (d)	13318500	505	1938-56
Grande Ronde River at Hilgard (d)	13318800	555	1967-81
Grande Ronde River at La Grande (d)	13319000	678	1904-15;1918-23;1926-89
Catherine Creek near Union (d)	13320000	105	1926-96
Little Creek near Union (d)	13321000	30.4	1918
Ladd Creek near Hot Lake (d)	13321500	40	1918
Mill Creek near Cove (d)	13322000	11.6	1918;1920-21
Mill Creek near Summerville (d)	13322500	--	1914-15
Grande Ronde River near Elgin (d)	13323500	1,250	1956-81
Indian Creek near Imbler (d)	13323600	22.0	1938-50
Grande Ronde River at Elgin (d)	13324000	1,400	1903-12;1918-19
Wallowa Falls powerplant tailrace near Joseph (d)	13324500	--	1925-52;1967-83
East Fork Wallowa River near Joseph (d)	13325000	10.3	1925-52;1967-82
Wallowa River above Wallowa Lake, near Joseph (d)	13325500	43.0	1924-33;1937-38;1940-41
Wallowa Lake near Joseph (g)	13326000	50.8	1904-06;1912-15;1926-91
Joseph powerplant tailrace at Joseph (d)	13326500	--	1951-56
Wallowa River at Joseph (d)	13327500	50.9	1904-07;1908-14;1915;1927-91
Hurricane Creek near Joseph (d)	13329500	29.6	1915;1924-78
Wallowa River at Wallowa (d)	13329900	--	1976-77
Wallowa River near Wallowa (d)	13331000	520	1904-07
Wallowa River at Minam (d)	13332000	880	1904-14
Grande Ronde River at Rondowa (d)	13332500	2,550	1927-91
Joseph Creek at Chico (d)	13333500	280	1931-33
South Fork Walla Walla River near Milton-Freewater (d)	14010000	63.0	1903;1906-17;1931-91
South Fork Walla Walla River blw PP&L plant, near Milton (d)	14010500	80.0	1904-06;1931-45
North Fork Walla Walla River near Milton-Freewater (d)	14010800	34.4	1970-91

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WALLA WALLA RIVER BASIN			
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 Reservoir near Pendleton (g)	14023000	186	1927-92
McKay Creek near Pendleton (d)	14023500	186	1919-23;1925-91
McKay Creek at mouth, near Pendleton (d)	14024000	190	1903-04;1922-24
East Birch Creek near Pilot Rock (d)	14024200	69.7	1968-73
Birch Creek near Pilot Rock (d)	14024500	240	1920-26
Birch Creek at Rieth (d)	14025000	291	1921-23;1927-76
Umatilla River near Yoakum (d)	14025500	1,260	1915-36
Umatilla River at Yoakum (d)	14026000	1,280	1903-91
Butter Creek near Pine City (d)	14032000	291	1928-88
WILLOW CREEK BASIN			
Rhea Creek near Heppner (d)	14034800	120	1960-91
Willow Creek near Morgan (d)	14035000	630	1921;1929-31
Willow Creek above Eightmile Canyon, near Arlington (d)	14035500	680	1905
Willow Creek near Arlington (d)	14036000	850	1906;1961-79
JOHN DAY RIVER BASIN			
Strawberry Creek above Slide Creek, near Prairie City (d)	14037500	7.00	1931-91
Strawberry Creek near Prairie City (d)	14038000	15	1916-17;1925-30
John Day River at Prairie City (d)	14038500	231	1916-17;1925-68
John Day River near John Day (d)	14038530	386	1969-94
John Day River near Dayville (d)	14039000	960	1909-14;1920-21;1925-26
South Fork John Day River near Dayville (d)	14039500	590	1952-56
South Fork John Day at Dayville (d)	14040000	600	1909-14;1920-21;1925-26
John Day River at Picture Gorge, near Dayville (d)	14040500	1,680	1986-91
Mountain Creek near Mitchell (d)	14040600	20.0	1986-89
Desolation Creek near Dale (d)	14041000	108	1915-17;1949-58
North Fork John Day River near Dale (d)	14041500	525	1930-58
Camas Creek near Lehman (d)	14042000	60.7	1951-70
Camas Creek near Ukiah (d)	14042500	121	1914-17;1920-24;1932-91
Cable Creek near Ukiah (d)	14043000	39	1914-17;1919-24;1932-37;1939
Snipe Creek near Ukiah (d)	14043560	37.0	1968-73
Fox Creek at gorge, near Fox (d)	14044500	90.2	1931-58
Cottonwood Creek near Monument (d)	14045000	210	1926-31
Cottonwood Creek at Monument (d)	14045500	232	1925
John Day River at Clarno (d)	14047000	5,940	1914-15;1920-21
Lone Rock Creek near Lonerock (d)	14047380	69	1966-74;1976-91
Rock Creek above Whyte Park near Condon (d)	14047390	297	1976-89
Rock Creek at Rock Creek (d)	14047500	500	1905;1911
John Day River at McDonald Ferry (d)	14048000	7,580	1905-96
DESCHUTES RIVER BASIN			
Deschutes River above Snow Creek, near La Pine (d)	14049000	109	1922-25
Snow Creek above Crane Prairie, near La Pine (d)	14049500	23.0	1922-25
Deschutes River below Snow Creek, near La Pine (d)	14050000	32	1938-91
Cultus River above Cultus Creek, near La Pine (d)	14050500	16.5	1923-25;1938-91
Cultus Creek abv Crane Prairie Reservoir, nr La Pine(d)	14051000	33.2	1924;1938-91
Cultus River below Cultus Creek, near La Pine (d)	14051500	52.8	1922
Deer Creek above Crane Prairie Reservoir, near La Pine (d)	14052000	21.5	1924;1938-91
Quinn River near La Pine (d)	14052500	--	1922-25;1938-91
Charlton Creek above Crane Prairie Reservoir, near La Pine(d)	14053000	15.6	1923-24;1938-79
Crane Prairie Reservoir near La Pine (e)	14053500	254	1923-91
Deschutes River blw Crane Prairie Reservoir, nr La Pine (d)	14054000	254	1907-08;1912-17;1922-91

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
DESCHUTES RIVER BASIN--Continued			
Brown Creek near La Pine (d)	14054500	21.0	1922-25;1938-91
Deschutes River above Davis Creek, near La Pine (d)	14055000	290	1925-32
Odell Creek near Crescent (d)	14055500	39.0	1912-14;1924;1933-76
Deschutes River below Wickiup Reservoir, near La Pine (d)	14056500	483	1938-91
Deschutes River at Pringle Falls, near La Pine (d)	14057000	507	1916-17;1922-60
Fall River near La Pine (d)	14057500	45.1	1938-91
Deschutes River near La Pine (d)	14058000	600	1910-17;1920;1922
Deschutes River near Lava (d)	14058500	659	1905-07;1909-12
Little Deschutes River at Crescent (d)	14059000	109	1905-08;1911-14
Crescent Lake near Crescent (e)	14059500	60.7	1922-91
Crescent Creek at Crescent lake, near Crescent (d)	14060000	60.7	1911;1912-15;1927;1928-91
Crescent Creek below Cold Creek, near Crescent (d)	14060500	77.0	1922-26;1931-32
Big Marsh Creek at Hoey Ranch, near Crescent (d)	14061000	51.5	1912-14;1924;1928-58
Crescent Creek near Crescent (d)	14061500	137	1912-14
Little Deschutes R above Walker Basin intake, nr La Pine(d)	14062000	307	1914-17;1919-26;1931-22
Little Deschutes River near La Pine	14063000	859	1911;1913-20;1924-94
East Lake near La Pine (d)	14063200	7.08	1992-95
Paulina Lake near La Pine (d)	14063250	10.1	1991-95
Paulina Creek near La Pine (d)	14063300	10.1	1982-89;1991-95
Little Deschutes River at Allen's Ranch, near La Pine (d)	14063500	1,020	1905-12;1913-15;1931-32 1943-44
Deschutes River at Benham Falls, near Bend (d)	14064500	1,759	1906-14;1921;1924-91
Deschutes River above Lava Island, near Bend (d)	14065000	1,790	1915-16;1943-50
Arnold Canal near Bend (d)	14065500	--	1913-90
Deschutes River below Lava Island, near Bend (d)	14066000	1,829	1926-65
Central Oregon Canal above Pilot Butte Canal (d)	14066500	--	1933-90
Deschutes County Mncpl Improvement Dist Canal at Bend (d)	14068500	--	1923-90
North Unit Main Canal near Bend (d)	14069000	--	1946-90
North Canal near Bend (d)	14069500	--	1913-90
Swalley Canal near Bend (d)	14070000	--	1913-90
Deschutes River below Bend (d)	14070500	1,899	1915-91
Bridge Creek near Bend (d)	14070700	6.58	1981-85
Tumalo Creek near Tumalo (d)	14071500	30.9	1906-14
Tumalo Creek near Bend (d)	14073000	47.3	1913-21;1922;1923-87
Deschutes River at Tumalo (d)	14074000	1,983	1910-12;1914-15
Deschutes River at Cline Falls, near Redmond (d)	14074500	2,080	1910-13;1928-46
Snow Creek near Sisters (d)	14074900	1.65	1986-91
Squaw Creek near Sisters (d)	14075000	45.2	1906-18;1919-94
South Fork Beaver Creek near Paulina (d)	14077000	95	1944-53
North Fork Beaver Creek near Paulina (d)	14077500	64.4	1942-54
Beaver Creek near Paulina (d)	14078000	450	1943-75
North Fork Crooked River above Deep Creek (d)	14078500	159	1942-54
North Fork Crooked River below Deep Creek (d)	14079000	264	1947-53
Crooked River near Post (d)	14079500	2,160	1909-11;1940-62;1969-73
Crooked River above Prineville Reservoir, near Post (d)	14079800	2,400	1961-68
Bear Creek at Rickman Ranch, near Roberts (d)	14080000	44	1920-23
Bear Creek near Prineville (d)	14080250	205	1976-81
Prineville Reservoir near Prineville (e)	14080400	2,700	1961-91
Crooked River near Prineville (d)	14080500	2,700	1909-14;1941-91
Crooked River at Prineville (d)	14081500	2,820	1914
Marks Creek near Prineville (d)	14082500	61.0	1916
Ochoco Creek above Mill Creek, near Prineville (d)	14083000	200	1918-22;1924-33
Mill Creek near Prineville (d)	14083500	78.8	1916-18;1920-22;1924-33
Ochoco Creek at Elliott Ranch, near Prineville (d)	14085000	300	1909-10;1915-17
Ochoco Creek at Prineville (d)	14085500	358	1912;1914-15
McKay Creek near Prineville (d)	14086000	76.6	1925-32
McKay Creek above Old Dry Creek, near Prineville (d)	14086500	86.2	1918-19;1920
McKay Creek below Old Dry Creek, near Prineville (d)	14087000	103	1915
Crooked River near Terrebonne (d)	14087300	4,240	1968-73
Crooked River near Culver (d)	14087500	4,330	1918-63
Lake Creek near Sisters (d)	14088000	22.2	1912-13;1915-91
Metolius River at Allingham ranger station, near Sisters (d)	14088500	81.5	1911-13;1915-17
First Creek near Sisters (d)	14089000	12.2	1915-17;1924-28
Jack Creek near Sisters (d)	14089500	16.0	1915-16
Canyon Creek near Sisters (d)	14090000	32.5	1915-16
Whitewater River near Grandview (d)	14090500	30.6	1911-13
Metolius River at Riggs Ranch, near Sisters (d)	14092000	347	1909-12
Seekseequa Creek near Warm Springs (d)	14092150	47.3	1987-93
Shitike Creek below Wolford Canyon, near Warm Springs (d)	14092885	75.8	1975-96

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
DESCHUTES RIVER BASIN--Continued			
Deschutes River at Mecca (d)	14093500	7,940	1911-27
Trout Creek near Antelope (d)	14094000	220	1915-17
Trout Creek near Gateway (d)	14094500	--	1915-16
Hay Creek near Hay Creek (d)	14095000	78	1915-16
Mill Creek at outlet of Olallie Lake (d)	14096000	5.6	1915-16
Mill Creek near Warm Springs (d)	14096500	28.8	1915
Warm Springs River near Warm Springs (d)	14097000	517	1911-19
White River near Government Camp (d)	14097200	40.7	1970-1980
Clear Creek below Clear Lake, near Govt Camp (d)	14097400	8.32	1969-73
Clear Creek near Government Camp (d)	14097500	9.94	1941-41;1947-53
Clear Creek above intake, near Wapinitia (d)	14098000	17.7	1918-21;1934-35
Clear Creek Ditch near Government Camp (d)	14098100	--	1969-73
Clear Creek near Pine Grove (d)	14098600	38.3	1968-73
Gate Creek at Purcell Ranch, near Wamic (d)	14099500	23.9	1921-23
Gate Creek near Wamic (d)	14100000	28.3	1918
White River near Tygh Valley (d)	14100500	221	1911-18
White River below Tygh Valley (d)	14101500	417	1918-90
Deschutes River at Sherars Bridge (d)	14102000	10,200	1923-32
FIFTEENMILE CREEK BASIN			
Fifteenmile Creek near Dufur (d)	14104000	19.6	1918-19
Fifteenmile Creek near Wrentham (d)	14104500	171	1947-53
Eightmile Creek near Boyd (d)	14105000	56	1947-53
Fivemile Creek near The Dalles (d)	14105500	32.4	1926;1928;1930-31;1949-50
MILL CREEK BASIN			
South Fork Mill Creek near The Dalles (d)	14105850	28.0	1961-75
MOSIER CREEK BASIN			
Mosier Creek near Mosier (d)	14113200	41.5	1964-81
HOOD RIVER BASIN			
Dog River near Parkdale (d)	14113400	4.50	1961-71
East Fork Hood River above intake, near Mount Hood (d)	14113500	77.2	1915-22
East Fork Hood River near Mount Hood (d)	14115000	78.8	1913-14
East Fork Hood River near Dee (d)	14115500	108	1917
Clear Branch below Laurance Lake, near Parkdale (d)	14115815	8.62	1987-95
Hood River at Dee (d)	14116000	155	1913-17
Green Point Creek near Dee (d)	14116500	10.0	1919-21
North Fork Green Point Creek near Dee (d)	14117500	7.6	1919;1921
Green Point below North Fork, near Dee (d)	14118000	20.0	1950-54
West Fork Hood River near Dee (d)	14118500	95.6	1914-16;1932-91
Hood River at Winans (d)	14119000	259	1906-07;1910-12;1913
Hood River near Hood River (d)	14121000	329	1913-64
COLUMBIA RIVER MAIN STEM			
Columbia River at Bonneville Dam (g)	14128860	239,900	1981-87
Columbia River at Warrendale (g)	14128910	240,000	1972-87
Columbia River at Washougal (g)	14129400	240,000	1972-81;1990-93
SANDY RIVER BASIN			
Lost Creek near Brightwood (d)	14130000	11.2	1913-18
Little Zigzag River at Twin Bridges, near Rhododendron (d)	14131000	3.70	1926-36
Zigzag River near Rhododendron (d)	14131400	14.8	1981-93
Zigzag River at Rhododendron (d)	14131500	31.0	1920-21;1926-30
Sandy River above Salmon River, at Brightwood (d)	14133500	117	1910-14;1926-31
Salmon River near Government Camp (d)	14134000	8.00	1910-12;1926-91
Salmon River below Linney Creek (d)	14134500	54.0	1928-50
Salmon River at Welches (d)	14135000	100	1913-14;1920-21;1925-36
Salmon River above Boulder Creek, near Brightwood (d)	14135500	106	1936-52
Bull Run River below Lake Ben Morrow (d)	14139500	74.0	1930-54
Little Sandy River near Marmot (d)	14140500	17.9	1913-19
WILLAMETTE RIVER BASIN			
Hills Creek above Hills Creek Reservoir, near Oakridge (d)	14144900	52.7	1959-81
Hills Creek near Oakridge (d)	14145000	59.0	1935-43
Salt Creek near Oakridge (d)	14146000	113	1913-14;1934-51
Salmon Creek near Oakridge (d)	14146500	117	1910;1913-19;1934-85; 1987-94
Gray Creek near Oakridge (d)	14146700	5.06	1979-86
Waldo Lake Outlet near Oakridge (d)	14147000	30.5	1937-53;1970-82;1984

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WILLAMETTE RIVER BASIN--Continued			
N.Fork of Middle Fork Willamette River, nr Oakridge (d)	14147500	246	1910-16;1936-85;1987-94
Fall Creek above Winberry Creek, near Lowell (d)	14150500	127	1936-43
Winberry Creek near Lowell (d)	14150800	43.9	1964-81
Little Fall Creek near Fall Creek (d)	14151500	52.5	1936-48
Coast Fork Willamette River at London (d)	14152500	72.1	1936-87
Mosby Creek near Cottage Grove (d)	14156000	85.0	1936-46
Mosby Creek at mouth, near Cottage Grove (d)	14156500	95.3	1947-68;1970-81
Coast Fork Willamette River at Saginaw (d)	14157000	529	1924-26;1928-51
Willamette River at Springfield (d)	14158000	2,030	1912-13;1920-57
McKenzie River near Belknap Springs (d)	14158700	146	1958-62
Smith River near Belknap Springs (d)	14158800	23.7	1958-60
Budworm Creek near Belknap Springs (d)	14158930	3.00	1979-83;1984-86
McKenzie River above Boulder Creek, near Belknap Springs (d)	14158955	--	1983
McKenzie River at McKenzie Bridge (d)	14159000	348	1910-94
Horse Creek near McKenzie Bridge (d)	14159100	149	1963-69
South Fork McKenzie River above Cougar Lake, nr Rainbow (d)	14159200	160	1958-87
Blue River above Quentin Creek (d)	14161000	11.5	1948-55
Blue River near Blue River (d)	14162000	75.0	1936-64
Gate Creek at Vida (d)	14163000	47.6	1952-57;1967-90
McKenzie River near Springfield (d)	14164000	1,066	1906-15
McKenzie River near Coburg (d)	14165500	1,337	1945-72
Coyote Creek near Crow (d)	14167000	95.1	1941-87
Amazon Creek at Eugene (d)	14169300	3.35	1963-75
Amazon Creek near Eugene (d)	14169500	21.3	1955-68;1980-82
Rock Creek near Philomath (d)	14170500	14.6	1946-52;1975-79
Marys River near Philomath (d)	14171000	159	1941-85
Muddy Creek near Corvallis (d)	14171500	107	1964-68
Calapooia River at Holley (d)	14172000	105	1936-90
Calapooia River at Albany (d)	14173500	372	1941-81
East Humbug Creek near Detroit (d)	14178700	7.32	1978-94
Breitenbush River above French Creek, near Detroit (d)	14179000	106	1933-87
Middle Santiam River near Upper Soda (d)	14185700	74.6	1981-94
Middle Santiam River near Cascadia (d)	14185800	104	1963-81
Packers Gulch near Cascadia (d)	14185880	7.45	1984-86;1988
Middle Santiam River near Foster (d)	14186000	271	1932-47
Middle Santiam River at mouth, near Foster (d)	14186500	287	1951-66
South Santiam River at Foster (d)	14186700	493	1967-73
Wiley Creek at Foster (d)	14187100	62.3	1974-88
Crabtree Creek near Crabtree (d)	14188700	111	1964-70
Thomas Creek near Scio (d)	14188800	109	1963-87
Luckiamute River near Hoskins (d)	14189500	34.3	1935-78
Luckiamute River at Pedee (d)	14190000	115	1940-70
Little Luckiamute River at Falls City (d)	14190100	22.7	1965-71
Rickreall Creek near Dallas (d)	14190700	27.4	1957-78
Mill Creek at Penitentiary Annex, near Salem (d)	14191500	104	1940-56
Mill Creek at Salem (d)	14192000	110	1940-78
South Yamhill River near Willamina (d)	14192500	133	1934-93
Willamina Creek near Willamina (d)	14193000	64.7	1934-91
Mill Creek near Willamina (d)	14193300	27.4	1958-73
South Yamhill River near Whiteson (d)	14194000	502	1940-91
North Yamhill River near Fairdale (d)	14194300	9.03	1959-66;1968-91
Haskins Creek near McMinnville (d)	14195000	6.48	1928-51
North Yamhill River near Pike (d)	14196500	47.8	1940-51
North Yamhill River at Pike (d)	14197000	66.8	1948-73
Willamette River at Wilsonville (d)	14198000	8,400	1948-73
Mollala River above Pine Creek, near Wilhoit (d)	14198500	97.0	1936-93
Molalla River near Molalla (d)	14199000	201	1906-09;1947-51
Molalla River near Canby (d)	14200000	323	1929-59;1964-78
Silver Creek at Silverton (d)	14200300	47.9	1964-68;1971-79
Pudding River near Mount Angel (d)	14201000	204	1940-66
Butte Creek at Monitor (d)	14201500	58.7	1936;1941-52;1967-85
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
Scoggins Creek near Gaston (d)	14203000	43.3	1941-74
Gales Creek near Glenwood (d)	14203750	7.3	1994-95
Gales Creek near Gales Creek (d)	14204000	33.2	1936-45;1964-70
Gales Creek near Forest Grove (d)	14204500	66.1	1941-56;1971-81
East Fork Dairy Creek at Mountindale (d)	14205500	43.0	1941-51
Dairy Creek near Cornelius (d)	14205800	147	1974-76

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WILLAMETTE RIVER BASIN--Continued			
McKay Creek near North Plains (d)	14206000	27.6	1941-43;1949-56
McKay Creek near Hillsboro (d)	14206180	61.0	1973-76
Bronson Creek at 185th Ave, near Aloha (d)	14206298	4.15	1995-96
Tualatin River at Farmington (d)	14206500	568	1940-58;1973-76
Fanno Creek at Durham (d)	14206950	31.5	1994-96
Oswego Canal near Lake Oswego (d)	14207000	--	1929-91
Clackamas River at Big Bottom (d)	14208000	136	1920-70
Collawash River near Breitenbush (d)	14208300	142	1966-68
Oak Grove Fork at Timothy Meadows (d)	14208500	54.0	1913-14;1916-29
Roaring River near Estacada (d)	14209600	42.4	1966-68
Clackamas River near Clackamas (d,g)	14211000	930	(d)1963-83; (g)1988-89
Willamette River at Portland (d)	14211720	11,100	1973-94
COLUMBIA RIVER MAIN STEM			
Columbia River at Columbia City (g)	14222880	254,000	1971-81
Columbia River at Longview, WA (g)	14245300	256,700	1984-90
Columbia River at Wauna (g)	14247295	257,000	1971-81
Bear Creek near Svensen (d)	14248700	3.33	1966-75
Youngs River near Astoria (d)	14251500	40.1	1928-58
NESTUCCA RIVER BASIN			
Trask River near Tillamook (d)	14302500	145	1932-55;1962-72
Nestucca River near McMinnville (d)	14303000	12.0	1929-44
Nestucca River near Beaver (d)	14303600	180	1965-91
SILETZ RIVER BASIN			
Sunshine Creek near Valsetz (d)	14304350	6.70	1973-91
Big Rock Creek near Valsetz (d)	14304850	6.90	1986-89
YAQUINA RIVER BASIN			
Yaquina River near Chitwood (d)	14306030	71.0	1973-91
Mill Creek near Toledo (d)	14306036	4.18	1961-73
ALSEA RIVER BASIN			
North Fork Beaver Creek near Seal Rock (d)	14306040	10.0	1966-67
North Fork Alsea River at Alsea (d)	14306100	63.0	1958-89
South Fork Alsea River near Alsea (d)	14306200	49.5	1961-63
Fall Creek near Alsea (d)	14306300	29.4	1961-63
Five Rivers near Fisher (d)	14306400	114	1961-63;1968-90
Drift Creek near Salado (d)	14306600	20.5	1959-63;1966-70
Needle Branch near Salado (d)	14306700	.27	1959-73
Flynn Creek near Salado (d)	14306800	.78	1959-73
Deer Creek near Salado (d)	14306810	1.17	1959-73
BIG CREEK BASIN			
Big Creek near Roosevelt Beach (d)	14306900	11.9	1973-91
SIUSLAW RIVER BASIN			
Siuslaw River above Wildcat Creek, at Austa (d)	14307000	267	1932-40
Lake Creek at Triangle Lake (d)	14307500	52.5	1932-55
Lake Creek near Deadwood (d)	14307580	174	1968-89
Siuslaw River near Mapleton (d)	14307620	588	1968-94
North Fork Siuslaw River near Minerva (d)	14307645	41.2	1968-85
UMPQUA RIVER BASIN			
Jackson Creek near Tillier (d)	14307700	152	1956-86
South Umpqua River at Days Creek (d)	14308600	641	1975-90
Days Creek at Days Creek (d)	14308700	55.3	1956-72
South Myrtle Creek near Myrtle Creek (d)	14310700	43.9	1956-72
North Myrtle Creek near Myrtle Creek (d)	14311000	54.2	1956-86
Olalla Creek near Tenmile (d)	14311200	61.3	1957-73
Tenmile Creek at Tenmile (d)	14311300	29.6	1968-73
Deer Creek near Roseburg (d)	14312200	53.2	1956-73
Silent Creek near Diamond Lake (d)	14312400	8.24	1972-77
Lake Creek near Diamond Lake (d)	14312500	54.9	1923-29;1930;1931-53 1972-84
North Umpqua River at Toketee Falls (d)	14315500	339	1926-45;1947-48
North Umpqua River above Rock Creek, near Glide (d)	14317500	886	1925-45
Rock Creek near Glide (d)	14317600	97.4	1958-73

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
UMPQUA RIVER BASIN--Continued			
Little River at Peel (d)	14318000	177	1955-89
North Umpqua River near Glide (d)	14318500	1,210	1916-18;1928-38
Sutherlin Creek at Sutherlin (d)	14319200	16.4	1956-67
Calapooya Creek at Nonpareil (d)	14319900	88.6	1977-88
Elk Creek near Drain (d)	14322000	104	1956-73
Umpqua River near Scottsburg (d)	14322900	4,095	1967-69
Smith River near Gardiner (d)	14323100	206	1966-73
Tenmile Creek near Lakeside (d)	14323200	87.0	1958-76
COOS RIVER BASIN			
West Fork Millicoma River near Allegany (d)	14324500	46.9	1955-81
COQUILLE RIVER BASIN			
South Fork Coquille River above Panther Creek, nr Illahe (d)	14324600	31.2	1957-70
South Fork Coquille River near Illahe (d)	14324700	40.6	1957-74
South Fork Coquille River near Powers (d)	14324900	93.2	1957-70
Middle Fork Coquille River near Myrtle Point (d)	14326500	305	1931-46
North Fork Coquille River near Fairview (d)	14326800	73.9	1964-81
North Fork Coquille River near Myrtle Point (d)	14327000	282	1929-46;1964-68
SIXES RIVER BASIN			
Sixes River at Sixes (d)	14327150	116	1968-70
Elk River near Sixes (d)	14327300	86.1	1968-70
ROGUE RIVER BASIN			
Rogue River above Bybee Creek, near Union Creek (d)	14327500	156	1930-52
Mill Creek near Prospect (d)	14329500	32.0	1926-35
South Fork Rogue River above Imnaha Creek, near Prospect (d)	14330500	52.0	1932-49
Imnaha Creek near Prospect (d)	14331000	26.0	1932-49
Middle Fork Rogue River near Prospect (d)	14333000	56.5	1926-55
Red Blanket Creek near Prospect (d)	14333500	45.5	1926-32;1934-81
South Fork Rogue River south of Prospect (d)	14334700	246	1969-92
Rogue River below South Fork Rogue River, near Prospect (d)	14335000	650	1929-65
Rogue River at McLeod (d)	14335075	697	1978-81
South Fk Big Butte Creek, abv Willow Cr, nr Butte Falls (d)	14335200	67.6	1986-91
South Fork Big Butte Creek near Butte Falls (d)	14335500	138	1911;1915;1918-22;1925-91
South Fork Little Butte Collect Canal near Pinehurst (d)	14339400	--	1961-65
South Fork Little Butte Creek at Big Elk Ranger Station (d)	14339500	16.6	1927-50
Dead Indian Collect Canal near Pinehurst (d)	14340400	--	1961-65
South Fork Little Butte Creek near Lakecreek (d)	14341500	138	1922-57;1961-82
North Fork Little Butte Creek at Fish Lake, nr Lakecreek(d)	14342500	20.8	1915;1917-89
North Fork Little Butte Creek near Lakecreek (d)	14343000	43.8	1912-13;1917;1923-27; 1929-64;1966-85
N F Little Butte Creek abv Intake Canal, near Lakecreek (d)	14344500	60.4	1918-19;1922-50
Little Butte Creek above Eagle Point (d)	14347000	269	1917-26;1929
Little Butte Creek below Eagle Point (d)	14348000	293	1908-16;1924-26;1946-50
Emigrant Creek near Ashland (d)	14350000	64.3	1920-86
West Fork Ashland Creek near Ashland (d)	14353000	10.5	1925-33;1975-82
East Fork Ashland Creek near Ashland (d)	14353500	8.14	1925-33;1975-82
Evans Creek near Bybee Springs, near Rogue River (d)	14359500	116	1925-27;1951-53
Middle Fork Applegate River near Copper (d)	14361590	50.7	1980-87
Elliott Creek near Copper (d)	14361600	51.8	1978-87
Carberry Creek near Copper (d)	14361700	68.9	1978-87
Applegate River near Ruch (d)	14363000	302	1912-14;1926-53
Powell Creek near Williams (d)	14368500	8.17	1947-58
Slate Creek at Wonder (d)	14370000	31.4	1944-57
Grave Creek at Pease Bridge, near Placer (d)	14371500	22.1	1941-89
Grave Creek near Placer (d)	14372000	45.6	1914;1941-50
East Fork Illinois River near Takilma (d)	14372500	42.3	1926;1927-32;1941-91
Althouse Creek near Holland (d)	14373500	24.3	1947-53
Sucker Creek near Holland (d)	14375000	76.2	1942-65
Sucker Creek below Little Grayback Creek, near Holland (d)	14375100	83.9	1966-91
Elk Creek near O'Brien (d)	14375400	26.6	1986-91
West Fork Illinois River below Rock Creek, near O'Brien (d)	14375500	42.4	1955-85
West Fork Illinois River near O'Brien (d)	14376500	49.7	1947-54
Illinois River at Kerby (d)	14377000	364	1926-61
Deer Creek near Dryden (d)	14377500	22.0	1942-56
Illinois River near Selma (d)	14378000	665	1957-68
Illinois River near Agness (d)	14378200	988	1961-81

DISCONTINUED SURFACE-WATER QUALITY STATIONS

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

[Type of record: 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
			sed	1966
Columbia River at Umatilla	14019250	214,000	t	1975-79
UMATILLA RIVER BASIN				
Umatilla River above Meacham Creek near Gibbon	14020000	131	t	1960-80
Umatilla River near Umatilla	14033500	2,290	t	1963-69
WILLOW CREEK RIVER BASIN				
Willow Creek at Heppner	14034500	96.8	t	1963-68; 1972-73
			sed	1963-68
Willow Creek near Arlington	14036000	850	t	1963-68
			sed	1963-70
JOHN DAY RIVER BASIN				
South Fork John Day River near Dayville	14039500	590	t	1952-56
Desolation Creek near Dale	14041000	108	t	1958
Middle Fork John Day River at Ritter	14044000	515	t	1967-68
North Fork John Day River at Monument	14046000	2,520	t	1967-68
John Day River at McDonald Ferry	14048000	7,580	t	1963-68
				1976-81
			sc	1976-81
			sed	1963-70
Columbia River at Biggs Junction	14048330	226,400	t	1975-76

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
DESCHUTES RIVER BASIN				
Paulina Creek near La Pine	14063300	10.1	sc	1992-95
Deschutes River at Benham Falls	14064500	1,759	t	1968-80
Deschutes River near Culver	14076500	2,705	t	1955-57; 1959-74
Crooked River at Post	14079500	2,160	t, sed	1960-62
Bear Creek in Prineville	14080250	205	t	1976
			sed	1976-80
Crooked River near Prineville	14080500	2,700	t, sed	1959
Crooked River below Opal Springs, near Culver	14087400	4,300	t	1964-74
Crooked River near Culver	14087500	4,330	t	1955-63
Metolius River near Grandview	14091500	316	t	1955-74
Deschutes River near Madras	14092500	7,820	t	1953-56
				1958; 1972-88
White River below Tygh Valley	14101500	417	t, sed	1982
			tb	1982-83
Deschutes River at Moody	14103000	10,500	t	1955-58; 1962-81
COLUMBIA RIVER MAIN STEM				
Columbia River at The Dalles	14105700	237,000	t	1956-70; 1974-76
			sc	1965-85
Columbia River at Warrendale	14128910	240,000	t, sc	1976-92
Columbia River at Vancouver	14144700	241,000	t	1968-70; 1973-79
			sed	1964-69
WILLAMETTE RIVER BASIN				
Middle Fork Willamette River 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
			sc	1977-85
Gate Creek at Vida	14163000	47.6	t	1984
McKenzie River at Leaburg Dam	14163100	--	t	1984
McKenzie River near Springfield	14164000	1,066	t	1984
Walterville Canal near Walterville	14164200	--	t	1984
McKenzie River above Hayden Bridge, at Springfield	14164900	--	t	1984
Mohawk River near Springfield	14165000	177	t	1964-69; 1984
McKenzie River near Coburg	14165500	1,337	t	1964-75; 1984
Willamette River at Harrisburg	14166000	3,420	t	1962-87
			sc, do	1970-76
			ph	1970-75
Willamette River above Calapooia River at Albany	14171750	4,460	t	1964-87
North Santiam River below Boulder Creek, near Detroit	14178000	216	t	1952-87
Breitenbush River above French Creek, near Detroit	14179000	108	t	1951; 1954-87
North Santiam River at 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	1963-63; 1967;
				1970-87
Middle Santiam River near Cascadia	14185800	104	t	1964-79; 1981-82

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
WILLAMETTE RIVER BASIN--Continued				
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 Glenwood	14203750	7.3	t	1994-95
Gales Creek near Gales Creek	14204000	33.2	t	1964-69
Fanno Creek at Durham	14206950	31.5	t, sc	1994-96
Tualatin River at West Linn	14207500	706	t	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
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

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
ALSEA RIVER BASIN--Continued				
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 sc sed	1968-75; 1978-81 1978-81 1968-75
UMPQUA RIVER BASIN				
South Umpqua River at Days Creek	14308600	641	t tb sc, ph, do	1971-82; 1991-92 1973-82 1991-92
South Umpqua River near Roseburg	14312260	1,798	sc ph do	1971-95 1972-95 1971-95
North Umpqua River at Winchester	14319500	1,344	t	1971-91
Umpqua River near Elkton	14321000	3,683	t	1971-92
COOS RIVER BASIN				
West Fork Millicoma River near Allegany	14324500	46.9	t	1973-76
COQUILLE RIVER BASIN				
South Fork Coquille River near Illahe	14324700	40.6	t	1971-74
Rock Creek near Illahe	14324800	--	t	1958
South Fork Coquille River near Powers	14324900	93.2	t	1957-70
SIXES RIVER BASIN				
Sixes River at Sixes	14327150	116	t sed	1968 1968-70
ROGUE RIVER BASIN				
South Fork Rogue River south of Prospect	14334700	246	t sed	1969-92 1977-81
Rogue River at Grants Pass	14361500	2,459	t	1956-58; 1974-87
Middle Fork Applegate River near Copper	14361590	50.7	t	1980-87
Elliott Creek near Copper	14361600	51.8	t sed	1978-87 1978-80
Carberry Creek near Copper	14361700	68.9	t sed	1978-87 1981
Rogue River near Merlin	14370400	3,268	t	1975-87
Rogue River at Marial	14372250	3,812	t	1975-87
Rogue River near Agness	14372300	3,939	t	1961-87
Illinois River near Selma	14378000	665	t	1962-68

INTRODUCTION

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

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 189 stream-gaging stations, stage only records for 5 gaging stations, 24 partial-record or miscellaneous streamflow stations, and 1 crest-stage, partial-record streamflow station; (2) stage and content records for 26 lakes and reservoirs; (3) water-quality records for 54 streamflow-gaging stations; (4) water-quality for 2 atmospheric disposition stations; (5) air-temperature records for 1 data site; and (6) light incident for 1 record.

This series of annual reports for Oregon began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one or two volumes, data on quantities of surface water, quality of surface and ground water, and ground-water levels. In 1981, the annual report was divided into two volumes: Volume 1 described the activities for Eastern Oregon, while Volume 2 described the activities for Western Oregon. 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-97-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. For further ordering information, the Customer Inquiries telephone number is (703) 487-4650.

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

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

COOPERATION

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

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

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

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

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

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

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

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

Surface-water Conditions

Streamflows for the 1997 water year remained above average for the third consecutive year due, in part, to record snowpacks along with abundant precipitation. Snowpack in the Deschutes River Basin of eastern Oregon was reported at 145 percent of normal, the Klamath Basin at 132 percent of normal and the Harney Basin of southeast Oregon at 118 percent of normal. The Willamette River Basin of western Oregon reported a snowpack of 143 percent.

The greatest runoff occurred during the period November through January as a series of warm, tropical storms from the Pacific Ocean brought record-breaking precipitation to Oregon and the entire Pacific Northwest. Rivers rose to flood levels during the periods November 18-20, December 8-12, and December 30 through January 6. All areas of the State were affected by these record-breaking storms, from the Oregon Coast to the Snake River tributaries along the Oregon-Idaho State line. During this time, streams rose quickly to flood levels and the major streams remained above flood levels for several weeks. Many streams crested at or slightly above National Weather Service flood levels resulting in several streams setting new peaks-of-record. As an example, the peak discharge at the long-term gaging station on the Imnaha River in eastern Oregon was 20,200 ft³/s on January 1. This is twice the previous peak of record of 10,100 ft³/s set in January 1974. Bear Creek, along with many other streams in southern Oregon, crested slightly below or at levels equal to the peaks of record. Peak streamflows recorded during the year for selected gages are shown in Table 1.

By May, streamflows returned to average range and remained there for the rest of the water year. By the close of the water year, total runoff for the water year for long-term index stations ranged from a low of 123 percent for the South Fork of the Coquille River along the southern Oregon coast to a high of 166 percent of average for the John Day River Basin of north-central Oregon. Figure 3 compares 1997 water year monthly and annual average discharge for selected gages with median discharge for the period 1961-90.

Table 1. Maximum stage, discharge and recurrence interval for the 1997 water year at selected gaging stations.
[mi², square miles; ft, feet; ft³/s, cubic feet per second; ND, not determined; <, less than; >, greater than].

Station Number	Stream and Location	Drainage Area (mi ²)	Period of Record	Maximum for Period of Record			Maximum during Water Year			
				Date	Stage (ft)	Discharge (ft ³ /s)	Date	Stage (ft)	Discharge (ft ³ /s)	Estimate of Recurrence interval (years)
10396000	Donner und Blitzen River near Frenchglen	200	1912-13, 15,16,18,21, 1938-	04-26-78	7.15	4,270	01-02-97	6.23	2,990	10
11502500	Williamson River below Sprague River, near Chiloquin	3,000	1918-	01-05-97	10.27	17,100	01-05-97	10.27	17,100	>100
13181000	Owyhee River near Rome	8,000	1950-	03-18-93	20.11	55,700	01-02-97	17.91	35,600	regulated
13292000	Imnaha River at Imnaha	622	1929-	01-01-97	11.44	20,200	01-01-97	11.44	20,200	>100
13333000	Grande Ronde River at Troy	3,275	1944-	02-09-96	13.76	51,800	01-01-97	12.65	36,700	>25
14033500	Umatilla River near Umatilla	2,290	1903-	01-30-65	10.75	19,800	01-02-97	7.91	13,100	regulated
14046500	John Day River at Service Creek	5,090	1930-	12-23-64	17.85	40,200	01-01-97	16.49	35,200	<50
14150300	Fall Creek near Lowell	118	1964-	11-19-96	12.48	12,700	11-19-96	12.48	12,700	>10
14308500	Elk Creek near Drew	54	1955-82, 1987-	01-09-95	11.09	9,120	01-01-97	10.87	8,550	<25
14309000	Cow Creek near Azalea	78	1933-	01-15-74	16.40	10,600	01-02-97	9.69	2,490	regulated
14311500	Lookingglass Creek at Brockway	158	1956-	12-26-55	24.93	35,000	12-08-96	15.72	11,300	<5
14316700	Steamboat Creek near Glide	227	1957-	12-22-64	25.60	51,000	11-18-96	19.54	31,400	50
14320700	Calapooya Creek near Oakland	210	1956-73, 1987-	11-18-96	21.62	27,100	11-18-96	21.62	27,100	25
14321000	Umpqua River near Elkton	3,683	1906-	12-23-64	51.95	265,000	12-09-96	39.42	169,000	10
14327250	Elk River above Anvil Creek, near Port Orford	83.4	1994-	11-18-96	22.58	28,900	11-18-96	22.58	28,900	ND
14328000	Rogue River above Prospect	312	1909-11, 1924-	12-22-64	11.55	22,400	01-01-97	8.38	12,000	25
14337800	Elk Creek near Cascade Gorge	78.8	1974-	01-15-74	8.90	6,780	11-18-96	8.49	5,750	>10
14357500	Bear Creek at Medford	289	1921-81, 1985-	01-01-97	14.69	17,600	01-01-97	14.69	17,600	regulated
14361500	Rogue River at Grants Pass	2,459	1939-	12-23-64	35.15	152,000	01-01-97	26.49	90,800	regulated
14362000	Applegate River near Copper	225	1939-	01-15-74	25.38	29,800	01-01-97	16.23	18,800	regulated
14366000	Applegate River near Applegate	483	1939-	01-15-74	20.41	37,200	01-01-97	17.90	29,700	regulated
14369500	Applegate River near Wilderville	698	1939-55, 1979-	01-18-53	18.30	47,500	01-02-97	19.38	44,000	regulated
14372300	Rogue River near Agness	3,939	1961-	12-23-64	68.03	290,000	01-02-97	39.60	241,000	regulated
14400000	Chetco River near Brookings	271	1970-	11-19-96	28.56	76,100	11-19-96	28.56	76,100	50

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

SPECIAL NETWORKS AND PROGRAMS

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

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

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

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

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

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

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

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

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

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

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1997 water year that began October 1, 1996, and ended September 30, 1997. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

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

Downstream Order System

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

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

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude (figure 1, page 6). The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other

sites within a one-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

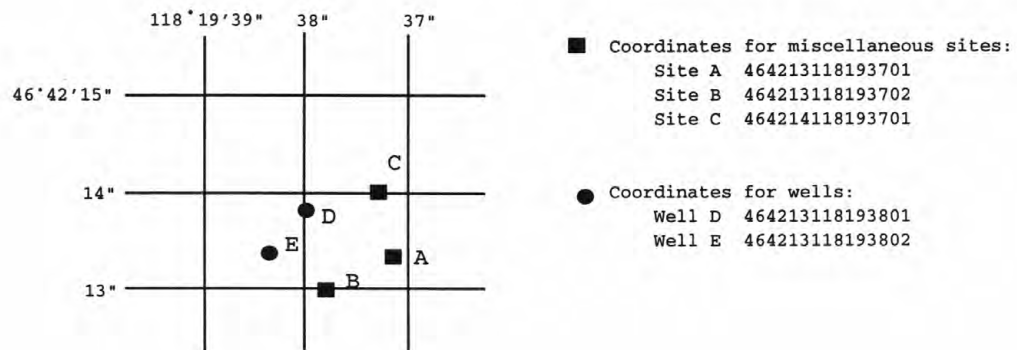
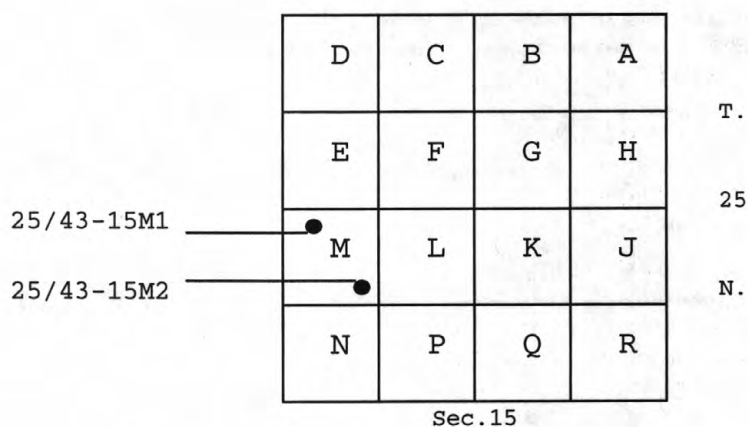


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

Local Identifier Well-Numbering System

In addition to the latitude-longitude based site identification number, wells in the State of Oregon are assigned local well numbers. These numbers are based on and show locations of wells according to the rectangular system for subdivision of public land, indicating township, range, section, and 40-acre tract within the section. For example, in the well number 25/43E-15M1, the part preceding the hyphen indicates successively the township and range (T.25 N., R.43 E.) north and east of the Willamette base line and meridian. The first number following the hyphen indicates the section (sec.15) and the letter (M) given the 40-acre subdivision of the section as shown in figure 2, page 8. The last number (1) is the serial number of the well in that particular 40-acre tract. Thus, the first well recorded in NW 1/4 SW 1/4 sec.15, T.25 N., R.43 E., would have the number 25/43-15M1, and the second well would have the number 25/43-15M2 or 25/43E-15M2.

R. 43 E.

**Figure 2.** Local identifier well numbering system.

Records of Stage and Water Discharge

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

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

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

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

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

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

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

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

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather

records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

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

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

Station manuscript

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

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

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

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

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

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

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

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

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

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

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

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

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

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

was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

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

Data table of daily mean values

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

Statistics of monthly mean data

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

Summary statistics

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

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

Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge

measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff because of the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation, or other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, changes in contents of reservoirs, or other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

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

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

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging

stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

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

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

Arrangement of Records

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

On-site Measurements and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are detailed in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; Book 5, Chapter A1, A3, and A4. These references are listed in the PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section of this report. These methods are consistent with ASTM standards and generally follow ISO standards. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey Oregon office.

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

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent

water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

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

Water Temperature

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

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

Sediment

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

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

At other stations, suspended-sediment samples were collected periodically. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

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

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for identification of biological populations, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed

in the Geological Survey laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are described in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

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

Data Presentation

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

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

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

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

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

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

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

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

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

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, 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)
ND	Materials specifically analyzed for but not detected
V	Analyte was detected in both the environmental sample and the associated blanks.

Water-Quality-Control Data

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

Blank Sample

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

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

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

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

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

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

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

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

Reference Samples

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

Replicate Samples

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

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

Spike Samples

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

ACCESS TO USGS WATER DATA

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

<http://water.usgs.gov>

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

DEFINITION OF TERMS

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

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

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

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

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth

potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

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

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

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

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

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

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C plus or minus 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Base flow. See Base runoff.

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

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

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, 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 ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

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

One thousand micrograms per liter is equivalent to one milligram per liter.

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

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

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

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

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

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area habitat, usually square meter (m²), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria,

phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

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

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

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

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

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

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

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

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

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

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

Bed load discharge (tons per day) is the quantity of bed load measured by

dry weight that moves past a section as bed load in a given time.

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

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

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

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

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

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

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

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

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

Solute is any substance that is dissolved in water.

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

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

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

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring 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
Genus.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

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

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

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

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

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

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

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

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

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

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

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

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

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

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

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

1-D1. Water temperature--influential factors, field measurement, and data presentation, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

1-D2. Guidelines for collection and field analysis of ground-water samples for selected unstable constituents, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.

2-D1. Application of surface geophysics to ground-water investigations, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-D2. Application of seismic-refraction techniques to hydrologic studies, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.

2-E1. Application of borehole geophysics to water-resources investigations, by W. S. Keys and L.M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

2-E2. Borehole geophysics applied to ground-water investigations, by W. S. Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.

2-F1. Application of drilling, coring, and sampling techniques to test holes and wells, by Eugene Shuter and W. E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.

3-A1. General field and office procedures for indirect discharge measurements, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. Measurement of peak discharge by the slope-area method, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. Measurement of peak discharge at culverts by indirect methods, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

3-A4. Measurement of peak discharge at width contractions by indirect methods, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.

3-A5. Measurement of peak discharge at dams by indirect methods, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.

3-A6. General procedure for gaging streams, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. Stage measurement at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.

3-A8. Discharge measurements at gaging stations, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

3-A9. Measurement of time of travel in streams by dye tracing, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

- 3-A10. Discharge ratings at gaging stations, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. Measurement of discharge by the moving-boat method, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. Fluorometric procedures for dye tracing, Revised, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 34 pages.
- 3-A13. Computation of continuous records of streamflow, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. Use of flumes in measuring discharge, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. Computation of water-surface profiles in open channels, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. Measurement of discharge using tracers, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. Acoustic velocity meter systems, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. Determination of stream reaeration coefficients by use of tracers, by F. A. Kilpatrick, R. E. Rathbun, Nobuhiro Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. Levels at streamflow gaging stations, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. Simulation of soluble waste transport and buildup in surface waters using tracers, by F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-A21. Stream-gaging cableways, by C. Russell Wagner: USGS--TWRI Book 3, Chapter A21. 1995. 56 pages.
- 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 programmed 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 R. L. Cooley and R. L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B4. Supplement 1. Regression modeling of ground-water flow - Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems, by R. L. Cooley: USGS--TWRI Book 3, Chapter B4. 1993. 8 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-B7. Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow, by E. J. Wexler: USGS--TWRI Book 3, Chapter B7. 1992. 190 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

- 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.
- 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. Greeson, 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.
- 6-A2. Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model, by S. A. Leake and D. E. Prudic: USGS--TWRI Book 6, Chapter A2. 1991. 68 pages.
- 6-A3. A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual, by L. J. Torak: USGS--TWRI Book 6, Chapter A3. 1993. 136 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

6-A4. A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions, by R. L. Cooley: USGS--TWRI Book 6, Chapter A4. 1992. 108 pages.

6-A5. A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details, by L. J. Torak: USGS--TWRI Book 6, Chapter A5, 1993. 243 pages.

6-A6. A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction, by Eric D. Swain and Eliezer J. Wexler. 1995. 125 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.

9-A7. National Field Manual for the Collection of Water-Quality Data: Biological Indicators, by D. N. Myers and F. D. Wilde: USGS--TWRI Book 9, Chapter A7. 1997. 49 pages.

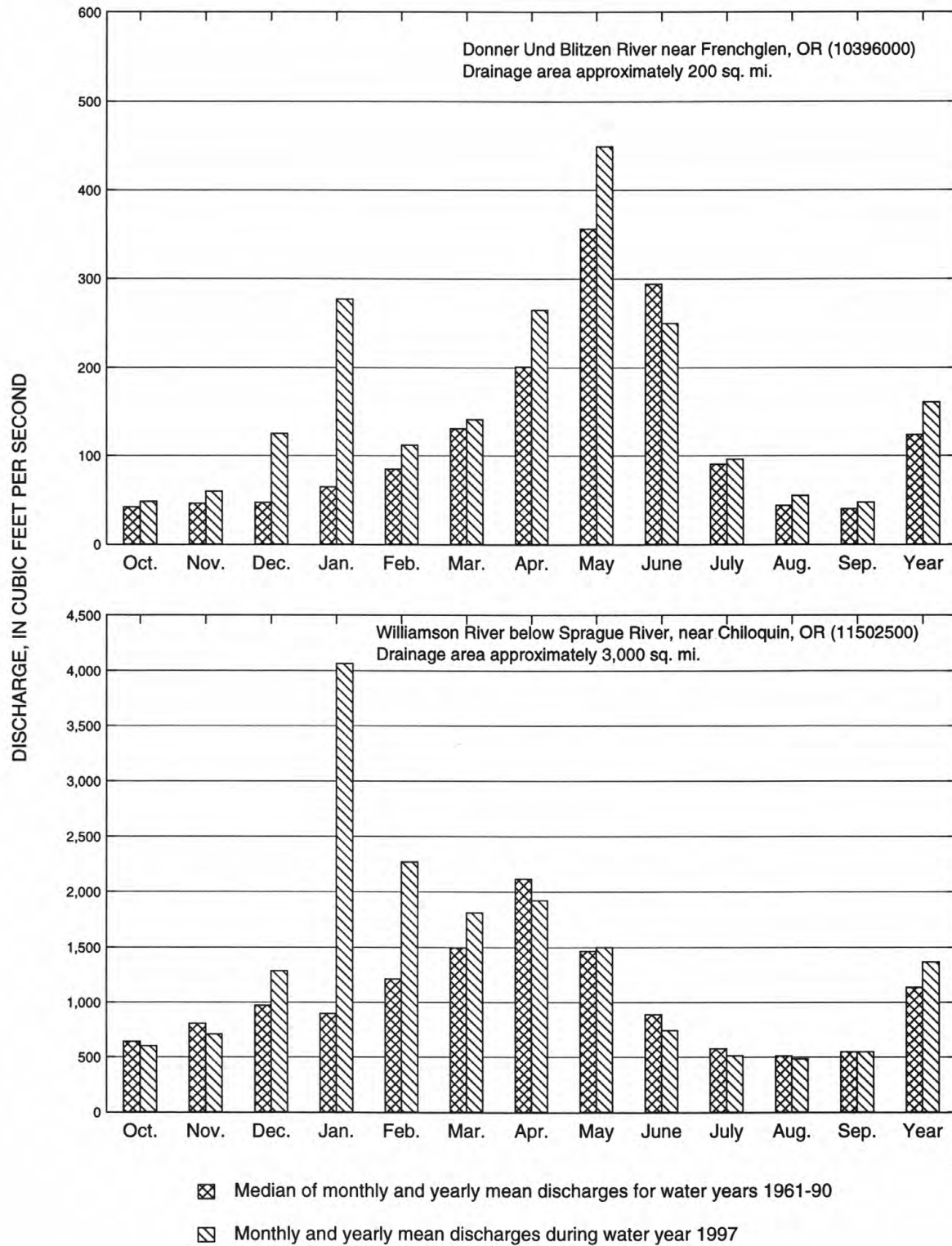


Figure 3. Discharge during 1997 water year compared with median discharge for period 1961-90 for two representative gaging stations in Eastern Oregon.

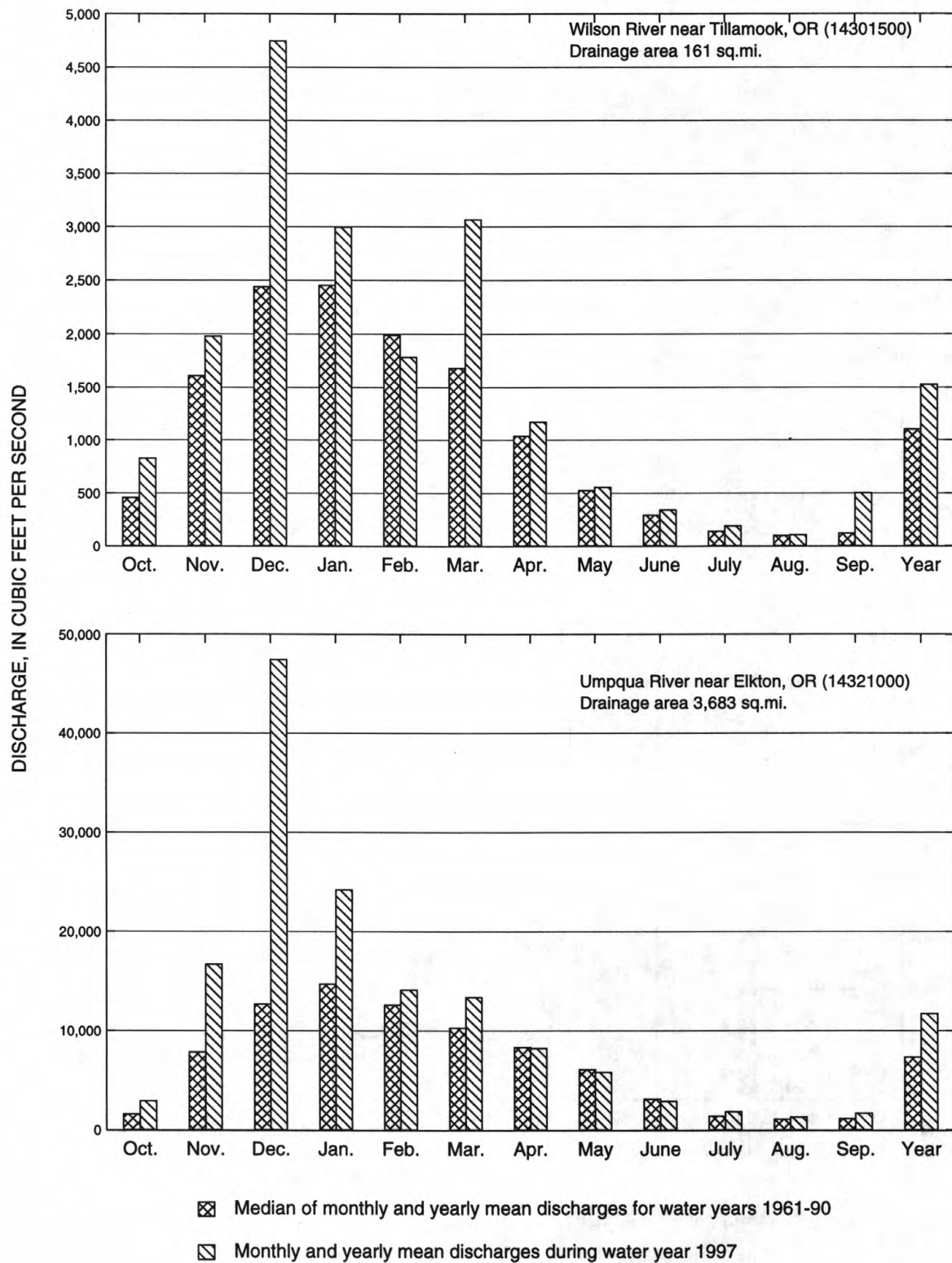


Figure 4. Discharge during 1997 water year compared with median discharge for period 1961-90 for two representative gaging stations in Western Oregon.

SURFACE-WATER RECORDS

Remark Codes

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

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

Dissolved Trace-Element Concentrations

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

Change in National Trends Network Procedures

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

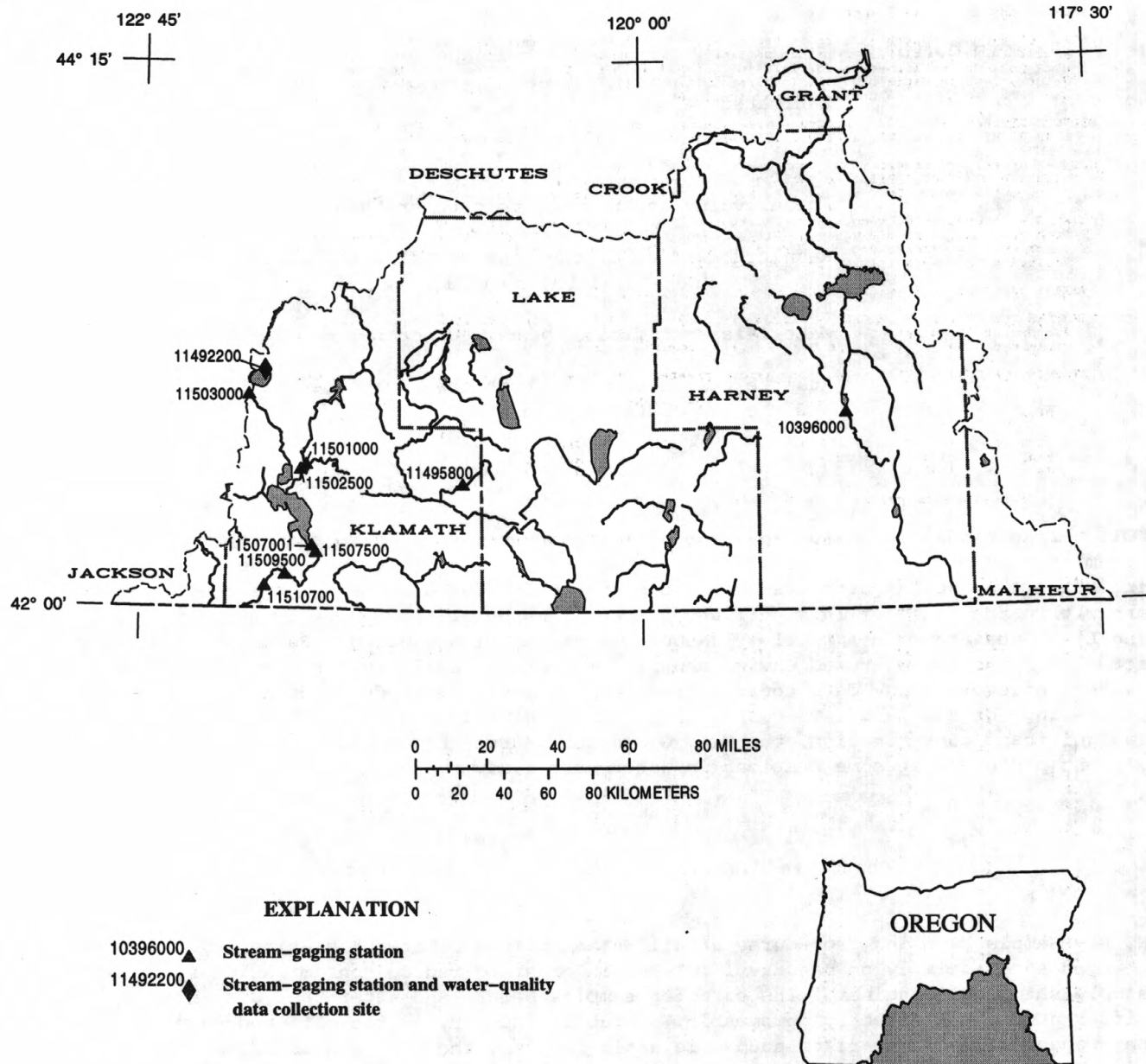


Figure 5. Location of surface-water and water-quality stations in The Great Basin and the Klamath River Basin.

MALHEUR AND HARNEY LAKES BASIN

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 17210003, 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 Frenchlen.

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.

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

AVERAGE DISCHARGE.--67 years (water years 1912-13, 1915-16, 1918-21, 1939-97), 127 ft³/s, 91,660 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)
Dec. 26	2030	1,150	4.44	Jan. 31	0830	1,450	4.80
Jan. 2	0500	*2,990	*6.23	Apr. 23	0830	1,430	4.77
Jan. 3	0300	1,180	4.47	May 18	0200	862	4.06

Minimum discharge, 33 ft³/s Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	50	82	949	470	75	167	412	421	131	69	47
2	45	50	63	1570	204	76	154	325	360	121	66	47
3	44	50	65	812	137	74	156	300	347	115	63	50
4	45	50	e55	392	121	74	150	299	497	117	61	49
5	45	49	e70	307	e90	68	138	316	366	122	61	48
6	45	45	85	242	e75	76	136	341	281	129	61	47
7	45	50	68	225	e80	72	135	350	254	121	61	47
8	45	48	156	194	e90	79	135	371	242	114	59	46
9	45	48	117	181	88	80	140	408	249	112	58	46
10	44	48	78	171	88	84	132	471	237	125	60	47
11	44	48	72	160	93	112	121	558	245	107	67	50
12	45	48	93	e120	105	100	116	635	304	97	59	50
13	45	49	97	e85	83	88	116	684	268	93	57	48
14	46	51	66	e110	89	83	123	705	270	91	55	47
15	45	51	e60	e120	127	102	118	655	284	93	54	48
16	45	50	e65	e130	130	154	125	635	288	93	53	49
17	45	49	e50	141	155	165	136	689	282	92	52	48
18	46	57	e45	120	107	160	146	707	296	91	51	49
19	47	77	68	111	102	179	342	583	257	86	51	48
20	47	79	69	106	93	185	445	542	218	83	50	47
21	43	74	61	102	82	201	389	496	185	80	51	47
22	50	92	65	e90	79	204	436	435	181	81	50	47
23	50	91	59	e70	77	200	865	389	160	78	49	46
24	62	77	57	e75	74	200	559	358	147	76	52	46
25	65	78	58	e100	77	197	419	313	143	74	50	46
26	53	65	372	142	79	225	385	264	146	71	49	47
27	49	66	406	131	77	270	427	243	150	72	48	46
28	53	71	198	344	76	229	419	254	144	73	48	46
29	56	66	385	302	---	202	401	352	138	82	49	46
30	53	61	308	254	---	189	415	372	131	83	48	45
31	52	---	397	735	---	181	---	448	---	75	47	---
TOTAL	1489	1788	3890	8591	3148	4384	7946	13910	7491	2978	1709	1420
MEAN	48.0	59.6	125	277	112	141	265	449	250	96.1	55.1	47.3
MAX	65	92	406	1570	470	270	865	707	497	131	69	50
MIN	43	45	45	70	74	68	116	243	131	71	47	45
AC-FT	2950	3550	7720	17040	6240	8700	15760	27590	14860	5910	3390	2820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1997, BY WATER YEAR (WY)

MEAN	43.7	47.8	56.0	67.8	92.6	151	223	375	287	98.3	47.9	42.3
MAX	86.4	94.3	181	277	310	500	666	812	802	320	113	87.3
(WY)	1985	1985	1965	1997	1921	1993	1952	1984	1917	1984	1984	1984
MIN	24.2	25.3	25.2	25.0	27.8	40.5	61.2	105	44.7	28.9	21.1	22.2
(WY)	1993	1962	1960	1916	1964	1977	1968	1992	1992	1968	1992	1992

WATER YEARS 1911 - 1997

ANNUAL TOTAL	56457		58744				
ANNUAL MEAN	154		161			127	
HIGHEST ANNUAL MEAN						273	1984
LOWEST ANNUAL MEAN						49.1	1992
HIGHEST DAILY MEAN	973	May 15	1570	Jan 2	2700		Mar 17 1993
LOWEST DAILY MEAN	30	Feb 1	43	Oct 21	11		Nov 16 1961
ANNUAL SEVEN-DAY MINIMUM	42	Jan 29	45	Oct 5	14		Jan 2 1974
ANNUAL RUNOFF (AC-FT)	112000		116500		91660		
10 PERCENT EXCEEDS	359		389		327		
50 PERCENT EXCEEDS	84		89		58		
90 PERCENT EXCEEDS	46		47		32		

e Estimated

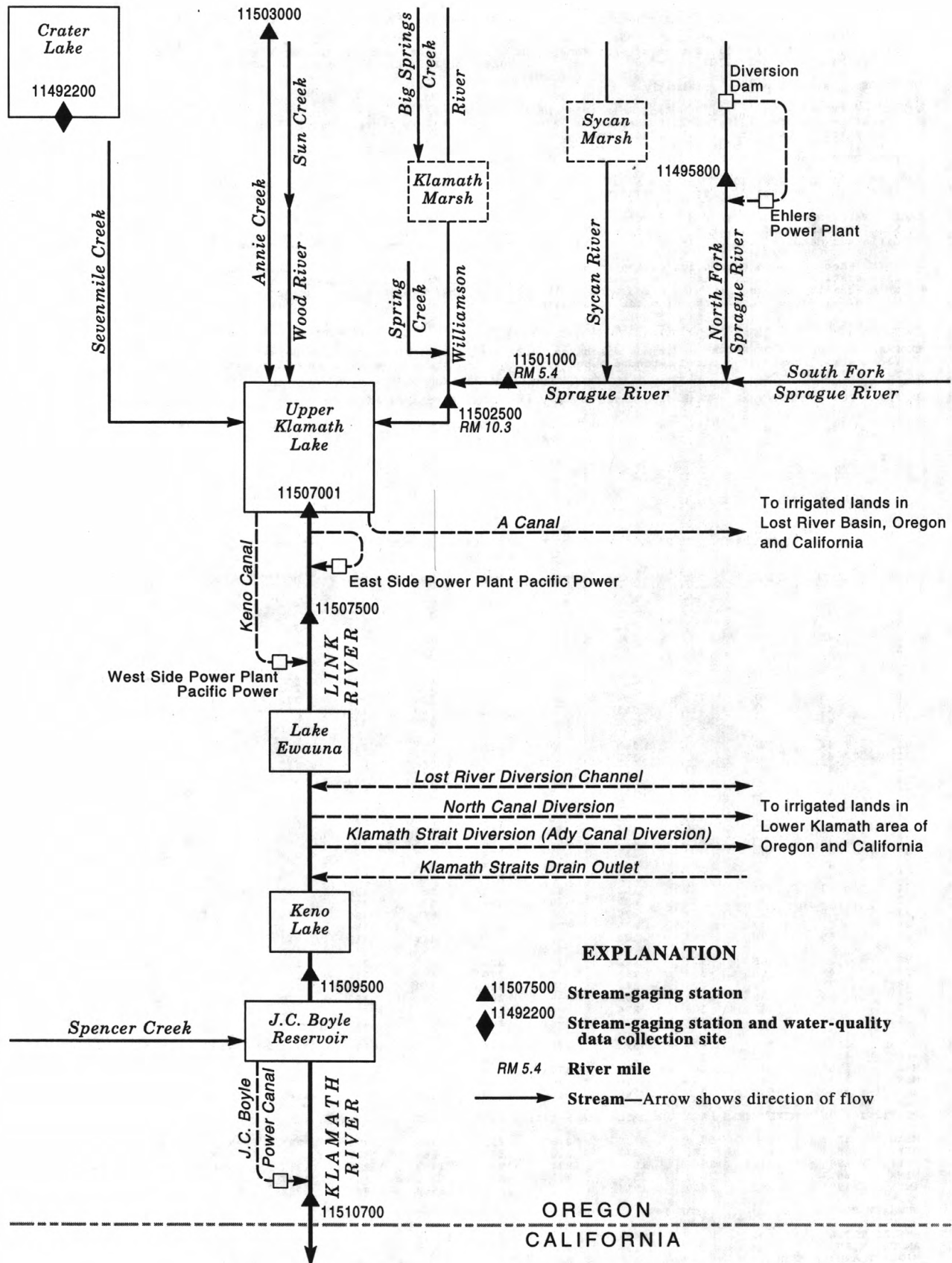


Figure 6. Schematic diagram showing gaging stations and major diversions in the Klamath Basin in Oregon.

39

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

WATER-ELEVATION RECORDS

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,174.96 ft June 12, 13; minimum elevation, 6,170.49 Oct. 18.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6170.74	6170.86	6171.61	6173.47	6174.30	6174.45	6174.55	6174.78	6174.82	6174.85	---	---
2	6170.73	6170.85	6171.63	6173.58	6174.29	6174.44	6174.53	6174.77	6174.80	6174.83	---	---
3	6170.71	6170.84	6171.73	6173.72	6174.30	6174.44	6174.54	6174.77	6174.81	6174.83	---	---
4	6170.70	6170.83	6171.74	6174.12	6174.46	6174.46	6174.52	6174.77	6174.82	6174.82	---	6174.10
5	6170.68	6170.81	6171.75	6174.27	6174.50	6174.45	6174.51	6174.78	6174.83	6174.80	---	6174.07
6	6170.67	6170.79	6171.83	6174.34	6174.50	6174.47	6174.55	6174.80	6174.84	6174.79	---	6174.04
7	6170.66	6170.78	6172.04	6174.33	6174.48	6174.56	6174.54	6174.84	6174.83	6174.83	---	6174.02
8	6170.65	6170.77	6172.09	6174.32	6174.48	6174.60	6174.52	6174.83	6174.88	6174.84	---	6174.00
9	6170.64	6170.76	6172.17	6174.31	6174.47	6174.58	6174.50	6174.82	6174.87	6174.79	---	6173.99
10	6170.62	6170.75	6172.35	6174.29	6174.46	6174.57	6174.48	6174.83	6174.86	---	---	6173.98
11	6170.60	6170.74	6172.49	6174.28	6174.47	6174.57	6174.47	6174.82	6174.91	---	---	6173.96
12	6170.57	6170.72	6172.61	6174.27	6174.47	6174.57	6174.45	6174.81	6174.95	---	---	6173.94
13	6170.60	6170.70	6172.65	6174.26	6174.46	6174.56	6174.45	6174.80	6174.95	---	---	6173.92
14	6170.58	6170.70	6172.73	6174.24	6174.46	6174.56	6174.45	6174.79	6174.95	---	---	6173.94
15	6170.58	6170.71	6172.78	6174.22	6174.46	6174.55	6174.45	6174.78	6174.94	---	---	6174.03
16	6170.54	6170.70	6172.78	6174.19	6174.50	6174.56	6174.44	6174.78	6174.94	---	---	6174.01
17	6170.51	6170.70	6172.76	6174.16	6174.50	6174.54	6174.42	6174.77	6174.93	---	---	6174.04
18	6170.55	6170.69	6172.75	6174.15	6174.49	6174.54	6174.39	6174.77	6174.93	---	---	6174.00
19	6170.66	6170.82	6172.73	6174.14	6174.47	6174.52	6174.39	6174.77	6174.92	---	---	6173.99
20	6170.65	6171.23	6172.72	6174.16	6174.46	6174.53	6174.42	6174.77	6174.94	---	---	6173.97
21	6170.64	6171.46	6172.71	6174.15	6174.47	6174.55	6174.40	6174.77	6174.94	---	---	6173.96
22	6170.62	6171.44	6172.72	6174.13	6174.48	6174.59	6174.40	6174.78	6174.93	---	---	6173.95
23	6170.66	6171.47	6172.85	6174.12	6174.48	6174.55	6174.38	6174.78	6174.92	---	---	6173.94
24	6170.69	6171.46	6172.88	6174.13	6174.54	6174.55	6174.37	6174.78	6174.92	---	---	6173.93
25	6170.86	6171.45	6172.91	6174.20	6174.53	6174.57	6174.43	6174.78	6174.92	---	---	6173.93
26	6170.93	6171.52	6172.93	6174.18	6174.52	6174.58	6174.53	6174.79	6174.91	---	---	6173.91
27	6170.90	6171.52	6172.95	6174.16	6174.50	6174.58	6174.60	6174.78	6174.89	---	---	6173.86
28	6170.88	6171.51	6173.16	6174.14	6174.47	6174.57	6174.67	6174.78	6174.88	---	---	

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1963 to current year.

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

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.5°C Aug. 9, 10, 1978, several days in July and August, 1994; 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 recorded, 16.5°C Aug. 9, 10, but may have been higher during period of missing record; minimum, not determined, occurred during period of missing record.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	12.5	11.5	12.0		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	---	---	---		---	---	---		---	---	---		---	---	---
27	---	---	---		---	---	---		---	---	---		---	---	---
28	---	---	---		---	---	---		---	---	---		---	---	---
29	---	---	---		---	---	---		---	---	---		---	---	---
30	---	---	---		---	---	---		---	---	---		---	---	---
31	---	---	---		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

KLAMATH RIVER BASIN

41

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	15.0	14.5	14.5	15.0	14.5	15.0
2	---	---	---	---	---	---	15.0	14.5	15.0	15.0	14.5	14.5
3	---	---	---	---	---	---	15.0	15.0	15.0	15.0	14.5	14.5
4	---	---	---	---	---	---	15.0	15.0	15.0	15.0	14.5	14.5
5	---	---	---	---	---	---	15.5	15.0	15.0	15.0	14.5	14.5
6	---	---	---	---	---	---	15.5	15.0	15.5	15.0	14.5	14.5
7	---	---	---	---	---	---	16.0	15.5	15.5	15.0	14.5	15.0
8	---	---	---	---	---	---	16.0	15.0	15.5	15.0	14.5	14.5
9	---	---	---	---	---	---	16.5	15.5	16.0	14.5	14.5	14.5
10	---	---	---	---	---	---	16.5	14.5	15.5	15.0	14.5	14.5
11	---	---	---	12.5	11.0	12.0	15.5	15.0	15.0	14.5	14.5	14.5
12	---	---	---	11.5	10.5	11.0	15.5	15.0	15.0	14.5	14.0	14.5
13	---	---	---	12.0	11.5	12.0	16.0	15.0	15.5	14.5	14.5	14.5
14	---	---	---	12.5	11.5	12.0	16.0	15.5	15.5	14.5	14.0	14.0
15	---	---	---	13.5	12.0	13.0	16.0	15.5	16.0	14.0	13.5	13.5
16	---	---	---	13.0	12.5	12.5	16.0	15.5	15.5	13.5	13.0	13.5
17	---	---	---	13.5	12.5	13.0	16.0	15.5	15.5	13.0	12.5	13.0
18	---	---	---	14.0	12.5	13.5	16.0	15.5	16.0	12.5	12.5	12.5
19	---	---	---	14.0	12.5	13.0	16.0	15.5	16.0	12.5	12.0	12.0
20	---	---	---	13.5	13.0	13.0	16.0	16.0	16.0	12.5	12.0	12.0
21	---	---	---	14.0	13.5	13.5	16.0	15.5	15.5	12.5	12.0	12.0
22	---	---	---	15.0	14.0	14.5	15.5	15.0	15.5	12.0	11.0	12.0
23	---	---	---	15.0	14.5	14.5	15.5	15.0	15.5	12.5	12.0	12.5
24	---	---	---	15.0	14.5	14.5	15.0	15.0	15.0	12.5	12.5	12.5
25	---	---	---	15.0	14.5	14.5	15.0	15.0	15.0	13.0	12.5	12.5
26	---	---	---	14.5	13.5	14.5	15.0	15.0	15.0	13.0	12.5	12.5
27	---	---	---	15.0	14.5	15.0	15.0	14.5	14.5	12.5	12.0	12.5
28	---	---	---	15.0	14.0	14.5	14.5	14.5	14.5	12.5	12.5	12.5
29	---	---	---	15.0	13.5	14.5	14.5	14.0	14.5	12.5	12.5	12.5
30	---	---	---	14.5	14.5	14.5	14.5	14.5	14.5	12.5	12.0	12.5
31	---	---	---	15.0	14.5	15.0	15.0	14.5	14.5	---	---	---
MONTH	---	---	---	---	---	---	16.5	14.0	15.2	15.0	11.0	13.5

KLAMATH RIVER BASIN

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

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

DRAINAGE AREA.--77.7 mi².

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

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

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

AVERAGE DISCHARGE.--4 years (water years 1994-97), 77.2 ft³/s, 55,930 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 865 ft³/s Jan. 1, gage height, 7.80 ft; minimum discharge, 23 ft³/s June 6-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	52	76	735	57	40	90	248	47	47	42	31
2	48	52	70	699	47	37	78	233	43	47	39	31
3	48	51	71	497	42	39	82	227	53	43	38	31
4	48	50	46	397	42	46	78	235	65	45	35	31
5	48	48	35	339	35	42	67	220	43	45	31	31
6	48	48	39	311	48	42	91	221	42	44	29	31
7	48	50	40	275	37	41	61	219	45	45	29	31
8	48	48	59	253	35	40	56	219	66	45	29	31
9	48	48	63	237	37	40	46	223	85	44	29	31
10	48	48	63	220	41	42	45	229	67	44	49	32
11	48	47	48	171	36	43	45	237	96	44	44	32
12	48	48	44	169	36	42	47	244	98	44	29	32
13	50	49	40	159	34	42	50	250	49	44	29	32
14	49	49	44	159	38	42	54	223	41	44	29	34
15	49	49	36	161	37	61	74	208	90	43	29	36
16	48	48	37	158	39	69	96	192	88	44	29	35
17	48	48	37	162	40	53	120	181	76	49	29	35
18	54	149	38	141	38	54	246	166	46	52	29	34
19	53	180	42	130	38	59	348	138	45	55	29	33
20	50	165	42	126	39	103	413	119	44	50	30	55
21	49	109	39	118	40	92	391	104	46	46	30	54
22	51	134	40	111	39	79	369	95	46	46	30	40
23	54	104	38	99	40	91	405	140	46	46	29	33
24	74	106	39	102	39	101	331	140	44	45	39	33
25	60	98	45	112	40	212	314	118	46	46	29	34
26	53	81	60	112	41	194	319	58	45	46	30	34
27	52	80	51	105	41	186	304	55	46	46	30	33
28	53	82	42	87	39	145	294	52	48	e50	30	34
29	57	75	49	89	---	128	276	57	45	e45	30	34
30	54	74	84	63	---	159	279	51	47	45	30	36
31	53	---	327	44	---	152	---	51	---	46	31	---
TOTAL	1586	2270	1784	6541	1115	2516	5469	5153	1688	1425	994	1034
MEAN	51.2	75.7	57.5	211	39.8	81.2	182	166	56.3	46.0	32.1	34.5
MAX	74	180	327	735	57	212	413	250	98	55	49	55
MIN	47	47	35	44	34	37	45	51	41	43	29	31
AC-FT	3150	4500	3540	12970	2210	4990	10850	10220	3350	2830	1970	2050

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1997, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997
MEAN	42.4	47.9	51.9	79.9	54.0
MAX	51.2	75.7	81.4	211	83.1
(WY)	1997	1997	1996	1997	1996
MIN	30.2	29.5	30.4	33.9	35.5
(WY)	1995	1995	1995	1994	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1993 - 1997

ANNUAL TOTAL	34309	31575	
ANNUAL MEAN	93.7	86.5	77.2
HIGHEST ANNUAL MEAN			93.4
LOWEST ANNUAL MEAN			37.6
HIGHEST DAILY MEAN	716	735	735
LOWEST DAILY MEAN	29	29	16
ANNUAL SEVEN-DAY MINIMUM	30	29	23
ANNUAL RUNOFF (AC-FT)	68050	62630	55930
10 PERCENT EXCEEDS	261	219	223
50 PERCENT EXCEEDS	48	48	40
90 PERCENT EXCEEDS	30	32	29

e Estimated

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

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

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

AVERAGE DISCHARGE.--76 years (water years 1922-97), 582 ft³/s, 421,500 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, 10,800 ft³/s Jan. 5, gage height, 9.05 ft; minimum daily discharge, 169 ft³/s Aug. 17.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	271	335	437	2960	2440	1010	1460	1850	699	415	379	176
2	272	330	422	4380	2350	978	1410	1810	681	437	316	182
3	276	329	424	6800	2430	979	1370	1780	669	441	251	189
4	263	330	428	9840	2550	991	1320	1730	663	457	219	193
5	254	328	498	10300	2380	978	1240	1620	660	463	193	205
6	249	323	527	8330	1990	946	1190	1480	689	417	181	233
7	251	319	595	6040	1700	942	1150	1380	711	359	177	247
8	260	312	627	4770	1480	985	1110	1320	677	334	177	258
9	261	316	690	4020	1410	983	1070	1240	626	312	185	269
10	262	320	821	3340	1300	1000	1040	1150	588	287	193	274
11	260	316	1030	2750	1280	1030	1010	1080	578	265	188	284
12	267	317	1290	2420	1320	1090	976	1040	603	262	178	281
13	269	317	1510	2230	1300	1180	955	1010	615	257	181	273
14	274	320	1480	e1700	1230	1160	929	982	635	249	187	287
15	286	314	1240	e1300	1150	1050	909	987	650	235	179	294
16	292	316	943	1200	1210	985	903	989	604	225	173	322
17	293	320	722	1430	1370	996	898	971	564	226	169	356
18	306	358	633	1500	1470	1070	907	931	496	242	170	367
19	320	381	544	1440	1560	1120	965	883	464	274	188	367
20	324	443	531	1480	1560	1120	1030	837	443	263	187	366
21	333	562	510	1470	1440	1110	1230	800	441	243	208	362
22	326	592	516	1380	1310	1150	1480	748	440	233	228	332
23	320	553	499	1230	1190	1260	1720	721	427	213	238	310
24	330	555	479	1060	1070	1330	1940	729	413	213	236	300
25	341	563	481	978	961	1370	2120	746	417	195	207	293
26	344	521	562	1000	897	1350	2260	800	415	179	201	283
27	359	504	748	1060	896	1370	2310	805	394	181	217	271
28	356	478	960	1250	955	1390	2210	785	405	207	209	266
29	348	448	1220	1630	---	1430	2040	755	407	196	183	261
30	340	443	1440	1970	---	1490	1920	741	416	274	177	253
31	339	---	1900	2260	---	1510	---	733	---	355	183	---
TOTAL	9246	11863	24707	93518	42199	35353	41072	33433	16490	8909	6358	8354
MEAN	298	395	797	3017	1507	1140	1369	1078	550	287	205	278
MAX	359	592	1900	10300	2550	1510	2310	1850	711	463	379	367
MIN	249	312	422	978	896	942	898	721	394	179	169	176
AC-FT	18340	23530	49010	185500	83700	70120	81470	66310	32710	17670	12610	16570

MEAN	294	342	470	539	698	941	1264	1130	604	279	218	236
MAX	848	789	2853	3017	2877	2904	4250	3211	1762	560	405	375
(WY)	1963	1974	1965	1997	1996	1972	1956	1956	1983	1983	1956	1956
MIN	183	218	215	196	223	286	263	119	93.8	85.1	76.9	125
(WY)	1934	1995	1933	1937	1933	1992	1977	1992	1992	1994	1992	1992

ANNUAL TOTAL	347012			331502					
ANNUAL MEAN	948			908				582	
HIGHEST ANNUAL MEAN								1395	1956
LOWEST ANNUAL MEAN								199	1992
HIGHEST DAILY MEAN	6330	Feb 11		10300	Jan 5		14500		Dec 26 1964
LOWEST DAILY MEAN	141	Aug 19		169	Aug 17		50		May 26 1926
ANNUAL SEVEN-DAY MINIMUM	147	Aug 7		177	Aug 12		65		Aug 5 1992
ANNUAL RUNOFF (AC-FT)	688300			657500			421500		
10 PERCENT EXCEEDS	1960			1660			1320		
50 PERCENT EXCEEDS	562			592			345		
90 PERCENT EXCEEDS	188			218			200		

e Estimated

Klamath River Basin

11502500 WILLIAMSON RIVER BELOW SPRAGUE RIVER, NEAR CHILOQUIN, OR

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

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

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

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 sea level. September 1, 1923 to July 12, 1991 at site 0.6 mi upstream at datum 7.05 ft higher. Prior to Sept. 1, 1923, at different datum.

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

AVERAGE DISCHARGE.--79 years (water years 1918-22, 1924-97), 1,044 ft³/s, 756,000 acre-ft/yr, includes monthly data published in WSP 1315-B.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s Jan. 5, 1997, gage height, 10.27 ft; minimum discharge, 285 ft³/s Aug. 6, 8, 9, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,100 ft³/s Jan. 5, gage height, 10.27 ft; minimum discharge, 433 ft³/s July 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	560	645	759	3640	3110	1720	2050	2360	965	552	626	472
2	561	642	736	4950	3020	1720	2010	2330	926	577	585	473
3	567	643	736	7110	3070	1720	1970	2290	914	572	516	474
4	554	645	762	13400	3200	1730	1920	2220	911	582	492	474
5	542	639	845	16000	3070	1720	1850	2110	897	605	471	472
6	538	628	845	11000	2740	1680	1800	1970	909	589	460	508
7	539	624	911	7080	2500	1660	1750	1880	927	548	456	523
8	541	618	964	5700	2320	1680	1700	1810	906	528	454	527
9	543	619	1050	4840	2230	1700	1660	1740	853	524	463	531
10	543	625	1200	4140	2130	1710	1640	1660	806	509	466	531
11	544	625	1420	3580	2090	1720	1610	1600	784	501	468	534
12	559	624	1680	3230	2100	1750	1580	1550	793	503	456	532
13	572	618	1960	e2600	2080	1830	1540	1510	812	502	459	521
14	578	623	1980	e2200	2020	1830	1510	1460	823	499	465	545
15	589	618	1770	e2050	1940	1750	1490	1460	844	492	458	548
16	599	622	1510	2030	1970	1690	1480	1450	806	484	448	572
17	600	628	1300	2240	2120	1690	1470	1420	765	484	444	609
18	628	703	1200	2330	2220	1740	1470	1350	696	492	441	627
19	640	721	1110	2260	2310	1770	1510	1300	651	520	457	631
20	638	749	1110	2290	2320	1790	1580	1230	628	514	482	633
21	647	868	1090	2280	2210	1780	1770	1160	610	497	484	636
22	642	913	1090	2180	2080	1810	2000	1080	607	492	496	614
23	632	876	1070	2000	1970	1900	2240	1050	588	477	507	591
24	647	864	1040	1790	1860	1950	2440	1040	573	477	510	579
25	658	886	1060	1740	1770	1980	2580	1050	564	461	491	567
26	654	833	1170	1750	1700	1990	2690	1100	559	445	485	562
27	662	814	1370	1810	1680	1980	2740	1120	553	445	496	545
28	668	798	1570	2000	1710	2000	2670	1090	548	466	497	542
29	661	765	1840	2360	---	2040	2540	1060	546	469	483	538
30	647	758	2120	2590	---	2080	2430	1030	555	516	473	528
31	645	---	2600	2900	---	2080	---	1010	---	597	479	---
TOTAL	18598	21234	39868	126070	63540	56190	57690	46490	22319	15919	14968	16439
MEAN	600	708	1286	4067	2269	1813	1923	1500	744	514	483	548
MAX	668	913	2600	16000	3200	2080	2740	2360	965	605	626	636
MIN	538	618	736	1740	1680	1660	1470	1010	546	445	441	472
AC-FT	36890	42120	79080	250100	126000	111500	114400	92210	44270	31580	29690	32610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1997, BY WATER YEAR (WY)

MEAN	652	757	944	1014	1246	1611	1970	1646	995	607	537	563
MAX	1237	1345	3682	4067	3846	4256	5488	4376	2658	1278	934	872
(WY)	1963	1974	1965	1997	1958	1952	1952	1956	1953	1958	1958	1958
MIN	488	530	545	524	547	619	583	391	338	311	304	382
(WY)	1993	1995	1993	1937	1937	1992	1992	1992	1992	1994	1994	1994

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1918 - 1997	
ANNUAL TOTAL	485803		499325			
ANNUAL MEAN	1327		1368		1044	
HIGHEST ANNUAL MEAN					2187	1956
LOWEST ANNUAL MEAN					483	1992
HIGHEST DAILY MEAN	6580	Feb 11	16000	Jan 5	16000	Dec 26 1964
LOWEST DAILY MEAN	424	Aug 19	441	Aug 18	288	Aug 6 1994
ANNUAL SEVEN-DAY MINIMUM	433	Aug 7	453	Aug 12	294	Aug 4 1994
ANNUAL RUNOFF (AC-FT)	963600		990400		756000	
10 PERCENT EXCEEDS	2570		2310		1980	
50 PERCENT EXCEEDS	931		909		744	
90 PERCENT EXCEEDS	467		492		506	

e Estimated

KLAMATH RIVER BASIN

45

11503000 ANNIE SPRING NEAR CRATER LAKE, OR

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

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

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

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

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

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

AVERAGE DISCHARGE.--20 years (water years 1978-97), 2.87 ft³/s, 2,080 acre-ft/yr, adjusted for diversion.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9.9 ft³/s May 21, gage height, 1.22 ft; minimum daily discharge, 1.5 ft³/s Nov. 8-16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	1.7	3.0	3.7	3.4	2.8	2.5	4.4	9.0	8.0	4.4	2.8
2	2.2	1.7	3.0	4.2	3.4	2.7	2.5	4.5	9.3	8.0	4.3	2.8
3	2.2	1.7	3.0	4.7	3.4	2.6	2.5	4.5	9.4	7.8	4.3	2.8
4	2.2	1.7	3.0	5.0	3.4	2.6	2.5	4.5	9.4	7.6	4.2	2.8
5	2.2	1.6	3.1	5.2	3.3	2.6	2.5	4.5	9.4	7.5	4.0	2.9
6	2.1	1.6	3.1	5.3	3.3	2.6	2.5	4.5	9.4	7.4	4.0	2.8
7	2.1	1.6	3.1	5.3	3.3	2.6	2.5	4.5	9.4	7.2	3.9	2.9
8	2.1	1.5	3.1	5.3	3.3	2.6	2.5	4.5	9.4	7.1	3.9	2.8
9	2.0	1.5	3.1	5.2	3.3	2.5	2.5	4.6	9.4	7.1	3.8	2.8
10	2.0	1.5	3.2	5.2	3.2	2.5	2.5	5.0	9.4	7.0	3.8	2.8
11	2.0	1.5	3.2	5.2	3.2	2.4	2.5	5.4	9.4	7.0	3.7	2.9
12	2.0	1.5	3.2	5.2	3.2	2.4	2.5	6.0	9.4	6.9	3.7	2.8
13	2.0	1.5	3.2	5.1	3.2	2.4	2.5	6.5	9.4	6.8	3.7	2.8
14	2.0	1.5	3.1	5.1	3.2	2.4	2.5	7.0	9.4	6.7	3.6	2.8
15	1.9	1.5	3.2	5.0	3.1	2.4	2.5	7.4	9.4	6.6	3.6	2.8
16	1.9	1.5	3.2	5.0	3.1	2.4	2.5	7.8	9.3	6.6	3.5	2.8
17	1.9	1.6	3.2	4.8	3.0	2.4	2.5	8.1	9.2	6.4	3.5	2.7
18	1.9	1.6	3.1	4.6	2.9	2.3	2.4	8.5	9.2	6.4	3.5	2.7
19	1.9	1.9	3.0	4.5	2.9	2.3	2.5	8.9	9.2	6.3	3.5	2.7
20	1.9	2.2	2.9	4.4	2.9	2.3	2.5	9.2	9.2	6.2	3.5	2.6
21	1.9	2.3	3.0	4.3	2.9	2.3	2.7	9.6	9.2	6.1	3.4	2.6
22	1.8	3.0	3.0	4.3	2.9	2.3	2.9	9.7	9.1	5.9	3.3	2.6
23	1.8	3.1	3.0	4.3	2.9	2.3	3.1	9.7	9.0	5.8	3.2	2.6
24	1.8	3.2	3.0	4.1	2.8	2.3	3.3	9.7	8.9	5.6	3.2	2.6
25	1.8	3.2	2.9	4.0	2.8	2.4	3.5	9.6	8.8	5.5	3.1	2.6
26	1.8	3.2	2.9	4.0	2.8	2.4	3.6	9.4	8.7	5.4	3.1	2.6
27	1.8	3.1	2.9	4.0	2.8	2.4	3.7	9.2	8.5	5.3	3.0	2.6
28	1.8	3.0	2.9	3.8	2.8	2.4	3.9	9.2	8.4	5.2	3.0	2.5
29	1.8	3.0	3.0	3.5	---	2.5	4.1	9.0	8.3	5.0	2.9	2.5
30	1.8	3.1	3.1	3.4	---	2.5	4.3	9.0	8.2	4.6	2.9	2.5
31	1.7	---	3.4	3.4	---	2.5	---	9.0	---	4.5	2.9	---
TOTAL	60.5	62.6	95.1	141.1	86.7	76.1	85.0	223.4	273.7	199.5	110.4	81.5
MEAN	1.95	2.09	3.07	4.55	3.10	2.45	2.83	7.21	9.12	6.44	3.56	2.72
MAX	2.2	3.2	3.4	5.3	3.4	2.8	4.3	9.7	9.4	8.0	4.4	2.9
MIN	1.7	1.5	2.9	3.4	2.8	2.3	2.4	4.4	8.2	4.5	2.9	2.5
AC-FT	120	124	189	280	172	151	169	443	543	396	219	162
MEAN†	2.00	2.10	3.08	4.57	3.11	2.47	2.85	7.25	9.19	6.54	3.66	2.80
AC-FT†	123	125	190	281	173	152	170	446	547	402	225	167

CAL YR 1996 TOTAL 1515.6 MEAN 4.14 MAX 9.0 MIN 1.5 AC-FT 3010 MEAN† 2.53 AC-FT† 1832
WTR YR 1997 TOTAL 1495.6 MEAN 4.10 MAX 9.7 MIN 1.5 AC-FT 2970 MEAN† 4.14 AC-FT† 2999

† 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 (gage heights only), October 1922 to current year. Monthend contents only October 1923 to September 1927, published in WSP 1315-B.

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum weighted daily elevation, 4,143.14 ft Apr. 27; minimum weighted daily, 4,138.71 ft Oct. 18.

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 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4138.95	4138.99	4139.92	4141.77	4141.84	4141.96	4142.58	4143.12	4142.89	4142.23	4141.28	4140.38
2	4138.93	4139.00	4139.90	4142.01	4141.87	4142.04	4142.61	4143.08	4142.87	4142.21	4141.26	4140.36
3	4138.91	4139.01	4139.96	4142.23	4141.86	4142.08	4142.60	4143.05	4142.84	4142.19	4141.24	4140.34
4	4138.89	4139.04	4140.00	4142.38	4141.89	4142.07	4142.60	4143.04	4142.90	4142.16	4141.22	4140.32
5	4138.88	4139.02	4140.15	4142.54	4141.90	4142.08	4142.60	4143.03	4142.90	4142.12	4141.20	4140.29
6	4138.86	4139.01	4140.23	4142.65	4141.88	4142.06	4142.59	4143.04	4142.89	4142.09	4141.17	4140.26
7	4138.84	4139.02	4140.24	4142.73	4141.89	4142.08	4142.61	4143.03	4142.90	4142.05	4141.14	4140.22
8	4138.83	4139.04	4140.31	4142.77	4141.89	4142.10	4142.65	4143.04	4142.89	4142.00	4141.08	4140.22
9	4138.82	4139.05	4140.42	4142.77	4141.88	4142.11	4142.68	4143.04	4142.86	4141.96	4141.05	4140.20
10	4138.80	4139.06	4140.48	4142.77	4141.89	4142.11	4142.68	4143.05	4142.83	4141.91	4141.00	4140.18
11	4138.77	4139.06	4140.57	4142.76	4141.85	4142.12	4142.70	4143.04	4142.83	4141.88	4140.95	4140.16
12	4138.75	4139.07	4140.63	4142.72	4141.89	4142.15	4142.69	4143.04	4142.84	4141.81	4140.92	4140.15
13	4138.76	4139.08	4140.70	4142.65	4141.85	4142.15	4142.70	4143.02	4142.83	4141.77	4140.88	4140.10
14	4138.74	4139.08	4140.77	4142.58	4141.86	4142.15	4142.73	4143.01	4142.79	4141.74	4140.83	4140.10
15	4138.75	4139.10	4140.78	4142.49	4141.88	4142.16	4142.76	4143.02	4142.77	4141.72	4140.80	4140.14
16	4138.75	4139.08	4140.81	4142.40	4141.86	4142.14	4142.77	4143.02	4142.75	4141.70	4140.75	4140.15
17	4138.72	4139.10	4140.85	4142.36	4141.90	4142.17	4142.80	4143.00	4142.74	4141.70	4140.71	4140.18
18	4138.71	4139.16	4140.82	4142.30	4141.88	4142.19	4142.79	4143.00	4142.71	4141.66	4140.66	4140.22
19	4138.77	4139.27	4140.82	4142.24	4141.92	4142.24	4142.81	4142.98	4142.68	4141.64	4140.60	4140.25
20	4138.78	4139.44	4140.85	4142.19	4141.96	4142.30	4142.90	4142.96	4142.64	4141.62	4140.61	4140.25
21	4138.78	4139.51	4140.87	4142.16	4142.00	4142.33	4142.98	4142.93	4142.60	4141.60	4140.62	4140.25
22	4138.78	4139.59	4140.90	4142.10	4142.02	4142.34	4143.02	4142.88	4142.56	4141.57	4140.59	4140.25
23	4138.80	4139.63	4140.91	4142.03	4142.03	4142.36	4143.08	4142.88	4142.52	4141.55	4140.56	4140.26
24	4138.82	4139.64	4140.92	4141.98	4142.05	4142.38	4143.09	4142.90	4142.48	4141.54	4140.56	4140.26
25	4138.88	4139.72	4140.96	4141.97	4142.02	4142.40	4143.10	4142.87	4142.44	4141.50	4140.53	4140.25
26	4138.97	4139.74	4141.02	4141.94	4142.03	4142.44	4143.10	4142.84	4142.40	4141.48	4140.50	4140.26
27	4138.93	4139.74	4141.08	4141.88	4142.05	4142.45	4143.14	4142.85	4142.36	4141.44	4140.51	4140.25
28	4138.90	4139.82	4141.14	4141.86	4142.03	4142.50	4143.11	4142.87	4142.30	4141.39	4140.48	4140.25
29	4138.95	4139.82	4141.14	4141.82	---	4142.50	4143.12	4142.88	4142.27	4141.29	4140.46	4140.24
30	4139.02	4139.82	4141.30	4141.78	---	4142.47	4143.12	4142.88	4142.25	4141.32	4140.44	4140.21
31	4139.03	---	4141.43	4141.78	---	4142.54	---	4142.87	---	4141.29	4140.40	---
MEAN	4138.84	4139.29	4140.67	4142.28	4141.92	4142.23	4142.82	4142.98	4142.68	4141.75	4140.81	4140.23
MAX	4139.03	4139.82	4141.43	4142.77	4142.05	4142.54	4143.14	4143.12	4142.90	4142.23	4141.28	4140.38
MIN	4138.71	4138.99	4139.90	4141.77	4141.84	4141.96	4142.58	4142.84	4142.25	4141.29	4140.40	4140.10
(†)	193700	252800	367000	398900	414400	461000	511800	486400	433400	358400	289700	271800
(‡)	+1300	+59100	+114200	+31900	+15500	+46600	+50800	-25400	-53000	-75000	-68700	-17900

CAL YR 1996 MEAN 4141.24 MAX 4143.33 MIN 4138.71 AC-FT‡ +4700
WTR YR 1997 MEAN 4141.37 MAX 4143.14 MIN 4138.71 AC-FT‡ +79400

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

KLAMATH RIVER BASIN

47

11507500 LINK RIVER AT KLAMATH FALLS, OR

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

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

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

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

REMARKS.--Records good. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Large diurnal fluctuation caused by powerplant upstream from station. Water diverted upstream from station by main or "A" Canal of Klamath project. Many other diversions upstream from lake. All records presented herein do not include flow in Keno Canal which, since September 1908, has diverted from Upper Klamath Lake at Link River Dam for power generation, and returns flow to Link River downstream from station.

AVERAGE DISCHARGE.--79 years (water years 1905-83), 1,593 ft³/s, 1,154,000 acre-ft/yr, not adjusted for "A" Canal. 14 years (water years 1984-97), 1,225 ft³/s, 887,700 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 7,200 ft³/s Jan. 12; minimum, 303 ft³/s July 30 to Aug. 3, result of regulation from Upper Klamath Lake, minimum daily, 303 ft³/s Aug. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	1130	610	1110	4570	2600	1640	3230	1050	e870	304	969
2	1290	1130	604	1460	4580	2630	1710	3270	942	e830	303	969
3	1350	1180	599	4660	4580	2650	1810	3310	935	e960	338	836
4	1270	1210	546	6470	4610	2640	1870	3320	872	e960	562	747
5	1230	1210	480	6740	4630	2650	1850	2620	682	e750	672	750
6	1230	1200	1200	6810	4330	2470	1690	1810	675	e880	674	747
7	1230	1190	1620	6900	4150	2190	1460	1280	679	e1220	819	592
8	1160	1200	1620	6920	4180	2190	1190	1290	690	e890	1010	515
9	1120	1200	1630	6920	4160	2190	1200	1060	849	e1010	1030	704
10	1130	1200	1640	6900	4170	2190	1180	1070	849	e860	1030	729
11	1100	1200	1610	6890	3840	2190	1110	1250	798	e820	1020	639
12	999	1200	1740	6890	3620	2200	1010	1270	802	e840	1020	527
13	936	1200	1740	6760	3170	2150	934	1350	695	e920	1030	525
14	1040	1150	1750	6630	2780	2000	839	1390	591	e790	1130	525
15	1200	1090	1750	6510	2790	1960	668	1370	548	e880	1090	461
16	1230	1090	1750	6400	2780	1900	741	1320	613	e1040	960	402
17	1230	1090	1760	6310	2800	1780	825	1100	984	e1000	958	410
18	1220	981	1670	6240	2530	1330	783	1080	1050	e780	954	416
19	1180	1050	1480	6120	2370	1530	621	1070	912	e650	1110	413
20	1130	978	1460	6020	2370	1680	515	1130	820	e640	1090	425
21	1130	732	1460	5960	2380	1690	734	1420	878	e750	825	617
22	758	700	1460	5950	2390	1690	2120	1410	903	e1060	809	813
23	674	695	1460	5810	2510	1690	3150	1140	965	e860	622	729
24	1380	693	1460	5770	2650	1700	2810	973	1030	e860	662	616
25	1380	692	1460	5750	2640	1730	2440	847	1030	e950	749	613
26	1280	696	1430	5700	2660	1730	2660	903	1030	e1030	745	617
27	1000	691	1440	5610	2660	1730	2360	995	1010	e960	944	664
28	956	550	1520	5570	2630	1730	2960	925	1030	e750	1150	769
29	959	552	1510	5550	---	1730	3160	1100	1030	e620	1100	766
30	1040	602	1870	4950	---	1710	3240	933	1020	403	970	731
31	1130	---	2520	4520	---	1550	---	960	---	310	970	---
TOTAL	35172	29482	44849	180800	93530	61800	49280	46196	25962	26143	26650	19236
MEAN	1135	983	1447	5832	3340	1994	1643	1490	865	843	860	641
MAX	1380	1210	2520	6920	4630	2650	3240	3320	1050	1220	1150	969
MIN	674	550	480	1110	2370	1330	515	847	548	310	303	402
AC-FT	69760	58480	88960	358600	185500	122600	97750	91630	51500	51850	52860	38150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	998	1181	1362	1422	1480	1929	1828	1271	977	759	752	761		
MAX	2125	3739	4075	5832	4797	5261	3801	2819	1933	997	985	1205		
(WY)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	
MIN	606	434	451	372	214	119	342	286	648	543	551	362		
(WY)	1990	1992	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1984 - 1997
ANNUAL TOTAL	692260	639100	
ANNUAL MEAN	1891	1751	1225
HIGHEST ANNUAL MEAN			2200
LOWEST ANNUAL MEAN			547
HIGHEST DAILY MEAN	5830	6920	547
LOWEST DAILY MEAN	451	303	95
ANNUAL SEVEN-DAY MINIMUM	570	406	96
ANNUAL RUNOFF (AC-FT)	1373000	1268000	887700
10 PERCENT EXCEEDS	3920	4170	2660
50 PERCENT EXCEEDS	1410	1130	871
90 PERCENT EXCEEDS	880	632	382

e Estimated

Klamath River Basin

11509500 KLAMATH RIVER AT KENO, OR

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, and at mile 231.9.

DRAINAGE AREA.--3,920 mi², approximately (not including Lost River or Lower Klamath Lake basins).

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 sea level (from river-profile survey). See WSP 1735 for history of changes prior to Nov. 6, 1954.

REMARKS.--Records good. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Fluctuation by Keno powerplant 0.9 mi upstream. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--77 years (water years 1905-13, 1930-97), 1,636 ft³/s, 1,185,000 acre-ft/yr.

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, 9,870 ft³/s Jan. 3, gage height, 12.60 ft, from inside high water mark; minimum discharge, 276 ft³/s Oct. 25; minimum daily, 305 ft³/s Oct. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1080	919	1080	e4130	5940	2840	1700	3920	819	622	581	691
2	1080	918	e1150	e5810	5780	2950	1690	3930	820	613	629	686
3	1050	929	e1090	e8640	5630	3020	1670	3930	818	595	633	685
4	1030	936	e1050	e9310	5750	3020	1580	3930	825	533	612	683
5	1030	937	e1500	e9200	5660	3050	1580	3140	828	532	616	654
6	1030	932	e1980	e8310	6090	2560	1590	1820	827	527	624	562
7	1020	933	e2350	e8720	6120	2490	1410	1210	826	528	620	514
8	1020	930	e2380	e8470	6000	2540	1150	1300	818	527	599	478
9	1020	920	e2380	e8450	6020	2470	1150	955	868	490	580	439
10	1020	918	e2380	e8350	5870	2390	1150	976	906	462	580	412
11	1020	916	e2370	e8030	5630	2300	1120	1260	895	427	580	407
12	1020	917	e2370	e8390	5480	2310	1040	1270	895	368	576	412
13	1010	925	e2370	e8500	4710	2310	1040	1260	900	367	573	414
14	1010	932	e2370	e7960	4510	2310	941	1190	900	351	572	419
15	1010	931	e2390	e7770	4350	2310	876	1150	893	316	577	438
16	1010	926	e2130	e7900	4350	2310	889	1100	887	373	575	461
17	1020	925	e2020	e8010	4780	2050	842	1030	883	477	573	539
18	1020	963	e2020	e7810	4470	1920	786	1030	894	476	609	771
19	1030	1050	e2070	e7490	4190	1880	678	1040	893	471	663	758
20	1040	740	e2100	e7590	3900	1890	676	1030	858	468	664	749
21	1020	772	e2100	e7380	3770	1890	991	1030	784	465	661	753
22	1060	885	e2100	e7380	3370	1890	2500	1040	784	467	657	753
23	762	919	e2100	e6930	3400	1890	3400	1050	784	462	650	780
24	305	919	e2090	e6730	3360	1890	3420	1020	783	458	639	780
25	374	990	e2090	e6780	3100	1890	3150	1020	779	452	637	775
26	926	1090	e2100	e6870	3240	1850	2980	1020	773	452	630	766
27	925	1090	e2370	e6840	3000	1800	2990	1020	563	456	658	761
28	915	1080	e2560	e7210	2850	1730	3210	1020	723	451	708	764
29	922	1080	e2500	e7600	---	1700	3700	1020	543	461	713	769
30	925	1090	e3020	e7120	---	1700	3930	1020	664	491	715	768
31	924	---	e4950	5930	---	1710	---	927	---	539	702	---
TOTAL	29628	28412	67530	235610	131320	68860	53829	47658	24433	14677	19406	18841
MEAN	956	947	2178	7600	4690	2221	1794	1537	814	473	626	628
MAX	1080	1090	4950	9310	6120	3050	3930	3930	906	622	715	780
MIN	305	740	1050	4130	2850	1700	676	927	543	316	572	407
AC-FT	58770	56360	133900	467300	260500	136600	106800	94530	48460	29110	38490	37370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1997, BY WATER YEAR (WY)

MEAN	1399	1646	1894	2022	2172	2548	2276	1727	1151	846	953	1177
MAX	3055	4673	5732	7702	7564	8197	6594	5258	7075	4177	2513	2214
(WY)	1957	1985	1984	1965	1972	1972	1956	1956	1904	1904	1904	1943
MIN	564	290	391	542	254	215	166	109	97.6	114	146	246
(WY)	1982	1935	1935	1935	1992	1992	1931	1931	1931	1931	1992	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1904 - 1997

ANNUAL TOTAL	822274		740204						
ANNUAL MEAN	2247		2028				1636		
HIGHEST ANNUAL MEAN							3582		1956
LOWEST ANNUAL MEAN							340		1992
HIGHEST DAILY MEAN	9250	Feb 22	9310	Jan 4			9780	Mar 5	1972
LOWEST DAILY MEAN	214	Aug 12	305	Oct 24			60	May 19	1934
ANNUAL SEVEN-DAY MINIMUM	353	Aug 10	381	Jul 10			78	Jun 4	1931
ANNUAL RUNOFF (AC-FT)	1631000		1468000				1185000		
10 PERCENT EXCEEDS	5360		5790				3210		
50 PERCENT EXCEEDS	1140		1020				1260		
90 PERCENT EXCEEDS	666		528				410		

e Estimated

49

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

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

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

AVERAGE DISCHARGE.--38 years (water years 1960-97), 1,798 ft³/s, 1,302,000 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,400 ft³/s Jan. 3, gage height, 9.44 ft; minimum discharge, 305 ft³/s Nov. 13.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1390	1240	1440	5370	6300	3240	2100	4260	1140	843	1010	1000
2	1360	1240	1450	6590	6210	3210	2100	4240	1000	959	918	992
3	1380	1220	1440	9280	5980	3380	2030	4240	1460	932	950	1010
4	1410	1340	1340	9860	5790	3360	1970	4220	1060	833	917	1000
5	1400	1230	1630	9300	5990	3440	1920	3810	1140	847	911	983
6	1410	1370	2450	8450	5840	3240	1930	2060	1170	865	922	910
7	1280	1080	2590	8710	6270	2920	1830	1610	1220	851	887	815
8	1170	1040	2660	8760	6340	2860	1490	1600	1210	828	887	770
9	1320	1320	2760	8510	6230	2990	1680	1540	1100	755	896	717
10	1280	1200	2840	8420	6220	2810	1660	1300	1120	750	923	702
11	1380	1160	2970	8100	5940	2790	1460	1480	1260	759	926	751
12	1310	1220	2930	8260	5910	2770	1480	1710	1220	772	894	752
13	1290	1500	2920	8500	5430	2800	1360	1710	1200	969	860	762
14	1280	1130	2760	8510	4860	2780	1190	1490	1060	490	880	336
15	1310	1230	2660	8300	4710	2770	1310	1510	1180	326	879	790
16	1350	1230	2610	7820	4590	2720	1350	1460	1400	684	895	781
17	1250	1220	2050	7880	4650	2650	1050	1510	1210	774	895	999
18	1370	1470	2470	7660	4950	2250	1240	1500	1230	777	884	1050
19	1370	1200	2440	7390	4590	2320	1030	1190	1140	739	937	1050
20	1370	1190	2560	7440	4330	2330	1030	1450	1160	739	983	1080
21	1370	1360	2460	7340	4210	2420	1510	1360	1060	1320	987	1100
22	1720	1160	2480	7240	3960	2320	2460	1310	1060	676	928	1100
23	2250	1200	2430	7190	3710	2280	3650	1370	1070	673	1090	1060
24	320	1240	2300	7210	3690	2280	3810	1470	1230	655	993	1070
25	879	1240	2450	6910	3580	2330	3530	1280	1070	706	1000	1100
26	1310	1540	2560	6680	3440	2310	3410	1450	1130	681	1020	1090
27	1190	1450	2620	6720	3470	2260	3360	1290	776	679	964	1090
28	1270	1540	2990	7130	3330	2010	3430	1380	1110	708	1030	1090
29	1180	1290	2990	7380	---	1970	3970	1310	961	741	1010	962
30	1160	1350	3340	6940	---	1980	4240	1370	791	775	1020	1060
31	1250	---	5400	5780	---	2030	---	1380	---	841	1010	---
TOTAL	40579	38200	78990	239630	140520	81820	64580	58860	33938	23947	29306	27972
MEAN	1309	1273	2548	7760	5019	2639	2153	1899	1131	772	945	932
MAX	2250	1540	5400	9830	6340	3440	4240	4260	1460	1320	1090	1100
MIN	320	1040	1340	5370	3330	1970	10					

MEAN	1549	1917	2347	2513	2549	2949	2410	1685	899	671	894	1213
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	735	792	771	489	450	537	418	391	349	349	457
(WY)	1982	1992	1995	1993	1992	1992	1994	1992	1992	1992	1992	1992

ANNUAL TOTAL	943701		858342						
ANNUAL MEAN	2578		2352					1798	
HIGHEST ANNUAL MEAN								3024	1984
LOWEST ANNUAL MEAN								564	1992
HIGHEST DAILY MEAN	10200	Feb 22	9860	Jan 4		10800			Mar 5 1972
LOWEST DAILY MEAN	315	Aug 14	320	Oct 24		302			Aug 30 1995
ANNUAL SEVEN-DAY MINIMUM	591	Aug 9	647	Jul 14		338			Aug 30 1992
ANNUAL RUNOFF (AC-FT)	1872000		1703000			1302000			
10 PERCENT EXCEEDS	5600		5980			3350			
50 PERCENT EXCEEDS	1570		1370			1290			
90 PERCENT EXCEEDS	954		842			605			

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,500 ft³/s Jan. 1, gage height, 13.08 ft; minimum daily discharge, 804 ft³/s July 21.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1350	1500	18500	7060	3610	2220	4600	1380	972	1020	1030
2	1340	1350	1570	15100	7070	3930	2210	4560	1260	827	1060	1030
3	1340	1350	1730	14600	6880	3950	2210	4520	1280	823	1050	1030
4	1340	1340	1850	14000	6580	3980	2180	4550	1280	825	1050	1030
5	1340	1350	2000	11300	6480	3670	2110	4330	1270	825	1050	1030
6	1340	1350	2780	10900	6610	3880	2100	3240	1310	819	1060	1030
7	1340	1350	3310	9910	6710	3850	2020	2090	1340	823	1050	1030
8	1340	1340	4170	10300	7060	3360	1740	1840	1340	834	1060	1030
9	1340	1340	4930	9950	6990	3310	1660	1710	1340	837	1060	1030
10	1340	1340	5490	9710	6970	3210	1660	1720	1340	823	1060	1040
11	1340	1340	4770	9440	6680	3140	1640	1720	1350	811	1060	1040
12	1340	1350	4060	9220	6330	3030	1630	1720	1350	813	1060	1040
13	1350	1350	3840	9240	6210	2940	1640	1720	1340	815	1060	1030
14	1340	1350	3630	9090	5570	2910	1540	1720	1340	811	1060	1050
15	1350	1340	3520	8670	5140	2930	1390	1720	1340	811	1060	1040
16	1340	1340	3510	8620	4930	2930	1400	1550	1340	810	1060	1040
17	1350	1340	2850	8660	5030	2900	1400	1470	1160	811	1060	1050
18	1350	1380	2440	8600	5160	2710	1400	1460	1140	810	1060	1040
19	1350	1510	2270	8200	5270	2670	1400	1460	1140	810	1060	1040
20	1350	1800	2340	8160	5030	2540	1400	1470	1150	807	1080	1040
21	1350	1800	2400	8110	4760	2530	1610	1470	1150	804	1070	1040
22	1350	1800	2420	7920	4110	2530	2370	1460	1150	805	1070	1030
23	1350	1790	2510	7590	4010	2530	3300	1460	1150	807	1060	1030
24	1350	1710	2700	7010	3980	2600	3620	1460	1150	808	1070	1030
25	1350	1610	3020	7210	4010	2660	4010	1460	1150	809	1070	1030
26	1350	1550	3560	7480	3790	2560	3640	1460	1150	810	1070	1040
27	1350	1500	3840	7560	3370	2470	3630	1450	1150	810	1070	1040
28	1350	1500	3850	7970	3460	2440	3820	1460	1150	807	1070	1030
29	1360	1500	4530	8120	---	2320	4290	1460	1150	809	1050	1030
30	1350	1500	6010	8140	---	2260	4580	1450	1160	811	1030	1030
31	1350	---	10900	6850	---	2200	---	1450	---	809	1030	---
TOTAL	41720	43820	108300	296130	155250	92550	69820	65210	37300	25406	32800	31050
MEAN	1346	1461	3494	9553	5545	2985	2327	2104	1243	820	1058	1035
MAX	1360	1800	10900	18500	7070	3980	4580	4600	1380	972	1080	1050
MIN	1											

MEAN	1656	2124	2765	3007	3114	3584	2953	2048	1055	760	972	1296
MAX	3353	5254	6735	9553	9150	10780	6922	4973	2591	1429	1208	2052
(WY)	1985	1985	1984	1997	1965	1972	1971	1971	1983	1982	1965	1965
MIN	852	873	889	888	525	511	572	512	506	428	398	538
(WY)	1982	1992	1992	1992	1992	1992	1994	1992	1992	1992	1992	1992

ANNUAL TOTAL	1091850		999356				
ANNUAL MEAN	2983		2738			2106	
HIGHEST ANNUAL MEAN						3657	1965
LOWEST ANNUAL MEAN						641	1992
HIGHEST DAILY MEAN	12000	Feb 22	18500	Jan 1		25000	Dec 22 1964
LOWEST DAILY MEAN	1030	Jul 10	804	Jul 21		389	Aug 25 1992
ANNUAL SEVEN-DAY MINIMUM	1030	Jul 10	807	Jul 19		390	Aug 24 1992
INSTANTANEOUS PEAK FLOW			20500	Jan 1		29400	Dec 22 1964
INSTANTANEOUS PEAK STAGE			13.08	Jan 1		13.63	Dec 22 1964
INSTANTANEOUS LOW FLOW						389	Aug 25 1992
ANNUAL RUNOFF (AC-FT)	2166000		1982000			1526000	
10 PERCENT EXCEEDS	6340		6920			4100	
50 PERCENT EXCEEDS	1700		1460			1390	
90 PERCENT EXCEEDS	1060		1030			730	

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

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.

DRAINAGE AREA.--96,000 mi², approximately.

PERIOD OF RECORD.--January 1917 to current year. January 1917 to September 1930, at site 3.4 mi downstream, published as "at Vernita." October 1930 to July 27, 1959, at site 46.5 mi upstream, published as "at Trinidad."

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

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

REMARKS.--No estimated daily discharges. Records excellent. Diversions for irrigation of about 600,000 acres upstream from station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and powerplants. U.S. Geological Survey satellite telemeter at station. Water temperatures March 1980 to April 1993. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

AVERAGE DISCHARGE.--80 years (water years 1918-97), 119,600 ft³/s, 86,650,000 acre-ft/yr, unadjusted.
38 years (water years 1960-97), 120,100 ft³/s, 87,010,000 acre-ft/yr, regulated period.

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, due to construction at Rock Island Dam, site and datum then in use; minimum daily discharge prior to construction of Rock Island Dam (1932), 22,000 ft³/s Feb. 1-7, 1930, site and datum then in use; minimum daily discharge after completion of Rock Island Dam (1932), 20,000 ft³/s Jan. 31 to Feb. 10, 1937, site and datum then in use; minimum discharge since completion of Priest Rapids Dam (1959), 28,300 ft³/s Nov. 9, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, based on a rating extension for a Weather Bureau gage at Wenatchee.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 448,000 ft³/s June 12, elevation, 423.80 ft; minimum discharge, 35,200 ft³/s Oct. 27, elevation, 396.20 ft; minimum daily discharge, 63,100 ft³/s Oct. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89100	102000	119000	66300	127000	154000	207000	260000	320000	181000	126000	108000
2	84200	97900	131000	66100	111000	131000	168000	265000	325000	183000	110000	130000
3	100000	91100	138000	72300	139000	131000	170000	247000	327000	202000	122000	102000
4	101000	96000	147000	102000	156000	147000	181000	230000	319000	200000	164000	104000
5	87600	94800	147000	119000	159000	139000	151000	230000	332000	200000	168000	109000
6	63100	96200	120000	150000	162000	139000	149000	223000	337000	198000	151000	103000
7	103000	99300	111000	159000	168000	102000	146000	232000	330000	177000	154000	69200
8	115000	103000	100000	162000	172000	97200	161000	223000	323000	200000	160000	103000
9	104000	99900	126000	149000	158000	80600	154000	253000	324000	200000	152000	98800
10	109000	99900	121000	168000	142000	108000	153000	218000	345000	210000	124000	111000
11	91700	101000	104000	160000	156000	114000	155000	233000	387000	209000	142000	98500
12	120000	95500	89600	160000	157000	140000	129000	248000	410000	200000	151000	114000
13	95900	98900	102000	190000	157000	137000	115000	259000	365000	201000	158000	86700
14	110000	95600	101000	191000	152000	138000	142000	263000	367000	212000	153000	68300
15	80300	108000	96100	184000	134000	128000	159000	262000	367000	242000	137000	112000
16	96100	108000	112000	188000	126000	112000	142000	272000	364000	237000	127000	96000
17	98600	104000	148000	174000	124000	122000	127000	286000	350000	224000	135000	101000
18	101000	101000	139000	168000	148000	114000	120000	305000	355000	239000	150000	97300
19	102000	107000	151000	148000	175000	127000	140000	292000	334000	227000	159000	103000
20	94100	116000	143000	144000	178000	130000	112000	304000	333000	198000	179000	123000
21	104000	106000	151000	162000	158000	147000	169000	294000	332000	197000	181000	116000
22	102000	113000	132000	151000	162000	144000	226000	307000	339000	201000	164000	122000
23	110000	127000	127000	149000	170000	130000	191000	299000	334000	203000	154000	130000
24	107000	95300	128000	156000	176000	136000	213000	293000	303000	206000	118000	137000
25	104000	99800	128000	171000	166000	181000	206000	301000	272000	205000	119000	139000
26	97900	107000	140000	169000	160000	189000	227000	287000	280000	175000	136000	124000
27	78700	109000	136000	159000	154000	201000	234000	304000	276000	170000	139000	110000
28	92300	72200	88900	155000	153000	211000	242000	298000	263000	160000	153000	98800
29	98900	86900	87400	171000	---	200000	249000	310000	185000	149000	162000	124000
30	98400	120000	109000	163000	---	183000	277000	307000	179000	134000	158000	125000
31	101000	---	78100	143000	---	203000	---	317000	---	153000	146000	---
TOTAL	3039900	3051300	3751100	4669700	4300000	4415800	5215000	8422000	9677000	6093000	4552000	3263600
MEAN	98060	101700	121000	150600	153600	142400	173800	271700	322600	196500	146800	108800
MAX	120000	127000	151000	191000	178000	211000	277000	317000	410000	242000	181000	139000
MIN	63100	72200	78100	66100	111000	80600	112000	218000	179000	134000	110000	68300
AC-FT	6030000	6052000	7440000	9262000	8529000	8759000	10340000	16710000	19190000	12090000	9029000	6473000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1997, BY WATER YEAR (WY)

	MEAN	80630	87940	98610	105700	110100	109600	117500	165800	212800	160700	111100	80400
MAX	118200	121200	163800	168400	195000	201800	189100	271700	461400	294300	191000	126700	
(WY)	1960	1991	1996	1996	1996	1983	1996	1997	1961	1964	1976	1976	
MIN	61550	56100	52570	55070	72700	58170	57920	79060	78810	71850	66740	60050	
(WY)	1964	1964	1962	1964	1964	1962	1993	1973	1977	1977	1985	1994	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1960 - 1997
ANNUAL TOTAL	58740600	60450400	
ANNUAL MEAN	160500	165600	120100
HIGHEST ANNUAL MEAN			165600
LOWEST ANNUAL MEAN			90330
HIGHEST DAILY MEAN	279000	Jun 13	410000
LOWEST DAILY MEAN	63100	Oct 6	63100
ANNUAL SEVEN-DAY MINIMUM	87300	Sep 26	81200
ANNUAL RUNOFF (AC-FT)	116500000		119900000
10 PERCENT EXCEEDS	234000		292000
50 PERCENT EXCEEDS	160000		149000
90 PERCENT EXCEEDS	95400		97900
			64500

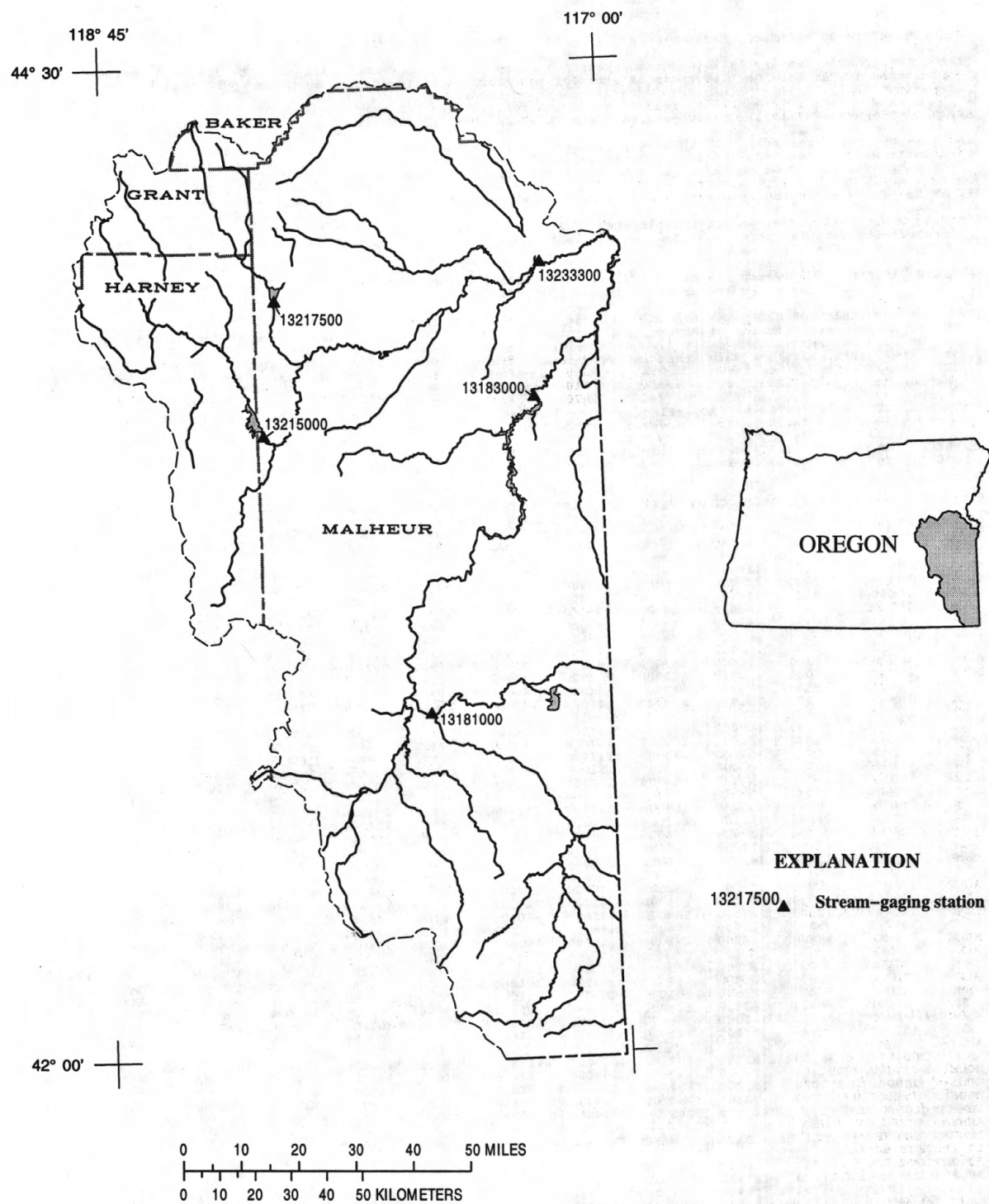


Figure 7. Location of surface-water stations in the Owyhee and Malheur River Basins.

53

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.

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. U. S. Bureau of Reclamation satellite telemeter at station.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1997, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1950 - 1997
--------------------	------------------------	---------------------	-------------------------

e Estimated

OWYHEE RIVER BASIN

13183000 OWYHEE RIVER BELOW OWYHEE DAM, OR

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

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

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

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

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

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

AVERAGE DISCHARGE.--65 years (water years 1933-97), 423 ft³/s, 306,200 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, 9,880 ft³/s Apr. 24, gage height, 11.03 ft; minimum daily discharge, 12 ft³/s Nov. 30, Dec. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	13	12	16	2530	2290	253	2720	283	269	245	237
2	232	13	13	16	3230	2290	248	2680	272	268	245	237
3	232	13	15	18	3560	2290	245	2760	267	269	244	228
4	232	13	15	23	3580	2290	245	2730	264	269	242	221
5	232	13	15	24	3700	2290	245	1750	263	269	242	236
6	232	13	15	505	4040	2290	246	1020	263	268	242	237
7	232	13	15	3030	4160	2280	248	1100	264	266	243	237
8	229	13	15	3900	3780	2290	248	1180	264	267	243	237
9	232	13	15	4080	3320	2290	248	1230	264	265	242	236
10	232	13	15	4060	2980	2290	249	1250	266	268	231	237
11	232	13	15	3820	2600	2290	956	1300	267	268	240	237
12	232	13	15	3320	2380	2290	1170	1330	269	268	240	235
13	232	13	15	3040	2370	2300	1210	770	267	268	239	235
14	232	13	15	2680	2370	2300	1450	560	269	266	239	230
15	232	13	15	2400	2310	2300	1310	586	269	266	239	231
16	232	13	15	2140	2300	2300	886	602	268	264	239	234
17	232	13	15	1880	2300	2300	806	533	262	263	239	235
18	232	13	15	1690	2300	2310	259	637	285	262	239	234
19	232	13	15	1560	2300	1450	264	663	269	261	239	234
20	231	13	15	1500	2300	930	252	475	269	260	238	234
21	230	13	15	1430	2310	516	1290	353	269	258	237	234
22	227	13	15	1390	2300	243	2500	340	269	256	238	234
23	230	13	15	1340	2300	245	3150	326	269	252	238	234
24	230	13	15	1270	2300	245	2720	304	269	255	238	234
25	129	13	15	1190	2300	245	3570	300	269	253	237	235
26	16	13	15	1150	2300	248	3540	285	249	252	237	234
27	13	13	15	1120	2290	255	3430	277	269	251	237	234
28	13	13	15	1140	2290	250	3070	278	269	249	237	233
29	13	13	15	1260	---	251	2940	285	269	248	237	233
30	13	12	15	1590	---	252	2820	286	269	247	237	233
31	13	---	15	1920	---	253	---	292	---	245	237	---
TOTAL	5763	389	460	54502	76800	46663	40068	29202	8034	8090	7420	7020
MEAN	186	13.0	14.8	1758	2743	1505	1336	942	268	261	239	234
MAX	232	13	15	4080	4160	2310	3570	2760	285	269	245	237
MIN	13	12	12	16	2290	243	245	277	249	245	231	221
AC-FT	11430	772	912	108100	152300	92560	79470	57920	15940	16050	14720	13920

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1997, BY WATER YEAR (WY)

	MEAN	59.7	9.58	24.9	154	417	1070	1748	835	326	170	151	124
MAX	242	196	703	2751	5198	7799	12790	8565	3246	618	312	248	
(WY)	1986	1933	1985	1971	1986	1972	1984	1984	1984	1933	1933	1933	
MIN	2.80	1.00	1.31	1.17	1.13	1.66	28.2	39.5	45.8	44.3	22.4	8.00	
(WY)	1955	1953	1993	1993	1993	1992	1955	1955	1948	1948	1948	1948	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1933 - 1997

ANNUAL TOTAL	253897	284411	
ANNUAL MEAN	694	779	
HIGHEST ANNUAL MEAN			423
LOWEST ANNUAL MEAN			2991
HIGHEST DAILY MEAN	5990	Mar 18	22.3
LOWEST DAILY MEAN	12	Nov 30	1.0
ANNUAL SEVEN-DAY MINIMUM	13	Nov 25	1.0
ANNUAL RUNOFF (AC-FT)	503600	564100	306200
10 PERCENT EXCEEDS	2390	2330	712
50 PERCENT EXCEEDS	231	252	80
90 PERCENT EXCEEDS	13	13	2.6

SNAKE RIVER BASIN

55

13213100 SNAKE RIVER AT NYSSA, OR

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

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

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records good except for estimated daily discharges, which are fair. Station equipment includes satellite telemetry. Flow regulated by many reservoirs upstream from station.

AVERAGE DISCHARGE.--20 years (water years 1976-86, 1989-97), 14,520 ft³/s, 105,2000,000 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 48,900 ft³/s June 22, gage height, 12.29 ft; minimum discharge, 8,830 ft³/s July 14, 26, gage height, 5.40 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9980	10600	10000	22700	37900	38100	38000	30500	26200	31600	11400	15300
2	10300	10700	11000	25600	38600	38700	37600	30800	27000	31200	11500	17400
3	10100	11700	10700	31600	40800	39600	39100	30800	27700	28500	11600	16700
4	10200	12000	11200	35000	41100	39800	37600	30400	27500	23500	11500	16300
5	9900	12000	11600	32000	38800	40000	36400	29400	27500	20800	11100	16300
6	10000	12800	11100	25200	38700	39400	37200	27800	29200	18000	11400	15600
7	10200	12100	10300	22300	41300	39100	37700	27000	29900	15100	9890	15900
8	10100	11500	10700	24400	39400	38300	36900	25600	31000	13500	10400	16400
9	10100	11500	11400	25900	37600	38900	37100	24200	31900	10900	10800	16700
10	10000	11800	11700	26700	37000	39600	36100	22900	32600	10700	10400	16900
11	10300	12000	12000	27800	38200	39000	32100	23400	32500	9570	10600	17100
12	9620	12600	12100	25900	37300	39100	30700	23800	33000	11000	10700	17200
13	10600	12800	12000	26700	36200	38900	31400	23000	36100	10300	11400	18000
14	11000	11800	12000	25900	35800	38700	32100	22600	38600	9530	10600	18600
15	10200	12100	12000	24800	35700	38800	31600	22500	43100	10600	10700	18500
16	10900	12000	12500	24000	38200	39100	31600	23000	46900	9900	10700	18600
17	10500	11500	13200	25000	39900	39000	30100	24500	48200	9820	13400	18500
18	11200	11300	13400	25000	38700	38300	27500	24500	48400	10200	14100	17800
19	10900	12200	12700	25100	38900	39900	28100	24000	47400	9960	14100	17900
20	10400	11800	12200	25800	39900	39400	28900	24400	47200	10400	14800	16500
21	10700	11900	12300	27000	38600	39500	28700	25300	47900	10900	13900	17200
22	11200	11700	12300	27900	39100	38500	30800	25400	48500	10700	14100	17600
23	11100	10600	12700	26500	39100	39400	31700	25500	48000	10100	14100	17400
24	10700	11600	13900	26600	38500	39100	30600	24900	47200	9710	14600	16900
25	11000	10900	13800	27600	38600	38700	32800	25000	45300	10200	14600	17000
26	11100	11000	15200	28100	39000	38800	32700	26300	44200	9610	14800	17300
27	10700	10800	17300	e28000	38900	38300	32700	26800	43200	10400	14700	17100
28	11200	10200	18100	e30000	38400	38200	32100	27000	41800	10200	14900	16800
29	10800	10300	22100	34600	---	40000	31900	27100	38500	10500	14800	17000
30	10300	10100	22700	34200	---	39700	32100	25800	35100	10700	14800	16900
31	10100	---	24300	35600	---	39100	---	25000	---	11700	14900	---
TOTAL	325400	345900	418500	853500	1080200	1211000	993900	799200	1151600	419800	391290	513400
MEAN	10500	11530	13500	27530	38580	39060	33130	25780	38390	13540	12620	17110
MAX	11200	12800	24300	35600	41300	40000	39100	30800	48500	31600	14900	18600
MIN	9620	10100	10000	22300	35700	38100	27500	22500	26200	9530	9890	15300
AC-FT	645400	686100	830100	1693000	2143000	2402000	1971000	1585000	2284000	832700	776100	1018000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1997, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	12190	12940	13360	14770	16100	18580	21440	19960	16940	8943	8784	10800											
MAX	21360	24660	24320	30290	38580	40010	43970	49060	41100	16480	12620	17110											
(WY)	1985	1985	1984	1984	1997	1986	1984	1984	1984	1983	1997	1997											
MIN	8102	8924	8902	8908	8562	8018	6033	5367	5223	5546	5075	6664											
(WY)	1993	1993	1993	1993	1992	1991	1992	1992	1992	1992	1992	1992											

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1975 - 1997

	1996	1997	1975-1997
ANNUAL TOTAL	6260790	8503690	
ANNUAL MEAN	17110	23300	14520
HIGHEST ANNUAL MEAN			26260
LOWEST ANNUAL MEAN			7365
HIGHEST DAILY MEAN	41200	Apr 3	57400
LOWEST DAILY MEAN	8330	Jul 23	4240
ANNUAL SEVEN-DAY MINIMUM	8870	Jul 17	4520
ANNUAL RUNOFF (AC-FT)	12420000	16870000	10520000
10 PERCENT EXCEEDS	31900	39100	28100
50 PERCENT EXCEEDS	12800	22700	11000
90 PERCENT EXCEEDS	9600	10400	7310

e Estimated

SNAKE RIVER BASIN

13213100 SNAKE RIVER AT NYSSA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1989 to September 1990, October 1992 to September 1993, April to September 1997 (discontinued).

PERIOD OF DAILY RECORD.--April 1989 to September 1990.

INSTRUMENTATION.--Water-quality monitor April 1989 to September 1990. Additional water temperature data for period August to September on file in the Boise, ID field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 544 microsiemens/cm Sept. 3; minimum, 507 microsiemens/cm Sept. 19, 1989.

pH: Maximum, 9.82 units May 29; minimum, 8.00 units Aug. 26, 1989.

WATER TEMPERATURE: Maximum 25.0°C June 12, Aug. 12, 13; minimum, 11.0°C Apr. 23, 25-28, 1989.

DISSOLVED OXYGEN: Maximum, 13.8 mg/L Aug. 11; minimum, 6.7 mg/L Sept. 3, 1989.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, KF AGAR (COLS./100 ML) (31673)
APR 29...	1155	31600	325	8.3	15.0	11.5	19	10.4	104	74	100
MAY 22...	1415	25400	348	8.7	27.0	18.5	--	11.6	135	K130	190
JUN 13...	1350	36500	349	8.4	25.0	18.0	26	9.4	109	380	670
JUL 22...	1145	9910	429	8.6	28.5	23.0	12	10.0	127	270	910
AUG 13...	1252	11600	464	8.6	25.0	22.0	14	9.8	123	K100	110
SEP 17...	0915	18600	460	8.5	15.0	18.5	11	8.5	99	K94	K4200

DATE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER FIELD (MG/L AS HCO3) (00440)	CAR-BONATE WATER FIELD (MG/L AS CO3) (00445)	ALKA-LINITY WAT WH TOT FET FIELD (MG/L AS CACO3) (00410)
SEP 17...	170	43	14	25	24	4.0	190	4	162

DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
SEP 17...	43	18	0.57	23	286	273	0.39	14400

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
APR 29...	<0.010	0.608	0.021	0.45	0.084	0.044	45	3840
MAY 22...	<0.010	0.403	<0.015	0.56	0.089	<0.010	47	3220
JUN 13...	<0.010	0.399	<0.015	0.49	0.106	0.023	90	8870
JUL 22...	0.017	0.903	<0.015	0.84	0.166	0.015	52	1390
AUG 13...	0.022	0.940	<0.015	0.58	0.062	<0.010	57	1790
SEP 17...	0.010	1.04	<0.015	0.44	0.098	0.029	41	2060

K Results based on counts outside ideal colony range.

13215000 MALHEUR RIVER BELOW WARMSPRINGS RESERVOIR, NEAR RIVERSIDE, OR

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

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

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

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

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

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

AVERAGE DISCHARGE.--78 years (water years 1920-97), 189 ft³/s, 136,900 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,110 ft³/s Apr. 23, gage height, 6.26 ft; minimum discharge, no flow Dec. 3, 20-28, Jan. 4-8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	110	.19	.02	e1.0	284	14	220	250	308	512	418	379
2	110	.19	.02	e1.0	284	14	253	243	308	505	408	379
3	110	.20	.00	e.50	592	14	242	296	307	503	403	361
4	110	.20	.03	e.00	1030	14	221	331	303	500	437	351
5	110	.18	.18	e.00	1030	14	291	298	300	494	451	333
6	110	.34	.36	e.00	1020	14	335	227	300	491	449	303
7	110	.54	.36	e.00	588	14	335	191	300	489	443	292
8	108	.95	.18	e.00	331	14	335	190	300	496	435	292
9	111	.56	.23	e320	331	14	302	191	340	499	443	292
10	117	.47	.20	e600	331	15	286	191	407	477	449	292
11	116	.29	.17	e750	329	15	284	188	469	463	445	292
12	115	.21	.14	e800	305	14	284	188	487	461	441	284
13	115	.18	.16	e800	292	14	284	188	487	461	440	271
14	113	.17	.14	e800	253	14	283	255	472	459	429	264
15	107	.15	.13	e800	231	14	284	302	465	474	453	251
16	89	.15	.13	e800	230	15	242	307	474	499	464	221
17	76	.16	.13	e450	226	14	217	325	478	508	461	209
18	27	.21	.11	254	454	14	219	335	478	494	472	202
19	.24	.15	.08	254	705	14	257	372	478	487	478	196
20	.22	.21	e.00	268	704	14	275	426	478	486	477	195
21	.20	.21	e.00	277	703	14	686	444	477	472	477	193
22	.19	.22	e.00	279	656	14	1030	444	475	465	474	191
23	.22	.21	e.00	277	543	14	1060	444	502	451	470	198
24	.23	.21	e.00	251	217	14	1040	437	522	455	465	202
25	.19	.20	e.00	235	12	14	849	432	516	461	472	202
26	.18	.16	e.00	235	13	310	572	432	511	464	450	197
27	.19	.12	e.00	235	13	640	476	433	509	465	428	195
28	.21	.09	e.00	235	13	786	455	390	508	471	403	195
29	.21	.07	e.50	235	---	789	384	351	508	474	383	190
30	.17	.04	e.50	236	---	630	315	320	518	463	379	184
31	.18	---	e1.0	265	---	347	---	308	---	435	379	---
TOTAL	1866.63	7.23	4.77	9658.50	11720	3855	12316	9729	12985	14834	13676	7606
MEAN	60.2	.24	.15	312	419	124	411	314	433	479	441	254
MAX	117	.95	1.0	800	1030	789	1060	444	522	512	478	379
MIN	.17	.04	.00	.00	12	14	217	188	300	435	379	184
AC-FT	3700	14	9.5	19160	23250	7650	24430	19300	25760	29420	27130	15090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1997, BY WATER YEAR (WY)

	MEAN	34.3	.83	7.58	20.0	39.0	81.6	316	428	344	432	355	199
MAX	138	19.8	323	452	763	1440	1603	1162	558	677	575	394	
(WY)	1953	1920	1984	1971	1983	1983	1984	1958	1953	1945	1946	1928	
MIN	.000	.000	.000	.000	.000	.000	.000	31.4	92.0	30.3	.041	.000	
(WY)	1934	1933	1933	1933	1933	1933	1935	1932	1942	1992	1988	1988	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1920 - 1997

ANNUAL TOTAL	75501.91	98258.13	189
ANNUAL MEAN	206	269	566
HIGHEST ANNUAL MEAN			189
LOWEST ANNUAL MEAN			46.8
HIGHEST DAILY MEAN	669	1060	3030
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	149800	194900	136900
10 PERCENT EXCEEDS	500	506	497
50 PERCENT EXCEEDS	120	275	4.0
90 PERCENT EXCEEDS	.03	.17	.00

e Estimated

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.

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

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

AVERAGE DISCHARGE.--62 years (water years 1936-97), 144 ft³/s, 104,000 acre-ft/yr, regulated period.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 724 ft³/s Apr. 23, 24, gage height, 4.24 ft; minimum daily discharge, no flow Nov. 9, 10, Dec. 4-25.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	e.09	.12	67	162	269	506	502	208	287	237	255
2	59	e.09	.09	329	242	269	503	500	207	258	241	252
3	59	e.09	.10	506	276	267	501	499	225	241	241	251
4	68	e.09	.05	516	264	265	501	499	247	235	238	247
5	72	.05	.00	520	239	218	453	499	241	235	235	246
6	72	.06	.00	465	216	191	360	492	235	234	232	246
7	72	.09	.00	352	164	190	313	490	249	234	232	246
8	72	.09	.00	369	117	190	290	490	255	231	232	245
9	72	.02	.02	369	117	190	273	490	255	230	231	228
10	74	.03	.04	367	117	190	237	489	254	230	232	193
11	68	.05	.00	343	117	190	213	488	252	227	234	161
12	65	.07	.00	293	118	192	214	487	252	227	234	153
13	65	.09	.01	226	169	113	199	462	252	227	238	152
14	65	.11	.00	117	321	51	211	451	253	228	241	150
15	57	.11	.00	59	399	51	236	451	255	227	239	150
16	53	.11	.00	57	396	53	237	451	255	227	238	150
17	47	.09	.00	76	394	53	258	453	281	227	238	121
18	16	.19	.00	121	391	53	297	454	293	227	242	98
19	e.09	.15	.00	176	391	35	390	430	293	228	244	94
20	e.09	.13	.00	198	388	22	548	381	293	232	244	94
21	e.09	.10	.00	200	384	21	568	337	293	231	242	94
22	e.09	.13	.00	184	380	18	631	327	292	228	246	105
23	e.09	.14	.00	163	321	18	654	310	290	227	249	112
24	e.09	.14	.00	135	276	15	713	299	290	227	246	111
25	e.09	.14	.00	119	275	13	708	296	290	227	248	110
26	e.09	.14	.08	97	274	87	617	296	289	227	249	108
27	e.09	.14	.05	83	272	204	509	254	288	227	249	108
28	e.09	.14	.08	83	270	297	466	218	290	227	249	106
29	e.09	.11	.21	82	---	360	450	208	288	227	251	106
30	e.09	.11	.36	79	---	442	497	208	288	233	255	106
31	e.09	---	.67	91	---	507	---	208	---	235	255	---
TOTAL	1117.17	3.09	1.88	6842	7450	5034	12553	12419	7953	7208	7482	4798
MEAN	36.0	.10	.061	221	266	162	418	401	265	233	241	160
MAX	74	.19	.67	520	399	507	713	502	293	287	255	255
MIN	.09	.02	.00	57	117	13	199	208	207	227	231	94
AC-FT	2220	6.1	3.7	13570	14780	9980	24900	24630	15770	14300	14840	9520

MEAN	36.3	1.04	1.75	11.2	30.5	83.7	294	353	281	273	217	137
MAX	134	35.5	62.7	287	478	936	856	810	510	402	399	341
(WY)	1954	1936	1943	1943	1965	1983	1958	1983	1974	1979	1980	1945
MIN	.086	.000	.000	.000	.000	.000	2.29	120	53.7	39.5	30.4	31.9
(WY)	1974	1938	1938	1936	1938	1938	1981	1927	1939	1992	1992	1961

WATER YEARS 1936 - 1997

e Estimated

MALHEUR RIVER BASIN

59

13233300 MALHEUR RIVER BELOW NEVADA DAM, NEAR VALE, OR

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

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

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

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

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

AVERAGE DISCHARGE.--75 years (water years 1927-34, 1937-41, 1945-52, 1994-97), 177 ft³/s, 128,200 acre-ft/yr, unadjusted.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,870 ft³/s Jan. 3, gage height, 10.46 ft; minimum daily discharge, 36 ft³/s May 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	172	144	1570	3060	609	781	349	236	128	215	173
2	143	170	141	4370	2710	604	563	300	229	137	216	176
3	138	167	141	6230	1870	588	546	256	212	125	193	175
4	138	163	139	4170	1730	573	542	261	203	147	161	181
5	137	173	134	2890	1850	544	480	301	217	134	128	187
6	135	176	142	2420	1740	528	486	285	196	121	127	177
7	133	169	145	1710	1660	470	490	229	182	114	134	172
8	133	161	145	1290	1370	464	399	162	169	109	122	170
9	131	157	152	1190	1010	456	354	152	171	105	106	169
10	130	156	164	1310	959	441	318	149	144	158	100	175
11	128	154	193	1640	915	409	272	141	129	169	114	184
12	128	160	250	1660	902	404	234	139	185	161	139	198
13	129	163	249	1520	875	398	233	123	243	164	124	207
14	135	156	218	1400	867	397	196	69	219	164	115	199
15	137	160	200	e1350	961	320	157	36	212	144	110	188
16	142	154	187	e1300	1050	290	155	37	181	116	106	199
17	145	154	168	e1250	1090	276	120	71	149	127	143	219
18	159	169	142	1110	1120	268	72	67	169	185	149	232
19	162	165	142	822	1220	265	53	110	160	226	115	218
20	159	156	159	854	1470	244	68	148	158	215	116	210
21	152	152	158	877	1470	260	201	164	154	195	114	193
22	154	156	158	889	1440	212	438	173	144	173	110	189
23	166	152	149	868	1380	165	988	175	139	146	130	197
24	169	151	153	821	1230	143	1070	224	125	135	143	190
25	184	157	158	805	1060	136	1110	395	127	117	152	187
26	173	153	172	775	716	132	1270	379	116	115	163	208
27	163	151	1030	751	659	123	766	325	105	119	167	209
28	160	150	1240	811	633	527	535	314	100	126	155	207
29	190	147	838	790	---	879	487	347	91	137	161	207
30	197	144	979	879	---	1010	401	320	82	179	158	208
31	176	---	1330	926	---	952	---	265	---	224	160	---
TOTAL	4672	4768	9720	49248	37017	13087	13785	6466	4947	4615	4346	5804
MEAN	151	159	314	1589	1322	422	460	209	165	149	140	193
MAX	197	176	1330	6230	3060	1010	1270	395	243	226	216	232
MIN	128	144	134	751	633	123	53	36	82	105	100	169
AC-FT	9270	9460	19280	97680	73420	25960	27340	12830	9810	9150	8620	11510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

	1994	1995	1996	1997
MEAN	154	133	166	524
MAX	224	159	314	1589
(WY)	1994	1997	1997	1997
MIN	74.1	100	78.9	128
(WY)	1995	1995	1995	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1994 - 1997

ANNUAL TOTAL	121994	158475		
ANNUAL MEAN	333	434		
HIGHEST ANNUAL MEAN			255	
LOWEST ANNUAL MEAN			434	1997
HIGHEST DAILY MEAN	4260	Feb 9	6230	Jan 3 1997
LOWEST DAILY MEAN	31	May 11	36	Sep 29 1994
ANNUAL SEVEN-DAY MINIMUM	59	May 8	73	Sep 15 1994
INSTANTANEOUS PEAK FLOW				1690 Feb 2 1995
INSTANTANEOUS PEAK STAGE				4.68 Feb 2 1995
INSTANTANEOUS LOW FLOW				7.5 Sep 28 1994
ANNUAL RUNOFF (AC-FT)	242000	314300	185000	
10 PERCENT EXCEEDS	827	1110	574	
50 PERCENT EXCEEDS	160	176	144	
90 PERCENT EXCEEDS	103	124	46	

e Estimated

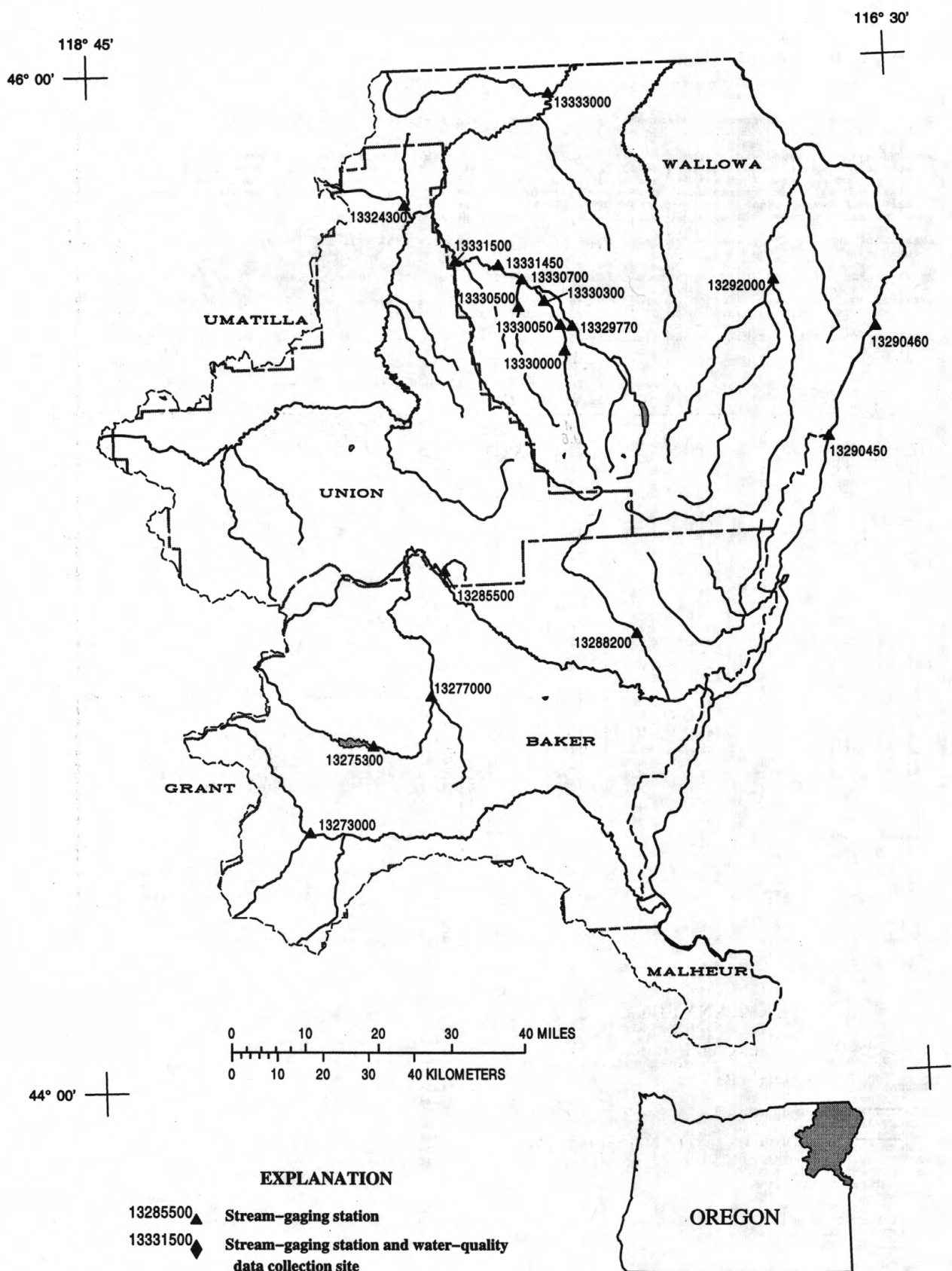
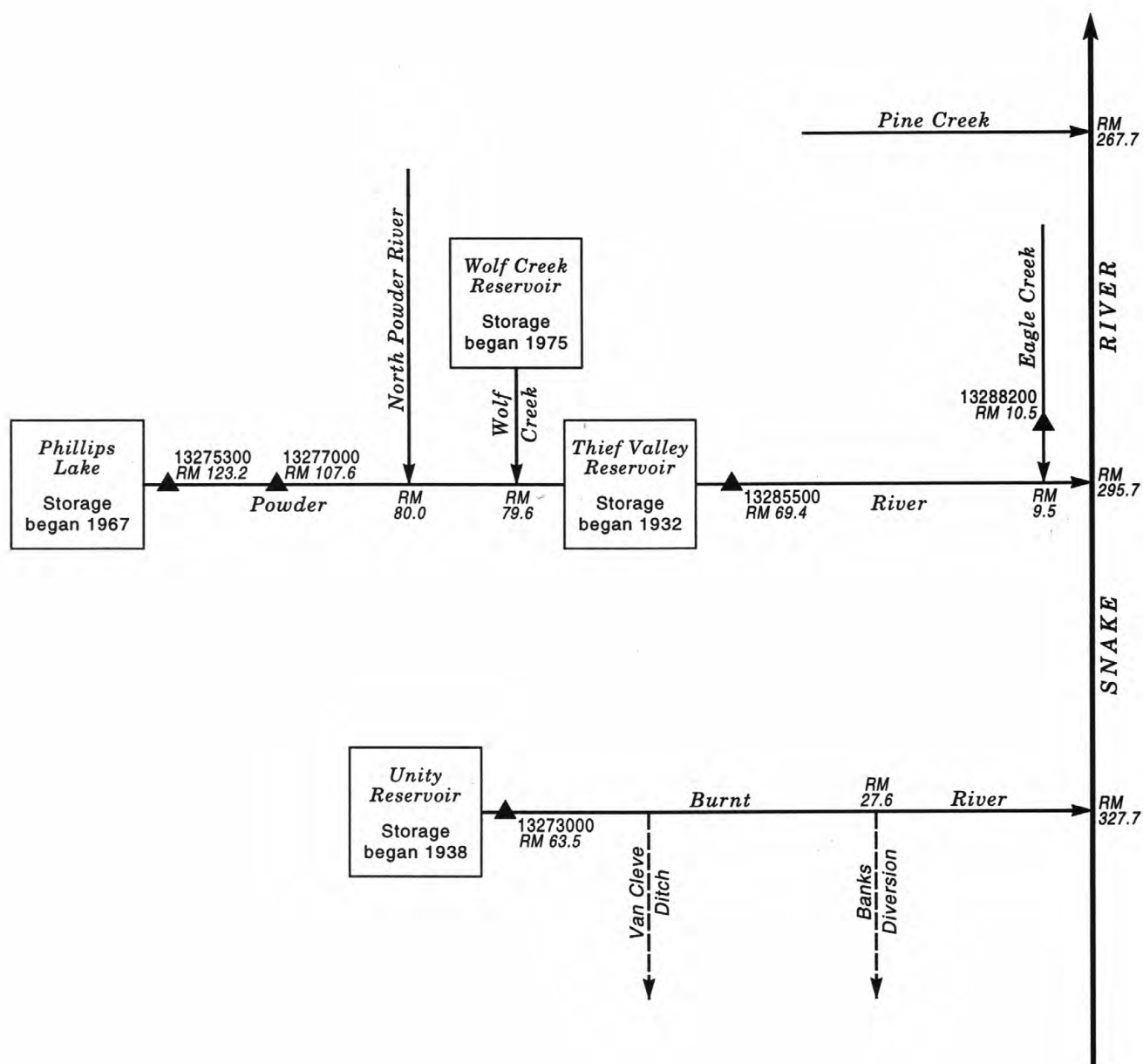


Figure 8. Location of surface-water and water-quality stations in the Burnt River, Powder River, Pine Creek, Imnaha River, and Grande Ronde River Basins.



EXPLANATION

- ▲ 13285500 **Stream-gaging station**
- RM 70.0 **River mile**
- **Stream**—Arrow shows direction of flow
- - - → **Tunnel, canal or pipe**—Arrow shows direction of flow

Figure 9. Schematic diagram showing gaging stations in Burnt and Powder River Basins.

BURNT 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 September 1997 (discontinued). 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 sea level. 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.--Records good. 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.--59 years (water years 1939-97), 89.9 ft³/s, 65,130 acre-ft/yr, regulated period.

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, 1,090 ft³/s Mar. 28, 29, gage height, 8.29 ft; minimum discharge, 0.2 ft³/s Nov. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	13	9.9	19	13	161	533	519	128	105	135	114
2	43	13	9.9	29	7.8	161	495	417	127	105	134	123
3	24	13	10	32	31	161	462	251	127	105	133	122
4	15	13	10	33	217	161	438	199	115	105	132	121
5	9.0	13	10	34	245	160	380	253	109	105	132	120
6	9.5	13	10	34	245	160	351	265	109	104	131	118
7	9.6	13	10	33	244	160	350	258	109	103	130	117
8	10	13	10	34	243	160	302	6.5	109	103	129	116
9	10	13	e10	286	242	160	280	58	109	103	128	114
10	10	13	e9.9	402	241	160	281	181	109	104	128	113
11	10	8.5	9.9	399	239	160	281	205	110	103	128	120
12	10	13	9.9	398	239	161	281	205	110	102	126	115
13	10	13	10	318	184	272	282	204	109	102	125	109
14	11	13	10	227	238	285	282	205	109	101	124	107
15	10	13	10	226	237	261	282	215	109	100	123	106
16	e10	13	10	204	236	241	330	254	109	100	122	105
17	e10	13	10	177	235	231	424	237	109	103	122	104
18	e11	13	10	177	235	293	477	228	108	103	132	101
19	e11	11	10	176	234	328	639	227	106	100	137	100
20	e12	9.5	10	103	234	410	915	197	106	99	136	98
21	e12	9.5	10	10	215	599	942	161	106	98	129	96
22	e13	9.5	10	11	183	684	754	151	106	98	132	96
23	e13	9.5	10	11	174	690	712	150	106	97	132	94
24	13	9.8	10	110	161	751	740	150	106	107	130	93
25	e13	9.9	10	174	150	856	632	149	105	111	129	91
26	13	9.9	11	187	172	856	580	149	105	111	129	89
27	13	9.9	11	232	185	861	542	148	105	110	128	87
28	e13	9.9	11	231	170	1010	523	135	105	109	127	86
29	e13	9.9	11	231	---	848	524	128	105	128	126	84
30	13	9.9	11	230	---	653	523	128	105	136	99	82
31	13	---	11	227	---	609	---	128	---	136	97	---
TOTAL	462.1	347.7	315.5	4995	5449.8	12663	14537	6161.5	3290	3296	3945	3141
MEAN	14.9	11.6	10.2	161	195	408	485	199	110	106	127	105
MAX	75	13	11	402	245	1010	942	519	128	136	137	123
MIN	9.0	8.5	9.9	10	7.8	160	280	6.5	105	97	97	82
AC-FT	917	690	626	9910	10810	25120	28830	12220	6530	6540	7820	6230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1997, BY WATER YEAR (WY)

	MEAN	24.2	14.1	16.9	23.9	41.5	110	251	194	120	101	106	76.1
MAX	93.0	63.2	66.4	161	287	485	618	484	326	134	148	128	
(WY)	1954	1954	1942	1997	1996	1983	1943	1975	1953	1957	1971	1975	
MIN	.20	.23	.18	.082	.000	.72	.23	85.2	41.7	59.7	47.0	.20	
(WY)	1978	1989	1989	1989	1939	1991	1955	1994	1944	1940	1977	1977	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1939 - 1997

ANNUAL TOTAL	45685.3	58603.6	
ANNUAL MEAN	125	161	89.9
HIGHEST ANNUAL MEAN			166
LOWEST ANNUAL MEAN			31.7
HIGHEST DAILY MEAN	586	Feb 22	1010
LOWEST DAILY MEAN	8.5	Nov 11	6.5
ANNUAL SEVEN-DAY MINIMUM	9.7	Nov 20	9.7
ANNUAL RUNOFF (AC-FT)	90620	116200	65130
10 PERCENT EXCEEDS	297	363	182
50 PERCENT EXCEEDS	105	111	67
90 PERCENT EXCEEDS	10	10	2.7

e Estimated

POWDER RIVER BASIN

63

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 September 1997 (discontinued).

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

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Many small diversions for irrigation upstream from station. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--30 years (water years 1968-97), 112 ft³/s, 81,020 acre-ft/yr, regulated period.

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; Oct. 13, 1994.

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, 501 ft³/s May 16, 17, gage height, 3.67 ft; minimum discharge, 6.9 ft³/s Feb. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	10	11	14	126	154	157	164	480	269	214	262
2	9.6	10	11	15	126	154	157	164	404	269	213	262
3	9.6	10	11	15	144	154	159	164	345	269	212	262
4	9.6	10	11	15	157	154	159	164	315	269	211	261
5	9.6	10	11	15	157	154	159	242	268	269	212	240
6	9.5	10	11	15	157	154	159	303	221	268	211	233
7	8.6	10	11	16	155	154	159	314	223	269	250	235
8	9.9	10	11	16	154	152	161	311	223	269	269	230
9	11	11	11	16	156	152	162	311	223	266	266	206
10	11	10	11	16	157	152	162	311	223	243	265	186
11	11	10	11	16	157	152	162	311	223	224	265	153
12	11	11	11	16	157	152	162	302	312	214	265	119
13	11	11	11	16	157	152	162	356	362	214	265	100
14	11	11	11	15	157	154	161	393	350	201	265	102
15	11	11	11	15	157	153	159	408	286	197	265	64
16	11	11	11	15	126	152	159	470	286	197	265	37
17	11	11	12	15	112	152	159	496	233	197	265	33
18	11	11	12	15	157	152	159	496	207	197	265	32
19	10	11	12	16	157	152	159	495	206	176	265	32
20	10	11	12	16	157	153	151	490	206	167	265	32
21	10	11	12	49	155	154	100	487	207	155	265	32
22	10	12	12	112	154	154	91	487	206	140	265	32
23	10	12	13	132	154	152	119	489	206	140	264	32
24	10	11	12	129	154	152	162	487	207	139	264	32
25	10	11	12	129	154	154	162	486	207	194	262	32
26	10	11	12	129	154	155	162	486	207	220	262	32
27	10	11	12	129	155	157	162	486	253	220	263	31
28	10	11	12	128	156	157	164	486	269	238	262	31
29	10	11	12	126	---	157	164	486	269	230	262	31
30	10	11	12	126	---	157	164	486	269	214	262	18
31	10	---	14	126	---	157	---	486	---	214	262	---
TOTAL	321.4	322	359	1623	4219	4764	4637	12017	7896	6748	7866	3384
MEAN	10.4	10.7	11.6	52.4	151	154	155	388	263	218	254	113
MAX	15	12	14	132	157	157	164	496	480	269	269	262
MIN	8.6	10	11	14	112	152	91	164	206	139	211	18
AC-FT	637	639	712	3220	8370	9450	9200	23840	15660	13380	15600	6710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1997, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	10.9	8.47	8.09	14.7	21.0	57.5	129	301	273	208	216	87.0																		
MAX	19.6	16.0	14.0	105	151	317	355	519	546	411	301	171																		
(WY)	1981	1985	1984	1984	1997	1982	1984	1975	1983	1984	1974	1974																		
MIN	2.55	.46	.50	.36	.78	1.10	4.81	123	101	77.1	56.0	21.7																		
(WY)	1974	1968	1968	1968	1968	1968	1993	1995	1990	1992	1976	1984																		

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1968 - 1997

	1996	1997	1968-1997
ANNUAL TOTAL	51995.4	54156.4	
ANNUAL MEAN	142	148	112
HIGHEST ANNUAL MEAN			186
LOWEST ANNUAL MEAN			60.0
HIGHEST DAILY MEAN	429	496	592
LOWEST DAILY MEAN	3.2	8.6	.00
ANNUAL SEVEN-DAY MINIMUM	3.7	9.5	.13
ANNUAL RUNOFF (AC-FT)	103100	107400	81020
10 PERCENT EXCEEDS	342	269	310
50 PERCENT EXCEEDS	143	154	20
90 PERCENT EXCEEDS	7.6	11	4.6

POWDER RIVER BASIN

13277000 POWDER RIVER AT BAKER CITY, OR

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 City, 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 September 1997 (discontinued). Monthly discharge only May 1913, April 1914 published in WSP 1317. November 1971 to September 1978 in reports of Oregon Water Resources Department. Prior to October 1990, published as "at Baker".

REVISED RECORDS.--WSP 1317: 1913.

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

REMARKS.--Records good except for estimated daily discharges, 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.--25 years (water years 1973-97), 104 ft³/s, 75,370 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, 810 ft³/s Jan. 1, gage height, 4.80 ft; minimum discharge, 13 ft³/s Oct. 8-11, Dec. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	17	26	565	256	179	249	195	442	227	200	181
2	18	17	24	460	198	182	239	173	393	220	203	183
3	16	17	24	266	177	180	235	165	354	215	200	185
4	15	17	e22	157	190	178	231	154	321	212	198	188
5	16	18	e23	118	182	176	230	188	303	210	196	180
6	16	18	e25	86	179	178	225	254	220	210	185	165
7	16	18	e28	89	177	186	217	275	235	209	218	165
8	14	18	e35	77	179	195	213	273	235	208	256	163
9	13	18	e42	71	177	193	203	267	217	215	251	140
10	13	18	70	68	178	213	193	252	202	206	250	131
11	14	19	51	64	176	221	197	250	201	171	240	108
12	15	18	39	e40	177	217	202	243	269	143	233	86
13	15	19	36	e35	176	203	202	293	346	140	221	61
14	15	19	e27	e36	191	199	202	332	342	133	224	60
15	16	20	e28	e40	208	200	202	359	288	122	224	55
16	16	20	e30	e45	208	206	201	384	274	118	221	37
17	16	20	e32	e48	180	226	212	432	249	123	215	26
18	16	24	e36	e42	211	238	223	414	204	132	208	25
19	17	49	e40	e40	211	269	237	407	201	131	197	24
20	17	34	e46	e38	199	304	264	397	199	113	188	24
21	17	28	e52	47	188	308	214	395	194	115	189	23
22	17	31	49	111	184	298	189	393	189	98	189	24
23	17	28	44	160	180	295	195	399	183	93	188	25
24	20	27	43	142	179	286	278	415	180	85	190	25
25	20	28	49	143	183	276	269	410	168	109	186	26
26	19	25	51	144	185	280	251	413	165	176	182	27
27	18	24	51	143	184	286	252	425	187	180	182	27
28	18	27	47	143	178	285	253	435	220	183	180	26
29	18	25	121	143	---	273	247	439	218	192	181	26
30	18	24	206	143	---	262	215	442	220	192	181	26
31	18	---	359	155	---	254	---	441	---	199	179	---
TOTAL	522	685	1756	3859	5291	7246	6740	10314	7419	5080	6355	2442
MEAN	16.8	22.8	56.6	124	189	234	225	333	247	164	205	81.4
MAX	28	49	359	565	256	308	278	442	442	227	256	188
MIN	13	17	22	35	176	176	189	154	165	85	179	23
AC-FT	1040	1360	3480	7650	10490	14370	13370	20460	14720	10080	12610	4840

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1997, BY WATER YEAR (WY)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	14.3	16.1	22.9	32.7	58.3	111	156	253	221	152	161	61.9														
MAX	23.7	28.5	56.6	124	189	414	456	536	494	335	208	120														
(WY)	1976	1985	1997	1997	1997	1982	1984	1975	1974	1984	1974	1974														
MIN	4.16	6.71	6.25	8.45	13.6	16.3	29.7	119	60.8	50.3	43.4	15.5														
(WY)	1974	1989	1991	1989	1993	1991	1992	1995	1990	1992	1976	1989														

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1972 - 1997

ANNUAL TOTAL	52046	57709	
ANNUAL MEAN	142	158	
HIGHEST ANNUAL MEAN			104
LOWEST ANNUAL MEAN			203
HIGHEST DAILY MEAN	390	Feb 9	48.5
LOWEST DAILY MEAN	13	Oct 9	636
ANNUAL SEVEN-DAY MINIMUM	14	Oct 8	2.4
ANNUAL RUNOFF (AC-FT)	103200	114500	3.0
10 PERCENT EXCEEDS	292	285	75370
50 PERCENT EXCEEDS	125	180	265
90 PERCENT EXCEEDS	18	18	51
			12

e Estimated

POWDER RIVER BASIN

65

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 September 1997 (discontinued). 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 sea level (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. 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.--19 years (water years 1979-97), 203 ft³/s, 147,100 acre-ft/yr.
13 years (water years 1985-97), 156 ft³/s, 112,700 acre-ft/yr, regulated period.

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, Nov. 26, 1992 to Jan. 15, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,120 ft³/s Jan. 2, gage height, 9.65 ft; minimum discharge, 38 ft³/s Oct. 22 to Nov. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	38	43	1470	560	398	611	721	1080	139	123	110
2	73	38	43	2020	712	395	567	659	1070	174	121	108
3	73	38	43	1690	564	416	546	597	1030	184	118	108
4	73	38	44	1270	444	413	494	540	1050	185	116	108
5	73	38	43	928	402	398	455	517	1210	185	119	109
6	73	38	43	671	366	388	432	403	1130	174	117	110
7	71	38	43	556	355	397	435	377	978	161	116	110
8	69	38	43	492	358	401	424	409	802	153	115	110
9	69	38	43	435	350	400	435	429	737	145	115	110
10	68	38	44	407	347	387	424	441	675	196	115	109
11	68	38	44	412	351	410	395	553	627	248	115	108
12	68	38	45	325	350	430	374	683	710	223	115	108
13	62	38	46	216	345	418	377	762	803	193	115	108
14	50	38	46	190	352	395	376	891	818	189	115	108
15	49	38	46	192	392	393	382	1040	825	163	115	107
16	49	38	46	188	483	385	390	1140	815	133	115	107
17	49	39	46	204	613	400	393	1210	741	127	115	106
18	49	39	46	216	597	424	446	1210	671	126	115	105
19	46	39	46	230	584	444	585	1130	553	125	115	105
20	41	39	46	231	598	486	711	958	439	123	114	103
21	41	40	80	238	525	534	807	756	359	123	114	103
22	40	40	124	236	475	576	831	642	294	124	114	103
23	38	40	137	246	436	587	866	572	264	123	114	103
24	38	41	149	263	414	555	823	553	229	124	113	103
25	38	41	160	276	415	589	786	542	203	125	112	103
26	38	41	173	299	429	615	784	496	171	125	112	103
27	38	42	180	260	434	653	812	519	131	123	112	103
28	38	43	197	277	408	705	798	546	140	123	111	103
29	38	43	283	299	---	687	774	628	161	123	110	102
30	38	43	686	307	---	668	754	749	142	123	110	102
31	38	---	1130	338	---	634	---	898	---	123	110	---
TOTAL	1667	1178	4188	15382	12659	14981	17287	21571	18858	4705	3556	3185
MEAN	53.8	39.3	135	496	452	483	576	696	629	152	115	106
MAX	73	43	1130	2020	712	705	866	1210	1210	248	123	110
MIN	38	38	43	188	345	385	374	377	131	123	110	102
AC-FT	3310	2340	8310	30510	25110	29710	34290	42790	37400	9330	7050	6320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1997, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	30.9	22.0	54.5	103	190	304	298	324	275	110	93.6	65.5	
MAX	126	169	249	496	572	601	844	696	629	153	119	106	
(WY)	1985	1985	1986	1987	1986	1985	1985	1997	1997	1991	1991	1997	
MIN	.11	.077	.000	.058	.41	103	55.6	72.5	85.8	71.6	4.11	6.04	
(WY)	1989	1989	1993	1989	1989	1992	1988	1988	1988	1992	1992	1994	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1985 - 1997
ANNUAL TOTAL	102956	119217	
ANNUAL MEAN	281	327	156
HIGHEST ANNUAL MEAN			327
LOWEST ANNUAL MEAN			50.9
HIGHEST DAILY MEAN	1210	Feb 9	2020
LOWEST DAILY MEAN	38	Oct 23	38
ANNUAL SEVEN-DAY MINIMUM	38	Oct 23	38
ANNUAL RUNOFF (AC-FT)	204200	236500	112700
10 PERCENT EXCEEDS	652	758	431
50 PERCENT EXCEEDS	150	190	98
90 PERCENT EXCEEDS	41	41	1.6

SNAKE RIVER MAIN STEM

67

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

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

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 103,000 ft³/s Jan. 2, gage height, 86.17 ft; minimum discharge, 6,410 ft³/s Oct. 15, gage height, 63.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18100	9380	11200	93400	61700	60000	60400	64400	31800	38800	19400	20000
2	18200	9370	11200	98100	64100	60000	57900	50400	31800	35700	19600	19900
3	18000	9350	11900	97500	63700	58300	58800	47800	31700	36100	19400	20400
4	18300	9410	16300	91700	62000	57000	52000	45500	32900	34200	19500	20100
5	17800	9430	16000	68600	64200	57100	51000	44100	36900	31600	19700	19400
6	15900	9430	15400	53400	61500	55900	51100	44800	39700	27900	19700	19800
7	17600	9420	9610	40000	60300	54900	51300	46000	39800	25700	19500	19800
8	18100	9450	11900	37800	60100	54900	47800	44000	39800	24700	19200	19800
9	18700	9480	16600	42000	59900	54800	51800	42200	40700	21100	19900	19900
10	19100	9460	20300	43700	54000	54700	51000	39800	42600	14500	19700	19600
11	19100	9440	24800	40500	54200	54600	46500	40200	45200	14100	18800	19700
12	17100	9480	27800	41700	55000	53200	44900	32600	47700	13300	19700	19900
13	14400	9520	24000	40600	55200	50600	44900	31900	47700	17000	19700	20100
14	13700	9490	20200	38700	55200	49500	42800	31900	53700	20400	19800	20800
15	13500	9510	20200	40900	55200	49500	40600	32000	59200	18100	19700	25000
16	16700	9500	20100	41000	55200	49400	41000	32300	59400	16000	20300	28300
17	18500	9520	20100	37200	55200	50100	41700	32500	59400	18100	20400	29600
18	19100	9520	20100	34500	55200	54500	41800	33000	60300	14000	20400	29100
19	11000	9500	20100	39600	55300	57300	42000	32300	61200	15400	20400	29600
20	9600	10100	19700	37400	56800	59200	48700	31900	60200	13900	20000	29900
21	9590	11200	20000	38300	57100	61100	55900	32000	58600	16800	20200	30000
22	9590	11200	20200	33100	57500	62600	59400	32100	57900	16300	20200	29900
23	9580	11300	20100	39400	57300	63200	59400	31900	55700	15000	20000	29900
24	9560	11200	20200	39600	58200	63000	58800	31900	52600	20000	19900	29800
25	9560	11200	20300	45000	58000	59100	58300	31800	47600	19700	19900	30000
26	9550	11300	21600	48400	58500	53700	53000	31800	45700	20100	19900	30000
27	9560	11200	27800	49800	59700	55600	52300	31800	45300	19800	20100	29900
28	9540	11300	29200	49900	60000	61500	59800	31900	49900	20300	20200	29600
29	9550	11200	34200	50100	---	61400	65800	31800	49600	19500	20200	29400
30	9480	11100	47200	50100	---	58200	65200	31800	44300	18300	20100	29600
31	9400	---	64800	52800	---	58100	---	31900	---	19600	20100	---
TOTAL	437460	301960	683110	1554800	1630300	1753000	1555900	1150300	1428900	656000	615600	748800
MEAN	14110	10070	22040	50150	58230	56550	51860	37110	47630	21160	19860	24960
MAX	19100	11300	64800	98100	64200	63200	65800	64400	61200	38800	20400	30000
MIN	9400	9350	9610	33100	54000	49400	40600	31800	31700	13300	18800	19400
AC-FT	867700	598900	1355000	3084000	3234000	3477000	3086000	2282000	2834000	1301000	1221000	1485000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1997, BY WATER YEAR (WY)

MEAN	15460	16070	18480	22710	24830	29120	30530	27080	24560	13960	11400	14030
MAX	24140	28630	30410	50150	58230	66340	61960	68840	59080	25550	19860	24960
(WY)	1972	1985	1984	1997	1997	1986	1984	1984	1984	1983	1997	1997
MIN	9962	9193	9391	12850	11570	10600	7371	6401	5868	6901	6583	6887
(WY)	1989	1993	1993	1991	1988	1991	1988	1977	1992	1977	1992	1977

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1966 - 1997
ANNUAL TOTAL	9827960	12516130	
ANNUAL MEAN	26850	34290	20650
HIGHEST ANNUAL MEAN			36560
LOWEST ANNUAL MEAN			9746
HIGHEST DAILY MEAN	65500	Mar 16	98100
LOWEST DAILY MEAN	6620	Sep 11	9350
ANNUAL SEVEN-DAY MINIMUM	7060	Sep 6	9400
ANNUAL RUNOFF (AC-FT)	19490000		24830000
10 PERCENT EXCEEDS	53100		59400
50 PERCENT EXCEEDS	22000		31800
90 PERCENT EXCEEDS	9550		11200

SNAKE RIVER MAIN STEM

13290460 SNAKE RIVER AT JOHNSON BAR, ID

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

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 25.07 ft Jan. 2; minimum gage height, 4.40 ft Oct. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.61	5.30	5.88	23.46	17.86	17.45	17.60	18.35	11.00	12.98	8.24	8.33
2	7.60	5.31	5.92	24.39	18.35	17.43	17.13	15.76	10.98	12.19	8.21	8.30
3	7.59	5.30	6.07	24.23	18.27	17.03	17.28	14.99	10.97	12.29	8.21	8.38
4	7.67	5.33	7.28	23.17	17.88	16.75	15.90	14.41	11.24	11.81	8.36	8.35
5	7.52	5.32	7.15	19.13	18.42	16.76	15.67	14.10	12.26	11.23	8.26	8.16
6	6.99	5.29	7.06	16.27	17.88	16.56	15.66	14.24	13.02	10.22	8.34	8.25
7	7.47	5.28	5.49	13.27	17.55	16.34	15.66	14.53	13.03	9.61	8.25	8.21
8	7.62	5.30	6.08	12.55	17.49	16.29	14.91	14.11	13.04	9.37	8.16	8.16
9	7.73	5.31	7.19	13.60	17.46	16.30	15.74	13.67	13.21	8.65	8.28	8.20
10	7.87	5.30	8.31	14.07	16.23	16.28	15.68	13.23	13.69	6.93	8.31	8.15
11	7.87	5.30	9.33	13.27	16.25	16.27	14.55	13.16	14.34	6.75	8.03	8.11
12	7.43	5.30	10.11	13.57	16.44	15.95	14.07	11.55	15.02	6.42	8.30	8.16
13	6.58	5.31	9.30	13.26	16.48	15.42	14.19	11.21	15.00	7.30	8.30	8.21
14	6.46	5.30	8.25	12.83	16.46	15.20	13.76	11.20	16.20	8.37	8.34	8.47
15	6.43	5.31	8.26	13.32	16.52	15.25	13.24	11.27	17.42	7.86	8.26	9.56
16	7.25	5.31	8.20	13.37	16.56	15.21	13.30	11.32	17.44	7.23	8.38	10.27
17	7.76	5.32	8.21	12.53	16.54	15.37	13.48	11.31	17.43	7.77	8.41	10.69
18	7.88	5.32	8.24	11.85	16.53	16.36	13.50	11.26	17.59	6.64	8.41	10.61
19	5.83	5.35	8.24	13.21	16.52	16.88	13.59	11.09	17.78	6.96	8.41	10.68
20	5.30	5.47	8.14	---	16.79	17.35	15.05	10.93	17.60	6.82	8.31	10.74
21	5.31	5.83	8.22	---	16.89	17.70	16.63	10.97	17.31	7.32	8.34	10.79
22	5.32	5.84	8.24	---	16.97	18.00	17.35	10.98	17.16	7.30	8.37	10.79
23	5.28	5.88	8.19	---	16.91	18.14	17.34	10.90	16.71	6.89	8.41	10.79
24	5.27	5.93	8.25	---	17.09	18.10	17.25	10.90	16.10	8.20	8.37	10.76
25	5.26	5.90	8.25	---	16.99	17.41	17.19	10.88	14.99	8.20	8.34	10.81
26	5.26	5.91	8.48	---	17.13	16.26	16.14	10.85	14.55	8.27	8.33	10.81
27	5.26	5.90	10.09	---	17.36	16.60	15.93	10.83	14.42	8.24	8.40	10.77
28	5.29	5.92	10.35	---	17.48	17.75	17.39	10.84	15.45	8.36	8.38	10.66
29	5.29	5.91	11.70	---	---	17.75	18.58	10.86	15.50	8.13	8.39	10.62
30	5.28	5.89	14.58	15.47	---	17.11	18.49	10.90	14.27	7.82	8.37	10.65
31	5.30	---	18.37	16.01	---	17.08	---	10.94	---	8.24	8.32	---
MEAN	6.53	5.51	8.63	---	17.12	16.72	15.74	12.31	14.82	8.53	8.32	9.51
MAX	7.88	5.93	18.37	---	18.42	18.14	18.58	18.35	17.78	12.98	8.41	10.81
MIN	5.26	5.28	5.49	---	16.23	15.20	13.24	10.83	10.97	6.42	8.03	8.11

69

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 10	1900	1,730	4.36	June 1	0700	2,370	4.60
Jan. 1	unknown	*a20,200	*b11.44	June 12	1730	2,220	4.47
Apr. 20	1900	4,290	5.92	July 1	0300	1,790	4.08
Apr. 27	2330	2,470	4.68	July 10	0400	1,990	4.27
May 16	0330	3,300	5.29				

b From floodmark.

MEAN	156	184	215	214	244	412	940	1555	1325	563	196	145
MAX	501	625	806	1343	570	1026	1760	2804	2612	1348	380	256
(WY)	1963	1974	1942	1997	1996	1995	1956	1948	1974	1975	1982	1978
MIN	81.5	80.0	88.6	69.3	82.4	114	345	445	361	123	78.8	82.8
(WY)	1937	1937	1936	1937	1937	1977	1977	1977	1992	1977	1931	1931

ANNUAL TOTAL	242328		298367				
ANNUAL MEAN	662		817			513	
HIGHEST ANNUAL MEAN						897	1974
LOWEST ANNUAL MEAN						184	1977
HIGHEST DAILY MEAN	3290	Dec 31	12400	Jan 1	12400		Jan 1 1997
LOWEST DAILY MEAN	95	Feb 2	128	Oct 10	25		Nov 22 1931
ANNUAL SEVEN-DAY MINIMUM	121	Jan 30	131	Oct 7	43		Jan 8 1993
ANNUAL RUNOFF (AC-FT)	480700		591800			371800	
10 PERCENT EXCEEDS	1600		1980			1390	
50 PERCENT EXCEEDS	435		388			230	
90 PERCENT EXCEEDS	150		152			111	

e Estimated

GRANDE RONDE RIVER BASIN

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

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

DRAINAGE AREA.--78.3 mi².

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

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

REMARKS.--Records fair. 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.--15 years (water years 1983-97), 141 ft³/s, 102,000 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 1	0930	773	6.33	Apr. 20	1200	*1,400	7.12
Feb. 1	1430	407	5.50	Apr. 20	1200	(a)	*7.53
Feb. 19	1430	384	5.43	Apr. 27	2045	959	6.65
Mar. 11	1430	388	5.45	May 13	1900	1,240	6.96
Mar. 27	0030	894	6.54				

Minimum discharge, 38 ft³/s Aug. 13.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	62	105	618	380	199	e460	547	422	131	54	55
2	55	61	98	504	e340	210	e420	483	390	114	53	53
3	55	61	93	417	e300	195	e410	467	358	112	57	54
4	58	58	89	332	e275	193	e410	522	362	112	50	53
5	59	57	99	300	e260	192	e390	545	346	99	49	49
6	60	63	95	261	e235	196	e360	603	309	100	47	52
7	58	60	93	229	e200	208	e350	632	296	93	47	47
8	60	60	107	201	e165	216	e350	650	284	89	46	46
9	58	63	127	189	e150	230	328	707	286	96	45	47
10	58	61	134	171	e147	308	350	776	278	98	44	48
11	61	59	130	181	146	371	333	860	281	92	44	52
12	58	58	127	163	101	355	334	883	285	86	46	55
13	59	60	117	169	97	290	351	1000	275	77	38	56
14	59	70	107	174	136	259	392	905	253	78	39	56
15	61	75	106	166	263	248	443	928	235	77	42	58
16	58	64	103	164	314	273	524	914	228	79	45	61
17	58	72	98	168	337	376	592	851	215	80	42	59
18	61	88	109	178	333	408	613	746	208	72	42	67
19	60	106	105	152	358	536	714	648	197	66	42	56
20	55	107	108	145	356	761	1160	594	175	63	42	53
21	56	99	108	145	322	769	1010	522	157	63	42	53
22	63	99	107	147	253	687	820	479	150	64	49	53
23	61	96	108	153	216	656	877	447	151	62	47	60
24	95	95	106	137	202	647	781	428	137	62	46	55
25	86	97	122	139	198	649	725	409	129	58	49	55
26	63	92	122	146	197	724	661	391	130	58	53	54
27	58	94	121	142	195	803	800	381	118	56	53	55
28	59	107	121	143	195	732	696	355	116	54	51	57
29	60	104	130	139	---	e590	653	361	116	56	47	54
30	60	98	177	149	---	e550	626	389	117	56	48	55
31	59	---	354	288	---	e520	---	416	---	55	52	---
TOTAL	1886	2346	3726	6610	6671	13351	16933	18839	7004	2458	1451	1628
MEAN	60.8	78.2	120	213	238	431	564	608	233	79.3	46.8	54.3
MAX	95	107	354	618	380	803	1160	1000	422	131	57	67
MIN	55	57	89	137	97	192	328	355	116	54	38	46
AC-FT	3740	4650	7390	13110	13230	26480	33590	37370	13890	4880	2880	3230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	53.0	72.0	85.2	91.9	148	207	337	364	161	68.8	53.1	52.1			
MAX	66.7	167	288	213	483	431	564	608	425	117	65.3	61.9			
(WY)	1986	1996	1996	1997	1996	1997	1997	1997	1984	1984	1985	1984			
MIN	45.2	46.8	53.2	52.9	54.8	83.3	220	114	57.4	47.0	37.1	40.1			
(WY)	1995	1988	1988	1987	1993	1985	1991	1992	1992	1994	1994	1994			

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1983 - 1997

ANNUAL TOTAL	68649		82903												
ANNUAL MEAN	188		227												
HIGHEST ANNUAL MEAN															
LOWEST ANNUAL MEAN															
HIGHEST DAILY MEAN	1740	Feb 9	1160	Apr 20											
LOWEST DAILY MEAN	54	Sep 25	38	Aug 13											
ANNUAL SEVEN-DAY MINIMUM	55	Sep 22	41	Aug 13											
ANNUAL RUNOFF (AC-FT)	136200		164400												
10 PERCENT EXCEEDS	400		607												
50 PERCENT EXCEEDS	106		127												
90 PERCENT EXCEEDS	58		53												

e Estimated

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

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

DRAINAGE AREA.--Not determined.

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

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

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

AVERAGE DISCHARGE.--2 years (water years 1996-97), 353 ft³/s, 255,500 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	2330	1,410	*4.27	June 6	0445	1,180	4.05
June 1	0030	906	3.75	July 9	2400	*1,590	4.17
June 4	2130	897	3.74	July 17	2200	1,510	4.07

Minimum discharge, 148 ft³/s Dec. 18.

EXTREMES FOR 1995-96 WATER YEARS.--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)
June 5, 1995	1030	1,050	2.79	May 18, 1996	0900	939	3.09
June 30, 1995	2345	*1,260	*3.05	June 7, 1996	1715	981	3.48
Feb. 8, 1996	1415	*1,020	3.17	July 3, 1996	0030	981	*3.76

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	184	e190	530	315	234	232	481	724	458	518	262
2	211	182	e180	463	239	239	229	462	582	332	506	263
3	208	181	e170	371	202	237	222	446	562	289	478	310
4	204	180	171	313	210	233	233	459	735	260	437	321
5	200	182	178	275	212	232	237	450	771	285	389	309
6	197	180	174	252	203	236	244	452	666	293	362	305
7	196	183	171	248	198	244	248	451	630	261	343	303
8	196	181	194	248	202	245	251	451	580	257	320	288
9	193	180	217	248	204	243	255	469	636	866	298	284
10	195	180	232	243	210	269	254	502	576	1140	288	279
11	197	179	220	241	213	276	255	557	674	811	291	313
12	195	178	212	204	216	275	251	590	899	718	297	316
13	202	179	204	197	218	256	254	644	972	689	262	304
14	215	184	192	180	263	246	257	656	940	684	244	304
15	208	184	182	178	291	247	264	916	959	665	231	330
16	205	179	185	177	266	252	263	1140	985	639	237	338
17	207	177	165	186	272	279	276	1060	1000	780	241	345
18	225	187	156	198	250	272	305	944	1050	959	266	363
19	221	322	161	199	256	281	407	825	869	856	269	353
20	212	303	167	198	246	290	465	790	764	808	270	353
21	202	237	168	195	237	285	470	739	754	826	259	330
22	195	232	164	194	239	270	459	609	660	863	240	324
23	191	215	165	186	236	260	472	588	595	804	234	316
24	198	208	168	185	233	246	479	593	468	749	250	309
25	200	204	176	181	237	244	463	523	383	721	258	300
26	190	198	178	182	240	251	453	480	351	684	250	294
27	183	194	185	178	239	269	484	429	324	628	243	297
28	183	211	175	180	235	256	497	410	267	586	249	297
29	182	e200	365	181	---	247	501	411	268	553	260	290
30	188	e190	334	183	---	243	492	434	326	545	265	286
31	191	---	355	216	---	237	---	578	---	534	261	---
TOTAL	6201	5974	6154	7210	6582	7894	10172	18539	19970	19543	9316	9286
MEAN	200	199	199	233	235	255	339	598	666	630	301	310
MAX	225	322	365	530	315	290	501	1140	1050	1140	518	363
MIN	182	177	156	177	198	232	222	410	267	257	231	262
AC-FT	12300	11850	12210	14300	13060	15660	20180	36770	39610	38760	18480	18420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	214	235	277	223	267	289	319	491	651	589	311	310
MAX	228	272	356	233	297	323	339	598	666	727	340	369
(WY)	1996	1996	1996	1997	1996	1996	1997	1997	1997	1995	1996	1996
MIN	200	199	199	214	235	255	298	320	635	410	292	252
(WY)	1997	1997	1997	1996	1997	1997	1996	1995	1996	1996	1995	1995

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1995 - 1997
ANNUAL TOTAL	123085	126841	
ANNUAL MEAN	336	348	353
HIGHEST ANNUAL MEAN			358
LOWEST ANNUAL MEAN			348
HIGHEST DAILY MEAN	886	May 22	1140
LOWEST DAILY MEAN	135	Feb 4	156
ANNUAL SEVEN-DAY MINIMUM	149	Jan 30	164
ANNUAL RUNOFF (AC-FT)	244100		251600
10 PERCENT EXCEEDS	661		678
50 PERCENT EXCEEDS	266		259
90 PERCENT EXCEEDS	180		192

e Estimated

GRANDE RONDE RIVER BASIN

73

13330050 LOSTINE RIVER AT CAUDLE LANE, AT LOSTINE, OR

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

DRAINAGE AREA.--Not determined.

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

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

REMARKS.--Records fair except for those above 1,200 ft³/s and estimated daily discharges, which are poor. Minam Lake, capacity 400 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 years (water years 1996-97), 223 ft³/s, 161,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft³/s June 1, 1997, gage height, 6.73 ft; minimum discharge, 10 ft³/s Sept. 25, 1995.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	2130	1,330	6.42	June 18	0030	1,430	6.49
June 1	0630	*2,100	*6.73	July 9	2230	1,880	6.66

Minimum discharge, 23 ft³/s Oct. 21.

EXTREMES FOR 1996 WATER YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 9	0730	1,570	6.55	July 3	0100	*1,710	*6.60

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	37	63	327	131	70	114	250	1590	717	193	29
2	36	39	59	268	118	72	110	229	1260	532	182	29
3	35	40	59	214	108	70	108	218	1250	489	168	32
4	37	39	56	179	104	68	106	230	1520	538	157	30
5	47	40	68	153	101	66	104	243	1250	643	144	e29
6	44	39	58	143	100	67	102	272	1020	713	151	e28
7	38	40	56	131	102	68	100	276	987	661	147	e27
8	35	40	62	125	95	67	100	293	1040	628	146	e26
9	33	39	70	119	92	67	100	351	1090	1150	118	e26
10	32	39	79	113	89	73	97	487	1060	1240	96	e30
11	32	39	76	107	86	71	96	656	1110	753	81	e33
12	31	39	72	97	85	69	93	761	1170	577	75	36
13	33	40	69	e94	81	67	93	894	1110	548	72	33
14	36	42	64	e90	85	65	97	1010	1110	560	70	33
15	35	41	e60	e90	86	66	100	1130	1170	578	74	39
16	35	41	e54	e91	83	67	110	939	1220	593	67	53
17	32	42	51	e94	83	73	139	791	1200	672	61	63
18	40	44	e56	e98	80	74	169	733	1250	602	61	60
19	39	103	e60	96	86	88	269	627	1020	488	55	50
20	38	129	e58	90	82	112	434	594	855	429	51	47
21	28	88	56	87	77	119	375	565	748	426	49	41
22	36	85	55	86	76	113	307	532	652	428	44	39
23	37	77	52	87	74	114	301	526	555	363	40	39
24	47	76	54	83	73	112	278	516	490	310	47	38
25	48	71	59	84	73	110	257	432	550	273	43	39
26	43	65	e60	81	72	126	259	358	692	236	38	38
27	40	65	e62	e78	72	155	317	322	746	211	36	39
28	43	74	64	e77	70	146	317	342	754	200	35	39
29	44	66	83	76	---	135	290	454	765	211	37	38
30	42	62	102	77	---	127	273	623	762	224	36	37
31	40	---	141	116	---	121	---	881	---	214	33	---
TOTAL	1171	1681	2038	3651	2464	2818	5615	16535	29996	16207	2607	1120
MEAN	37.8	56.0	65.7	118	88.0	90.9	187	533	1000	523	84.1	37.3
MAX	48	129	141	327	131	155	434	1130	1590	1240	193	63
MIN	28	37	51	76	70	65	93	218	490	200	33	26
AC-FT	2320	3330	4040	7240	4890	5590	11140	32800	59500	32150	5170	2220

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	48.9	114	118	97.5	127	104	189	423	846	500	74.1	25.7
MAX	60.1	172	170	118	166	118	191	533	1000	523	84.1	37.3
(WY)	1996	1996	1996	1997	1996	1996	1997	1997	1997	1997	1997	1997
MIN	37.8	56.0	65.7	77.3	88.0	90.9	187	313	693	478	62.5	16.7
(WY)	1997	1997	1997	1996	1997	1997	1997	1996	1996	1996	1995	1995

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1995 - 1997

ANNUAL TOTAL	69794	85903	223
ANNUAL MEAN	191	235	235
HIGHEST ANNUAL MEAN			211
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	1370	1590	1590
LOWEST DAILY MEAN	14	26	11
ANNUAL SEVEN-DAY MINIMUM	16	28	12
ANNUAL RUNOFF (AC-FT)	138400	170400	161600
10 PERCENT EXCEEDS	516	723	589
50 PERCENT EXCEEDS	102	87	97
90 PERCENT EXCEEDS	35	37	33

e Estimated

GRANDE RONDE RIVER BASIN

13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR

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

DRAINAGE AREA.--Not determined.

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

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

REMARKS.--Records fair except for those below 40 ft³/s and estimated daily discharge, which are poor. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from gage.

AVERAGE DISCHARGE.--2 years (water years 1996-97), 245 ft³/s, 177,300 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 15	2015	1,410	6.23	June 15	2400	1,400	6.25
June 1	0245	1,480	6.32	July 9	2230	*1,500	*6.34
June 4	2315	1,380	6.21				

Minimum daily discharge, 15 ft³/s Aug. 27.

EXTREMES FOR 1995-96 WATER YEARS.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 5, 1995	0430	1,570	6.56	July 3, 1995	0530	1,380	6.39
June 17, 1995	0315	1,440	6.44	July 9, 1996	2315	1,520	6.52
June 26, 1995	2345	*1,690	*6.66				
May 16, 1996	0200	1,540	6.53	June 9, 1996	0045	*1,970	*6.88
June 4, 1996	2400	1,710	6.68	July 3, 1996	0100	1,860	6.79

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	44	74	469	157	74	124	303	1190	674	161	e36
2	77	44	66	385	135	77	118	278	924	530	153	e56
3	75	47	66	283	125	74	116	259	937	477	144	e75
4	78	45	64	236	121	71	114	272	1250	504	132	e70
5	91	44	82	198	114	68	110	286	1160	595	109	e53
6	86	43	66	181	113	68	106	326	899	669	112	e56
7	75	43	63	168	108	68	105	349	851	641	109	e53
8	70	42	72	155	106	67	104	379	867	621	108	e47
9	68	42	85	147	101	67	105	457	925	1050	89	e47
10	69	41	97	141	97	78	102	606	929	1040	73	e48
11	73	41	93	132	94	75	99	771	1010	629	63	e70
12	74	41	87	e115	96	71	95	863	1100	509	60	e75
13	76	41	83	e105	92	67	95	997	1070	485	52	e73
14	84	44	77	e98	97	64	99	1140	1110	503	49	e73
15	63	44	e70	e105	99	67	102	1250	1220	523	54	e91
16	37	43	e62	e110	94	67	113	1120	1220	533	51	e104
17	34	44	e55	e120	94	75	155	1020	1190	575	39	e119
18	39	48	66	e125	90	75	215	869	1200	529	42	e130
19	40	120	69	e120	97	89	382	679	960	420	48	e119
20	34	172	72	e110	92	119	627	608	769	361	50	e112
21	27	120	65	e105	85	130	556	568	668	360	49	e96
22	33	113	61	e105	84	124	454	519	570	366	36	e96
23	35	97	58	e100	79	123	434	496	500	300	30	e96
24	47	92	60	e100	78	121	391	492	444	238	34	e95
25	52	86	69	e94	79	116	351	393	487	203	32	e93
26	45	76	72	e96	78	133	344	332	583	169	29	e91
27	53	74	90	e92	78	170	428	292	624	145	15	91
28	55	88	77	e88	74	159	426	298	634	141	e16	90
29	56	78	105	84	---	144	374	390	640	161	e16	87
30	52	70	141	84	---	135	336	580	674	178	e16	84
31	48	---	197	134	---	128	---	972	---	172	e19	---
TOTAL	1821	1967	2464	4585	2757	2964	7180	18164	26605	14301	1990	2426
MEAN	58.7	65.6	79.5	148	98.5	95.6	239	586	887	461	64.2	80.9
MAX	91	172	197	469	157	170	627	1250	1250	1050	161	130
MIN	27	41	55	84	74	64	95	259	444	141	15	36
AC-FT	3610	3900	4890	9090	5470	5880	14240	36030	52770	28370	3950	4810

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	76.9	154	149	113	149	95.9	219	535	855	492	65.6	47.9
MAX	95.0	243	218	148	198	96.1	239	586	894	535	101	80.9
(WY)	1996	1996	1996	1997	1996	1997	1997	1997	1995	1995	1996	1997
MIN	58.7	65.6	79.5	77.1	98.5	95.6	198	484	785	461	32.0	23.1
(WY)	1997	1997	1997	1996	1997	1996	1996	1996	1996	1997	1995	1995

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1995 - 1997
ANNUAL TOTAL	80969.6	87224	
ANNUAL MEAN	221	239	
HIGHEST ANNUAL MEAN			245
LOWEST ANNUAL MEAN			251
HIGHEST DAILY MEAN	1620	1250	239
LOWEST DAILY MEAN	9.6	15	7.4
ANNUAL SEVEN-DAY MINIMUM	14	20	14
ANNUAL RUNOFF (AC-FT)	160600	173000	177300
10 PERCENT EXCEEDS	538	652	783
50 PERCENT EXCEEDS	92	100	109
90 PERCENT EXCEEDS	44	45	40

e Estimated

13330500 BEAR CREEK NEAR WALLOWA, OR

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

DRAINAGE AREA.--68 mi², approximately.

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

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

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

REMARKS.--Records good except for estimated daily discharges and those for May 13-20, which are fair. No regulation. Diversions for irrigation upstream from station. Water for irrigation in Lostine River basin diverted from Little Bear Creek, a tributary upstream from station, in sec.32, T.1 S., R.43 E. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1925-85, 1996-97), 116 ft³/s, 83,780 acre-ft/yr.

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

EXTREMES FOR PERIOD APRIL TO SEPTEMBER.--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 15	2045	*1,400	*3.97	July 9	1915	748	3.45
May 31	2315	1,150	3.80				

Minimum discharge, 11 ft³/s Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	19	53	421	113	50	122	214	778	442	93	19
2	14	19	49	388	119	50	107	189	594	347	82	20
3	13	20	47	292	116	48	102	171	584	327	76	22
4	13	20	67	226	109	46	96	172	764	329	74	19
5	13	21	60	176	99	44	89	188	622	333	64	18
6	13	20	46	146	93	44	83	223	504	319	57	18
7	13	20	42	127	91	45	80	230	468	306	54	18
8	13	20	49	109	81	45	78	256	470	292	51	18
9	13	20	69	98	74	48	76	310	477	488	37	17
10	13	20	91	90	68	62	72	412	462	492	31	16
11	13	21	102	84	63	71	68	539	502	352	31	18
12	13	23	93	e65	61	72	66	596	541	301	31	18
13	14	25	83	e60	57	68	67	654	546	267	29	17
14	15	27	71	e58	61	63	72	757	567	252	24	18
15	16	26	63	e58	61	61	77	804	585	236	24	23
16	14	25	59	e74	61	61	96	775	577	220	24	32
17	13	25	44	86	65	75	136	903	650	230	23	34
18	16	28	e43	82	64	91	180	743	607	207	21	37
19	16	95	e42	64	70	128	331	684	512	174	18	32
20	15	104	e41	56	67	210	502	604	443	154	18	30
21	14	80	e40	55	63	214	463	524	403	141	17	28
22	17	81	44	54	60	189	374	484	361	131	17	27
23	17	72	41	53	57	171	346	458	331	113	17	26
24	21	68	38	50	54	155	304	473	305	98	20	25
25	21	62	41	57	53	145	262	438	318	87	19	25
26	18	55	47	59	53	167	255	435	354	78	18	24
27	17	53	59	e62	53	199	325	398	359	72	18	25
28	18	60	62	e62	51	187	319	369	366	66	18	24
29	19	55	88	e55	---	166	277	649	357	71	19	24
30	19	52	173	43	---	151	246	628	366	84	19	e23
31	20	---	229	86	---	138	---	761	---	85	20	---
TOTAL	478	1236	2076	3396	2037	3264	5671	15041	14773	7094	1064	695
MEAN	15.4	41.2	67.0	110	72.8	105	189	485	492	229	34.3	23.2
MAX	21	104	229	421	119	214	502	903	778	492	93	37
MIN	13	19	38	43	51	44	66	171	305	66	17	16
AC-FT	948	2450	4120	6740	4040	6470	11250	29830	29300	14070	2110	1380
CFSM	.23	.61	.98	1.61	1.07	1.55	2.78	7.14	7.24	3.37	.50	.34
IN.	.26	.68	1.14	1.86	1.11	1.79	3.10	8.23	8.08	3.88	.58	.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1997, BY WATER YEAR (WY)

MEAN	25.6	41.3	51.3	45.4	49.5	66.6	171	374	404	121	20.2	15.9
MAX	160	220	195	141	192	186	422	682	869	388	37.5	44.2
(WY)	1928	1928	1996	1984	1996	1972	1936	1928	1974	1943	1975	1941
MIN	7.58	8.20	7.29	5.16	4.46	11.1	49.6	138	112	18.6	8.10	6.33
(WY)	1936	1953	1937	1937	1937	1977	1975	1975	1926	1977	1940	1935

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1925 - 1997

ANNUAL TOTAL	48501	56825	116
ANNUAL MEAN	133	156	178
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			46.2
HIGHEST DAILY MEAN	800	903	1480
LOWEST DAILY MEAN	13	13	3.0
ANNUAL SEVEN-DAY MINIMUM	13	13	3.9
ANNUAL RUNOFF (AC-FT)	96200	112700	83780
ANNUAL RUNOFF (CFSM)	1.95	2.29	1.70
ANNUAL RUNOFF (INCHES)	26.53	31.09	23.11
10 PERCENT EXCEEDS	348	469	354
50 PERCENT EXCEEDS	70	67	43
90 PERCENT EXCEEDS	17	18	11

e Estimated

GRANDE RONDE RIVER BASIN

13330700 BEAR CREEK AT WALLOWA, OR

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

DRAINAGE AREA.--Not determined.

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

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

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

AVERAGE DISCHARGE.--2 years (water years 1996-97), 145 ft³/s, 105,300 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 16	0130	*1,410	*6.51	May 31	2100	1,260	6.39

Minimum discharge, 4.0 ft³/s Aug. 15, gage height, 3.65 ft.

EXTREMES FOR 1996 WATER YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 9	1045	*1,230	*6.36	June 8	2330	784	5.93

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11	14	52	451	111	31	127	238	841	407	29	5.5
2	e10	14	46	428	106	33	111	206	600	300	29	5.3
3	e10	14	45	370	102	30	102	187	662	265	24	7.0
4	e10	13	38	285	94	28	91	187	728	265	18	6.5
5	e10	13	55	218	88	26	83	193	674	283	15	5.8
6	e9.6	13	44	166	83	26	76	233	574	274	13	5.6
7	e9.6	13	39	146	75	27	72	241	584	252	11	5.6
8	e9.6	13	47	124	67	27	69	269	623	230	9.9	5.7
9	e9.6	13	73	108	60	30	67	327	552	418	8.3	6.3
10	e9.6	13	104	99	55	50	63	427	564	436	7.9	6.6
11	e9.8	13	125	89	52	67	57	625	579	314	7.5	7.7
12	e10	14	114	67	52	69	51	668	569	248	6.6	7.5
13	e11	15	98	54	47	63	52	745	578	210	6.1	7.3
14	e12	16	79	e53	55	56	58	823	580	189	5.1	7.9
15	e11	15	63	e52	56	53	62	941	531	171	4.5	11
16	e10	15	57	e50	54	52	80	962	549	160	6.3	15
17	e11	14	46	e58	59	69	119	944	509	173	7.5	16
18	e11	15	e44	71	50	85	168	772	520	152	7.9	18
19	e11	77	e40	58	53	122	336	532	489	130	7.2	15
20	e10	122	e36	52	50	198	500	549	430	114	6.9	15
21	e11	84	e34	50	46	227	498	542	371	104	6.6	15
22	e13	84	35	49	43	200	406	515	322	95	6.7	13
23	13	74	34	48	39	178	378	491	287	82	6.3	13
24	15	69	35	44	37	159	345	471	258	72	7.8	11
25	15	63	38	46	35	146	309	409	274	64	8.2	9.1
26	11	55	39	46	35	167	294	371	311	55	7.5	8.6
27	10	51	59	e47	35	208	350	354	322	50	6.9	8.5
28	12	63	61	e54	34	199	346	375	327	40	7.1	8.4
29	13	55	103	e44	---	176	314	450	310	36	8.0	8.3
30	13	50	245	36	---	159	279	542	331	33	6.3	8.2
31	14	---	339	80	---	143	---	734	---	29	5.8	---
TOTAL	345.8	1097	2267	3543	1673	3104	5863	15323	14849	5651	307.9	283.4
MEAN	11.2	36.6	73.1	114	59.8	100	195	494	495	182	9.93	9.45
MAX	15	122	339	451	111	227	500	962	841	436	29	18
MIN	9.6	13	34	36	34	26	51	187	258	29	4.5	5.3
AC-FT	686	2180	4500	7030	3320	6160	11630	30390	29450	11210	611	562

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	22.1	100	138	92.7	143	91.4	197	388	390	145	9.42	8.17
MAX	33.0	164	202	114	224	100	199	494	495	182	10.2	9.45
(WY)	1996	1996	1996	1997	1996	1997	1996	1997	1997	1997	1996	1997
MIN	11.2	36.6	73.1	71.1	59.8	82.7	195	281	316	120	8.13	5.81
(WY)	1997	1997	1997	1996	1997	1996	1997	1996	1996	1996	1995	1995

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1995 - 1997
ANNUAL TOTAL	43444.9	54307.1	
ANNUAL MEAN	119	149	145
HIGHEST ANNUAL MEAN			149
LOWEST ANNUAL MEAN			142
HIGHEST DAILY MEAN	843 Feb 9	962 May 16	962 May 16 1997
LOWEST DAILY MEAN	7.5 Sep 3	4.5 Aug 15	4.5 Aug 15 1997
ANNUAL SEVEN-DAY MINIMUM	7.8 Aug 31	5.9 Sep 1	5.1 Aug 25 1995
ANNUAL RUNOFF (AC-FT)	86170	107700	105300
10 PERCENT EXCEEDS	336	478	410
50 PERCENT EXCEEDS	74	55	76
90 PERCENT EXCEEDS	9.6	8.2	7.9

e Estimated

GRANDE RONDE RIVER BASIN

77

13331450 WALLOWA RIVER BELOW WATER CANYON, NEAR WALLOWA, OR

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

DRAINAGE AREA.--Not determined.

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

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

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by Wallowa Lake. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--2 years (water years 1996-97), 894 ft³/s, 647,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 ft³/s Feb 9, 1996, gage height, 4.76 ft; minimum discharge, 222 ft³/s Sept. 20, 21, 1995, gage height, 0.41 ft.

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. 1	0845	*4,500	*4.67	June 1	0215	3,680	4.10
Apr. 20	1200	2,770	3.39	June 18	0300	3,440	3.92
May 16	0015	3,680	4.10	July 9	2400	3,510	3.97

Minimum discharge, 272 ft³/s Oct. 9, 10, 13.

EXTREMES FOR 1996 WATER 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)
Feb. 9	0900	*4,640	*4.76	June 9	0500	3,430	3.91
May 16	0215	2,710	3.34	July 3	0145	2,860	3.46

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	314	323	487	3500	996	503	750	1290	3390	2100	752	305
2	308	335	436	2630	756	530	698	1170	2890	1630	731	337
3	299	348	417	1970	640	516	681	1120	2860	1370	704	422
4	289	343	327	1330	596	493	661	1140	3360	1360	661	467
5	303	342	362	e1000	556	488	635	1150	3070	1590	571	429
6	301	339	337	e800	522	494	622	1260	2540	1730	527	404
7	293	344	319	e700	503	537	625	1300	2480	1590	470	411
8	286	333	378	e650	499	560	633	1240	2470	1470	467	408
9	279	332	655	e600	488	557	643	1340	2590	2430	448	409
10	279	330	732	e540	486	914	626	1690	2580	2810	420	403
11	283	333	722	e500	481	884	601	2100	2710	1960	413	437
12	282	330	656	e460	493	813	582	2310	3000	1610	426	475
13	289	332	588	e430	472	711	584	2650	2920	1480	401	468
14	333	347	509	e410	585	638	634	2960	3010	1450	382	464
15	337	350	448	e400	649	625	665	3140	3080	1480	357	495
16	326	338	456	e400	614	643	693	3330	3060	1530	346	539
17	325	331	373	e430	629	842	761	3240	3030	1720	335	550
18	347	368	328	e480	605	937	877	2950	3190	1900	360	595
19	360	693	350	e540	689	1190	1800	2530	2820	1610	364	560
20	335	971	373	e500	662	1420	2500	2360	2430	1460	371	539
21	311	668	362	e480	599	1330	2260	2180	2240	1450	361	509
22	312	625	350	e450	571	1130	1910	1990	2020	1480	336	490
23	314	566	344	e430	541	1070	1950	1910	1810	1320	328	475
24	354	530	364	e420	530	997	1810	1950	1520	1180	353	458
25	416	521	433	e410	531	944	1610	1730	1450	1070	363	444
26	352	480	432	e410	534	1060	1480	1490	1660	944	353	430
27	322	455	578	e400	537	1230	1720	1270	1760	823	325	429
28	326	546	594	e410	511	1060	1670	1280	1700	776	325	428
29	326	501	982	e420	---	926	1540	1630	1720	734	325	419
30	322	452	1670	e430	---	868	1430	2080	1890	797	338	408
31	336	---	1930	e630	---	815	---	2830	---	773	321	---
TOTAL	9859	13106	17292	23160	16275	25725	33651	60610	75250	45627	13234	13607
MEAN	318	437	558	747	581	830	1122	1955	2508	1472	427	454
MAX	416	971	1930	3500	996	1420	2500	3330	3390	2810	752	595
MIN	279	323	319	400	472	488	582	1120	1450	734	321	305
AC-FT	19560	26000	34300	45940	32280	51030	66750	120200	149300	90500	26250	26990

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	348	590	711	610	857	676	949	1636	2192	1283	445	391
MAX	379	743	864	747	1124	830	1122	1955	2508	1472	463	454
(WY)	1996	1996	1996	1997	1997	1997	1997	1997	1997	1997	1996	1997
MIN	318	437	558	473	581	523	776	1317	1876	1095	427	277
(WY)	1997	1997	1997	1996	1997	1996	1996	1996	1996	1996	1997	1995

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1995 - 1997

ANNUAL TOTAL	285660	347396	894
ANNUAL MEAN	780	952	952
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1996
HIGHEST DAILY MEAN	3900	Feb 9	3900
LOWEST DAILY MEAN	279	Oct 9	228
ANNUAL SEVEN-DAY MINIMUM	284	Oct 7	249
ANNUAL RUNOFF (AC-FT)	566600	689100	647700
10 PERCENT EXCEEDS	1730	2250	1940
50 PERCENT EXCEEDS	511	584	540
90 PERCENT EXCEEDS	331	332	327

e Estimated

GRANDE RONDE RIVER BASIN

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

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

DRAINAGE AREA.--240 mi², approximately.

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

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

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

AVERAGE DISCHARGE.--33 years (water years 1913, 1966-97), 461 ft³/s, 26.10 in/yr, 333,900 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)
Jan. 1	1400	2,570	4.02	June 15	0100	2,410	3.88
Apr. 20	1630	2,400	3.87	July 1	0700	1,740	3.24
May 17	0130	*3,920	*5.02	July 10	0230	1,940	3.44
June 1	0030	3,520	4.74				

Minimum discharge, 56 ft³/s Oct. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	88	e155	2140	810	241	431	1040	3130	1510	370	113
2	81	85	e145	1650	686	249	384	948	2580	1210	341	110
3	80	85	e140	1230	550	242	371	880	2490	1070	312	116
4	79	86	e130	935	460	227	361	886	2990	1040	291	137
5	77	87	e125	729	399	217	342	928	2920	1110	277	116
6	75	83	e140	591	374	212	322	1040	2400	1150	267	108
7	73	88	e150	536	351	231	311	1050	2210	1110	259	105
8	72	83	e150	464	353	248	308	1110	2100	1070	249	102
9	70	85	e350	426	317	252	298	1290	2120	1320	235	99
10	70	86	e600	403	296	397	290	1600	2070	1630	217	100
11	69	86	e540	384	281	519	275	2030	2030	1190	206	107
12	67	90	e430	322	281	460	265	2280	2310	991	198	130
13	69	92	e370	257	263	390	270	2520	2100	905	194	109
14	86	e95	e300	e210	303	326	296	2920	2140	889	183	103
15	87	e98	e250	e230	333	309	323	3130	2340	886	177	119
16	84	e100	e200	256	331	297	387	3500	2290	886	172	173
17	78	e100	e140	302	356	370	534	3600	2220	915	168	149
18	78	e120	e120	321	353	487	690	3250	2250	925	176	154
19	89	e200	258	281	386	614	1340	2710	1950	796	164	127
20	81	e400	233	263	386	828	2110	2510	1650	718	155	116
21	73	e330	213	253	352	844	1950	2300	1490	672	148	108
22	80	e290	212	248	330	690	1510	2120	1360	688	142	103
23	94	e250	185	230	286	602	1610	2010	1260	616	135	99
24	117	e220	181	229	272	537	1510	1960	1150	544	155	96
25	133	e200	195	214	279	488	1290	1690	1140	485	151	94
26	101	e180	220	230	261	556	1200	1470	1240	440	138	91
27	88	e170	382	200	257	757	1450	1370	1290	410	131	91
28	87	e175	406	227	241	700	1420	1390	1300	388	128	95
29	95	e170	524	206	---	590	1260	1620	1320	394	125	91
30	94	e165	968	202	---	523	1150	1920	1350	440	121	88
31	92	---	1170	399	---	481	---	2680	---	393	116	---
TOTAL	2601	4387	9582	14568	10147	13884	24258	59752	59190	26791	6101	3349
MEAN	83.9	146	309	470	362	448	809	1927	1973	864	197	112
MAX	133	400	1170	2140	810	844	2110	3600	3130	1630	370	173
MIN	67	83	120	200	241	212	265	880	1140	388	116	88
AC-FT	5160	8700	19010	28900	20130	27540	48120	118500	117400	53140	12100	6640
CFSM	.35	.61	1.29	1.96	1.51	1.87	3.37	8.03	8.22	3.60	.82	.47
IN.	.40	.68	1.49	2.26	1.57	2.15	3.76	9.26	9.17	4.15	.95	.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1997, BY WATER YEAR (WY)

	MEAN	195.7	153	195	208	268	323	543	1305	1589	632	158	98.5
MAX	173	508	765	470	977	697	888	2016	3125	1392	276	180	
(WY)	1969	1996	1996	1997	1996	1986	1913	1971	1974	1975	1912	1978	
MIN	38.1	56.1	62.4	59.6	56.9	66.7	235	484	494	125	72.6	45.9	
(WY)	1988	1994	1979	1977	1977	1977	1967	1977	1992	1977	1966	1987	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1912 - 1997

ANNUAL TOTAL	217147	234610	461	
ANNUAL MEAN	593	643	713	1974
HIGHEST ANNUAL MEAN			189	1977
LOWEST ANNUAL MEAN			5160	Jun 15 1974
HIGHEST DAILY MEAN	3020	Feb 9	67	Oct 12
LOWEST DAILY MEAN	67	Oct 12	11	Dec 6 1972
ANNUAL SEVEN-DAY MINIMUM	70	Oct 7	15	Dec 6 1972
ANNUAL RUNOFF (AC-FT)	430700	465300	333900	
ANNUAL RUNOFF (CFSM)	2.47	2.68	1.92	
ANNUAL RUNOFF (INCHES)	33.66	36.36	26.10	
10 PERCENT EXCEEDS	1540	1950	1300	
50 PERCENT EXCEEDS	370	308	201	
90 PERCENT EXCEEDS	89	90	72	

e Estimated

GRANDE RONDE RIVER BASIN

79

13333000 GRANDE RONDE RIVER AT TROY, OR

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

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 sea level. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at datum 1.15 ft higher. Sept. 6, 1963 to Oct. 19, 1994, water-stage recorder at site 500 ft downstream, at present datum.

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

AVERAGE DISCHARGE.--53 years (water years 1945-97), 3,096 ft³/s, 2,243,000 acre-ft/yr.

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

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)
Jan. 1	1330	*36,700	*12.65	Mar. 27	0430	17,000	9.35
Feb. 1	2230	12,300	8.29	Apr. 20	1700	25,900	11.00
Mar. 11	0230	9,250	7.48	May 16	0500	17,200	9.39
Mar. 20	2230	19,100	9.77	June 1	0900	11,800	8.17

Minimum discharge, 747 ft³/s Oct. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	851	873	e1750	e28000	10500	3610	9040	10900	11100	4770	1710	853
2	851	840	e1700	e24700	10700	3880	7950	9620	9660	4160	1670	855
3	832	827	e1650	e20300	8780	3930	7530	8880	8810	3690	1620	905
4	817	824	1590	e15400	7200	3630	7090	8980	9650	3490	1550	1040
5	817	821	1430	e11500	5950	3310	6500	9020	10200	3530	1460	1010
6	820	822	1430	9130	4950	3170	6270	9620	8620	3690	1360	966
7	805	840	1470	7600	4200	3570	6430	9450	7970	3600	1310	941
8	810	823	1640	6470	3890	4350	6430	9190	7550	3390	1250	935
9	792	803	3460	5620	3550	4260	6870	9780	7520	3680	1220	928
10	768	794	4370	5180	3280	6430	7130	10900	7380	5570	1170	927
11	760	792	5360	5280	3120	8820	6680	12800	7280	4320	1120	935
12	762	793	4400	4810	3200	8480	6400	13600	8060	3640	1120	1010
13	762	792	3820	3760	3030	7300	6550	14300	7810	3300	1120	1030
14	790	807	3170	3150	3390	6150	7280	15200	7720	3180	1080	1020
15	843	820	2630	3010	6030	5480	8510	15400	8020	3090	1040	1060
16	842	811	2350	2910	6390	5370	10100	16300	7940	3050	1000	1230
17	809	829	2060	2960	6480	7060	11300	16200	7500	3030	986	1240
18	828	904	1650	2980	6640	9680	12100	15000	7660	3290	968	1280
19	897	1140	1510	2940	7410	13500	16600	12800	6940	2990	993	1250
20	866	2760	1630	2790	7780	16900	22900	11700	6040	2740	975	1190
21	852	2280	1540	2650	6420	16700	21100	10700	5490	2600	968	1160
22	861	1970	1590	2540	5490	14900	17600	9740	4960	2650	941	1120
23	915	1920	1560	2340	4760	13700	18600	9030	4580	2480	909	1100
24	1060	1830	1500	2170	4250	13300	17500	8600	4190	2270	921	1080
25	1120	1850	1800	1990	4010	12600	15900	7840	3960	2100	970	1050
26	1040	1830	2110	2000	3940	13700	14700	7060	4030	1960	938	1040
27	953	1720	2510	1750	3940	15900	15900	6480	4170	1810	901	1020
28	902	e1900	3330	1850	3720	13700	15000	6200	4090	1730	875	1040
29	914	e1800	3590	1900	---	11900	13500	6710	4080	1650	874	1040
30	910	e1700	9720	1950	---	10900	12300	7500	4120	1770	865	1020
31	891	---	17000	3830	---	10200	---	8960	---	1730	875	---
TOTAL	26740	37515	95320	193460	153000	276380	341760	328460	207100	94950	34759	31275
MEAN	863	1251	3075	6241	5464	8915	11390	10600	6903	3063	1121	1043
MAX	1120	2760	17000	28000	10700	16900	22900	16300	11100	5570	1710	1280
MIN	760	792	1430	1750	3030	3170	6270	6200	3960	1650	865	853
AC-FT	53040	74410	189100	383700	303500	548200	677900	651500	410800	188300	68940	62030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1997, BY WATER YEAR (WY)

MEAN	877	1242	2021	2217	3276	4293	6338	7416	5715	2196	855	773
MAX	2559	3766	7212	6280	14390	11520	11390	13820	11610	4951	1385	1291
(WY)	1960	1996	1996	1974	1996	1972	1997	1948	1974	1975	1984	1984
MIN	528	618	685	702	769	888	2257	2368	1501	520	438	414
(WY)	1988	1988	1945	1979	1977	1977	1968	1977	1992	1977	1992	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1945 - 1997
ANNUAL TOTAL	1712153	1820719	
ANNUAL MEAN	4678	4988	3096
HIGHEST ANNUAL MEAN			5253
LOWEST ANNUAL MEAN			1136
HIGHEST DAILY MEAN	42200	Feb 9	28000
LOWEST DAILY MEAN	760	Oct 11	760
ANNUAL SEVEN-DAY MINIMUM	778	Oct 8	778
ANNUAL RUNOFF (AC-FT)	3396000	3611000	2243000
10 PERCENT EXCEEDS	9800	12200	7510
50 PERCENT EXCEEDS	3300	3280	1640
90 PERCENT EXCEEDS	865	854	699

e Estimated

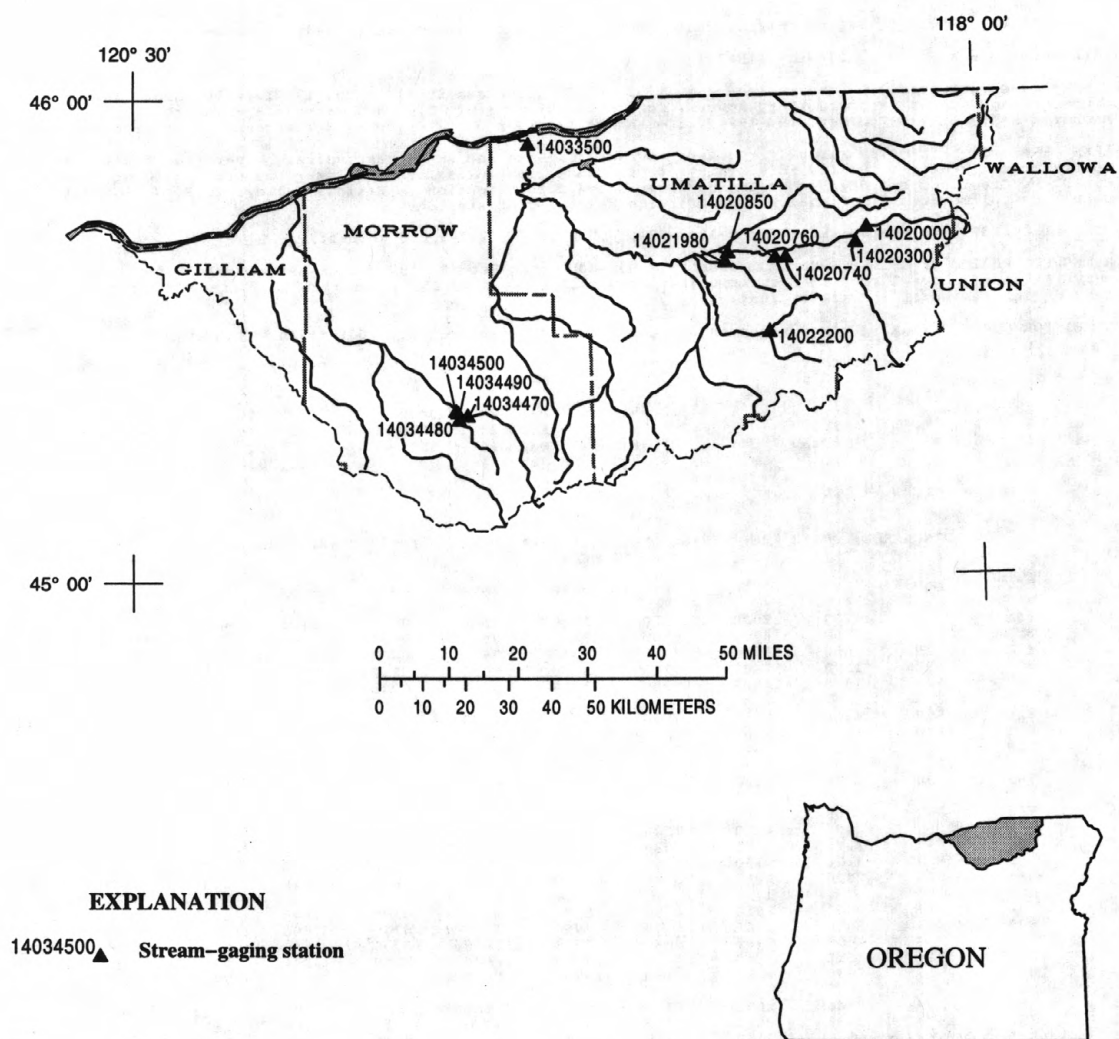


Figure 10. Location of surface-water stations in the Umatilla and Willow Creek Basins.

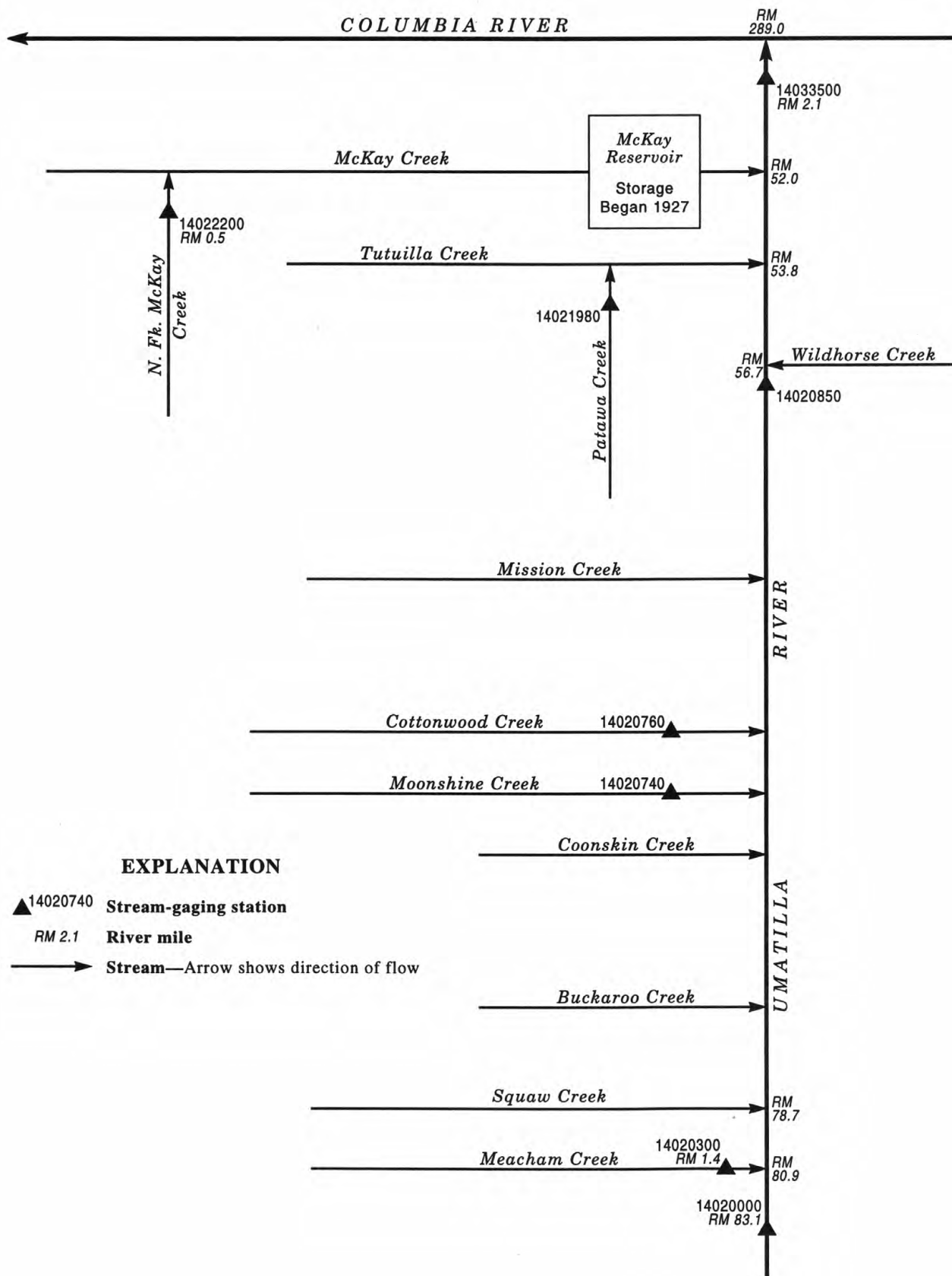


Figure 11. Schematic diagram showing gaging stations in the Umatilla River Basin.

UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

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

DRAINAGE AREA.--131 mi².

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

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

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

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

AVERAGE DISCHARGE.--64 years (water years 1934-97), 228 ft³/s, 23.63 in/yr, 165,100 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 1	0800	*a5,230	*8.76	Mar. 20	1730	1,940	6.16
Feb. 1	0130	2,390	6.60	Apr. 20	1000	2,410	6.62

Minimum discharge, 40 ft³/s Sept. 1.

a From rating curve extended above 3,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	66	314	3630	2020	e290	465	827	260	85	51	41
2	43	64	295	1830	1210	e380	403	722	228	77	51	42
3	43	64	256	1290	805	e350	382	679	215	72	48	48
4	43	66	229	887	586	e300	367	725	241	68	47	47
5	42	65	250	640	459	e270	333	749	216	66	47	45
6	42	68	216	472	380	e240	317	786	197	65	45	43
7	42	81	218	396	328	e300	324	750	182	63	45	43
8	42	78	463	346	292	e370	331	737	170	62	45	42
9	42	77	695	322	264	e450	357	767	159	71	45	42
10	42	77	960	327	243	e760	368	811	151	80	44	43
11	42	76	771	416	229	e1100	344	823	149	70	44	44
12	42	74	532	424	227	e900	330	810	164	65	44	43
13	45	76	470	e390	207	e740	365	833	148	62	44	44
14	46	84	395	e340	410	e600	591	774	137	60	43	44
15	49	90	317	e300	e540	e540	911	750	128	58	43	49
16	47	95	284	e260	e700	e490	1110	713	120	56	43	61
17	46	101	241	240	e820	e800	1150	657	115	57	43	59
18	59	128	213	237	e840	e1200	1110	555	109	56	43	56
19	61	431	193	238	e880	1520	1440	472	103	54	43	51
20	52	550	194	245	e860	1820	2150	422	98	53	43	49
21	50	313	189	250	e720	1510	1740	370	95	53	43	48
22	61	261	180	253	e580	1110	1310	334	92	53	43	47
23	68	254	169	239	e470	937	1780	313	89	52	42	47
24	102	233	187	226	e390	845	1530	289	86	51	44	46
25	112	263	583	216	e350	793	1160	278	83	50	44	46
26	90	252	509	216	e330	921	1080	267	80	50	43	46
27	78	233	451	215	e330	1080	1310	250	78	50	42	46
28	72	403	366	206	e290	864	1140	244	76	50	42	46
29	72	411	497	186	---	673	962	249	76	51	42	46
30	70	321	1160	274	---	588	907	241	75	54	42	46
31	68	---	2070	1470	---	532	---	260	---	53	42	---
TOTAL	1756	5355	13867	16981	15760	23273	26067	17457	4120	1867	1370	1400
MEAN	56.6	179	447	548	563	751	869	563	137	60.2	44.2	46.7
MAX	112	550	2070	3630	2020	1820	2150	833	260	85	51	61
MIN	42	64	169	186	207	240	317	241	75	50	42	41
AC-FT	3480	10620	27510	33680	31260	46160	51700	34630	8170	3700	2720	2780
CFSM	.43	1.36	3.41	4.18	4.30	5.73	6.63	4.30	1.05	.46	.34	.36
IN.	.50	1.52	3.94	4.82	4.48	6.61	7.40	4.96	1.17	.53	.39	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1997, BY WATER YEAR (WY)

	MEAN	57.5	131	238	264	334	392	543	449	189	64.8	47.3	46.8
MAX	169	405	716	656	1074	989	885	1135	591	110	63.4	81.6	
(WY)	1952	1948	1976	1965	1996	1972	1974	1948	1974	1948	1975	1959	
MIN	39.1	40.2	44.4	45.7	71.8	189	162	67.0	49.4	39.5	36.9	34.9	
(WY)	1936	1936	1966	1937	1977	1955	1941	1934	1992	1934	1939	1935	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1933 - 1997

ANNUAL TOTAL	113947	129273	
ANNUAL MEAN	311	354	
HIGHEST ANNUAL MEAN			228
LOWEST ANNUAL MEAN			415
HIGHEST DAILY MEAN	4800	Feb 9	3630
LOWEST DAILY MEAN	39	Sep 7	41
ANNUAL SEVEN-DAY MINIMUM	40	Sep 1	42
ANNUAL RUNOFF (AC-FT)	226000	256400	165100
ANNUAL RUNOFF (CFSM)	2.38	2.70	1.74
ANNUAL RUNOFF (INCHES)	32.36	36.71	23.63
10 PERCENT EXCEEDS	619	883	555
50 PERCENT EXCEEDS	191	218	118
90 PERCENT EXCEEDS	43	44	44
e Estimated			

UMATILLA RIVER BASIN

83

14020300 MEACHAM CREEK AT GIBBON, OR

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

DRAINAGE AREA.--176 mi².

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

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

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

AVERAGE DISCHARGE.--22 years (water years 1976-97), 206 ft³/s, 15.92 in/yr, 149,400 acre-ft.

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

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 1	1200	*4,600	*6.87	Mar. 20	0230	2,440	5.41
Jan. 1	---	---	a7.70	Apr. 20	1930	2,250	5.24
Feb. 1	0700	2,420	5.39				

Minimum discharge, 9.7 ft³/s Oct. 8, 9.

a From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	22	351	3600	2180	290	644	754	124	34	17	11
2	11	22	324	2320	1630	391	527	672	117	34	17	11
3	11	21	290	1720	1160	358	474	610	109	31	16	16
4	11	22	256	1250	868	315	477	592	107	29	16	13
5	12	21	250	917	657	276	417	572	111	27	16	12
6	11	21	221	659	503	271	389	588	107	26	15	11
7	11	23	223	517	406	345	396	536	101	25	14	12
8	12	21	379	424	339	476	420	480	95	24	14	12
9	11	21	616	358	288	533	491	474	89	25	14	11
10	11	21	1040	346	256	1280	526	488	83	28	14	11
11	11	22	1080	422	227	1410	494	493	78	28	13	11
12	11	22	713	475	222	1220	451	462	81	27	13	12
13	12	23	554	422	192	998	462	451	88	26	12	12
14	13	24	444	359	265	773	681	407	81	24	12	12
15	13	24	358	304	546	640	1100	365	75	23	12	13
16	13	25	329	256	713	600	1340	335	69	22	12	16
17	13	28	285	233	831	1190	1350	299	65	22	12	16
18	16	48	252	226	878	1610	1280	249	60	21	11	16
19	17	192	228	211	901	2100	1590	194	55	21	11	15
20	15	411	218	209	887	2250	2050	176	52	20	11	14
21	15	310	204	210	743	1990	1830	164	48	19	11	15
22	18	267	188	217	600	1600	1380	151	46	19	11	15
23	19	279	174	198	480	1380	1520	140	44	19	11	15
24	23	252	181	191	400	1280	1430	131	42	18	11	13
25	24	275	361	181	352	1180	1210	122	40	18	12	14
26	22	282	409	179	337	1340	1080	115	37	18	11	13
27	22	252	423	161	330	1570	1160	111	35	18	11	13
28	23	352	421	164	294	1260	1010	107	34	17	11	13
29	24	443	604	161	---	983	850	109	32	17	11	12
30	24	381	1430	200	---	834	808	112	32	19	11	12
31	23	---	2060	984	---	754	---	109	---	19	11	---
TOTAL	483	4127	14866	18074	17485	31497	27837	10568	2137	718	394	392
MEAN	15.6	138	480	583	624	1016	928	341	71.2	23.2	12.7	13.1
MAX	24	443	2060	3600	2180	2250	2050	754	124	34	17	16
MIN	11	21	174	161	192	271	389	107	32	17	11	11
AC-FT	958	8190	29490	35850	34680	62470	55210	20960	4240	1420	781	778
CFSM	.09	.78	2.72	3.31	3.55	5.77	5.27	1.94	.40	.13	.07	.07
IN.	.10	.87	3.14	3.82	3.70	6.66	5.88	2.23	.45	.15	.08	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1997, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	16.0	83.6	209	240	417	503	551	320	101	24.4	13.0	12.2											
MAX	26.7	323	582	583	1074	1016	956	668	354	52.2	20.7	16.7											
(WY)	1985	1996	1976	1997	1996	1997	1985	1991	1984	1984	1993	1978											
MIN	8.48	11.2	18.0	22.2	27.1	134	228	58.3	21.7	13.2	8.48	9.37											
(WY)	1988	1988	1977	1977	1977	1977	1986	1992	1992	1977	1986	1987											

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1975 - 1997

ANNUAL TOTAL	104265	128578	
ANNUAL MEAN	285	352	
HIGHEST ANNUAL MEAN			206
LOWEST ANNUAL MEAN			352
HIGHEST DAILY MEAN	4820	Feb 8	3600
LOWEST DAILY MEAN	10	Aug 23	11
ANNUAL SEVEN-DAY MINIMUM	11	Aug 20	11
ANNUAL RUNOFF (AC-FT)	206800	255000	149400
ANNUAL RUNOFF (CFSM)	1.62	2.00	1.17
ANNUAL RUNOFF (INCHES)	22.04	27.18	15.92
10 PERCENT EXCEEDS	630	1090	551
50 PERCENT EXCEEDS	179	161	67
90 PERCENT EXCEEDS	11	12	11

UMATILLA RIVER BASIN

14020740 MOONSHINE CREEK NEAR MISSION, OR

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

DRAINAGE AREA.--4.62 mi².

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

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

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

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

AVERAGE DISCHARGE.--5 years (water years 1993-97), 3.67 ft³/s, 10.78 in/yr, 2,660 acre-ft per year.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 113 ft³/s Jan. 1, gage height, 6.13 ft; minimum discharge, 0.05 ft³/s many days in July and August.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.54	4.7	54	35	4.5	3.2	5.1	.47	.16	.06	.07
2	.07	.58	4.4	27	18	6.7	2.9	4.9	.46	.15	.06	.07
3	.07	.58	4.0	19	12	6.6	2.8	4.5	.47	.12	.06	.08
4	.07	.59	4.4	14	8.3	6.2	2.7	4.3	.54	.11	.06	.08
5	.09	.58	10	11	6.8	5.8	2.3	4.0	.51	.09	.05	.08
6	.09	.62	8.5	9.0	5.8	5.6	2.1	3.7	.51	.10	.05	.07
7	.09	.63	9.8	7.8	5.2	5.9	2.0	3.4	.50	.09	.05	.07
8	.09	.63	33	7.1	4.7	6.0	1.9	3.0	.47	.09	.06	.07
9	.11	.65	30	6.6	4.4	7.0	1.8	2.7	.42	.14	.06	.07
10	.12	.68	26	6.2	4.2	34	1.7	2.1	.41	.16	.06	.07
11	.16	.69	15	6.1	4.0	30	1.6	1.7	.39	.14	.06	.07
12	.18	.69	11	5.4	3.9	21	1.6	1.6	.39	.11	.06	.08
13	.29	.69	10	4.8	3.9	15	1.7	1.4	.37	.09	.06	.08
14	.37	.69	8.4	4.4	4.9	12	2.2	1.3	.36	.09	.05	.09
15	.34	.68	7.1	4.1	5.1	10	2.3	1.1	.34	.07	.06	.10
16	.33	.63	6.7	3.9	5.1	11	2.5	1.0	.32	.07	.06	.11
17	.37	.63	5.9	3.9	5.2	18	2.5	.90	.32	.07	.06	.12
18	.55	.74	5.1	4.0	5.0	14	2.7	.84	.29	.07	.06	.11
19	.50	13	4.4	4.0	7.0	11	3.5	.77	.27	.07	.06	.10
20	.48	9.1	4.6	4.0	7.2	11	4.7	.71	.26	.06	.06	.10
21	.48	5.4	4.6	4.0	6.7	9.4	4.9	.66	.27	.06	.06	.10
22	.54	4.5	4.3	4.0	6.1	7.9	4.8	.62	.25	.06	.06	.09
23	.55	3.8	4.0	3.8	5.5	7.0	9.6	.61	.24	.06	.06	.08
24	.56	3.8	4.6	3.6	5.1	6.2	8.3	.59	.22	.06	.07	.07
25	.54	4.8	13	3.6	4.8	5.4	7.4	.58	.20	.06	.07	.07
26	.52	4.4	11	3.6	4.6	5.1	6.5	.58	.19	.06	.07	.09
27	.51	4.1	13	3.3	4.4	4.6	6.1	.55	.18	.06	.07	.08
28	.53	5.8	12	3.5	4.2	4.3	5.5	.53	.16	.06	.07	.10
29	.56	5.4	36	4.0	---	4.0	5.2	.51	.15	.07	.07	.10
30	.55	4.8	72	11	---	3.9	5.2	.50	.17	.07	.07	.09
31	.53	---	52	49	---	3.5	---	.48	---	.06	.07	---
TOTAL	10.31	80.42	439.5	299.7	197.1	302.6	112.2	55.23	10.10	2.73	1.90	2.56
MEAN	.33	2.68	14.2	9.67	7.04	9.76	3.74	1.78	.34	.088	.061	.085
MAX	.56	.13	.72	.54	.35	.34	.9.6	.5.1	.54	.16	.07	.12
MIN	.07	.54	4.0	3.3	3.9	3.5	1.6	.48	.15	.06	.05	.07
AC-FT	.20	160	872	594	391	600	223	110	.20	5.4	3.8	5.1
CFSM	.07	.58	3.07	2.09	1.52	2.11	.81	.39	.07	.02	.01	.02
IN.	.08	.65	3.54	2.41	1.59	2.44	.90	.44	.08	.02	.02	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1997, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997
MEAN	.16	2.04	5.96	6.32	8.12	7.59
MAX	.33	3.65	14.2	9.67	25.1	12.0
(WY)	1997	1995	1997	1997	1996	1993
MIN	.098	.26	.48	1.93	1.90	2.41
(WY)	1994	1994	1994	1992	1994	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1992 - 1997

ANNUAL TOTAL	2095.26	1514.35	
ANNUAL MEAN	5.72	4.15	
HIGHEST ANNUAL MEAN			3.67
LOWEST ANNUAL MEAN			4.95
HIGHEST DAILY MEAN	164	72	1.59
LOWEST DAILY MEAN	.07	.05	.00
ANNUAL SEVEN-DAY MINIMUM	.07	.06	.00
ANNUAL RUNOFF (AC-FT)	4160	3000	2660
ANNUAL RUNOFF (CFSM)	1.24	.90	.79
ANNUAL RUNOFF (INCHES)	16.87	12.19	10.78
10 PERCENT EXCEEDS	13	9.9	9.0
50 PERCENT EXCEEDS	2.2	.74	.66
90 PERCENT EXCEEDS	.09	.07	.03

UMATILLA RIVER BASIN

85

14020760 COTTONWOOD CREEK NEAR MISSION, OR

LOCATION.--Lat 45°39'38", long 118°33'52", in SW 1/4 SW 1/4 sec.8, T.2 N., R.34 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank, on downstream side of county road crossing, 4.5 mi west of Mission, and at mile 1.3.

DRAINAGE AREA.--4.01 mi².

PERIOD OF RECORD.--November 1991 to September 1997 (discontinued).

GAGE.--Water-stage recorder, elevation of gage is 1,500 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No known regulation.

AVERAGE DISCHARGE.--5 years (water years 1993-97), 2.68 ft³/s, 9.08 in/yr, 1,940 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 97 ft³/s Feb. 7, 1996, gage height, 5.45 ft; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 55 ft³/s Jan. 31, gage height, 5.06 ft; no flow many days during year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	2.9	28	e22	3.9	2.6	7.2	.15	.00	.00	.00
2	.00	.00	2.7	21	e14	5.8	2.1	6.8	.10	.00	.00	.00
3	.00	.00	2.4	17	e10	6.6	1.9	6.1	.12	.00	.00	.00
4	.00	.00	2.4	13	e8.0	6.4	1.9	5.7	.21	.00	.00	.00
5	.00	.00	5.5	9.5	e6.0	5.9	1.6	5.1	.18	.00	.00	.00
6	.00	.00	4.9	7.1	e5.0	5.7	1.4	4.6	.14	.00	.00	.00
7	.00	.00	5.5	5.6	e4.0	6.4	1.3	4.0	.08	.00	.00	.00
8	.00	.00	16	4.7	e3.6	6.5	1.1	3.5	.05	.00	.00	.00
9	.00	.00	17	3.9	e3.2	7.1	1.1	3.0	.01	.00	.00	.00
10	.00	.00	16	3.4	e3.0	29	1.0	2.6	.00	.00	.00	.00
11	.00	.00	11	3.1	e2.9	30	.89	2.2	.00	.00	.00	.00
12	.00	.00	7.5	2.5	e2.8	25	.82	1.9	.00	.00	.00	.00
13	.00	.00	6.7	1.7	2.7	20	.87	1.6	.00	.00	.00	.00
14	.00	.00	5.4	1.3	4.7	17	1.2	1.4	.00	.00	.00	.00
15	.00	.00	4.5	.93	5.6	15	1.2	1.0	.00	.00	.00	.00
16	.00	.00	4.1	.69	5.6	15	1.4	.88	.00	.00	.00	.00
17	.00	.00	3.4	.71	5.5	21	1.5	.71	.00	.00	.00	.00
18	.00	.00	2.8	.72	5.3	17	1.6	.63	.00	.00	.00	.00
19	.00	8.3	2.1	.63	7.2	15	2.7	.48	.00	.00	.00	.00
20	.00	7.9	2.1	.58	7.8	14	4.5	.37	.00	.00	.00	.00
21	.00	4.4	2.0	.58	7.4	13	5.1	.34	.00	.00	.00	.00
22	.00	3.3	1.9	.68	6.6	12	5.1	.25	.00	.00	.00	.00
23	.00	2.5	1.6	.60	5.8	9.6	14	.25	.00	.00	.00	.00
24	.00	2.4	2.0	.53	5.0	8.0	14	.22	.00	.00	.00	.00
25	.00	3.3	7.4	.50	4.4	6.7	12	.22	.00	.00	.00	.00
26	.00	3.0	7.7	.43	4.0	6.0	10	.23	.00	.00	.00	.00
27	.00	2.7	8.6	e.40	3.9	5.2	9.3	.20	.00	.00	.00	.00
28	.00	3.9	8.8	e.46	3.3	4.6	8.2	.18	.00	.00	.00	.00
29	.00	3.6	17	.68	---	4.2	7.5	.17	.00	.00	.00	.00
30	.00	3.1	29	7.1	---	3.6	7.5	.15	.00	.00	.00	.00
31	.00	---	25	31	---	3.0	---	.14	---	.00	.00	---
TOTAL	0.00	48.40	235.9	169.02	169.3	348.2	125.38	62.12	1.04	0.00	0.00	0.00
MEAN	.000	1.61	7.61	5.45	6.05	11.2	4.18	2.00	.035	.000	.000	.000
MAX	.00	8.3	29	31	22	30	14	7.2	.21	.00	.00	.00
MIN	.00	.00	1.6	.40	2.7	3.0	.82	.14	.00	.00	.00	.00
AC-FT	.00	96	468	335	336	691	249	123	2.1	.00	.00	.00
CFSM	.00	.40	1.90	1.36	1.51	2.80	1.04	.50	.01	.00	.00	.00
IN.	.00	.45	2.19	1.57	1.57	3.23	1.16	.58	.01	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1997, BY WATER YEAR (WY)

	MEAN	.000	1.43	3.95	4.90	5.23	6.22	2.98	3.79	.060	.000	.000	.000
MAX	.000	3.45	7.61	8.68	12.8	11.2	5.44	10.1	.10	.000	.003	.000	.000
(WY)	1993	1995	1997	1995	1996	1997	1993	1995	1995	1994	1993	1992	1992
MIN	.000	.000	.000	.97	1.12	1.74	.11	.000	.000	.000	.000	.000	.000
(WY)	1993	1994	1994	1992	1994	1992	1992	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1992 - 1997

ANNUAL TOTAL	1174.59	1159.36	
ANNUAL MEAN	3.21	3.18	
HIGHEST ANNUAL MEAN			2.68
LOWEST ANNUAL MEAN			3.77
HIGHEST DAILY MEAN	64	31	1.32
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	2330	2300	1940
ANNUAL RUNOFF (CFSM)	.80	.79	.67
ANNUAL RUNOFF (INCHES)	10.90	10.76	9.08
10 PERCENT EXCEEDS	8.1	8.7	7.4
50 PERCENT EXCEEDS	.75	.37	.11
90 PERCENT EXCEEDS	.00	.00	.00

e Estimated

UMATILLA RIVER BASIN

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

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

DRAINAGE AREA.--Not determined.

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

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

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

AVERAGE DISCHARGE.--2 years (water years 1996-97), 772 ft³/s, 559,500 acre-ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,900 ft³/s Jan. 1, gage height, 10.82 ft; minimum discharge, 42 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	87	811	8450	5390	664	1110	1570	409	107	64	45
2	43	85	778	5750	3640	930	963	1410	360	105	58	45
3	44	82	715	3890	2380	954	882	1290	327	91	55	e50
4	44	82	607	2610	1760	863	868	1290	373	82	53	e55
5	46	82	800	1870	1370	771	805	1280	356	76	51	51
6	47	80	688	1400	1120	744	747	1330	315	74	48	48
7	45	91	679	1140	957	919	750	1260	285	72	47	47
8	45	94	1280	980	829	1180	761	1180	264	70	47	46
9	45	93	1830	853	726	1180	822	1180	243	79	48	46
10	45	92	2320	796	656	3160	871	1230	226	103	47	46
11	45	91	2270	890	603	3370	837	1260	216	101	46	46
12	46	91	1580	988	595	2710	791	1230	249	89	45	47
13	48	92	1300	895	542	2070	813	1220	247	80	45	48
14	51	96	1120	785	672	1640	1050	1180	219	75	46	48
15	54	104	916	686	1310	1360	1730	1090	198	72	45	51
16	53	108	818	599	1470	1290	2190	1050	180	69	45	62
17	51	114	705	545	1580	2190	2290	973	169	68	46	65
18	58	145	612	535	1640	2920	2180	869	159	69	46	66
19	76	525	542	526	1690	3650	2620	722	148	68	45	61
20	68	1290	516	522	1790	4460	4030	648	140	66	45	56
21	62	848	508	530	1510	3990	3880	573	132	63	46	54
22	61	643	478	542	1250	2860	2860	517	129	63	45	54
23	78	623	442	512	1050	2340	3320	485	122	63	45	52
24	94	569	459	487	911	2080	3100	448	116	61	46	52
25	121	610	1100	464	820	1870	2450	426	110	61	47	48
26	118	637	1280	452	777	2050	2110	409	103	60	47	49
27	103	572	1140	425	767	2540	2410	382	101	59	45	50
28	96	785	1090	398	697	2100	2190	363	97	58	46	50
29	95	1020	1250	397	---	1630	1780	371	95	58	46	50
30	94	883	3190	559	---	1380	1680	366	97	64	46	48
31	91	---	4940	2670	---	1240	---	365	---	70	45	---
TOTAL	2010	10714	36764	42146	38502	61105	52890	27967	6185	2296	1476	1536
MEAN	64.8	357	1186	1360	1375	1971	1763	902	206	74.1	47.6	51.2
MAX	121	1290	4940	8450	5390	4460	4030	1570	409	107	64	66
MIN	43	80	442	397	542	664	747	363	95	58	45	45
AC-FT	3990	21250	72920	83600	76370	121200	104900	55470	12270	4550	2930	3050

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1997, BY WATER YEAR (WY)

	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
MEAN	64.5	537	1116	1166	2101	1554	1613	848	193	68.5	43.9	47.0
MAX	64.8	717	1186	1360	2801	1971	1763	902	206	74.1	47.6	51.2
(WY)	1997	1996	1997	1997	1996	1997	1997	1997	1997	1997	1997	1997
MIN	64.2	357	1046	973	1375	1136	1464	794	180	63.0	40.1	42.8
(WY)	1996	1997	1996	1996	1997	1996	1996	1996	1996	1996	1996	1996

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1996 - 1997

ANNUAL TOTAL	274533		283591									
ANNUAL MEAN	750		777									
HIGHEST ANNUAL MEAN										772		
LOWEST ANNUAL MEAN										777		1997
HIGHEST DAILY MEAN	11700									768		1996
LOWEST DAILY MEAN	37									11700		Feb 9 1996
ANNUAL SEVEN-DAY MINIMUM	38									37		Aug 17 1996
ANNUAL RUNOFF (AC-FT)	544500									38		Aug 11 1996
10 PERCENT EXCEEDS	1670									559500		
50 PERCENT EXCEEDS	459									1870		
90 PERCENT EXCEEDS	42									423		
										45		

e Estimated

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

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

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

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

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

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

REMARKS.--Records fair.

AVERAGE DISCHARGE.--6 years (water years 1992-97), 6.53 ft³/s, 2.96 in/yr, 4,730 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 30	1800	240	7.21	Mar. 11	0100	162	6.75
Jan. 1	0445	284	7.49	Mar. 17	0130	105	6.30
Jan. 31	1315	*346	*7.80	Apr. 23	0430	64	5.88

Minimum discharge, 0.48 ft³/s Sept. 28.

EXTREMES FOR 1992-96 WATER YEARS.--Peak discharges greater than base discharge of 57 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 27, 1991	0030	*57	*5.98	Feb. 1, 1995	2045	157	6.57
Jan. 20, 1993	0500	64	6.13	Mar. 15, 1995	0200	*309	*7.58
Mar. 4, 1993	2030	*102	*6.49	Apr. 29, 1995	1745	207	6.99
Mar. 24, 1993	1315	63	6.11	May 5, 1995	2045	180	6.76
Feb. 28, 1994	1215	57	5.90	May 11, 1995	1500	201	6.91
May 20, 1994	1415	*356	*7.82	Nov. 28, 1995	0515	80	5.99
Jan. 14, 1995	0730	179	6.74	Jan. 31, 1996	0115	60	5.76
Jan. 18, 1995	2130	90	5.96	Feb. 7, 1996	1200	*378	*7.94

UMATILLA RIVER BASIN

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	.72	4.3	90	87	12	12	15	3.0	1.8	1.3	.73
2	.55	.74	3.9	42	40	15	12	14	2.8	1.8	1.2	.70
3	.57	.74	3.7	32	28	14	11	12	2.8	1.7	1.2	.73
4	.58	.75	3.9	24	21	14	11	12	5.5	1.6	1.1	.70
5	.58	.76	8.1	19	18	13	11	10	3.3	1.6	1.1	.70
6	.54	.78	7.3	17	16	13	10	9.3	2.9	1.5	1.1	.68
7	.56	.78	7.9	15	14	13	10	8.5	2.6	1.5	1.1	.69
8	.56	.78	16	14	13	12	9.9	7.7	2.5	1.5	1.1	.67
9	.57	.78	20	13	12	12	9.7	7.2	2.4	1.6	1.2	.67
10	.58	.78	17	12	11	85	9.5	6.6	2.3	1.7	1.2	.70
11	.59	.80	11	12	11	82	9.2	6.3	2.3	1.7	1.2	.63
12	.59	.85	8.6	10	12	55	9.1	6.0	2.5	1.6	1.1	.62
13	.59	.90	8.1	9.0	11	41	9.2	5.5	2.3	1.6	1.0	.62
14	.60	.90	6.5	9.2	17	34	9.9	5.1	2.1	1.5	1.0	.63
15	.63	.85	5.7	9.2	15	32	9.8	4.8	2.0	1.4	1.0	.65
16	.59	.78	5.0	9.0	14	31	9.4	4.5	1.9	1.4	1.0	.69
17	.66	.78	4.2	8.0	14	50	9.3	4.3	1.9	1.4	1.0	.72
18	.76	1.1	3.6	7.9	13	32	9.6	4.0	1.9	1.3	.98	.68
19	.74	11	3.3	8.1	16	28	15	3.6	1.8	1.3	.94	.63
20	.71	18	3.6	8.1	15	30	15	3.3	1.8	1.3	.93	.63
21	.71	7.4	3.7	8.4	14	28	14	3.2	1.8	1.3	.91	.63
22	.76	4.9	3.4	9.1	13	25	14	3.0	1.8	1.2	.89	.62
23	.77	3.4	3.0	8.2	12	23	36	3.0	1.8	1.3	.85	.62
24	.86	3.2	4.0	8.1	11	21	26	3.0	1.8	1.3	.83	.62
25	.79	5.7	14	7.9	11	19	22	2.9	1.8	1.3	.84	.61
26	.78	5.0	e13	7.6	11	19	20	3.1	1.8	1.3	.80	.61
27	.78	4.4	e17	7.6	11	17	25	2.8	1.8	1.3	.72	.61
28	.76	6.6	20	7.7	10	16	19	2.8	1.7	1.3	.72	.54
29	.74	5.6	e33	8.1	---	15	18	2.7	1.7	1.2	.73	.55
30	.71	4.4	134	54	---	14	17	2.6	1.7	1.3	.72	.55
31	.71	---	53	180	---	13	---	3.0	---	1.3	.72	---
TOTAL	20.46	94.17	449.8	675.2	491	828	422.6	181.8	68.3	44.9	30.48	19.43
MEAN	.66	3.14	14.5	21.8	17.5	26.7	14.1	5.86	2.28	1.45	.98	.65
MAX	.86	.18	134	180	87	85	36	15	5.5	1.8	1.3	.73
MIN	.54	.72	3.0	7.6	10	12	9.1	2.6	1.7	1.2	.72	.54
AC-FT	.41	187	892	1340	974	1640	838	361	135	89	60	.39
CFSM	.02	.10	.48	.73	.58	.89	.47	.20	.08	.05	.03	.02
IN.	.03	.12	.56	.84	.61	1.03	.52	.23	.08	.06	.04	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1997, BY WATER YEAR (WY)

	MEAN	.55	2.72	6.22	11.3	14.3	16.8	10.3	12.5	1.86	.87	.69	.61
MAX	.71	5.88	14.5	21.8	34.6	26.7	16.8	37.0	2.90	1.45	.98	.89	
(WY)	1994	1992	1997	1997	1996	1997	1993	1995	1996	1997	1997	1993	
MIN	.31	.80	.65	1.30	2.84	5.19	1.81	1.01	.48	.22	.24	.41	
(WY)	1993	1994	1993	1992	1992	1992	1992	1992	1992	1992	1992	1994	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1992 - 1997

ANNUAL TOTAL	3388.79	3326.14	
ANNUAL MEAN	9.26	9.11	6.53
HIGHEST ANNUAL MEAN			10.6
LOWEST ANNUAL MEAN			2.08
HIGHEST DAILY MEAN	218	180	218
LOWEST DAILY MEAN	.54	.54	.10
ANNUAL SEVEN-DAY MINIMUM	.55	.56	.12
ANNUAL RUNOFF (AC-FT)	6720	6600	4730
ANNUAL RUNOFF (CFSM)	.31	.30	.22
ANNUAL RUNOFF (INCHES)	4.20	4.12	2.96
10 PERCENT EXCEEDS	19	19	17
50 PERCENT EXCEEDS	4.5	3.3	1.6
90 PERCENT EXCEEDS	.62	.68	.45

e Estimated

UMATILLA RIVER BASIN

89

14022200 NORTH FORK MCKAY CREEK NEAR PILOT ROCK, OR

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

DRAINAGE AREA.--48.6 mi².

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

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

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

AVERAGE DISCHARGE.--24 years (water years 1974-97), 43.4 ft³/s, 31,420 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)
Nov. 19	1600	321	3.23	Mar. 10	1730	476	3.76
Jan. 1	0530	*824	5.00	Mar. 17	0430	347	3.29
Jan. 31	2330	689	4.53	Apr. 23	0500	296	3.07

Minimum discharge, 0.75 ft³/s Sept. 8-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	5.0	65	510	462	58	54	94	8.3	3.2	1.7	.93
2	1.2	4.8	58	312	266	93	48	83	7.2	3.0	1.5	.93
3	1.2	4.5	51	228	192	99	45	72	6.5	2.8	1.2	1.3
4	1.2	4.5	46	169	142	97	44	68	11	2.6	1.1	1.3
5	1.4	4.5	66	127	110	88	41	58	9.5	2.4	1.0	1.1
6	1.4	4.6	62	100	86	88	40	51	8.3	2.2	1.0	.90
7	1.4	6.2	56	84	72	111	39	45	7.6	2.2	.95	.87
8	1.4	6.4	118	73	60	126	41	39	6.9	2.2	.95	.77
9	1.4	6.3	177	63	51	140	41	35	6.3	2.4	.96	.75
10	1.4	6.1	171	66	45	408	41	30	5.9	3.4	.98	.75
11	1.4	6.1	127	72	42	384	39	26	6.4	3.0	.97	.80
12	1.4	5.9	97	65	40	321	37	23	11	2.7	.96	.84
13	1.6	6.1	82	61	37	247	37	20	9.5	2.5	.93	.84
14	1.7	8.5	67	e52	110	196	64	17	8.2	2.4	.88	.85
15	1.8	11	56	e46	126	168	89	16	7.2	2.2	.84	1.0
16	1.6	12	54	e41	119	192	83	13	6.4	2.1	.86	1.3
17	1.6	12	e48	e35	122	290	75	12	6.1	1.9	.87	1.4
18	2.3	16	e44	31	111	261	72	11	5.7	1.9	.89	1.5
19	2.6	157	e38	e30	160	257	122	9.7	5.0	1.7	.87	1.3
20	2.1	140	36	e29	163	280	183	9.0	4.7	1.6	.87	1.1
21	2.0	81	35	e28	134	238	160	8.6	4.3	1.5	.88	1.0
22	2.3	64	33	e27	113	195	131	8.4	4.3	1.4	.88	.95
23	2.7	52	30	e26	95	161	243	8.1	3.9	1.4	.87	.93
24	3.9	48	39	e26	79	134	218	7.9	3.8	1.4	.92	.91
25	4.6	59	121	e26	71	115	173	7.5	3.5	1.4	1.1	.85
26	5.0	55	e100	e27	66	110	134	8.0	3.2	1.2	1.1	1.1
27	4.3	50	e94	e28	64	106	120	7.5	3.1	1.2	1.0	1.2
28	3.8	78	e86	e28	57	91	100	7.1	3.0	1.1	.96	1.3
29	4.5	77	e170	31	---	77	98	7.6	2.9	1.1	1.0	1.3
30	5.0	67	309	69	---	69	100	7.2	3.0	1.3	.98	1.2
31	5.1	---	325	401	---	62	---	7.2	---	1.4	.93	---
TOTAL	74.5	1058.5	2861	2911	3195	5262	2712	816.8	182.7	62.8	30.90	31.27
MEAN	2.40	35.3	92.3	93.9	114	170	90.4	26.3	6.09	2.03	1.00	1.04
MAX	5.1	157	325	510	462	408	243	94	11	3.4	1.7	1.5
MIN	1.2	4.5	30	26	37	58	37	7.1	2.9	1.1	.84	.75
AC-FT	148	2100	5670	5770	6340	10440	5380	1620	362	125	61	62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1997, BY WATER YEAR (WY)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	2.53	23.6	55.7	76.8	97.4	114	85.5	49.2	14.4	2.34	1.15	1.23												
MAX	8.50	74.6	197	170	225	223	200	154	60.4	4.97	2.77	2.74												
(WY)	1983	1992	1974	1976	1996	1984	1974	1995	1984	1991	1993	1977												
MIN	.90	1.30	3.11	5.01	4.39	29.3	16.2	5.08	2.26	.73	.72	.78												
(WY)	1988	1988	1977	1977	1977	1992	1992	1992	1992	1985	1987	1987												

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1974 - 1997
ANNUAL TOTAL	20740.12	19198.47	
ANNUAL MEAN	56.7	52.6	43.4
HIGHEST ANNUAL MEAN			72.5
LOWEST ANNUAL MEAN			10.7
HIGHEST DAILY MEAN	978 Feb 8	510 Jan 1	1070 Feb 23 1986
LOWEST DAILY MEAN	.75 Aug 26	.75 Sep 9	.45 Aug 11 1979
ANNUAL SEVEN-DAY MINIMUM	.82 Aug 20	.80 Sep 8	.50 Jul 29 1979
ANNUAL RUNOFF (AC-FT)	41140	38080	31420
10 PERCENT EXCEEDS	139	141	123
50 PERCENT EXCEEDS	26	12	11
90 PERCENT EXCEEDS	.96	.99	1.0

e Estimated

WILLOW CREEK BASIN

91

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE 1/4 NE 1/4 sec.1, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.5 mi southeast of Heppner, 1.7 mi upstream from Willow Creek dam, and at mile 54.1.

DRAINAGE AREA.--67.6 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,085.41 ft above sea level (levels by Corps of Engineers).

REMARKS.--Records fair. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--15 years (water years 1983-97), 23.9 ft³/s, 17,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 544 ft³/s Feb. 1, 1997, gage height, 9.60 ft, from crest-stage gage; minimum discharge, 0.01 ft³/s July 31 to Sept. 14, 1988, Aug. 20, 1992, but may have been less during period of no gage-height record July 31 to Sept. 14, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 10	1345	170	6.93	Mar. 11	0730	231	7.71
Dec. 31	unknown	453	a9.07	Mar. 17	0800	175	7.31
Feb. 1	unknown	*544	*a9.60				

Minimum discharge, 1.5 ft³/s Oct. 1.

a From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	4.4	29	e360	e450	37	54	60	23	11	3.3	3.4
2	1.7	4.3	26	e340	206	47	49	59	20	12	3.3	3.5
3	1.8	4.3	25	220	156	49	47	57	e34	11	2.7	3.9
4	1.8	4.2	23	154	121	44	46	56	e50	11	4.6	4.1
5	2.0	4.3	34	116	98	42	43	51	41	9.1	5.3	3.8
6	2.1	4.2	31	89	84	42	41	49	35	8.3	5.0	3.6
7	2.3	4.2	32	74	71	43	40	45	32	8.6	e4.8	3.5
8	2.3	4.3	42	64	62	44	40	41	29	8.5	e4.7	3.3
9	3.0	4.3	e130	58	55	44	39	38	27	10	4.6	3.3
10	3.2	4.5	e140	60	51	108	38	34	24	11	4.6	3.1
11	3.2	4.5	116	58	49	199	37	33	27	11	4.4	3.5
12	3.9	4.5	83	49	48	147	35	31	44	9.9	4.3	3.6
13	5.9	5.1	65	40	46	121	35	28	36	9.3	4.2	3.4
14	6.4	5.7	51	37	49	98	37	25	32	8.5	4.0	3.5
15	9.3	6.3	40	35	47	87	36	23	28	7.7	3.9	3.9
16	9.6	6.6	38	32	45	94	38	19	25	7.5	4.0	4.1
17	8.9	6.4	32	44	45	155	43	18	22	7.2	4.1	4.5
18	10	9.7	31	37	43	148	46	18	20	6.2	3.9	4.8
19	9.5	35	29	34	46	149	58	19	18	6.0	3.8	4.6
20	7.6	47	28	34	41	150	58	19	18	6.1	3.7	3.9
21	5.7	38	25	34	39	142	60	18	17	5.7	3.8	3.2
22	4.9	45	23	33	38	115	58	18	17	5.0	3.5	2.5
23	5.4	40	22	31	36	99	58	18	16	5.1	3.4	2.5
24	6.9	38	23	29	35	90	61	18	15	5.0	3.8	2.4
25	6.8	43	58	28	35	84	59	18	13	5.2	4.0	2.0
26	5.7	33	71	25	33	76	55	17	12	5.3	3.9	2.0
27	5.3	34	115	19	35	64	54	17	11	5.2	3.6	2.0
28	4.6	37	109	27	33	67	58	20	10	3.5	3.7	2.0
29	4.6	33	162	26	---	64	57	21	10	4.1	3.7	2.2
30	4.6	30	223	37	---	59	59	20	11	3.9	3.6	2.8
31	4.7	---	e400	e200	---	58	---	23	---	3.6	3.4	---
TOTAL	155.3	544.8	2256	2424	2097	2766	1439	931	717	231.5	123.6	98.9
MEAN	5.01	18.2	72.8	78.2	74.9	89.2	48.0	30.0	23.9	7.47	3.99	3.30
MAX	10	47	400	360	450	199	61	60	50	12	5.3	4.8
MIN	1.6	4.2	22	19	33	37	35	17	10	3.5	2.7	2.0
AC-FT	308	1080	4470	4810	4160	5490	2850	1850	1420	459	245	196

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

WY	1983	1987	1997	1993	1994	1995	1996	1997	1983	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	3.35	8.81	18.3	24.4	42.3	64.8	53.3	46.4	18.4	4.89	1.59	1.61							
MAX	7.10	21.2	72.8	78.2	109	128	116	110	55.4	11.2	3.99	6.13							
(WY)	1983	1987	1997	1997	1996	1993	1984	1995	1984	1993	1997	1984							
MIN	.20	2.79	4.02	6.68	7.52	9.81	11.9	2.73	1.60	.88	.010	.064							
(WY)	1989	1988	1991	1990	1994	1988	1992	1992	1992	1985	1988	1988							

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1983 - 1997

ANNUAL TOTAL	13653.6	13784.1	
ANNUAL MEAN	37.3	37.8	
HIGHEST ANNUAL MEAN			23.9
LOWEST ANNUAL MEAN			44.3
HIGHEST DAILY MEAN	400	Dec 31	450
LOWEST DAILY MEAN	1.4	Sep 12	1.6
ANNUAL SEVEN-DAY MINIMUM	1.5	Sep 8	1.9
ANNUAL RUNOFF (AC-FT)	27080	27340	17330
10 PERCENT EXCEEDS	91	84	66
50 PERCENT EXCEEDS	22	25	9.2
90 PERCENT EXCEEDS	2.1	3.5	.70

e Estimated

WILLOW CREEK BASIN

14034480 BALM FORK NEAR HEPPNER, OR

LOCATION.--Lat 45°19'56", long 119°32'24", in NW 1/4 SE 1/4 sec.2, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank, 0.7 mi upstream from bridge on Willow Creek Road, 1.0 mi southeast of Heppner, 1.2 mi upstream from Willow Creek dam, and at mile 1.1.

DRAINAGE AREA.--26.3 mi².

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

REVISED RECORDS.--WDR OR-83-1: Drainage area. WDR OR-88-1: 1987(M).

GAGE.--Water-stage recorder. Concrete control since Aug. 24, 1982. Datum of gage is 2,101.52 ft above sea level (Corps of Engineers bench mark).

REMARKS.--No estimated daily discharges. Records poor. Diversion for irrigation of about 170 acres upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--15 years (water years 1983-97), 3.04 ft³/s, 2,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190 ft³/s Mar. 4, 1983, gage height, 4.90 ft, from rating curve extended above 82 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.12 ft Dec. 29, 1996; no flow for part or all of several days in 1982, 1990, 1991, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, by computation of slope-area measurement (see WSP 96).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 29	1700	*102	*5.12	Jan. 31	2200	93	5.03

Minimum discharge, 0.08 ft³/s Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.44	10	40	52	7.7	5.4	12	1.6	1.6	.17	.12
2	.18	.43	10	33	32	10	4.6	10	1.5	1.7	.15	.13
3	.13	.44	9.9	27	25	10	4.5	8.6	1.7	1.4	.15	.15
4	.11	.44	9.4	22	21	11	4.6	8.2	5.6	1.1	.14	.16
5	.10	.43	17	18	19	11	4.4	5.9	4.5	.91	.14	.15
6	.15	.44	18	15	16	10	4.3	3.5	4.2	.88	.14	.14
7	.13	.45	19	13	14	10	4.7	3.1	5.3	.89	.13	.14
8	.11	.47	23	12	12	10	4.4	2.7	5.2	.76	.13	.16
9	.09	.51	37	11	11	11	4.1	2.5	4.2	.75	.13	.17
10	.09	.50	38	11	11	17	4.6	2.4	3.1	.70	.13	.16
11	.10	.52	27	11	10	37	4.6	2.2	3.0	.62	.13	.16
12	.09	.53	22	10	10	23	4.1	2.0	3.5	.71	.12	.16
13	.11	.56	20	8.0	9.2	17	3.8	1.8	3.0	.46	.13	.17
14	.10	.58	17	6.6	9.4	15	3.8	1.3	2.5	.44	.14	.18
15	.29	.58	16	6.3	9.5	14	3.4	1.2	2.3	.40	.15	.18
16	.27	.59	14	5.6	9.4	12	3.3	1.1	2.4	.36	.13	.18
17	.28	.59	13	7.0	9.2	13	3.4	1.1	2.3	.35	.12	.18
18	.34	1.0	12	7.4	8.9	14	3.0	1.2	2.1	.12	.11	.17
19	.32	4.8	12	6.5	9.2	14	3.5	1.2	2.3	.11	.11	.25
20	.30	4.3	12	6.3	8.9	14	3.1	1.1	2.3	.12	.11	.29
21	.30	2.3	11	6.2	8.7	14	3.0	1.1	2.4	.13	.11	.30
22	.30	4.7	11	6.0	8.6	12	3.2	1.1	2.4	.19	.10	.31
23	.30	4.6	9.6	5.3	7.8	12	8.7	1.1	2.4	.17	.10	.31
24	.35	10	9.9	5.2	7.3	11	11	1.2	2.3	.18	.11	.30
25	.34	18	17	5.2	7.1	12	10	1.1	1.9	.19	.13	.29
26	.33	15	21	4.9	6.9	13	9.5	1.1	1.7	.19	.11	.29
27	.33	13	24	4.5	6.9	13	11	1.1	1.6	.18	.11	.29
28	.35	12	29	5.3	6.8	12	11	1.2	1.5	.18	.14	.29
29	.40	11	50	8.5	---	11	12	1.3	1.3	.17	.13	.29
30	.41	10	45	11	---	11	13	1.3	1.4	.19	.13	.29
31	.44	---	38	42	---	8.5	---	1.4	---	.18	.13	---
TOTAL	7.31	119.20	621.8	380.8	366.8	410.2	174.0	86.1	81.5	16.33	3.96	6.36
MEAN	.24	3.97	20.1	12.3	13.1	13.2	5.80	2.78	2.72	.53	.13	.21
MAX	.44	18	50	42	52	37	13	12	5.6	1.7	.17	.31
MIN	.09	.43	9.4	4.5	6.8	7.7	3.0	1.1	1.3	.11	.10	.12
AC-FT	14	236	1230	755	728	814	345	171	162	32	7.9	13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

	MEAN	1.53	3.06	3.69	6.75	9.71	5.14	4.47	1.63	.46	.17	.22
MAX (WY)	1985	1997	1997	1997	1996	1993	1984	1995	1984	1993	1984	1984
MIN (WY)	.000	.002	.038	.28	.66	.47	.29	.24	.077	.034	.012	.006
	1992	1992	1991	1991	1990	1992	1992	1992	1992	1992	1992	1991

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1983 - 1997

ANNUAL TOTAL	2605.50	2274.36	
ANNUAL MEAN	7.12	6.23	
HIGHEST ANNUAL MEAN			3.04
LOWEST ANNUAL MEAN			6.23
HIGHEST DAILY MEAN	67	Feb 7	80
LOWEST DAILY MEAN	.06	Sep 3	.00
ANNUAL SEVEN-DAY MINIMUM	.07	Aug 31	.00
ANNUAL RUNOFF (AC-FT)	5170	4510	2200
10 PERCENT EXCEEDS	20	15	9.2
50 PERCENT EXCEEDS	3.5	2.4	.85
90 PERCENT EXCEEDS	.11	.13	.05

WILLOW CREEK BASIN

93

14034490 WILLOW CREEK LAKE AT HEPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW 1/4 SE 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineers land, on top left side of spillway on dam on Willow Creek, 2,000 ft upstream from Court Street bridge and at mile 52.4.

DRAINAGE AREA.--96.6 mi².

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Lake is formed behind roller-compacted, concrete dam; storage began Feb. 16, 1983. Capacity, 14,020 acre-ft between elevations 2,000.0 ft, sill of outlet gates, and 2,113.5 ft, crest of spillway. Average minimum lake elevation 2,047.0 ft, storing 2,540 acre-ft. Dead storage, 73 acre-ft below elevation 2,000.0 ft. Reservoir used for flood control. Figures given herein represent total contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,340 acre-ft May 8, 1995, elevation, 2,083.06 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 6,300 acre-ft June 18, elevation, 2,076.82 ft; minimum contents, 3,710 acre-ft Jan. 16, 17, elevation, 2,057.96 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2072.12	2067.82	2063.52	2074.01	2069.15	2062.66	2072.67	2076.17	2075.42	2076.16	2075.25	2074.54
2	2072.09	2067.47	2063.29	2075.97	2072.09	2062.73	2072.33	2075.97	2075.52	2076.16	2075.22	2074.51
3	2072.08	2067.12	2063.03	2075.62	2073.77	2062.81	2071.97	2075.70	2075.10	2076.14	2075.19	2074.53
4	2072.06	2066.77	2062.80	2074.64	2073.25	2062.88	2071.87	2075.44	2076.17	2076.13	2075.20	2074.50
5	2072.04	2066.42	2062.72	2073.26	2071.90	2062.93	2071.93	2075.37	2076.41	2076.06	2075.21	2074.47
6	2072.03	2066.06	2062.60	2071.61	2070.30	2062.97	2071.98	2075.44	2076.42	2076.01	2075.22	2074.44
7	2072.02	2065.71	2062.48	2069.78	2068.50	2063.02	2072.02	2075.44	2076.24	2075.96	2075.21	2074.41
8	2072.01	2065.35	2062.52	2067.80	2066.55	2063.11	2072.05	2075.38	2076.02	2075.91	2075.20	2074.38
9	2071.98	2065.01	2063.06	2065.72	2064.46	2063.22	2072.05	2075.29	2075.87	2075.90	2075.19	2074.35
10	2071.96	2064.65	2064.32	2063.64	2062.25	2064.64	2072.04	2075.15	2075.76	2075.91	2075.18	2074.33
11	2071.94	2064.29	2065.27	2061.44	2060.86	2066.28	2072.00	2075.02	2075.81	2075.91	2075.18	2074.30
12	2071.93	2063.92	2065.89	2060.06	2060.18	2066.25	2071.95	2074.97	2076.17	2075.90	2075.17	2074.28
13	2071.92	2063.58	2066.26	2059.70	2059.42	2066.29	2071.90	2075.08	2076.41	2075.89	2075.14	2074.26
14	2071.93	2063.26	2066.49	2059.35	2058.71	2066.20	2071.88	2075.16	2076.60	2075.85	2075.10	2074.25
15	2071.92	2063.02	2066.61	2058.47	2058.51	2066.65	2071.98	2075.17	2076.71	2075.80	2075.06	2074.22
16	2071.92	2062.80	2066.68	2057.97	2058.68	2066.84	2072.23	2075.11	2076.77	2075.76	2075.02	2074.22
17	2071.94	2062.53	2066.61	2058.14	2058.83	2067.94	2072.58	2075.02	2076.80	2075.70	2075.00	2074.20
18	2071.98	2062.54	2066.12	2058.18	2059.20	2068.74	2073.03	2074.96	2076.78	2075.64	2074.97	2074.20
19	2071.99	2062.91	2065.40	2058.16	2059.74	2069.53	2073.79	2074.91	2076.74	2075.58	2074.93	2074.21
20	2072.00	2063.20	2064.65	2058.14	2060.26	2070.43	2074.60	2074.85	2076.70	2075.51	2074.89	2074.20
21	2071.98	2063.33	2063.87	2058.10	2060.73	2071.10	2075.05	2074.79	2076.64	2075.43	2074.86	2074.17
22	2071.72	2063.52	2063.03	2058.15	2061.18	2071.44	2075.20	2074.77	2076.57	2075.40	2074.83	2074.14
23	2071.41	2063.67	2062.33	2058.29	2061.58	2071.56	2075.76	2074.78	2076.48	2075.38	2074.79	2074.11
24	2070.81	2063.89	2062.15	2058.38	2061.98	2071.51	2076.16	2074.80	2076.41	2075.36	2074.77	2074.08
25	2070.41	2064.18	2062.48	2058.48	2062.35	2071.37	2076.32	2074.80	2076.37	2075.35	2074.76	2074.04
26	2070.01	2064.26	2062.94	2058.52	2062.71	2071.22	2076.34	2074.81	2076.35	2075.34	2074.72	2073.98
27	2069.58	2064.15	2063.81	2058.56	2062.79	2071.38	2076.37	2074.82	2076.31	2075.34	2074.69	2073.93
28	2069.20	2064.05	2064.25	2058.89	2062.69	2072.02	2076.35	2074.92	2076.26	2075.32	2074.66	2073.89
29	2068.84	2063.90	2065.77	2059.28	---	2072.53	2076.33	2075.02	2076.22	2075.29	2074.64	2073.86
30	2068.50	2063.73	2067.68	2059.90	---	2072.90	2076.28	2075.11	2076.18	2075.29	2074.61	2073.85
31	2068.16	---	2070.41	2063.57	---	2072.94	---	2075.29	---	2075.26	2074.58	---
MAX	2072.12	2067.82	2070.41	2075.97	2073.77	2072.94	2076.37	2076.17	2076.80	2076.16	2075.25	2074.54
MIN	2068.16	2062.53	2062.15	2057.97	2058.51	2062.66	2071.87	2074.77	2075.42	2075.26	2074.58	2073.85
(†)	5020	4420	5330	4400	4290	5700	6210	6060	6200	6060	5950	5840
(‡)	-570	-600	+910	-930	-110	+1410	+510	-150	+140	-140	-110	-110

CAL YR 1996 MAX 2080.21 MIN 2060.96 AC-FT† +690
WTR YR 1997 MAX 2076.80 MIN 2057.97 AC-FT† +250

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

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE 1/4 NW 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank at Heppner, 100 ft upstream from Court Street bridge, 800 ft southeast of Morrow County courthouse, 0.2 mi downstream from Willow Creek Dam and at mile 52.2.

DRAINAGE AREA.--96.8 mi².

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since September 1985. Datum of gage is 1,952.73 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Willow Creek Lake, 0.2 mi upstream, since Feb. 16, 1983. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Continuous water-quality records for the period February 1963 to June 1968 and March 1972 to September 1973 have been collected at this location. Chemical analysis Oct. 1984 to September 1987.

AVERAGE DISCHARGE.--31 years (water years 1952-82), 19.1 ft³/s, 13,840 acre-ft/yr.
14 years (water years 1984-97), 24.0 ft³/s, 17,390 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft³/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft³/s; maximum gage height, 6.46 ft May 25, 1971, backwater from Shobe Canyon; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, result of slope-area measurement (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft³/s, result of slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 251 ft³/s Feb. 4, 5, gage height, 4.85 ft; minimum discharge, 1.3 ft³/s Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	28	38	98	25	44	84	94	16	12	3.2	4.7
2	3.0	28	38	124	25	44	83	93	15	11	3.2	4.6
3	3.0	28	38	244	50	44	81	93	15	11	3.1	4.6
4	3.0	28	38	246	199	44	61	93	18	11	3.2	4.5
5	3.0	28	38	246	249	44	46	71	25	11	3.2	4.5
6	3.0	28	38	246	246	44	45	54	34	11	3.2	4.5
7	3.0	28	38	243	243	44	44	54	48	11	3.2	4.3
8	3.0	28	38	241	239	44	44	54	48	11	3.2	4.2
9	3.0	28	38	240	236	44	44	54	40	11	3.2	4.2
10	3.0	28	36	238	233	44	44	52	33	10	3.2	4.3
11	3.0	28	36	233	160	154	44	50	25	9.9	3.2	4.2
12	3.0	29	36	161	99	227	44	43	23	9.6	3.2	4.3
13	3.0	28	36	66	99	162	44	24	23	9.4	4.6	4.2
14	3.0	26	36	64	99	138	45	22	23	9.4	5.0	4.1
15	3.0	22	36	97	66	83	36	24	23	9.3	5.0	4.1
16	3.0	22	36	75	40	109	26	24	23	9.2	5.1	4.1
17	3.0	22	36	48	40	109	24	23	23	9.0	5.1	4.1
18	3.0	20	61	48	28	110	23	23	23	8.7	5.1	4.1
19	3.0	19	77	48	18	111	23	23	23	8.7	5.1	4.1
20	3.0	19	76	48	18	111	23	23	23	8.7	5.1	4.1
21	4.5	19	76	48	18	111	49	23	23	8.7	5.1	4.1
22	20	19	76	42	18	112	70	20	23	5.7	5.1	4.1
23	26	19	68	34	17	113	77	18	23	3.9	4.9	4.1
24	48	19	38	34	17	113	87	18	21	3.4	4.7	4.1
25	35	19	38	34	17	113	94	18	16	3.1	4.7	4.0
26	35	26	38	34	17	112	94	18	14	3.2	4.7	4.0
27	35	38	38	28	34	87	94	17	13	3.2	4.7	4.0
28	34	38	62	24	44	46	94	16	13	3.1	4.7	3.9
29	30	38	59	24	---	46	94	16	13	3.2	4.7	3.9
30	29	38	62	24	---	46	94	16	13	3.2	4.7	3.9
31	28	---	97	24	---	65	---	16	---	3.2	4.7	---
TOTAL	384.5	788	1496	3404	2594	2718	1755	1187	696	245.8	131.1	125.9
MEAN	12.4	26.3	48.3	110	92.6	87.7	58.5	38.3	23.2	7.93	4.23	4.20
MAX	48	38	97	246	249	227	94	94	48	12	5.1	4.7
MIN	3.0	19	36	24	17	44	23	16	13	3.1	3.1	3.9
AC-FT	763	1560	2970	6750	5150	5390	3480	2350	1380	488	260	250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	6.86	10.8	16.7	28.2	37.2	56.8	52.3	45.0	19.3	6.40	5.05	4.35		
MAX	15.6	26.3	48.3	110	110	113	152	127	54.2	10.5	14.3	12.4		
(WY)	1994	1997	1997	1997	1996	1993	1984	1995	1984	1993	1992	1988		
MIN	1.93	1.69	2.65	3.40	5.95	8.09	10.4	2.15	2.17	2.39	2.79	2.56		
(WY)	1992	1992	1993	1991	1994	1988	1994	1992	1992	1987	1991	1991		

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	14372.2	15525.3	24.0
ANNUAL MEAN	39.3	42.5	45.5
HIGHEST ANNUAL MEAN			7.79
LOWEST ANNUAL MEAN			298
HIGHEST DAILY MEAN	261	249	May 12 1995
LOWEST DAILY MEAN	2.7	3.0	Oct 27 1991
ANNUAL SEVEN-DAY MINIMUM	2.9	3.0	Oct 27 1991
ANNUAL RUNOFF (AC-FT)	28510	30790	17390
10 PERCENT EXCEEDS	115	99	61
50 PERCENT EXCEEDS	29	24	10
90 PERCENT EXCEEDS	3.0	3.2	2.9

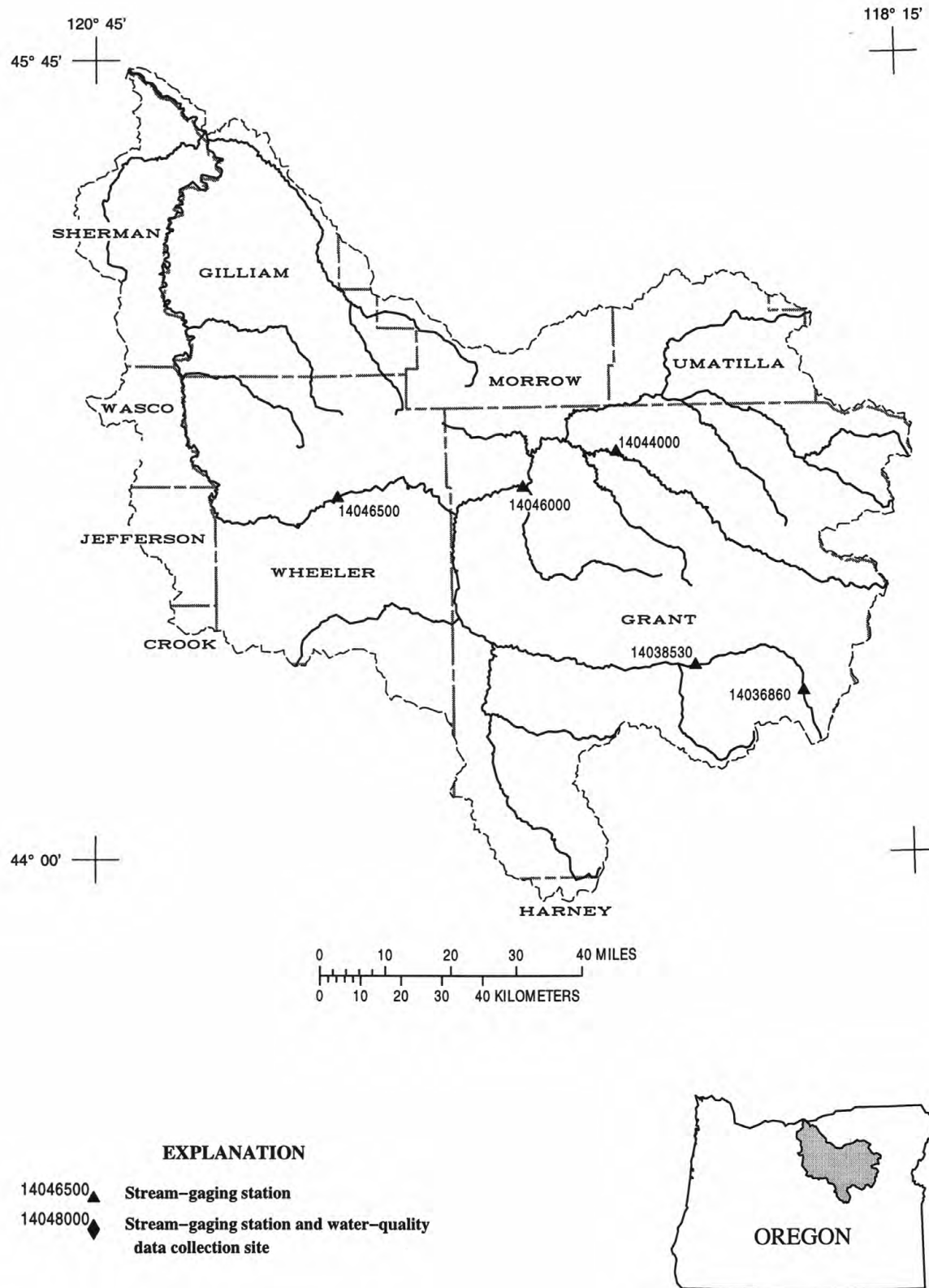


Figure 12. Location of surface-water and water-quality stations in the John Day River Basin.

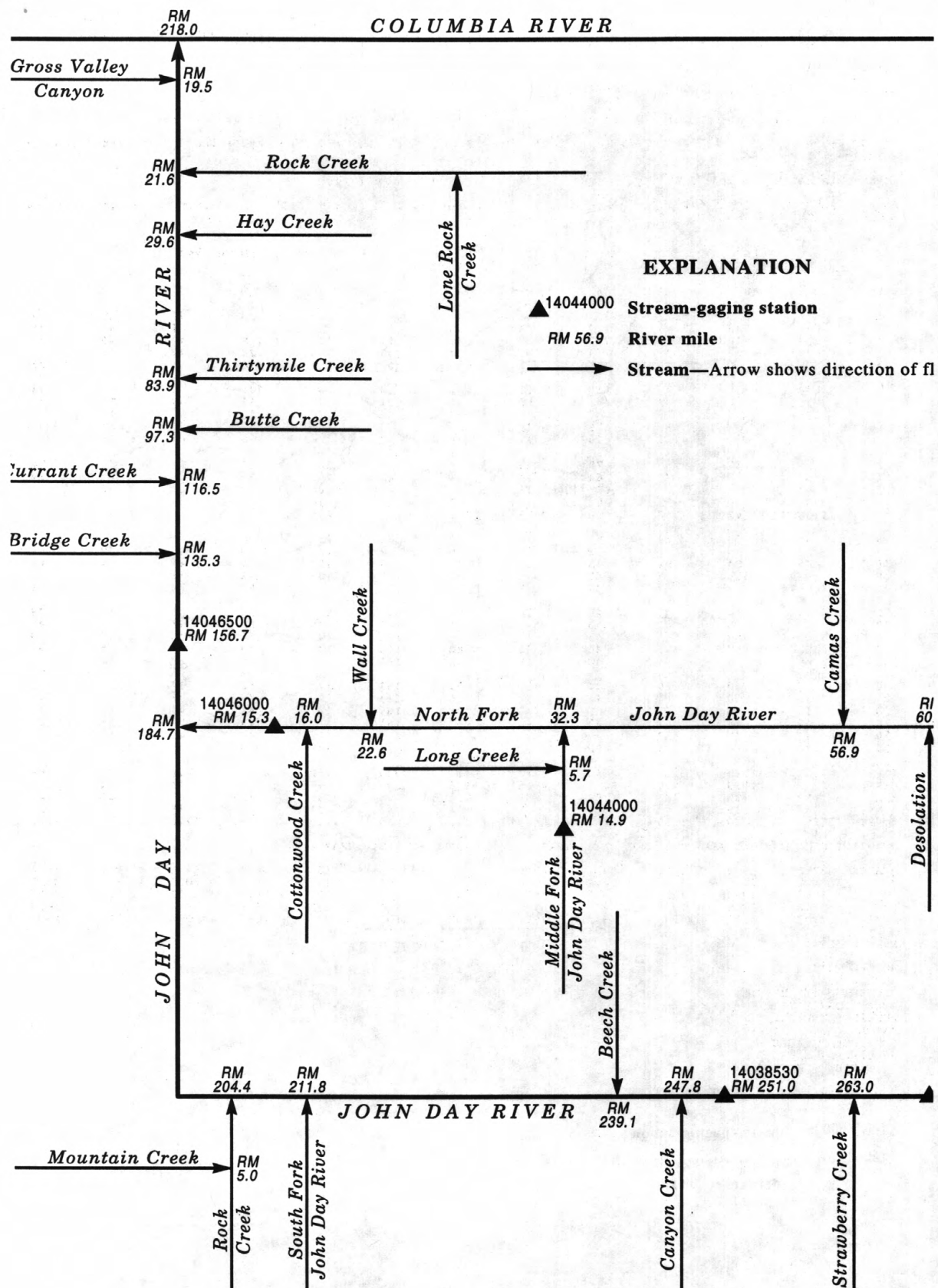


Figure 13. Schematic diagram showing gaging stations in the John Day River Basin.

JOHN DAY RIVER BASIN

97

14036860 JOHN DAY RIVER AT BLUE MOUNTAIN HOT SPRINGS, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°21'29", long 118°34'30", in SE 1/4 NW 1/4, sec. 13, T.14 S., R.34 E., Grant County, Hydrologic Unit 17070201, on right bank at private road crossing, 0.25 mi downstream from Blue Mountain Hot Springs, 0.6 mi downstream from Rail Creek, 8 mi southeast of Prairie City, and at mile 275.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1996 to September 1997.

GAGE.--Water-stage recorder. Elevation of gage is 4,200 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Some diversions for irrigation.

AVERAGE DISCHARGE.--1 year (water year 1997), 65.8 ft³/s, 47,660 acre-ft/yr.EXTREMES FOR CURRENT YEAR.--Maximum discharge, 439 ft³/s Jan. 1, gage height, 3.18 ft; minimum discharge, 31 ft³/s Oct. 17, 20, 21, Sept. 7.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e35	37	48	303	88	36	71	133	132	47	45	33
2	e33	39	45	279	83	36	65	120	123	44	44	36
3	e34	40	44	219	75	35	63	112	118	42	44	36
4	e34	36	49	174	68	34	63	108	123	42	44	34
5	e34	35	44	143	62	34	59	111	116	41	44	33
6	e34	36	42	118	58	34	56	123	106	40	43	33
7	e34	36	43	102	55	34	54	132	99	39	43	33
8	e34	36	57	88	52	34	54	140	93	39	43	33
9	e33	37	87	79	49	34	52	150	89	46	43	33
10	34	38	127	74	47	36	50	166	86	44	44	33
11	34	37	106	70	45	38	48	185	85	42	43	34
12	33	35	84	64	44	38	47	201	88	41	41	34
13	33	37	72	e62	41	37	47	206	81	40	40	34
14	34	40	62	e60	41	37	47	234	78	39	38	34
15	38	41	57	58	39	38	48	236	76	38	37	37
16	34	38	54	50	40	40	55	231	74	37	37	40
17	36	36	51	49	41	40	67	211	70	40	38	40
18	43	84	51	48	39	43	93	204	66	41	39	40
19	37	128	46	47	41	52	145	182	62	38	38	40
20	34	89	47	47	39	72	196	168	57	36	36	39
21	37	74	45	46	38	82	192	158	53	35	36	39
22	42	68	44	45	37	84	160	145	53	35	36	40
23	42	58	43	45	37	85	181	137	51	36	37	39
24	52	57	41	46	36	82	172	137	49	36	38	39
25	41	54	43	42	36	82	160	131	48	37	37	39
26	37	50	50	41	36	93	153	118	46	37	36	39
27	38	50	52	41	37	106	163	108	44	39	36	41
28	49	52	50	39	35	102	168	107	44	40	36	40
29	42	48	67	37	---	91	161	110	44	46	36	40
30	40	47	117	37	---	86	150	116	49	44	35	39
31	38	---	234	72	---	79	---	130	---	43	35	---
TOTAL	1153	1493	2002	2625	1339	1754	3040	4750	2303	1244	1222	1104
MEAN	37.2	49.8	64.6	84.7	47.8	56.6	101	153	76.8	40.1	39.4	36.8
MAX	52	128	234	303	88	106	196	236	132	47	45	41
MIN	33	35	41	37	35	34	47	107	44	35	35	33
AC-FT	2290	2960	3970	5210	2660	3480	6030	9420	4570	2470	2420	2190

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1997, BY WATER YEAR (WY)

	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997
MEAN	37.2	49.8	64.6	84.7	47.8	56.6	101	153	76.8	40.1	39.4	36.8
MAX	37.2	49.8	64.6	84.7	47.8	56.6	101	153	76.8	40.1	39.4	36.8
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997
MIN	37.2	49.8	64.6	84.7	47.8	56.6	101	153	76.8	40.1	39.4	36.8
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997

SUMMARY STATISTICS

FOR 1997 WATER YEAR

ANNUAL TOTAL
ANNUAL MEAN
HIGHEST DAILY MEAN
LOWEST DAILY MEAN
ANNUAL SEVEN-DAY MINIMUM
ANNUAL RUNOFF (AC-FT)
10 PERCENT EXCEEDS
50 PERCENT EXCEEDS
90 PERCENT EXCEEDS

24029
65.8
303
33
33
47660
132
44
35

Jan 1
Oct 2
Sep 4

e Estimated

JOHN DAY RIVER BASIN

14038530 JOHN DAY RIVER NEAR JOHN DAY, OR

LOCATION.--Lat 44°25'07", long 118°54'19", in SW 1/4 SE 1/4 sec.19, T.13 S., R.32 E., Grant County, Hydrologic Unit 17070101, on left bank 1,200 ft downstream from Dog Creek, 2.5 mi east of John Day, and at mile 250.8.

DRAINAGE AREA.--386 mi².

PERIOD OF RECORD.--October 1968 to September 1994, May to September 1996.

GAGE.--Water-stage recorder. Datum of gage is 3,130.56 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. No regulation upstream. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--27 years (water years 1969-94, 1997), 205 ft³/s, 148,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,830 ft³/s June 9, 1969, gage height, 10.80 ft, from floodmark; minimum discharge, 3.5 ft³/s Aug. 26-28, 1969.

EXTREMES FOR PERIOD MAY TO SEPTEMBER.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 26	1830	1,130	6.18	Jan. 2	0100	3,520	9.05
Dec. 29	2400	2,190	7.58	Jan. 31	2100	*4,810	*10.06
Dec. 31	0615	2,550	7.98	Apr. 23	0915	940	6.14

Minimum discharge, 32 ft³/s Aug. 24.

CORRECTIONS.--The EXTREMES FOR PERIOD OF RECORD and EXTREMES OUTSIDE PERIOD OF RECORD published in WDR OR-96-1 are erroneous and should be disregarded.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	120	209	2340	1710	242	381	535	497	181	91	46
2	85	118	193	2500	809	257	350	488	448	158	93	49
3	86	118	191	1530	630	244	335	451	427	142	87	65
4	89	117	168	945	548	239	329	435	504	129	83	66
5	88	117	213	707	479	231	317	423	481	122	81	64
6	88	116	202	560	418	232	303	432	420	141	78	60
7	88	117	196	514	381	238	292	447	369	130	77	60
8	88	115	384	462	368	271	299	452	345	125	68	60
9	88	114	558	429	342	250	291	471	321	155	66	63
10	87	114	689	456	333	265	281	534	298	205	62	64
11	88	114	539	473	324	274	269	626	309	168	59	77
12	87	114	404	367	333	277	259	689	503	152	55	82
13	87	115	354	275	298	271	256	714	376	140	54	85
14	90	130	304	296	312	264	253	743	331	136	51	81
15	97	136	259	294	311	271	249	759	315	136	46	90
16	95	133	257	280	302	276	267	754	292	129	41	107
17	93	128	210	319	338	287	306	743	277	134	38	100
18	96	207	203	342	320	301	385	700	266	142	40	102
19	102	533	199	302	328	357	595	602	245	137	37	100
20	99	368	205	287	310	452	799	530	227	125	37	98
21	95	276	198	278	283	523	817	472	203	117	38	98
22	100	271	189	274	273	510	761	422	193	110	36	95
23	115	246	183	245	257	505	883	413	187	106	38	96
24	154	251	182	237	251	479	803	535	176	101	35	93
25	145	268	309	261	250	460	707	496	164	90	42	89
26	127	223	655	257	251	492	653	420	145	87	41	87
27	119	207	778	237	251	544	704	368	136	83	40	90
28	120	241	526	322	241	529	710	406	135	80	45	101
29	140	219	1120	342	---	474	674	435	131	84	48	107
30	128	200	1460	366	---	436	601	451	142	101	49	108
31	125	---	1950	2510	---	408	---	497	---	96	48	---
TOTAL	3180	5546	13487	19007	11251	10859	14129	16443	8863	3942	1704	2483
MEAN	103	185	435	613	402	350	471	530	295	127	55.0	82.8
MAX	154	533	1950	2510	1710	544	883	759	504	205	93	108
MIN	85	114	168	237	241	231	249	368	131	80	35	46
AC-FT	6310	11000	26750	37700	22320	21540	28020	32610	17580	7820	3380	4930

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	MEAN	93.3	127	164	212	238	322	339	435	326	110	42.9	55.6
MAX	156	244	435	613	689	746	718	845	810	314	116	145	145
(WY)	1983	1974	1997	1997	1982	1984	1984	1984	1982	1982	1984	1984	1984
MIN	65.8	87.5	90.0	88.1	88.8	88.6	88.1	85.4	53.9	25.9	10.4	24.2	24.2
(WY)	1989	1979	1989	1977	1977	1977	1977	1992	1992	1973	1973	1990	1990

SUMMARY STATISTICS

FOR 1997 WATER YEAR

WATER YEARS 1969 - 1997

ANNUAL TOTAL	110894												
ANNUAL MEAN	304									205			
HIGHEST ANNUAL MEAN										393			1984
LOWEST ANNUAL MEAN										73.5			1977
HIGHEST DAILY MEAN	2510	Jan 31								2640	May 19		1991
LOWEST DAILY MEAN	35	Aug 24								3.5	Aug 27		1969
ANNUAL SEVEN-DAY MINIMUM	37	Aug 18								4.3	Aug 24		1969
ANNUAL RUNOFF (AC-FT)	220000									148800			
10 PERCENT EXCEEDS	574									461			
50 PERCENT EXCEEDS	245									129			
90 PERCENT EXCEEDS	78									39			

JOHN DAY RIVER BASIN

99

14044000 MIDDLE FORK JOHN DAY RIVER AT RITTER, OR

LOCATION.--Lat 44°53'20", long 119°08'25", in SW 1/4 NW 1/4 sec.8, T.8 S., R.30 E., Grant County, Hydrologic Unit 17070203, on left bank 0.2 mi south of Ritter, 0.8 mi downstream from Twelvemile Creek, and at mile 14.9.

DRAINAGE AREA.--515 mi².

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

REVISED RECORDS.--WSP 739: 1931. WSP 1218: 1950. WSP 1448: 1930-32, 1937, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft above sea level.

REMARKS.--Records good except those above 3,000 ft³/s and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Continuous water-quality records for the period July 1966 to September 1968 have been collected at this location.

AVERAGE DISCHARGE.--68 years (water years 1930-97), 258 ft³/s, 186,600 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)
Jan. 1	1430	*4,540	*8.24	Apr. 23	0900	2,800	6.64
Jan. 31	2230	1,480	5.56	May 14	0130	1,390	5.49
Mar. 21	0600	2,090	5.98				

Minimum discharge, 36 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	66	e120	3930	1300	335	820	1150	534	151	77	38
2	40	62	e100	3440	835	358	733	979	464	137	73	38
3	40	61	e90	2450	643	347	692	867	438	122	67	42
4	41	61	e80	1580	560	327	681	837	484	111	61	50
5	41	63	87	1060	481	297	636	833	462	102	61	46
6	41	60	141	778	414	316	592	868	407	98	58	43
7	40	60	131	715	406	322	573	864	375	94	55	41
8	40	60	161	604	419	352	588	876	352	89	51	40
9	40	60	412	536	372	343	604	932	330	96	48	38
10	40	59	732	557	364	428	598	1030	313	154	46	37
11	39	59	671	609	346	600	555	1170	301	124	45	40
12	40	60	458	488	347	686	522	1190	367	107	46	54
13	42	61	379	e400	321	577	515	1220	341	97	46	51
14	47	71	313	e370	366	513	524	1230	303	91	45	46
15	48	80	223	e330	417	484	554	1170	282	87	43	50
16	54	77	260	320	439	494	622	1180	260	80	41	55
17	49	71	e180	344	568	602	733	1130	242	79	42	58
18	49	84	134	346	551	726	901	984	229	93	42	63
19	58	435	148	327	571	1050	1740	816	211	93	43	58
20	56	405	166	305	563	1510	2410	742	195	83	42	55
21	51	e120	165	289	459	1920	2370	657	182	77	42	51
22	50	e120	161	280	430	1690	2150	604	172	74	41	49
23	62	e110	148	228	384	1600	2580	561	164	70	39	48
24	80	e130	150	230	368	1430	2440	571	156	67	38	46
25	117	e110	466	227	373	1290	1990	520	145	62	41	44
26	87	e100	652	253	375	1430	1750	468	136	58	41	43
27	70	e120	855	226	369	1660	1890	431	131	58	38	43
28	64	e150	603	239	348	1500	1710	425	124	59	39	43
29	73	e110	901	239	---	1220	1570	479	119	72	40	43
30	77	e110	1740	239	---	1050	1360	481	123	86	39	43
31	70	---	3150	602	---	916	---	487	---	80	38	---
TOTAL	1687	3195	13977	22541	13389	26373	35403	25752	8342	2851	1468	1396
MEAN	54.4	107	451	727	478	851	1180	831	278	92.0	47.4	46.5
MAX	117	435	3150	3930	1300	1920	2580	1230	534	154	77	63
MIN	39	59	80	226	321	297	515	425	119	58	38	37
AC-FT	3350	6340	27720	44710	26560	52310	70220	51080	16550	5650	2910	2770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1997, BY WATER YEAR (WY)

	MEAN	44.0	73.9	132	166	253	472	748	710	352	80.8	32.1	31.9
MAX	99.5	231	482	727	1073	1214	1426	1457	1127	285	98.4	108	
(WY)	1983	1974	1956	1997	1996	1972	1984	1984	1984	1984	1984	1984	
MIN	17.4	20.2	29.0	23.4	31.3	69.8	175	79.2	56.6	17.4	3.75	10.0	
(WY)	1937	1937	1933	1937	1937	1977	1968	1934	1992	1973	1966	1935	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1930 - 1997

ANNUAL TOTAL	141324	156374											
ANNUAL MEAN	386	428											
HIGHEST ANNUAL MEAN										258			
LOWEST ANNUAL MEAN										538			1984
HIGHEST DAILY MEAN	3150	Dec 31	3930	Jan 1						85.1			1977
LOWEST DAILY MEAN	31	Aug 27	37	Sep 10						4360			Jan 30 1965
ANNUAL SEVEN-DAY MINIMUM	33	Aug 27	39	Aug 27						.90			Aug 20 1966
ANNUAL RUNOFF (AC-FT)	280300		310200							1.1			Aug 19 1966
10 PERCENT EXCEEDS	891		1140							186600			
50 PERCENT EXCEEDS	218		228							731			
90 PERCENT EXCEEDS	40		43							92			
										25			

e Estimated

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 sea level. 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.--72 years (water years 1926-97), 1,301 ft³/s, 942,600 acre-ft/yr.
69 years (water years 1929-97), 1,305 ft³/s, 945,500 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)
Dec. 10	2000	6,730	8.53	Mar. 21	0830	8,540	9.43
Jan. 1	1300	*30,400	*17.56	Apr. 21	unknown	12,240	a10.93
Feb. 1	0430	15,400	12.29	May 12	1130	5,510	7.82

Minimum discharge, 115 ft³/s Oct. 11-13.
a From peak-stage indicator.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	210	763	24900	12300	1580	4040	5380	2370	602	339	136
2	119	196	798	17200	7510	2010	3600	4700	2370	641	308	132
3	119	185	692	11300	5320	2320	3410	4270	2120	543	287	138
4	119	182	548	7690	4400	1940	3230	4210	2070	484	256	148
5	119	181	592	5750	3590	1740	3120	4190	2400	447	237	166
6	119	181	901	4540	2960	1740	2880	4350	2160	414	223	156
7	119	173	804	4150	2670	1900	2740	4440	1860	410	220	146
8	118	177	1110	3640	2610	2070	2720	4390	1680	380	219	142
9	117	178	3700	3230	2340	1930	2880	4540	1550	376	199	138
10	117	176	5260	3140	2190	2940	2870	4850	1430	534	188	136
11	117	171	4810	3320	2030	4780	2750	5190	1340	607	180	138
12	115	171	3240	2770	1970	4410	2560	5320	1400	484	176	144
13	118	178	2590	e2200	1780	3750	2470	5250	1670	427	173	168
14	122	188	2070	e1500	1730	3230	2510	5300	1520	387	169	166
15	133	216	1560	e1300	2180	2930	2700	5180	1350	360	166	164
16	140	225	1500	e1400	2170	3030	3070	5030	1240	333	165	178
17	147	216	1200	e1600	2370	4280	3730	4880	1150	316	162	201
18	148	240	e900	e1800	2570	4690	4490	4560	1080	334	159	209
19	149	980	e800	e1700	2500	5430	6970	4000	989	380	152	215
20	176	2200	e900	e1600	3140	7010	e10000	3530	906	341	150	200
21	164	1250	e950	e1400	2490	8270	e11000	3160	831	307	148	190
22	150	878	832	e1300	2200	7460	8710	2850	774	289	148	180
23	149	881	756	e1200	1980	6900	9390	2630	736	277	145	172
24	203	775	758	e1100	1800	6360	10100	2560	724	260	138	168
25	283	961	1440	e1100	1750	5870	8390	2470	669	246	134	164
26	304	854	2250	e1200	1750	6160	7360	2220	618	232	139	159
27	238	677	4510	e1200	1720	6910	7770	2000	577	224	138	155
28	203	758	3910	1100	1650	6600	7530	1870	548	220	135	155
29	207	1010	5090	1320	---	5640	6730	1980	520	228	135	155
30	233	807	10500	1540	---	4970	6060	2140	527	280	136	155
31	225	---	19300	3850	---	4460	---	2210	---	376	134	---
TOTAL	4910	15475	85034	121040	83670	133310	155780	119650	39179	11739	5658	4874
MEAN	158	516	2743	3905	2988	4300	5193	3860	1306	379	183	162
MAX	304	2200	19300	24900	12300	8270	11000	5380	2400	641	339	215
MIN	115	171	548	1100	1650	1580	2470	1870	520	220	134	132
AC-FT	9740	30690	168700	240100	166000	264400	309000	237300	77710	23280	11220	9670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1997, BY WATER YEAR (WY)

MEAN	161	321	742	958	1484	2455	3634	3614	1686	385	134	122
MAX	420	1621	3374	4126	6103	6456	6695	8794	5227	1211	345	423
(WY)	1983	1974	1965	1965	1996	1983	1943	1948	1948	1982	1984	1984
MIN	58.5	64.5	96.6	75.8	134	345	822	378	259	97.4	36.6	45.2
(WY)	1937	1937	1937	1937	1929	1977	1968	1934	1992	1973	1931	1934

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1929 - 1997

ANNUAL TOTAL	738984	780319										
ANNUAL MEAN	2019	2138										
HIGHEST ANNUAL MEAN										1305		
LOWEST ANNUAL MEAN										2608		1984
HIGHEST DAILY MEAN	21000	24900								441		1977
LOWEST DAILY MEAN	99	115								31900		Jan 30 1965
ANNUAL SEVEN-DAY MINIMUM	105	117								17		Dec 12 1932
ANNUAL RUNOFF (AC-FT)	1466000	1548000								29		Aug 28 1931
10 PERCENT EXCEEDS	4840	5280								3750		
50 PERCENT EXCEEDS	1040	1150								428		
90 PERCENT EXCEEDS	119	148								97		

e Estimated

101

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.

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.

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

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.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 11	0400	9,990	8.92	Feb. 1	1230	21,900	12.91
Dec. 27	0900	8,520	8.32	Mar. 21	1300	11,500	9.50
Jan. 1	2230	*35,200	*16.49	Apr. 23	2030	16,200	11.15

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1997, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR		FOR 1997 WATER YEAR		WATER YEARS 1930 - 1997	
ANNUAL TOTAL	1072182		1179949			
ANNUAL MEAN	2929		3233		1951	
HIGHEST ANNUAL MEAN					4116	
LOWEST ANNUAL MEAN					619	
HIGHEST DAILY MEAN	24800	Feb 9	29800	Jan 2	36400	Jan 30
LOWEST DAILY MEAN	115	Aug 27	168	Aug 29	6.2	Aug 23
ANNUAL SEVEN-DAY MINIMUM	122	Sep 3	175	Aug 25	7.7	Aug 19
ANNUAL RUNOFF (AC-FT)	2127000		2340000		1413000	
10 PERCENT EXCEEDS	6870		7430		5420	
50 PERCENT EXCEEDS	1720		1990		755	
90 PERCENT EXCEEDS	179		294		134	

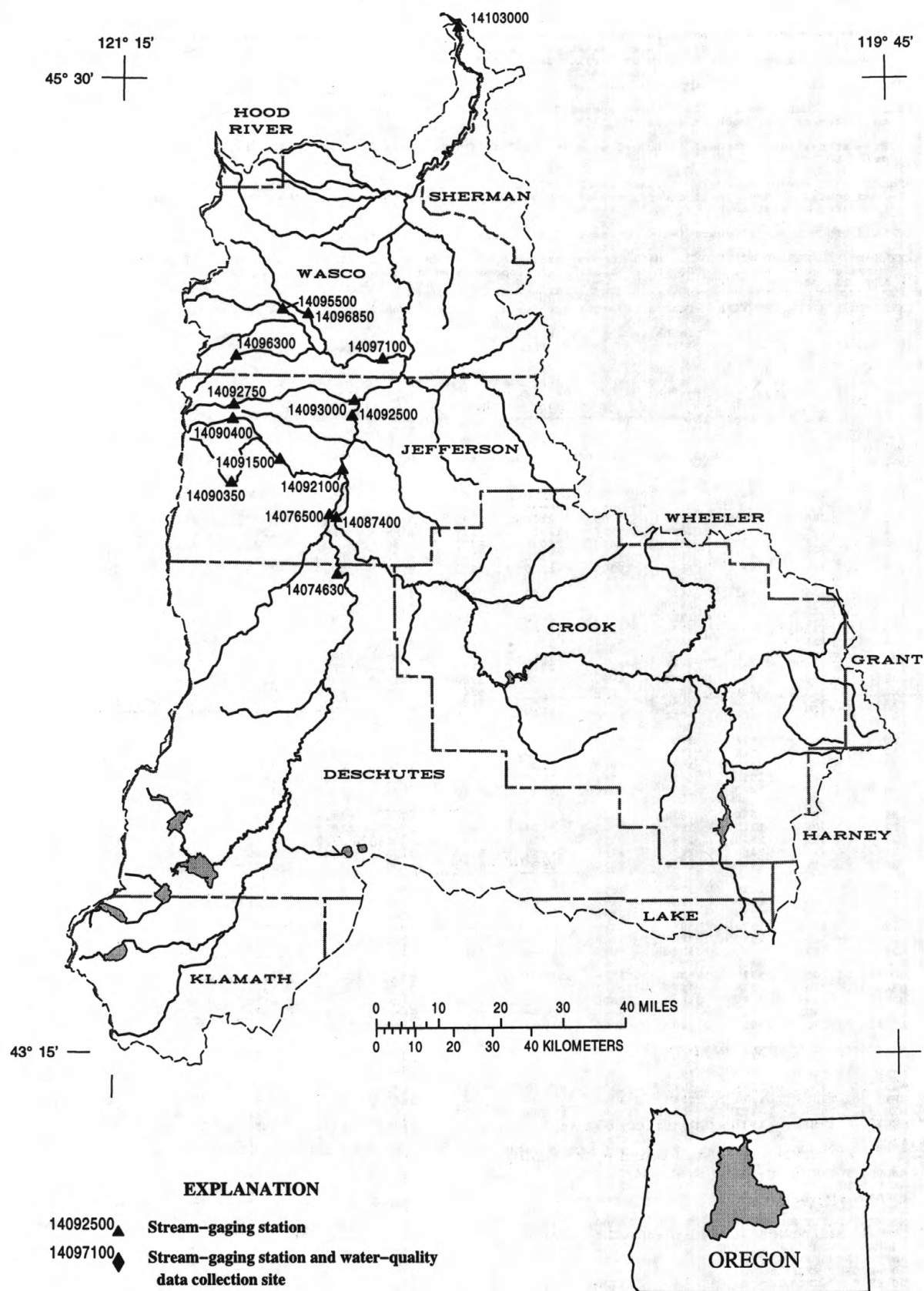


Figure 14. Location of surface-water and water-quality stations in the Deschutes River Basin.

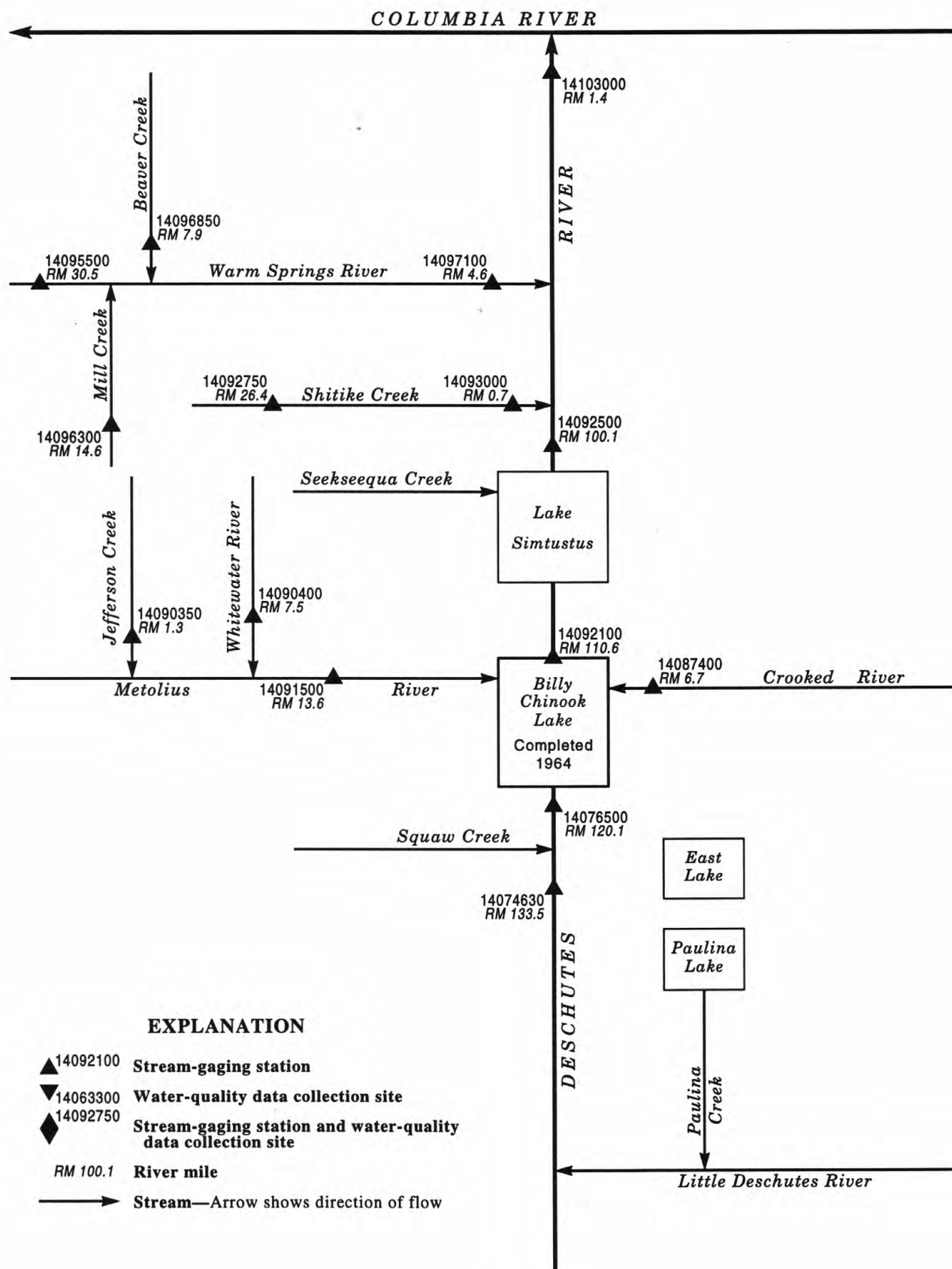


Figure 15. Schematic diagram showing gaging stations in the Deschutes River Basin.

DESCHUTES RIVER BASIN

14074630 DESCHUTES RIVER AT LOWER BRIDGE, NEAR TERREBONNE, OR

LOCATION.--Lat 44°21'37", long 121°17'36", in SE 1/4 NE 1/4 sec.16, T.14 S., R.12 E., Deschutes County, Hydrologic Unit 17070301, on right bank, at Lower Bridge Road bridge, 7.0 mi northwest of Terrebonne, and at mile 133.5.

DRAINAGE AREA.--2,160 mi², approximately.

PERIOD OF RECORD.--June 1994 to September 1997 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 2,516.32 ft above sea level.

REMARKS.--Records fair. Flow regulated by Crescent Lake, Crane Prairie and Wickiup Reservoirs. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--3 years (water year 1995-97), 560 ft³/s, 405,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft³/s Jan. 4, 5, 1997, gage height, 11.86 ft; maximum recorded gage height, 12.01 ft, Jan. 16, 1997 (backwater from ice); minimum discharge, 27 ft³/s July 29, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,720 ft³/s Jan. 4, 5, gage height, 11.86 ft; maximum recorded gage height, 12.01 ft Jan. 16 (backwater from ice); minimum discharge, 54 ft³/s, Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	956	1160	2420	2410	2130	1650	484	805	344	272	338
2	139	882	1150	2500	2340	2140	1600	410	647	295	248	330
3	112	867	1120	2460	2320	2140	1620	389	591	226	219	309
4	105	843	1130	2570	2340	2110	1690	362	801	164	202	306
5	107	827	1300	2600	2340	1970	1730	357	711	158	188	305
6	105	818	1220	2420	2360	1860	1750	278	543	184	189	258
7	102	809	1170	2350	2300	1790	1750	215	462	170	161	253
8	100	798	1240	2380	2240	1790	1730	152	347	135	134	248
9	100	783	1320	2430	2220	1800	1720	153	304	137	123	263
10	98	839	1380	2410	2190	1810	1730	162	212	174	121	271
11	97	668	1410	2430	2140	1790	1720	182	203	124	132	280
12	100	626	1420	2330	2110	1700	1710	206	236	103	122	264
13	102	618	1490	e2250	2070	1670	1590	204	173	97	104	286
14	104	622	1680	e2100	2110	1670	1440	222	191	95	102	309
15	141	621	1710	e2050	2150	1630	1130	341	224	110	101	427
16	134	796	1570	e2100	2140	1640	465	277	238	128	119	688
17	112	833	1580	e2050	1990	1520	300	319	231	117	106	815
18	213	849	1560	2010	1500	1090	272	352	248	112	108	952
19	611	697	1460	1920	1510	1060	256	326	202	113	114	899
20	1240	942	1310	1860	1520	1070	306	301	190	119	121	898
21	1070	570	802	1730	1640	1290	300	290	176	118	129	900
22	1050	898	769	1600	2110	1700	274	274	159	118	154	896
23	1010	1380	1350	1520	2170	1700	299	277	151	116	163	868
24	1060	1380	1370	1840	2170	1670	347	302	147	111	188	842
25	1070	1460	1430	2120	2170	1620	399	288	154	104	209	848
26	1020	1410	1630	2180	2120	1620	413	281	160	95	289	813
27	1010	1350	1770	2060	2090	1590	464	392	156	111	311	798
28	1030	1360	1680	2000	2080	1550	480	567	139	124	326	780
29	1020	1290	1760	2020	---	1640	552	752	144	164	346	761
30	982	1170	1980	2030	---	1650	543	647	165	217	400	754
31	978	---	2210	2220	---	1650	---	694	---	272	358	---
TOTAL	15220	27962	44131	66960	58850	52060	30230	10456	9110	4655	5859	16959
MEAN	491	932	1424	2160	2102	1679	1008	337	304	150	189	565
MAX	1240	1460	2210	2600	2410	2140	1750	752	805	344	400	952
MIN	97	570	769	1520	1500	1060	256	152	139	95	101	248
AC-FT	30190	55460	87530	132800	116700	103300	59960	20740	18070	9230	11620	33640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MEAN	296	582	911	1076	1284	1162	701	199	145	87.7	91.3	224
MAX	491	932	1424	2160	2102	1679	1008	337	304	150	189	565
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997	1997
MIN	192	375	368	362	742	560	167	66.9	55.1	48.7	34.4	37.5
(WY)	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1995 - 1997

ANNUAL TOTAL	219085	342452	560
ANNUAL MEAN	599	938	938
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			248
HIGHEST DAILY MEAN	2210	Dec 31	2600
LOWEST DAILY MEAN	41	Jun 21	95
ANNUAL SEVEN-DAY MINIMUM	44	Jun 18	100
ANNUAL RUNOFF (AC-FT)	434600	679300	405400
10 PERCENT EXCEEDS	1350	2120	1500
50 PERCENT EXCEEDS	480	783	307
90 PERCENT EXCEEDS	48	120	45

e Estimated

DESCHUTES RIVER BASIN

105

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW 1/4 SE 1/4 sec.29, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, on right bank 2.5 mi downstream from Squaw Creek, 6.0 mi southwest of Culver, and at mile 120.1.

DRAINAGE AREA.--2,705 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,980 ft above sea level (river-profile survey). July 14, 1952, to Sept. 30, 1961, at site 4.1 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1954 to September 1957 and January 1959 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--45 years (water years 1953-97), 908 ft³/s, 657,500 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft³/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 3,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 418 ft³/s July 7, 8, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,910 ft³/s Jan. 31, gage height, 7.89 ft; minimum discharge, 521 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	546	1310	1680	3370	3410	2630	2120	1110	1320	856	780	835
2	641	1280	1650	3220	3120	2670	2070	1030	1200	867	789	839
3	613	1270	1630	3230	3000	2660	2110	1000	1150	797	756	831
4	594	1260	1730	3340	2920	2640	2160	977	1270	716	725	829
5	595	1250	1920	3370	2900	2550	2210	968	1230	701	689	813
6	596	1250	1770	3080	2900	2440	2230	881	1110	740	686	778
7	589	1240	1750	2990	2850	2370	2230	779	1050	716	663	767
8	587	1240	1820	2970	2800	2340	2220	681	962	670	620	764
9	586	1240	1900	2970	2740	2340	2210	662	893	699	584	775
10	584	1270	1890	2900	2720	2370	2200	675	781	758	569	791
11	583	1200	1880	2890	2680	2370	2190	698	758	672	576	797
12	586	1160	1890	2840	2670	2300	2180	749	816	620	573	793
13	588	1170	1940	2730	2660	2270	2070	768	747	594	554	816
14	591	1170	2050	2670	2700	2270	1930	792	742	585	533	857
15	624	1170	2100	2710	2690	2230	1650	940	798	593	539	918
16	651	1250	2000	2630	2680	2250	1170	919	827	626	549	1040
17	652	1290	1980	2660	2610	2220	959	939	857	617	547	1130
18	771	1410	1980	2620	2120	1730	905	984	884	603	542	1240
19	940	1960	1920	2550	2130	1710	898	943	812	593	552	1220
20	1290	1820	1880	2500	2140	1740	1110	902	763	596	563	1220
21	1250	1360	1500	2340	2180	1830	1080	866	728	601	575	1230
22	1260	1430	1460	2210	2620	2290	1010	832	695	615	598	1230
23	1270	1730	1750	2070	2680	2290	1020	820	671	602	619	1220
24	1340	1770	1850	2300	2700	2260	1070	846	655	586	646	1190
25	1340	1830	1950	2560	2690	2190	1100	824	658	569	685	1200
26	1300	1790	2170	2610	2590	2210	1100	788	672	549	755	1180
27	1290	1760	2310	2540	2570	2180	1140	882	666	552	792	1170
28	1310	1820	2160	2500	2540	2140	1130	956	629	571	805	1160
29	1320	1760	2280	2520	---	2180	1190	1170	626	610	817	1150
30	1310	1670	2550	2530	---	2190	1170	1130	661	689	845	1140
31	1300	---	2780	3140	---	2170	---	1210	---	759	838	---
TOTAL	27497	43130	60120	85560	75010	70030	47832	27721	25631	20322	20364	29923
MEAN	887	1438	1939	2760	2679	2259	1594	894	854	656	657	997
MAX	1340	1960	2780	3370	3410	2670	2230	1210	1320	867	845	1240
MIN	546	1160	1460	2070	2120	1710	898	662	626	549	533	764
AC-FT	54540	85550	119200	169700	148800	138900	94870	54980	50840	40310	40390	59350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1997, BY WATER YEAR (WY)

	706	1137	1265	1340	1401	1352	865	592	628	548	528	558
MEAN	706	1137	1265	1340	1401	1352	865	592	628	548	528	558
MAX	1172	1706	2130	2760	2679	2360	1799	1228	1020	766	741	997
(WY)	1985	1985	1985	1997	1997	1972	1984	1956	1956	1975	1953	1997
MIN	470	783	813	853	892	839	510	457	455	430	441	455
(WY)	1964	1995	1995	1995	1993	1964	1968	1964	1964	1964	1964	1963

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR				FOR 1997 WATER YEAR				WATER YEARS 1953 - 1997			
ANNUAL TOTAL	402736				533140				908			
ANNUAL MEAN	1100				1461				1461			
HIGHEST ANNUAL MEAN									1461			
LOWEST ANNUAL MEAN									677			
HIGHEST DAILY MEAN	2780				3410				4790			
LOWEST DAILY MEAN	507				533				425			
ANNUAL SEVEN-DAY MINIMUM	509				545				426			
ANNUAL RUNOFF (AC-FT)	798800				1057000				657500			
10 PERCENT EXCEEDS	1820				2660				1580			
50 PERCENT EXCEEDS	1090				1210				747			
90 PERCENT EXCEEDS	517				600				489			

DESCHUTES RIVER BASIN

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

LOCATION.--Lat 44°29'33", long 121°17'50", in NW 1/4 NE 1/4 sec.33, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 0.2 mi downstream from Opal Springs, 4.8 mi southwest of Culver, and at mile 6.7.

DRAINAGE AREA.--4,300 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,953.60 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1960 by Prineville Reservoir, active capacity of 152,800 acre-ft and Ochoco Reservoir, active capacity, 46,500 acre-ft. Dam and powerplant 500 ft upstream, completed in 1985, causes brief fluctuations in flow. Many diversions for irrigation upstream from station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi upstream from station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase to summer flow from springs downstream from this station. Continuous water-quality records for the period October 1963 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--36 years (water years 1962-97), 1,564 ft³/s, 1,133,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft³/s Dec. 24, 1964, gage height, 9.36 ft; minimum daily discharge, 1,090 ft³/s May 11, 1981, minimum instantaneous discharge after October 1989, 656 ft³/s many days in the 1990 water year, prior to that date minimum instantaneous discharge was not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,350 ft³/s Jan. 2, gage height, 9.08 ft, due to powerplant operation; minimum discharge, 664 ft³/s May 17, due to powerplant operation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1320	1340	1510	4710	3040	1540	2390	2700	1620	1420	1440	1370
2	1300	1340	1510	5520	3020	1480	2160	2330	1600	1420	1480	1350
3	1290	1330	1500	5320	2930	1480	1910	2110	1610	1410	1490	1310
4	1320	1330	1510	5030	2890	1470	1720	1920	1750	1370	1470	1370
5	1310	1330	1600	4920	2860	1470	1550	1780	1820	1380	1410	1330
6	1310	1330	1640	4820	2840	1460	1500	1640	1800	1360	1350	1330
7	1330	1320	1580	4770	2830	1460	1490	1580	1770	1360	1310	1340
8	1320	1320	1640	4500	2660	1460	1470	1490	1730	1350	1280	1340
9	1310	1330	1930	3930	2590	1460	1450	1430	1650	1330	1290	1340
10	1300	1390	1950	3430	2580	1460	1440	1390	1640	1330	1300	1350
11	1300	1380	2370	3290	2570	1480	1420	1360	1510	1320	1300	1380
12	1340	1370	3080	3250	2560	1500	1430	1360	1460	1340	1280	1420
13	1330	1380	3360	3200	2480	1490	1440	1340	1450	1330	1270	1460
14	1360	1380	3350	2910	2450	1510	1440	1300	1390	1350	1270	1470
15	1410	1380	3330	2530	2450	1620	1610	1250	1370	1290	1250	1520
16	1430	1380	3320	2390	2450	1650	1830	1270	1360	1270	1240	1570
17	1450	1380	2970	2410	2440	1680	1890	1220	1320	1260	1250	1610
18	1530	1410	2480	2470	2460	1710	1880	1260	1310	1270	1250	1630
19	1570	1540	2040	2480	2460	1730	1910	1270	1290	1250	1260	1630
20	1480	1580	1710	2470	2410	1730	1960	1260	1270	1270	1250	1610
21	1400	1630	1580	2470	2370	1830	2100	1250	1310	1280	1250	1580
22	1430	1630	1580	2500	2270	1820	2480	1240	1330	1260	1250	1570
23	1400	1570	1580	2500	2120	1790	2680	1260	1350	1250	1250	1530
24	1370	1530	1510	2380	2020	1780	2840	1290	1350	1240	1260	1500
25	1360	1520	1480	2300	1890	1710	3390	1340	1320	1250	1290	1470
26	1350	1510	1720	2240	1720	1710	3520	1360	1320	1270	1300	1440
27	1340	1510	1680	2200	1610	2170	3420	1360	1330	1290	1340	1420
28	1350	1510	1890	2210	1600	2640	3370	1340	1330	1290	1340	1410
29	1350	1510	2320	2220	---	2640	3190	1360	1360	1280	1360	1410
30	1350	1510	2870	2280	---	2650	2880	1390	1390	1370	1340	1390
31	1330	---	3710	2550	---	2620	---	1440	---	1450	1350	---
TOTAL	42340	42970	66300	100200	68570	54200	63760	45890	44110	40910	40770	43450
MEAN	1366	1432	2139	3232	2449	1748	2125	1480	1470	1320	1315	1448
MAX	1570	1630	3710	5520	3040	2650	3520	2700	1820	1450	1490	1630
MIN	1290	1320	1480	2200	1600	1460	1420	1220	1270	1240	1240	1310
AC-FT	83980	85230	131500	198700	136000	107500	126500	91020	87490	81140	80870	86180

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1997, BY WATER YEAR (WY)

MEAN	1424	1378	1520	1632	1827	1964	2110	1680	1322	1270	1300	1364
MAX	1650	2069	2686	3551	3490	4208	4793	3295	1777	1475	1593	1541
(WY)	1970	1985	1965	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 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1962 - 1997
ANNUAL TOTAL	608370	653470	
ANNUAL MEAN	1662	1790	1564
HIGHEST ANNUAL MEAN			2196
LOWEST ANNUAL MEAN			1250
HIGHEST DAILY MEAN	4470	Feb 11	6130
LOWEST DAILY MEAN	1210	Jul 13	1090
ANNUAL SEVEN-DAY MINIMUM	1220	Jul 11	1100
ANNUAL RUNOFF (AC-FT)	1207000		1133000
10 PERCENT EXCEEDS	2470		2220
50 PERCENT EXCEEDS	1430		1350
90 PERCENT EXCEEDS	1270		1200

DESCHUTES RIVER BASIN

107

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW 1/4 SE 1/4 sec.34, T.11 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 100 ft upstream from bridge, 7.6 mi north of Camp Sherman, and at mile 1.3.

DRAINAGE AREA.--27.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,780 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--14 years (water years 1984-97), 93.4 ft³/s, 45.67 in/yr, 67,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 730 ft³/s Feb. 7, 1996, gage height, 3.94 ft, not including 390 ft³/s which flowed out of the channel 150 ft upstream of gage and flowed into Candle Creek; minimum daily discharge, 36 ft³/s Dec. 22, 1990, but could have been lower during period of ice effect Dec. 19-25, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1700	411	2.99	Apr. 20	0630	342	2.95
Nov. 28	0030	262	2.45	May 17	2230	256	2.63
Dec. 4	2000	387	2.91	May 31	2000	322	2.88
Dec. 26	1500	293	2.57	June 15	2100	224	2.50
Jan. 1	0500	347	2.77	June 30	0930	229	2.52
Feb. 1	0030	*466	*3.31				

Minimum discharge, 80 ft³/s many days in October and November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	83	125	300	301	106	110	127	243	183	136	106
2	83	83	108	283	191	104	107	122	205	170	135	105
3	83	83	101	224	165	103	106	124	211	166	135	114
4	83	82	184	189	156	101	104	125	212	169	134	105
5	84	80	180	175	149	99	102	128	198	175	132	104
6	82	82	134	166	145	99	102	136	191	174	131	103
7	81	81	127	159	141	99	101	134	192	168	130	101
8	81	80	125	153	135	96	101	135	189	167	126	100
9	81	80	120	148	132	102	100	146	183	196	125	98
10	81	80	119	151	130	134	99	161	187	172	126	99
11	80	80	114	145	128	135	97	175	198	160	124	98
12	81	82	111	137	125	114	97	193	198	156	123	96
13	92	102	109	133	122	107	97	215	183	156	122	96
14	87	87	104	131	127	104	101	217	192	155	121	98
15	90	82	103	130	126	119	105	229	201	157	121	119
16	83	81	102	130	125	172	112	229	210	156	119	126
17	82	81	99	155	124	143	115	231	206	155	117	139
18	112	89	97	161	121	125	117	216	195	152	116	121
19	90	296	97	144	127	137	141	196	182	151	116	110
20	85	156	100	138	121	167	254	194	175	151	117	106
21	83	117	97	133	119	140	162	180	179	154	116	103
22	99	113	95	130	115	129	162	172	173	151	114	101
23	91	100	95	127	113	124	165	173	169	147	113	101
24	148	126	100	124	111	121	143	171	166	145	120	100
25	98	108	152	124	111	122	137	160	168	143	113	99
26	87	97	220	122	109	135	140	161	171	142	111	105
27	84	120	190	119	108	131	154	190	165	140	110	110
28	90	156	145	125	106	122	142	199	165	144	111	99
29	93	110	189	119	---	117	136	213	166	143	109	97
30	86	117	214	143	---	115	134	218	193	140	107	96
31	85	---	216	340	---	112	---	275	---	138	107	---
TOTAL	2748	3114	4072	4958	3783	3734	3743	5545	5666	4876	3737	3155
MEAN	88.6	104	131	160	135	120	125	179	189	157	121	105
MAX	148	296	220	340	301	172	254	275	243	196	136	139
MIN	80	80	95	119	106	96	97	122	165	138	107	96
AC-FT	5450	6180	8080	9830	7500	7410	7420	11000	11240	9670	7410	6260
CFSM	3.19	3.73	4.72	5.75	4.86	4.33	4.49	6.43	6.79	5.66	4.34	3.78
IN.	3.68	4.17	5.45	6.63	5.06	5.00	5.01	7.42	7.58	6.52	5.00	4.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

MEAN	73.9	82.7	79.5	83.0	92.0	86.9	96.3	119	127	110	91.1	79.9
MAX	90.1	131	155	160	244	148	135	179	189	157	121	105
(WY)	1985	1996	1996	1997	1996	1996	1996	1997	1997	1997	1997	1997
MIN	55.5	59.3	58.6	57.8	50.6	57.9	68.9	83.3	80.0	70.5	62.0	56.8
(WY)	1993	1988	1993	1993	1989	1985	1994	1991	1992	1992	1994	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	48891		49131									
ANNUAL MEAN	134		135									
HIGHEST ANNUAL MEAN										93.4		
LOWEST ANNUAL MEAN										137		1996
HIGHEST DAILY MEAN	634	Feb 7								66.8		1994
LOWEST DAILY MEAN	80	Oct 11								634	Feb 7	1996
ANNUAL SEVEN-DAY MINIMUM	80	Nov 5								36	Dec 22	1990
ANNUAL RUNOFF (AC-FT)	96980									38	Feb 4	1989
ANNUAL RUNOFF (CFSM)	4.81									67700		
ANNUAL RUNOFF (INCHES)	65.42									3.36		
10 PERCENT EXCEEDS	184									45.67		
50 PERCENT EXCEEDS	124									138		
90 PERCENT EXCEEDS	86									85		
										59		

DESCHUTES RIVER BASIN

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--(Revised)Lat 44°43'06", long 121°38'18", in SW 1/4 NW 1/4 sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on right bank bridge abutment, 18 mi north of Camp Sherman, and at mile 7.5.

DRAINAGE AREA.--22.8 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,230 ft above sea level, from topographic map. July 1982 to Feb. 7, 1996, at comparable site 1/4 mi downstream, at different datum.

REMARKS.--No estimated daily discharges. Records poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--15 years (water years 1983-97), 84.7 ft³/s, 50.49 in/yr, 61,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,320 ft³/s Feb. 7, 1996, from slope-area measurement of peak flow, gage height, unknown; maximum gage height, 8.30 ft Feb. 9, 1996, from outside highwater mark caused by debris, channel fill, and channel reconfiguration, datum then in use; minimum daily discharge, 28 ft³/s Dec. 22, 1990, but could be less because of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1630	396	6.92	Apr. 20	0500	321	6.75
Dec. 4	2000	305	6.70	May 18	0100	279	6.65
Jan. 1	0430	*602	*7.28	May 31	2000	329	6.78
Jan. 31	1530	531	7.17	June 16	2200	221	6.49
Mar. 20	1330	231	6.47	July 9	1400	261	6.62

Minimum discharge, 62 ft³/s Oct. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	68	129	550	370	126	139	146	267	147	129	106
2	63	69	124	541	291	124	135	141	209	138	128	107
3	64	68	117	443	258	122	135	140	212	135	129	115
4	64	67	176	366	238	121	133	138	216	140	130	109
5	69	66	176	317	219	120	131	138	185	150	135	107
6	66	67	142	284	201	120	130	141	169	154	141	102
7	66	66	137	258	185	122	129	138	166	145	138	98
8	67	66	142	235	170	119	127	138	163	147	131	97
9	67	65	135	216	159	124	125	143	155	229	126	97
10	67	65	135	210	151	133	123	152	157	170	123	99
11	65	65	128	189	147	131	121	170	169	145	120	101
12	66	66	123	168	144	128	120	194	174	137	119	98
13	70	75	121	152	140	126	121	229	158	136	120	93
14	67	70	118	147	141	125	122	235	164	137	121	95
15	72	68	117	142	138	129	122	255	178	142	126	103
16	66	68	116	141	136	145	124	258	199	140	121	109
17	65	67	111	162	136	146	127	259	201	140	118	128
18	79	69	110	169	134	145	128	256	192	138	116	106
19	68	229	109	160	142	171	139	232	167	136	115	95
20	66	153	116	153	133	221	263	226	151	137	117	89
21	66	130	115	148	131	205	202	202	150	144	121	85
22	73	126	109	142	130	188	195	184	142	142	119	83
23	71	118	105	139	128	178	194	178	137	135	120	81
24	96	124	109	137	127	169	174	174	133	131	131	81
25	77	120	136	138	126	166	165	156	134	129	121	82
26	72	115	151	133	126	179	165	148	138	129	118	92
27	70	124	153	133	126	175	177	162	136	128	113	91
28	74	141	133	134	124	162	168	181	136	130	110	84
29	74	124	212	132	---	151	157	205	136	133	107	82
30	71	127	267	169	---	147	152	218	156	132	104	84
31	69	---	318	411	---	143	---	277	---	130	105	---
TOTAL	2154	2846	4390	6819	4651	4561	4443	5814	5050	4406	3772	2899
MEAN	69.5	94.9	142	220	166	147	148	188	168	142	122	96.6
MAX	96	229	318	550	370	221	263	277	267	229	141	128
MIN	63	65	105	132	124	119	120	138	133	128	104	81
AC-FT	4270	5650	8710	13530	9230	9050	8810	11530	10020	8740	7480	5750
CFSM	3.05	4.16	6.21	9.65	7.29	6.45	6.50	8.23	7.38	6.23	5.34	4.24
IN.	3.51	4.64	7.16	11.13	7.59	7.44	7.25	9.49	8.24	7.19	6.15	4.73

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

	MEAN	50.4	66.7	73.2	78.8	95.8	82.0	94.3	113	120	103	80.0	61.1
MAX	69.5	122	174	220	329	147	148	188	168	142	122	96.6	
(WY)	1997	1996	1996	1997	1996	1997	1997	1997	1997	1997	1997	1997	1997
MIN	36.0	34.7	45.5	38.4	37.1	50.1	50.3	64.5	60.7	54.0	54.8	42.2	
(WY)	1993	1994	1994	1993	1994	1985	1991	1991	1992	1992	1994	1994	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1983 - 1997

ANNUAL TOTAL	45694	51805	
ANNUAL MEAN	125	142	
HIGHEST ANNUAL MEAN			84.7
LOWEST ANNUAL MEAN			54.0
HIGHEST DAILY MEAN	1400	550	1400
LOWEST DAILY MEAN	63	63	28
ANNUAL SEVEN-DAY MINIMUM	64	65	31
ANNUAL RUNOFF (AC-FT)	90630	102800	61380
ANNUAL RUNOFF (CFSM)	5.48	6.23	3.72
ANNUAL RUNOFF (INCHES)	74.55	84.52	50.49
10 PERCENT EXCEEDS	172	209	138
50 PERCENT EXCEEDS	102	133	73
90 PERCENT EXCEEDS	68	70	43

DESCHUTES RIVER BASIN

109

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

LOCATION.--Lat 44°37'33", long 121°28'55", in SE 1/4 SW 1/4 sec.12, T.11 S., R.10 E., Jefferson County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 1.0 mi upstream from maximum controlled pool of Lake Billy Chinook, 15.0 mi northwest of Culver, and at mile 13.6.

DRAINAGE AREA.--316 mi², at cableway 1.0 mi downstream, where all discharge measurements are made. Hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--April 1910 to February 1912 (gage heights and discharge measurements only), March 1912 to December 1913, October 1921 to current year. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

REVISED RECORDS.--WSP 1448: 1913.

GAGE.--Water-stage recorder. Datum of gage is 1,974.36 ft above sea level (levels by Portland General Electric Co.). Prior to Dec. 31, 1913, nonrecording gage at site 2.3 mi upstream at different datum. Oct. 1, 1921, to May 3, 1949, nonrecording gage and May 4, 1949, to June 18, 1963, water-stage recorder at site 2.7 mi downstream at datum 64 ft lower.

REMARKS.--No estimated daily discharges. Records excellent except those above 3,500 ft³/s, which are good. No regulation. Many small diversions for irrigation upstream from station. Stream is spring fed. Records herein are for measuring site. Continuous water-quality records for the period October 1954 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--77 years (water years 1913, 1922-97), 1,489 ft³/s, 1,078,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Feb. 7, 1996, gage height, 7.38 ft; minimum discharge, 1,080 ft³/s Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,150 ft³/s Jan. 1, gage height, 4.89 ft; minimum discharge, 1,400 ft³/s several days in October and November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1420	1430	2030	4730	3450	1950	2060	2090	2260	1940	1780	1660
2	1410	1420	1890	4690	2890	2020	2060	2060	2110	1900	1780	1660
3	1410	1420	1830	4310	2660	1950	2010	2040	2110	1880	1770	1700
4	1420	1420	2080	3540	2520	1920	1980	2020	2130	1890	1770	1670
5	1430	1410	2620	3170	2410	1900	1960	2010	2070	1910	1770	1660
6	1420	1420	2220	2890	2340	1900	1950	2020	2030	1920	1770	1650
7	1420	1420	2140	2710	2280	1910	1930	2020	2010	1900	1770	1640
8	1420	1410	2280	2580	2210	1900	1920	2010	2000	1890	1750	1640
9	1410	1410	2230	2470	2160	1910	1910	2020	1980	1980	1730	1630
10	1410	1410	2220	2430	2120	2040	1890	2050	1970	1940	1720	1660
11	1410	1410	2140	2370	2090	2160	1880	2080	1990	1880	1720	1660
12	1410	1410	2080	2260	2090	2080	1870	2130	2010	1850	1710	1640
13	1450	1460	2070	2180	2040	2040	1870	2210	1970	1840	1710	1630
14	1430	1440	1970	2160	2060	2010	1890	2220	1980	1840	1710	1640
15	1450	1420	1910	2150	2060	2060	1890	2260	2000	1840	1730	1680
16	1420	1420	1880	2130	2040	2260	1900	2280	2040	1840	1720	1730
17	1410	1430	1820	2140	2040	2280	1920	2270	2040	1840	1710	1750
18	1530	1530	1780	2170	2020	2200	1940	2260	2020	1830	1700	1690
19	1460	2500	1760	2110	2170	2240	1990	2190	1980	1820	1690	1650
20	1430	2240	1810	2080	2120	2370	2370	2160	1940	1810	1700	1630
21	1420	1870	1790	2050	2060	2320	2260	2100	1940	1820	1700	1620
22	1460	1830	1760	2020	2030	2270	2280	2060	1930	1820	1700	1620
23	1450	1760	1750	1990	2000	2240	2330	2050	1910	1810	1690	1620
24	1640	1850	1800	1960	1970	2200	2250	2030	1880	1790	1740	1620
25	1540	1860	2300	1960	1970	2180	2190	2000	1880	1780	1710	1620
26	1470	1750	2440	1950	1960	2210	2160	1970	1890	1780	1690	1630
27	1440	1760	2640	1910	1960	2220	2180	2010	1880	1780	1690	1650
28	1450	2070	2430	1930	1930	2170	2160	2050	1880	1780	1680	1620
29	1480	1870	2620	1910	---	2130	2130	2080	1890	1800	1670	1620
30	1450	1830	3210	1980	---	2110	2120	2100	1980	1790	1660	1610
31	1430	---	3550	2950	---	2090	---	2230	---	1780	1660	---
TOTAL	44800	48880	67050	77880	61650	65240	61210	65080	59700	57270	53300	49500
MEAN	1445	1629	2163	2512	2202	2105	2040	2099	1990	1847	1719	1650
MAX	1640	2500	3550	4730	3450	2370	2370	2280	2260	1980	1780	1750
MIN	1410	1410	1750	1910	1930	1900	1870	1970	1880	1780	1660	1610
AC-FT	88860	96950	133000	154500	122300	129400	121400	129100	118400	113600	105700	98180

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1997, BY WATER YEAR (WY)

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
MEAN	1340	1390	1481	1515	1567	1535	1547	1600	1622	1509	1411	1361
MAX	1619	1816	2454	2512	2997	2504	2040	2099	2118	1910	1746	1650
(WY)	1914	1922	1965	1997	1996	1972	1997	1997	1974	1972	1972	1997
MIN	1081	1140	1110	1154	1148	1157	1162	1244	1196	1173	1136	1103
(WY)	1943	1940	1945	1979	1941	1941	1941	1941	1941	1941	1931	1942

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1913 - 1997

ANNUAL TOTAL	668770	711560	
ANNUAL MEAN	1827	1949	
HIGHEST ANNUAL MEAN			1489
LOWEST ANNUAL MEAN			1949
HIGHEST DAILY MEAN	6580	Feb 8	1167
LOWEST DAILY MEAN	1410	Sep 28	1941
ANNUAL SEVEN-DAY MINIMUM	1410	Sep 27	7100
ANNUAL RUNOFF (AC-FT)	1327000	1411000	Dec 24 1964
10 PERCENT EXCEEDS	2220	2270	1080
50 PERCENT EXCEEDS	1740	1920	Feb 17 1932
90 PERCENT EXCEEDS	1430	1450	Oct 2 1942

DESCHUTES RIVER BASIN

14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW 1/4 NE 1/4 sec.22, T.11 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, near left end of Round Butte Dam on Deschutes River, 5.0 mi west of Metolius, and at mile 110.6.

DRAINAGE AREA.--7,490 mi², approximately.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by rock fill dam completed in June 1964 by Portland General Electric Co.; storage began Jan. 2, 1964. Total capacity is 534,700 acre-ft at elevation 1,945.0 ft proposed upper limit of operation, and usable capacity is 273,900 acre-ft between elevations 1,860.0 ft, proposed lower limit of operation, and 1,945.0 ft. Reservoir used for power generation under FERC license 2030. Figures given herein represent total contents.

COOPERATION.--Gage readings and capacity tables furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 538,700 acre-ft July 15, 16, 1972, elevation, 1,946.00 ft; minimum contents observed since first filling, 431,100 acre-ft Feb. 13, 1972, elevation, 1,917.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 535,600 acre-ft July 2, elevation, 1,945.21 ft; minimum contents observed, 491,900 acre-ft Dec. 24, elevation, 1,933.85 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	1,944.29	531,900	--
Oct. 31.....	1,942.68	525,600	-6,300
Nov. 30.....	1,940.10	515,700	-9,900
Dec. 31.....	1,936.96	503,700	-12,000
CAL YR 1996.....	--	--	-18,300
Jan. 31.....	1,935.80	499,300	-4,400
Feb. 28.....	1,937.47	505,600	+6,300
Mar. 31.....	1,938.82	510,800	+5,200
Apr. 30.....	1,941.58	521,300	+10,500
May 31.....	1,944.50	532,800	+11,500
June 30.....	1,944.60	533,200	+400
July 31.....	1,944.82	534,000	+800
Aug. 31.....	1,944.45	532,600	-1,400
Sept.30.....	1,944.16	531,400	-1,200
WTR YR 1997.....	--	--	-500

DESCHUTES RIVER BASIN

111

14092500 DESCHUTES RIVER NEAR MADRAS, OR

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.

DRAINAGE AREA.--7,820 mi², approximately.

PERIOD OF RECORD.--October 1923 to current year.

REVISED RECORDS.--WSP 1398: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

REMARKS.--No estimated daily discharges. Records excellent. Diurnal fluctuation caused by Lake Simtustus and reregulating reservoir since 1957, combined capacity for normal operation, 6,500 acre-ft. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 47,500 acre-ft, in Crescent Lake, Crane Prairie and Wickiup Reservoirs, combined capacity, 354,600 acre-ft, and since 1960, in Prineville Reservoir, capacity, 152,800 acre-ft, and since 1964, in Lake Billy Chinook, capacity, 534,700 acre-ft. Large diversions in upper basin for irrigation. Continuous water-quality records for the period October 1978 to September 1988 have been collected at this location.

AVERAGE DISCHARGE.--74 years (water years 1924-97), 4,544 ft³/s, 3,292,000 acre-ft/yr.
34 years (water years 1964-97), 4,660 ft³/s, 3,376,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s July 16, 1983, accidental release from Pelton Dam, gage height, 7.70 ft, from floodmarks; minimum discharge, 916 ft³/s July 4, 1982, caused by power company testing control gates on dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,700 ft³/s Jan. 2, gage height, 5.79 ft; minimum discharge, 3,510 ft³/s July 29, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3870	4670	6050	9420	11100	6080	8030	7160	5790	4580	4890	4830
2	3780	4650	6050	11200	11100	6070	7770	6660	6080	5090	4890	4840
3	3780	4640	6050	12800	10400	6610	7310	6140	5790	5620	4870	4820
4	3770	4640	6050	11500	9540	6770	6490	5410	5760	5350	4970	4730
5	3770	4510	6330	11200	8800	6800	6320	5620	5770	4820	4840	4730
6	3770	4510	6710	11500	8250	6810	6150	5380	5780	4460	4830	4650
7	3770	4600	6650	12100	8280	6510	5780	5100	5770	4660	4880	4370
8	3760	4630	6660	12000	8540	6480	5770	4880	5770	4710	4620	4380
9	3770	4630	7150	11600	8290	6490	6290	4520	5500	4690	4270	4370
10	3770	4640	7980	10800	8240	6510	6350	4050	5490	4810	4250	4470
11	3780	4590	7970	10700	8220	6640	6350	4140	5360	4840	4010	4590
12	3770	4040	7970	10700	8210	6810	6340	4530	5120	4740	4230	4560
13	3770	3620	8230	10600	8130	6820	6350	4660	4860	4730	4340	4570
14	3980	3880	8280	10300	8060	6690	6270	4790	4720	4730	4240	4580
15	3980	4380	8040	10300	8050	6660	6030	4700	4560	4440	4390	5000
16	3980	4420	8370	10200	7920	6660	5750	4810	4770	4460	4380	5270
17	3980	4710	8380	9260	7780	6970	5750	4670	4830	4450	4240	5300
18	4000	5050	8380	9060	7770	7140	5450	4670	4930	4470	4250	5550
19	4290	5630	8030	8270	7420	7160	4530	4690	4970	4450	4220	5540
20	4660	6710	7720	8490	7410	6700	4180	5090	4960	4480	4350	5540
21	5050	6610	7250	8930	7410	6680	4180	5190	4870	4480	4340	5330
22	5190	6360	6010	8720	7170	6660	4990	5100	4570	4480	4330	5140
23	5190	6370	5710	7620	6790	6960	6270	4840	4770	4510	4330	5080
24	5180	6350	6010	7120	6780	6960	6870	5080	4810	4490	4360	5060
25	5190	6370	6350	7090	6800	6930	7270	4930	4830	4500	4560	5050
26	5180	6370	6390	7710	6760	6930	7570	4930	4810	4490	4580	5070
27	4920	6370	7440	7550	6160	6920	7590	4830	4840	4150	4580	5060
28	4910	6370	7170	7590	6080	7240	7600	4830	4720	4350	4570	4980
29	4900	6370	7930	7600	---	7590	7770	5300	4450	4330	4560	4990
30	4900	6060	8510	7560	---	7580	7760	5360	4440	4370	4710	4880
31	4910	---	9010	8110	---	7980	---	5360	---	4630	4820	---
TOTAL	133520	156750	224830	297600	225460	211810	191130	157420	153690	143360	139700	147330
MEAN	4307	5225	7253	9600	8052	6833	6371	5078	5123	4625	4506	4911
MAX	5190	6710	9010	12800	11100	7980	8030	7160	6080	5620	4970	5550
MIN	3760	3620	5710	7090	6080	6070	4180	4050	4440	4150	4010	4370
AC-FT	264800	310900	446000	590300	447200	420100	379100	312200	304800	284400	277100	292200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1997, 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	1992	1993	1994	1995	1996	1997
MEAN	4148	4660	5131	5401	5414	5494	5137	4427	4230	4011	3933	3976																						
MAX	5097	6124	7253	9600	8974	9590	8988	6346	5134	4786	4718	4911																						
(WY)	1973	1985	1997	1997	1996	1972	1984	1984	1974	1974	1976	1997																						
MIN	3085	3521	3951	3305	3094	3455	3602	3554	3492	3059	3064	3081																						
(WY)	1965	1965	1970	1964	1964	1964	1968	1964	1964	1964	1964	1964																						

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR				FOR 1997 WATER YEAR				WATER YEARS 1964 - 1997			
ANNUAL TOTAL	1920460				2182600							
ANNUAL MEAN	5247				5980							
HIGHEST ANNUAL MEAN									4660			
LOWEST ANNUAL MEAN									5980			
HIGHEST DAILY MEAN	17800				12800				17800			
LOWEST DAILY MEAN	3460				3620				2770			
ANNUAL SEVEN-DAY MINIMUM	3620				3770				3040			
ANNUAL RUNOFF (AC-FT)	3809000				4329000				3376000			
10 PERCENT EXCEEDS	7770				8260				6170			
50 PERCENT EXCEEDS	4910				5350				4280			
90 PERCENT EXCEEDS	3790				4330				3630			

DESCHUTES RIVER BASIN

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW 1/4 NE 1/4 sec.35, T.9 S., R.9 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 0.5 mi downstream from Peters Pasture, and 18 mi west of town of Warm Springs, and at mile 26.4.

DRAINAGE AREA.--22.9 mi².

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

REVISED RECORDS.--WDR OR-96-1: 1983, 1985, 1986, 1988, 1990, 1995.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

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

AVERAGE DISCHARGE.--15 years (water years 1983-97), 78.6 ft³/s, 46.65 in/yr, 56,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,430 ft³/s Feb. 7, 1996, gage height, 6.66 ft, from rating curve extended above 800 ft³/s on basis of slope area measurement of peak flow; minimum discharge, 17 ft³/s Dec. 22, 1990.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2100	705	3.19	Jan. 31	2300	968	3.82
Dec. 4	2230	661	3.09	Apr. 20	1030	526	2.76
Dec. 26	1900	423	2.49	May 31	2400	405	2.45
Jan. 1	0600	*1,110	*4.14				

Minimum discharge, 35 ft³/s, Oct. 8-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	54	196	933	713	78	116	152	319	151	84	60
2	36	51	148	782	403	77	108	138	220	132	83	58
3	36	49	123	559	284	74	104	130	208	121	81	61
4	36	48	252	384	224	72	100	129	218	125	80	58
5	39	46	470	295	185	71	94	131	187	134	80	57
6	38	46	275	239	163	71	91	148	166	137	79	56
7	37	46	211	202	147	74	89	151	161	123	79	55
8	36	45	217	174	132	72	88	148	161	122	76	54
9	36	44	188	155	120	79	86	160	147	136	75	53
10	35	44	175	147	111	119	83	189	150	138	73	54
11	35	44	150	139	106	138	80	221	164	116	72	54
12	36	44	131	125	101	125	78	249	168	110	71	53
13	46	76	118	110	95	109	78	300	151	110	70	52
14	48	60	105	105	96	101	83	305	162	109	70	54
15	63	55	96	101	95	104	88	333	174	111	69	71
16	48	52	95	94	93	207	94	332	186	109	68	105
17	44	51	88	105	94	231	113	317	179	108	67	110
18	79	53	83	149	91	192	127	298	170	106	66	84
19	59	347	79	146	106	232	157	243	145	102	65	66
20	50	377	84	134	99	329	442	230	129	100	66	58
21	47	197	79	122	94	280	333	198	131	106	65	54
22	61	160	76	112	90	224	278	177	129	101	64	52
23	59	128	74	105	87	190	270	168	123	94	63	50
24	127	150	77	98	84	171	226	171	117	91	71	48
25	86	144	190	94	82	164	194	154	115	90	65	47
26	70	114	292	90	80	182	183	144	127	88	64	51
27	61	123	357	87	78	186	212	165	116	86	64	65
28	62	279	245	90	77	167	200	199	114	87	63	53
29	73	180	380	88	---	149	178	226	125	90	61	49
30	63	154	622	126	---	138	166	225	153	88	60	47
31	58	---	652	658	---	127	---	295	---	85	60	---
TOTAL	1641	3261	6328	6748	4130	4533	4539	6426	4815	3406	2174	1789
MEAN	52.9	109	204	218	148	146	151	207	161	110	70.1	59.6
MAX	127	377	652	933	713	329	442	333	319	151	84	110
MIN	35	44	74	87	77	71	78	129	114	85	60	47
AC-FT	3250	6470	12550	13380	8190	8990	9000	12750	9550	6760	4310	3550
CFSM	2.31	4.75	8.91	9.51	6.44	6.39	6.61	9.05	7.01	4.80	3.06	2.60
IN.	2.67	5.30	10.28	10.96	6.71	7.36	7.37	10.44	7.82	5.53	3.53	2.91

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	35.7	69.4	77.8	83.8	107	90.4	103	122	108	70.0	43.9	34.1			
MAX	60.2	175	205	218	363	166	151	207	161	111	70.1	59.6			
(WY)	1983	1996	1996	1997	1996	1986	1997	1997	1997	1983	1997	1997			
MIN	20.3	23.4	34.9	35.9	28.3	41.4	50.4	69.4	41.7	33.4	24.5	20.1			
(WY)	1988	1994	1991	1993	1994	1985	1991	1991	1992	1992	1992	1994			

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1983 - 1997

ANNUAL TOTAL	45844	49790	
ANNUAL MEAN	125	136	
HIGHEST ANNUAL MEAN			78.6
LOWEST ANNUAL MEAN			136
HIGHEST DAILY MEAN			43.2
LOWEST DAILY MEAN	2020	933	2020
ANNUAL SEVEN-DAY MINIMUM	35	35	17
ANNUAL RUNOFF (AC-FT)	36	36	18
ANNUAL RUNOFF (CFSM)	90930	98760	56960
ANNUAL RUNOFF (INCHES)	5.47	5.96	3.43
10 PERCENT EXCEEDS	213	244	144
50 PERCENT EXCEEDS	89	105	60
90 PERCENT EXCEEDS	44	52	27

14093000 SHITKE CREEK NEAR WARM SPRINGS, OR

LOCATION(revised).--Lat 44°45'41", long 121°14'25", in NE 1/4 NE 1/4, sec.25, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation on left bank 1.5 mi east of Warm Springs, and at mile 0.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--July 1911 to October 1916, April 1923 to September 1928, October 1972 to September 1974. Records for October 1974 to September 1996 (see station 14092885) at site upstream not equivalent owing to difference in drainage area.

REVISED RECORDS.--WSP 1318: 1911-12, 1916, 1927.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,380 ft above sea level, from topographic map. Prior to September 1928 non-recording gage 1.3 mi upstream, October 1972 to September 1974 water-stage recorder 0.4 mi downstream.

REMARKS.--Records good except those for the period Oct. 1 to June 8, which are poor. No regulation. Some diversions for irrigation and municipal use.

AVERAGE DISCHARGE.--13 years (water years 1912-16, 1924-28, 1973-74, 1997), 116 ft³/s, 15.11 in/yr, 83,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s Jan. 15, 1974, gage height, 4.36 ft; minimum daily discharge, 20 ft³/s Dec. 8-15, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 7, 1996 reached a stage of 12.4 ft, information supplied by local resident, discharge about 4,400 ft³/s, from rating curve extended above 900 ft³/s on basis of runoff comparisons with nearby stations.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	unknown	unknown	unknown	Jan. 31	1900	817	6.31
Nov. 28	unknown	unknown	unknown	Mar. 20	2330	458	5.06
Dec. 5	unknown	unknown	unknown	Apr. 20	1600	405	4.88
Jan. 1	0300	*1,300	*7.61				

Minimum daily discharge, 56 ft³/s Oct. 11, 12, Nov. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e62	e68	e250	1110	639	151	194	e210	313	168	110	85
2	e60	e66	e180	945	452	157	182	e190	244	155	106	83
3	e60	e64	e150	705	357	147	174	181	230	140	104	88
4	e60	e62	e300	e580	303	142	e170	187	245	139	102	84
5	e64	e62	e600	e500	267	140	e160	184	219	143	101	82
6	e62	e60	e360	444	246	139	e150	185	200	153	99	81
7	e60	e60	e260	412	231	141	150	197	186	143	99	79
8	e60	e58	e340	381	216	141	147	198	191	138	97	77
9	e58	e58	e300	357	204	141	e145	199	189	168	95	76
10	e58	e58	e250	339	194	186	e140	206	176	165	94	77
11	e56	e56	e200	325	187	e210	e135	229	183	139	93	79
12	e56	e56	e210	e300	182	e200	e130	252	189	131	92	79
13	e66	e90	e190	e295	173	196	134	278	177	129	91	77
14	e70	e75	e170	e290	183	184	137	290	176	129	90	79
15	e80	e70	e160	e285	178	182	139	308	178	127	89	85
16	e70	e68	e150	e280	174	238	137	314	194	129	89	130
17	e66	e66	e130	296	178	309	149	297	193	124	88	135
18	e100	e70	e120	340	174	288	164	289	186	127	88	127
19	e75	e400	e115	360	200	302	178	255	167	120	87	107
20	e65	e440	e120	330	197	380	327	247	152	118	87	92
21	e62	e250	e115	330	188	360	e325	226	148	120	90	86
22	e75	e200	e110	316	179	310	279	210	152	123	86	83
23	e100	e160	e120	e310	171	284	274	202	145	115	85	81
24	e150	e180	e130	e300	164	272	e250	206	139	111	94	80
25	e110	e170	e300	290	161	258	223	198	136	109	91	79
26	e90	e140	e360	296	164	266	212	178	144	107	88	77
27	e75	e150	e440	293	159	271	222	190	139	105	91	94
28	e75	e320	e300	e300	151	242	233	226	135	104	89	86
29	e90	e220	e500	293	---	229	225	233	145	108	87	82
30	e80	e190	e850	307	---	212	221	233	158	109	84	80
31	e70	---	978	587	---	207	---	256	---	113	83	---
TOTAL	2285	3987	8778	12496	6272	6885	5706	7054	5429	4009	2869	2630
MEAN	73.7	133	283	403	224	222	190	228	181	129	92.5	87.7
MAX	150	440	978	1110	639	380	327	314	313	168	110	135
MIN	56	56	110	280	151	139	130	178	135	104	83	76
AC-FT	4530	7910	17410	24790	12440	13660	11320	13990	10770	7950	5690	5220
CFSM	.71	1.28	2.72	3.88	2.15	2.14	1.83	2.19	1.74	1.24	.89	.84
IN.	.82	1.43	3.14	4.47	2.24	2.46	2.04	2.52	1.94	1.43	1.03	.94

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1997, BY WATER YEAR (WY)

	MEAN	63.8	98.7	122	153	142	126	136	160	151	107	68.9	62.0
MAX	106	167	283	432	261	222	200	238	315	213	106	87.7	
(WY)	1914	1928	1997	1974	1916	1997	1916	1974	1974	1916	1916	1997	
MIN	41.5	50.1	63.6	54.4	60.4	64.7	66.4	86.2	68.9	46.7	36.2	36.1	
(WY)	1916	1926	1912	1926	1915	1973	1973	1973	1924	1924	1924	1924	

SUMMARY STATISTICS

FOR 1997 WATER YEAR

WATER YEARS 1912 - 1997

ANNUAL TOTAL	68400		
ANNUAL MEAN	187		
HIGHEST ANNUAL MEAN		116	
LOWEST ANNUAL MEAN		187	1997
HIGHEST DAILY MEAN	1110	71.0	1926
LOWEST DAILY MEAN	56		
ANNUAL SEVEN-DAY MINIMUM	58	2300	Jan 15 1974
ANNUAL RUNOFF (AC-FT)	135700	20	Dec 8 1972
ANNUAL RUNOFF (CFSM)	1.80	20	Dec 8 1972
ANNUAL RUNOFF (INCHES)	24.47	83800	
10 PERCENT EXCEEDS	315	1.11	
50 PERCENT EXCEEDS	158	15.11	
90 PERCENT EXCEEDS	75	200	
		91	
		50	

e Estimated

DESCHUTES RIVER BASIN

115

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW 1/4 sec.23, T.8 S., R.9 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 200 ft upstream from bridge on road B241, 3.4 mi upstream from headworks of Mill Creek Canal, and 19.3 mi northwest of Warm Springs, and at mile 14.6.

DRAINAGE AREA.--26.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--14 years (water years 1984-97), 67.5 ft³/s, 34.24 in/yr, 48,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s Feb. 7, 1996, from rating curve extended above 800 ft³/s on basis of slope-area measurement of peak flow, gage height, 8.42; maximum gage height, 9.49 ft, Feb. 7, 1996, from high-water mark on crest-stage gage; minimum discharge recorded, 23 ft³/s Feb. 15, 25, 1993, but may have been lower during period of estimated record.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	2000	345	6.05	Jan. 1	0500	--	*a7.30
Nov. 28	1100	161	5.52	Feb. 1	0130	443	6.28
Dec. 1	0630	156	5.50	Mar. 10	1400	139	5.44
Dec. 4	2300	381	6.14	Mar. 17	0530	189	5.62
Dec. 8	2000	184	5.60	Mar. 21	0100	207	5.68
Dec. 25	0930	198	5.65	Mar. 26	2230	152	5.49
Dec. 27	1500	195	5.64	Apr. 20	2300	241	5.78
Dec. 30	0330	356	6.08	May 16	1030	201	5.66
Jan. 1	0500	*578	6.63	June 1	1130	196	5.64

Minimum discharge, 46 ft³/s Oct. 9-12.

a High-water mark from crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	65	132	510	361	85	109	131	181	90	65	66
2	49	62	125	496	245	88	102	121	162	87	65	63
3	49	60	115	387	203	83	100	118	147	83	64	69
4	50	60	157	276	164	81	97	118	140	80	64	64
5	53	60	235	219	140	79	94	117	133	78	63	63
6	51	61	169	175	130	80	90	123	126	76	63	61
7	50	63	151	149	123	87	90	127	118	74	63	61
8	50	61	164	138	114	83	93	126	113	73	62	61
9	50	60	153	128	105	92	89	130	107	77	62	61
10	50	59	148	133	100	129	86	137	104	77	62	62
11	49	58	132	126	97	127	83	150	102	75	62	64
12	50	59	119	115	95	123	80	163	100	73	61	62
13	62	70	110	106	88	113	82	182	99	72	61	62
14	62	82	103	101	99	105	91	186	96	71	61	65
15	63	82	96	91	99	110	95	191	94	70	61	72
16	59	79	96	86	95	156	99	191	93	69	62	78
17	55	80	89	100	96	174	106	187	91	69	63	79
18	83	82	83	110	93	154	112	181	88	68	64	72
19	70	212	80	112	111	156	124	164	86	68	63	68
20	61	221	87	109	102	191	215	153	83	67	65	65
21	57	140	84	105	95	183	209	140	84	66	65	64
22	62	130	81	101	91	157	205	131	87	67	63	63
23	59	127	81	96	87	142	201	127	87	67	62	62
24	95	127	89	91	84	134	180	123	84	65	69	62
25	92	130	167	91	83	130	157	121	82	65	65	62
26	81	117	160	91	83	140	145	114	80	64	64	63
27	71	113	180	86	82	142	153	114	78	65	64	67
28	68	137	174	90	79	135	152	121	78	65	64	63
29	72	132	198	87	---	124	141	126	79	68	63	62
30	72	123	308	103	---	118	135	129	91	66	63	62
31	69	---	328	263	---	112	---	140	---	66	64	---
TOTAL	1913	2912	4394	4871	3344	3813	3715	4382	3093	2221	1962	1948
MEAN	61.7	97.1	142	157	119	123	124	141	103	71.6	63.3	64.9
MAX	95	221	328	510	361	191	215	191	181	90	69	79
MIN	49	58	80	86	79	79	80	114	78	64	61	61
AC-FT	3790	5780	8720	9660	6630	7560	7370	8690	6130	4410	3890	3860
CFSM	2.30	3.62	5.29	5.86	4.46	4.59	4.62	5.27	3.85	2.67	2.36	2.42
IN.	2.66	4.04	6.10	6.76	4.64	5.29	5.16	6.08	4.29	3.08	2.72	2.70

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	MEAN	41.4	67.0	76.9	80.1	93.8	78.4	87.9	89.4	69.9	46.9	40.7	39.9
MAX	61.7	136	203	162	275	123	124	141	103	71.6	63.3	64.9	64.9
(WY)	1997	1996	1996	1996	1996	1997	1997	1997	1997	1997	1997	1997	1997
MIN	30.0	38.2	44.1	43.8	40.0	58.1	62.4	43.7	33.3	34.2	31.1	28.2	28.2
(WY)	1993	1988	1994	1994	1993	1994	1991	1992	1992	1994	1992	1992	1995

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	39575	38568	
ANNUAL MEAN	108	106	67.5
HIGHEST ANNUAL MEAN			114
LOWEST ANNUAL MEAN			46.5
HIGHEST DAILY MEAN	1060	Feb 7	1060
LOWEST DAILY MEAN	49	Sep 30	25
ANNUAL SEVEN-DAY MINIMUM	49	Sep 27	25
ANNUAL RUNOFF (AC-FT)	78500	76500	48920
ANNUAL RUNOFF (CFSM)	4.03	3.94	2.52
ANNUAL RUNOFF (INCHES)	54.93	53.53	34.24
10 PERCENT EXCEEDS	174	164	107
50 PERCENT EXCEEDS	89	90	57
90 PERCENT EXCEEDS	52	62	35

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE 1/4 SW 1/4 sec.14, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 600 ft downstream from culvert on Warm Springs Reservation Highway 9, 200 ft downstream from Quartz Creek, and 2.4 mi west of Simnasho, and at mile 7.92.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR OR-96-1: 1986.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--14 years (water years 1984-97), 86.6 ft³/s, 8.12 in/yr, 62,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft³/s, Feb. 7, 1996, gage height, 10.57 ft; minimum discharge, 4.5 ft³/s Jan. 7, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 4	2200	1,120	5.23	Jan. 1	unknown	*2,750	*a7.50
Dec. 8	0530	601	4.21	Feb. 1	unknown	unknown	unknown
Dec. 25	0900	678	4.38				

Minimum discharge, 36 ft³/s Oct. 2.
a From extreme indicator reading in well.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	43	213	e2100	e1140	e210	e200	182	87	56	44	43
2	37	42	158	e1900	e770	e240	e190	168	82	54	44	42
3	37	42	133	e1500	e580	e220	e180	160	79	52	44	43
4	37	42	324	e950	e460	e200	176	156	81	51	43	43
5	37	42	534	e700	e390	e190	166	153	77	51	43	42
6	37	42	284	e540	e350	e180	157	152	73	51	43	42
7	37	44	280	e500	e310	e190	153	153	71	50	42	42
8	37	44	548	e470	e290	e200	151	150	69	49	42	42
9	37	43	446	e410	e275	e190	150	146	68	50	42	42
10	37	43	403	e400	e260	e250	147	144	66	51	42	43
11	37	42	324	e380	e240	e300	142	145	66	50	42	43
12	38	42	255	e340	e230	e290	135	146	66	49	42	43
13	40	43	308	e300	e240	e260	133	149	64	49	42	43
14	41	44	233	e260	e290	e240	139	150	63	48	42	44
15	41	44	175	e240	e300	e220	148	148	62	47	42	44
16	41	44	177	e230	e290	e260	152	143	61	47	42	48
17	41	43	143	e240	e270	e280	158	137	60	46	42	e47
18	44	51	121	e250	e270	e330	167	132	58	46	42	e46
19	48	68	114	e240	e310	e290	182	124	57	46	43	e45
20	45	101	124	e230	e350	e300	232	117	57	46	43	44
21	43	76	132	e220	e300	e340	240	111	56	46	43	44
22	44	65	122	e215	e280	e360	256	106	56	46	43	44
23	45	61	114	e210	e260	e300	266	105	56	46	43	43
24	50	62	153	e205	e240	e280	238	103	56	45	46	43
25	54	86	556	e200	e230	e250	215	97	55	44	45	43
26	50	79	386	e190	e240	e230	203	94	54	44	44	43
27	46	74	347	e185	e230	e240	199	93	53	44	43	43
28	44	229	317	e180	e220	e260	202	98	53	44	43	43
29	45	151	288	e185	---	e250	197	94	56	44	43	43
30	45	121	747	e190	---	e220	190	89	56	44	43	43
31	44	---	e1300	e680	---	e210	---	89	---	44	43	---
TOTAL	1296	1953	9759	14840	9615	7780	5464	4034	1918	1480	1330	1303
MEAN	41.8	65.1	315	479	343	251	182	130	63.9	47.7	42.9	43.4
MAX	54	229	1300	2100	1140	360	266	182	87	56	46	48
MIN	37	42	114	180	220	180	133	89	53	44	42	42
AC-FT	2570	3870	19360	29440	19070	15430	10840	8000	3800	2940	2640	2580
CFSM	.29	.45	2.17	3.30	2.37	1.73	1.26	.90	.44	.33	.30	.30
IN.	.33	.50	2.50	3.81	2.47	2.00	1.40	1.03	.49	.38	.34	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	37.6	50.7	80.0	130	213	162	120	83.3	55.7	41.3	37.3	36.5		
MAX	42.6	104	315	479	646	305	182	130	95.5	47.7	42.9	43.4		
(WY)	1985	1985	1997	1997	1996	1986	1997	1997	1993	1997	1997	1997		
MIN	33.1	35.6	40.0	47.6	42.7	58.9	60.8	44.6	36.6	32.3	30.5	30.4		
(WY)	1995	1988	1986	1987	1994	1994	1994	1994	1994	1994	1994	1994		

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1984 - 1997
ANNUAL TOTAL	59192	60772	
ANNUAL MEAN	162	166	
HIGHEST ANNUAL MEAN			86.6
LOWEST ANNUAL MEAN			166
HIGHEST DAILY MEAN	3600	2100	41.6
LOWEST DAILY MEAN	36	37	3600
ANNUAL SEVEN-DAY MINIMUM	36	37	5.8
ANNUAL RUNOFF (AC-FT)	117400	120500	8.3
ANNUAL RUNOFF (CFSM)	1.12	1.15	62760
ANNUAL RUNOFF (INCHES)	15.19	15.59	.60
10 PERCENT EXCEEDS	311	310	8.12
50 PERCENT EXCEEDS	81	94	164
90 PERCENT EXCEEDS	37	42	48
			35

e Estimated

DESCHUTES RIVER BASIN

117

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE 1/4 SW 1/4 sec.23, T.8 S., R.13 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 25 ft upstream from bridge, 2.5 mi east of Kahneeta Hot Springs, and at mile 4.6.

DRAINAGE AREA.--526 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--25 years(water years 1973-97), 446 ft³/s, 11.51 in/yr, 322,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s Feb. 7, 1996, gage height, 14.32 ft, from inside highwater mark and slope-area computation; minimum discharge, 149 ft³/s Dec. 20, 1990, but may have been less during period of ice effect Dec. 20, 1990 to Jan. 10, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 5	0230	3,630	6.35	Jan. 1	0630	*9,190	*9.59
Dec. 8	1000	1,860	4.64	Jan. 31	2230	5,780	7.82
Dec. 25	1400	2,200	5.05				

Minimum discharge, 267 ft³/s Oct. 8-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	270	291	902	7790	4210	836	1000	1040	683	439	352	337
2	270	286	780	6920	2810	983	943	976	668	420	348	334
3	270	285	662	5540	2140	914	905	940	629	406	346	341
4	272	285	841	3530	1770	847	876	928	625	398	343	338
5	273	285	2360	2600	1450	810	841	905	592	393	341	333
6	273	281	1320	2000	1300	790	811	898	564	388	339	330
7	271	285	1080	1860	1170	790	793	917	539	384	338	328
8	269	288	1720	1730	1090	819	789	899	521	380	335	326
9	269	284	1660	1530	1020	798	782	894	508	382	335	326
10	267	282	1400	1430	951	1020	764	893	497	389	336	328
11	268	282	1230	1420	919	1320	743	919	488	388	336	329
12	268	280	976	1230	903	1290	722	942	479	381	336	329
13	276	285	1090	1020	885	1120	715	970	476	376	333	328
14	289	297	910	936	1110	1020	734	991	468	371	332	332
15	289	309	733	907	1140	983	767	996	458	368	330	334
16	290	307	703	861	1010	1140	784	989	451	366	330	360
17	282	304	641	901	1000	1450	820	955	445	364	332	359
18	290	347	551	940	1000	1320	865	929	441	362	332	355
19	330	486	548	915	1150	1290	925	882	433	361	332	348
20	306	819	574	900	1290	1460	1150	833	427	360	331	339
21	288	676	595	875	1110	1590	1310	793	423	358	337	332
22	283	550	568	839	1020	1500	1340	752	433	356	332	330
23	291	499	543	786	956	1370	1350	735	431	356	330	328
24	309	490	578	760	914	1280	1270	712	424	353	355	327
25	353	572	1650	738	886	1220	1170	686	418	352	346	326
26	341	529	1480	723	898	1220	1110	662	410	351	338	324
27	311	471	1480	693	905	1280	1110	643	405	351	337	333
28	297	909	1390	681	865	1250	1130	668	405	349	337	332
29	297	851	1260	684	---	1170	1100	661	422	351	335	328
30	299	627	2770	710	---	1110	1070	638	426	355	333	327
31	297	---	4690	2510	---	1060	---	643	---	355	331	---
TOTAL	8958	12742	37685	54959	35872	35050	28689	26289	14589	11563	10448	10021
MEAN	289	425	1216	1773	1281	1131	956	848	486	373	337	334
MAX	353	909	4690	7790	4210	1590	1350	1040	683	439	355	360
MIN	267	280	543	681	865	790	715	638	405	349	330	324
AC-FT	17770	25270	74750	109000	71150	69520	56900	52140	28940	22940	20720	19880
CFSM	.55	.81	2.31	3.37	2.44	2.15	1.82	1.61	.92	.71	.64	.64
IN.	.63	.90	2.67	3.89	2.54	2.48	2.03	1.86	1.03	.82	.74	.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1997, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	255	318	500	601	790	654	577	512	379	279	255	250													
MAX	318	570	1216	1773	2894	1285	956	848	803	401	337	334													
(WY)	1973	1985	1997	1997	1996	1986	1997	1997	1974	1974	1997	1997													
MIN	211	229	242	201	239	274	278	278	235	198	196	197													
(WY)	1993	1994	1994	1979	1994	1977	1977	1977	1994	1994	1994	1994													

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1973 - 1997
ANNUAL TOTAL	278088	286865	
ANNUAL MEAN	760	786	446
HIGHEST ANNUAL MEAN			786
LOWEST ANNUAL MEAN			246
HIGHEST DAILY MEAN	15800	Feb 7	15800
LOWEST DAILY MEAN	267	Oct 10	160
ANNUAL SEVEN-DAY MINIMUM	269	Oct 6	174
ANNUAL RUNOFF (AC-FT)	551600	569000	322800
ANNUAL RUNOFF (CFSM)	1.44	1.49	.85
ANNUAL RUNOFF (INCHES)	19.67	20.29	11.51
10 PERCENT EXCEEDS	1240	1320	749
50 PERCENT EXCEEDS	529	627	315
90 PERCENT EXCEEDS	276	297	227

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. WDR OR-96-1: 1965(M).

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft above sea level. Oct. 19, 1897, to Dec. 31, 1899, nonrecording gage at site 10 mi upstream at different datum. July 22, 1906, to July 18, 1930, nonrecording gage at site 300 ft downstream at datum 0.50 ft lower.

REMARKS.--No estimated daily discharges. 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, 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.--93 years (water years 1898, 1899, 1907-97), 5,828 ft³/s, 4,222,000 acre-ft/yr.
41 years (water years 1957-97), 5,800 ft³/s, 4,202,000 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,300 ft³/s Feb. 8, 1996, gage height, 12.08 ft, from rating curve extended above 47,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 2,400 ft³/s Dec. 5, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,300 ft³/s Jan. 1, gage height, 9.01 ft; minimum discharge, 4,310 ft³/s Oct. 9-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4430	5550	8220	36600	26600	7880	10500	9950	7080	5120	5060	5160
2	2400	5340	8640	31700	21200	8120	10300	9110	7450	5340	5270	5170
3	4340	5310	8130	30600	17700	8300	9830	8560	7360	5780	5240	5150
4	4340	5300	7950	23400	15400	8600	8940	7700	7150	6090	5220	5140
5	4350	5260	14200	19100	13700	8630	8290	7330	7100	5710	5290	5060
6	4360	5160	11800	17000	12200	8570	8040	7410	6950	5260	5190	5060
7	4360	5220	10400	17000	11600	8460	7720	7180	6870	4980	5180	4900
8	4350	5310	14100	17000	11400	8270	7460	6950	6800	5190	5150	4680
9	4330	5310	13200	16200	11300	8200	7570	6620	6680	5190	4870	4700
10	4320	5290	13400	15400	10700	8580	7980	6330	6410	5250	4630	4740
11	4330	5310	13300	14800	10600	9420	7930	6140	6370	5340	4550	4850
12	4350	5110	12100	14300	10600	9830	7840	6490	6220	5310	4430	4920
13	4380	4640	12300	13700	10600	9510	7790	6880	5930	5190	4600	4910
14	4460	4400	12200	13100	10500	9180	7850	7120	5650	5180	4660	4940
15	4650	4820	11000	12900	11000	8910	7870	7230	5500	5110	4600	5050
16	4660	5100	10600	12700	10500	9180	7660	7200	5410	4870	4710	5480
17	4650	5200	10600	12400	10300	10200	7570	7150	5630	4860	4670	5750
18	4660	5690	10200	12000	10200	10600	7600	6930	5590	4870	4580	5850
19	4840	6340	9960	11400	10100	10500	7290	6740	5670	4870	4590	6020
20	5120	9870	9560	11200	10600	10700	7050	6680	5610	4850	4570	6000
21	5410	9350	9440	11300	10200	10800	7670	6790	5560	4870	4710	5940
22	5770	8210	8490	11700	9850	10500	7580	6740	5430	4870	4690	5670
23	5930	8040	7350	10500	9260	10200	8740	6560	5240	4870	4660	5520
24	5980	7890	7430	9450	8840	10200	9660	6370	5420	4880	4730	5450
25	6160	8480	9210	9050	8750	9970	9900	6450	5380	4850	4830	5420
26	6070	8290	11400	9180	8740	9950	10000	6280	5350	4860	4970	5420
27	5880	7960	10700	9480	8530	10200	10200	6200	5340	4810	4950	5450
28	5650	9020	11600	9250	7960	10200	10300	6210	5330	4560	4950	5460
29	5650	9390	11100	9300	---	10400	10300	6360	5260	4700	4940	5360
30	5660	8360	16600	9410	---	10400	10300	6750	5060	4730	4950	5340
31	5620	---	25500	13300	---	10400	---	6780	---	4820	5070	---
TOTAL	153460	194520	350680	464420	328930	294860	257730	217190	180800	157180	150510	158560
MEAN	4950	6484	11310	14980	11750	9512	8591	7006	6027	5070	4855	5285
MAX	6160	9870	25500	36600	26600	10800	10500	9950	7450	6090	5290	6020
MIN	4320	4400	7350	9050	7960	7880	7050	6140	5060	4560	4430	4680
AC-FT	304400	385800	695600	921200	652400	584900	511200	430800	358600	311800	298500	314500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1997, BY WATER YEAR (WY)

MEAN	4690	5404	6443	6986	7607	7252	6769	5891	5229	4593	4402	4446
MAX	5594	7814	13150	14980	16980	13580	10930	8267	7643	5917	5359	5285
(WY)	1973	1985	1965	1997	1996	1972	1984	1984	1974	1974	1976	1997
MIN	3385	3910	4446	4378	4021	4192	4467	4141	3988	3597	3411	3394
(WY)	1965	1965	1994	1964	1964	1964	1977	1977	1994	1964	1964	1964

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1957 - 1997
--------------------	------------------------	---------------------	-------------------------

[illegible]

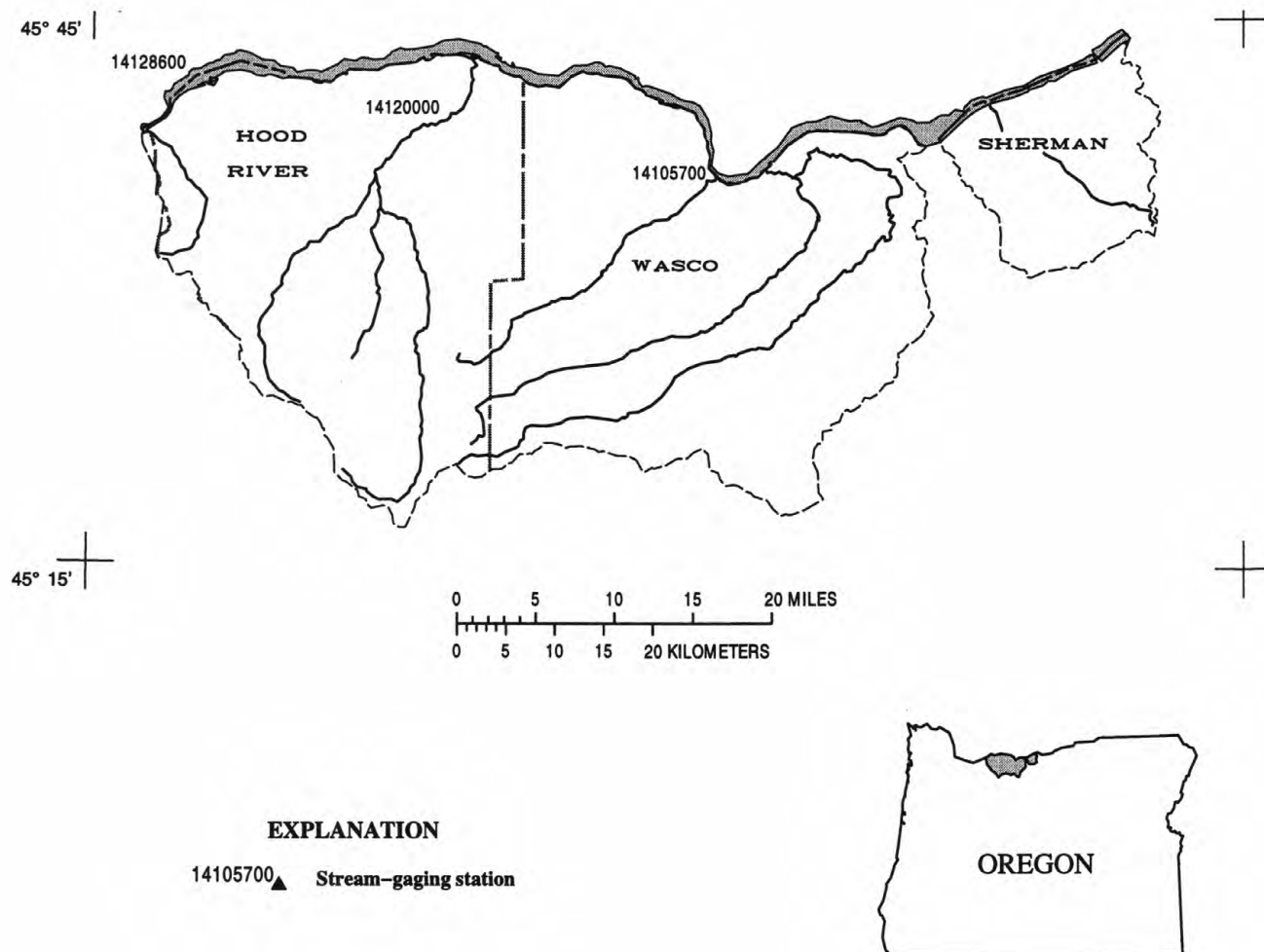
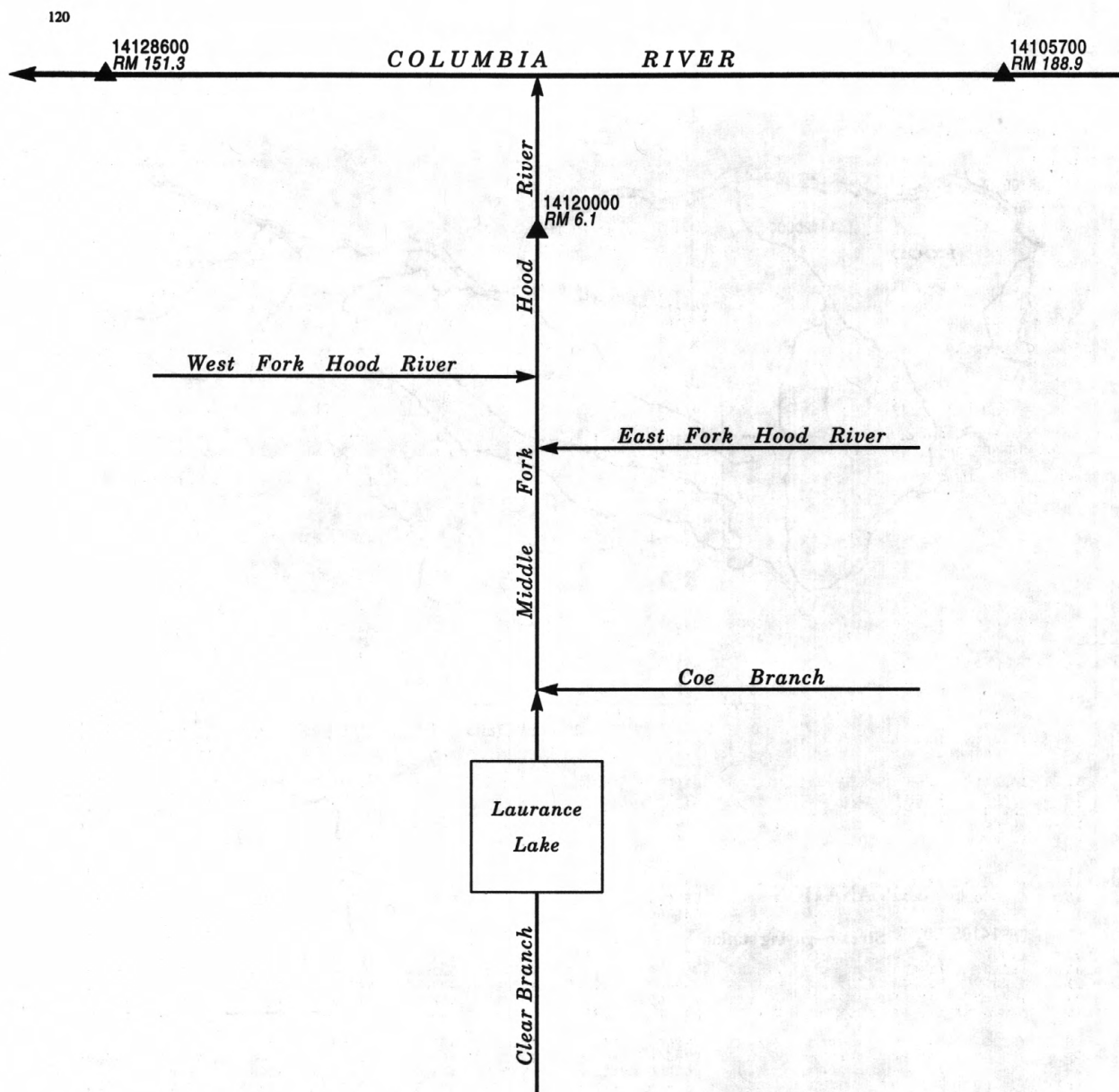


Figure 16. Location of surface-water stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.



EXPLANATION

- ▲ 14128600 Stream-gaging station
- RM 6.1 River mile
- Stream—Arrow shows direction of flow

Figure 17. Schematic diagram showing gaging stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW 1/4 SW 1/4 sec.34, T.2 N., R.13 E., Wasco County, Hydrologic Unit 17070105, Corps of Engineers land, on left bank 0.3 mi downstream from Mill Creek, 2.6 mi downstream from The Dalles Dam, and at mile 188.9.

DRAINAGE AREA.--237,000 mi², approximately.

PERIOD OF RECORD.--October 1857 to September 1877 (annual maximum only, at Lower Cascades Landing, published in WSP 1318), June 1878 to current year. Published as "near The Dalles" 1936-56.

REVISED RECORDS.--WSP 534: 1920(m). WSP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is sea level. See WSP 1738 for history of changes prior to Mar. 16, 1957. Mar. 16, 1957, to Sept 30, 1968, water-stage recorder at site 0.4 mi upstream at same datum.

REMARKS.--Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant and gates at The Dalles Dam. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to February 1985 have been collected at this location.

COOPERATION.--Discharge records provided by Corps of Engineers at The Dalles Dam through the Corps of Engineers, North Pacific Division, Reservoir Control center. The U.S. Geological Survey made 2 discharge measurements at this site during the year.

AVERAGE DISCHARGE.--119 years (water years 1879-97), 191,900 ft³/s, 139,000,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft³/s June 6, 1894, elevation, 106.5 ft; minimum discharge (since 1878), 12,100 ft³/s Apr. 16, 1968 (due to closure of John Day dam, recorded by AVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 571,000 ft³/s June 15; maximum elevation, 87.63 ft June 15; minimum daily discharge, 93,000 ft³/s Oct. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133000	117000	148000	301000	300000	258000	323000	479000	484000	289000	197000	142000
2	121000	108000	174000	316000	290000	250000	366000	468000	506000	289000	173000	143000
3	129000	93800	179000	321000	260000	238000	293000	428000	557000	315000	168000	148000
4	136000	134000	187000	315000	286000	230000	307000	400000	533000	275000	177000	140000
5	117000	126000	210000	322000	296000	258000	297000	384000	520000	288000	199000	145000
6	107000	123000	195000	307000	297000	261000	242000	404000	501000	285000	245000	148000
7	110000	133000	156000	269000	298000	223000	267000	404000	512000	283000	209000	110000
8	134000	121000	188000	279000	247000	240000	264000	404000	512000	242000	212000	116000
9	144000	125000	181000	278000	292000	202000	261000	404000	497000	249000	224000	129000
10	133000	115000	173000	285000	281000	219000	274000	387000	517000	276000	177000	140000
11	146000	136000	195000	285000	230000	246000	274000	379000	517000	285000	196000	129000
12	138000	126000	181000	278000	276000	251000	254000	453000	541000	270000	185000	150000
13	128000	125000	169000	276000	269000	256000	205000	510000	566000	258000	196000	134000
14	149000	132000	144000	305000	247000	265000	253000	497000	564000	261000	204000	117000
15	128000	126000	143000	275000	275000	254000	241000	455000	571000	277000	204000	120000
16	131000	121000	173000	273000	272000	223000	255000	443000	554000	290000	198000	144000
17	135000	133000	176000	256000	257000	263000	271000	482000	557000	300000	177000	150000
18	118000	152000	181000	272000	258000	260000	289000	516000	543000	295000	187000	164000
19	117000	170000	171000	221000	266000	293000	306000	527000	529000	302000	202000	170000
20	137000	165000	204000	247000	289000	312000	291000	526000	503000	270000	193000	164000
21	148000	156000	202000	262000	271000	296000	335000	523000	487000	268000	220000	173000
22	130000	156000	197000	224000	353000	324000	432000	503000	464000	261000	215000	150000
23	129000	147000	179000	216000	329000	342000	450000	494000	442000	279000	199000	164000
24	139000	162000	182000	228000	272000	302000	459000	498000	453000	244000	158000	196000
25	139000	146000	192000	244000	275000	279000	452000	465000	401000	261000	194000	183000
26	122000	133000	218000	258000	279000	344000	423000	468000	369000	260000	179000	167000
27	93000	144000	208000	263000	274000	350000	419000	455000	385000	213000	195000	164000
28	128000	121000	240000	257000	262000	412000	394000	464000	372000	261000	169000	168000
29	134000	122000	206000	248000	---	401000	452000	468000	351000	228000	180000	132000
30	131000	153000	175000	288000	---	381000	457000	450000	303000	206000	204000	155000
31	120000	---	247000	355000	---	322000	---	461000	---	190000	196000	---
TOTAL	4004000	4021800	5774000	8524000	7801000	8755000	9806000	14199000	14611000	8270000	6032000	4457000
MEAN	129200	134100	186300	275000	278600	282400	326900	458000	487000	266800	194600	148600
MAX	149000	170000	247000	355000	353000	412000	459000	527000	571000	315000	245000	196000
MIN	93000	93800	143000	216000	230000	202000	205000	379000	303000	190000	158000	110000
AC-FT	7942000	7977000	11450000	16910000	15470000	17370000	19450000	28160000	28980000	16400000	11960000	8840000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 1997, BY WATER YEAR (WY)

	MEAN	103900	107300	114200	116900	127000	145700	204100	341800	443200	302500	173100	120200
MAX	174800	200800	258300	275000	340400	345000	386400	624400	1002000	793300	385700	198200	
(WY)	1960	1928	1996	1997	1996	1983	1881	1897	1894	1880	1880	1880	
MIN	69430	57830	52380	42430	51420	69820	98350	136100	123700	88600	91970	75760	
(WY)	1930	1937	1937	1937	1937	1937	1944	1977	1977	1977	1994	1994	

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1879 - 1997
ANNUAL TOTAL	89220000	96254800	
ANNUAL MEAN	243800	263700	191900
HIGHEST ANNUAL MEAN			313600
LOWEST ANNUAL MEAN			181800
HIGHEST DAILY MEAN	456000	Jun 11	571000
LOWEST DAILY MEAN	93000	Oct 27	93000
ANNUAL SEVEN-DAY MINIMUM	117000	Oct 31	117000
ANNUAL RUNOFF (AC-FT)	177000000	190900000	139000000
10 PERCENT EXCEEDS	383000	464000	386000
50 PERCENT EXCEEDS	241000	251000	141000
90 PERCENT EXCEEDS	127000	131000	80100

14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR

LOCATION.--Lat 45°39'20", long 121°32'50", in SE 1/4 sec.15, T.2 N., R.10 E., Hood River County, Hydrologic Unit 17070105, on right bank 25 ft downstream from Tucker Bridge, 0.5 mi upstream from Odell Creek, 4.0 mi, southwest of town of Hood River, and at mile 6.1.

DRAINAGE AREA.--279 mi².

PERIOD OF RECORD.--October 1897 to December 1899, September 1913 to September 1914, August 1915 to September 1917, January 1965 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1318: 1899. WSP 1935: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft above sea level (Oregon State Highway Department bench mark). Prior to July 23, 1915, nonrecording gage at bridge at various datums. July 23 to Dec. 21, 1915, water-stage recorder at site 0.8 mi upstream at different datum. January 1916 to September 1917, nonrecording gage at bridge at different datum. Jan. 16 to July 23, 1965, nonrecording gage at bridge.

REMARKS.--No estimated daily discharges. Records good. Some daily fluctuation possibly caused by diversion dam upstream from station and sawmill at Dee. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--37 years (water years 1898-99, 1914, 1916-17, 1966-97), 1,029 ft³/s, 745,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,300 ft³/s Feb. 7, 1996, gage height, 17.11 ft, from rating curve extended above 8,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge recorded, 136 ft³/s Sept. 16, 1915, caused by temporary storage behind dam at Dee.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 20.6 ft, present datum, discharge, 33,200 ft³/s, from rating curve extended above 1,500 ft³/s on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 4	2130	5,500	8.81	Mar. 10	0130	5,350	8.66
Jan. 2	1000	*9,880	*11.46	Mar. 20	0930	5,280	8.61
Jan. 31	2230	8,280	10.58	Apr. 20	0530	5,850	9.02

Minimum discharge, 322 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	349	619	3090	6930	6070	1590	1870	2310	2140	843	576	488
2	331	585	2160	8710	3650	1880	1730	2050	1750	809	565	505
3	333	574	1720	5800	2770	1630	1670	1950	1650	756	594	475
4	345	660	2430	3870	2320	1510	1590	2050	1650	753	626	457
5	433	624	3540	3000	2020	1390	1500	2060	1530	808	646	449
6	365	866	2590	2520	1820	1520	1450	2290	1390	838	690	431
7	348	1000	2210	2490	1660	2340	1430	2180	1320	794	683	409
8	360	812	2810	2290	1530	2000	1480	2080	1250	775	581	398
9	369	733	2350	2110	1420	3070	1430	2130	1200	1060	519	403
10	382	682	2270	2540	1340	4340	1370	2270	1180	1060	500	430
11	372	641	2110	2440	1290	3030	1300	2450	1140	901	489	457
12	355	616	2000	2140	1350	2520	1270	2570	1150	783	477	444
13	472	855	2000	1900	1270	2160	1400	2720	1080	747	490	423
14	492	961	1730	1720	1600	1900	2270	2670	1060	731	492	488
15	689	902	1490	1560	1840	2010	2550	2710	1070	714	561	507
16	502	858	1370	1440	1700	3720	2420	2600	1130	731	531	649
17	426	1160	1210	1590	1870	3400	2400	2510	1170	707	496	844
18	1020	1350	1120	1950	1970	3010	2310	2330	1130	693	469	723
19	787	2280	1050	1760	2940	4110	2800	2100	1020	673	466	599
20	621	1990	1240	1760	2530	4770	4930	1970	940	670	471	531
21	543	1430	1220	1690	2120	3660	3460	1770	940	713	526	495
22	904	1300	1100	1560	1840	2960	2860	1630	960	715	507	467
23	784	1120	1120	1480	1650	2650	3160	1630	911	651	510	449
24	1710	1140	1880	1380	1520	2480	2970	1570	848	614	640	456
25	1600	1410	3690	1310	1450	2410	2580	1480	817	602	568	464
26	1050	1260	2760	1230	1440	2730	2480	1400	808	584	544	492
27	816	1660	2410	1150	1430	2780	2680	1490	786	578	537	614
28	806	3190	1940	1180	1330	2630	2490	1620	776	588	510	510
29	922	2200	2100	1130	---	2320	2520	1760	800	627	499	489
30	747	2060	2990	2060	---	2170	2520	1780	790	630	481	494
31	696	---	3870	5650	---	2040	---	2030	---	602	475	---
TOTAL	19929	35538	65570	78340	55740	80730	66890	64160	34386	22750	16719	15040
MEAN	643	1185	2115	2527	1991	2604	2230	2070	1146	734	539	501
MAX	1710	3190	3870	8710	6070	4770	4930	2720	2140	1060	690	844
MIN	331	574	1050	1130	1270	1390	1270	1400	776	578	466	398
AC-FT	39530	70490	130100	155400	110600	160100	132700	127300	68200	45120	33160	29830

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1997, BY WATER YEAR (WY)

	474	1052	1461	1599	1625	1370	1338	1216	936	592	401	378
MEAN	474	1052	1461	1599	1625	1370	1338	1216	936	592	401	378
MAX	929	2546	4109	3313	4217	2915	2358	2418	2439	1687	1088	804
(WY)	1900	1996	1978	1974	1996	1972	1916	1969	1899	1899	1899	1899
MIN	218	282	438	363	430	681	704	532	278	229	209	188
(WY)	1988	1988	1977	1979	1977	1977	1973	1992	1992	1992	1992	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1898 - 1997

ANNUAL TOTAL	525121	555792	
ANNUAL MEAN	1435	1523	1029
HIGHEST ANNUAL MEAN			1664
LOWEST ANNUAL MEAN			465
HIGHEST DAILY MEAN	19200	Feb 7	19200
LOWEST DAILY MEAN	282	Sep 7	144
ANNUAL SEVEN-DAY MINIMUM	291	Sep 4	155
ANNUAL RUNOFF (AC-FT)	1042000	1102000	745600
10 PERCENT EXCEEDS	2580	2720	1930
50 PERCENT EXCEEDS	1140	1330	784
90 PERCENT EXCEEDS	346	488	312

COLUMBIA RIVER MAIN STEM

123

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 September 1997, gage heights only, (discontinued).

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 79.81 ft June 15, 16, 1997; minimum, 70.39 ft Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 79.81 ft June 15, 16; minimum, 72.51 ft Sept. 29.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	76.22	75.47	75.93	75.51	72.65	74.19	76.65	75.64	76.01	78.54	77.68	78.05
2	76.18	75.69	75.89	75.62	74.74	75.27	76.72	75.64	76.04	79.14	77.37	78.24
3	76.57	75.49	75.96	75.30	74.50	74.89	76.61	75.52	76.13	78.06	77.20	77.59
4	76.49	75.39	75.83	76.18	74.99	75.68	76.95	75.35	76.19	78.08	76.41	77.53
5	76.15	75.62	75.91	75.80	74.96	75.35	77.23	76.38	76.90	77.36	75.78	76.45
6	76.18	74.71	75.51	75.29	74.48	74.92	77.01	75.66	76.12	77.96	77.19	77.60
7	74.71	73.66	73.92	76.38	74.69	75.56	76.46	75.94	76.25	77.82	76.37	76.99
8	74.06	73.18	73.48	76.16	75.26	75.76	77.06	76.39	76.75	77.25	74.58	76.07
9	75.23	72.60	73.28	76.13	75.27	75.76	77.18	76.27	76.50	77.54	75.93	76.71
10	76.56	75.23	76.12	75.92	74.39	74.89	76.97	74.96	75.57	77.95	76.21	76.81
11	76.53	76.13	76.33	75.78	74.30	75.11	77.00	74.91	75.94	77.62	76.77	77.22
12	76.31	75.57	75.81	75.86	74.53	75.03	77.07	74.63	75.72	77.72	76.73	77.12
13	76.02	75.36	75.62	76.02	74.92	75.39	77.03	75.38	75.95	77.75	76.00	76.64
14	76.16	75.17	75.70	76.16	75.50	75.86	76.56	75.29	76.00	77.59	76.26	76.76
15	76.16	75.41	75.81	76.31	74.75	75.55	76.53	75.09	75.54	78.25	76.75	77.69
16	76.00	75.01	75.59	76.98	75.22	76.18	75.89	74.73	75.39	77.35	76.01	76.78
17	76.52	75.02	75.89	76.92	75.69	76.38	75.98	74.80	75.30	77.20	75.87	76.68
18	76.60	75.40	75.81	76.84	75.54	76.27	76.11	74.07	74.94	77.54	74.69	75.89
19	75.71	74.13	74.53	76.78	75.53	76.01	75.41	73.72	74.38	77.41	75.25	76.15
20	74.52	74.02	74.26	76.91	75.73	76.17	76.02	74.91	75.36	76.12	75.00	75.50
21	74.44	73.54	74.08	76.69	75.30	75.62	76.17	74.94	75.47	77.08	75.95	76.32
22	75.56	72.75	73.83	76.06	75.31	75.66	76.28	75.41	75.82	77.08	75.49	76.20
23	76.04	74.37	75.12	76.46	75.42	75.85	76.17	74.44	75.39	76.34	75.59	75.92
24	76.80	74.21	75.37	76.46	75.92	76.21	76.69	75.65	76.14	76.57	75.58	76.07
25	76.99	75.28	76.22	76.49	75.66	76.07	76.60	75.55	76.12	76.83	75.39	76.03
26	76.60	74.63	75.30	76.25	74.96	75.25	76.94	75.83	76.13	77.08	76.09	76.76
27	75.94	74.98	75.30	75.62	74.83	75.20	77.04	75.20	75.81	77.01	76.11	76.51
28	75.66	74.27	75.11	76.06	74.91	75.52	76.93	75.64	76.04	76.59	75.44	75.94
29	75.80	73.74	74.66	75.88	75.03	75.28	77.02	75.51	76.35	76.99	74.99	76.12
30	75.81	74.80	75.17	76.58	75.03	75.74	76.07	73.54	74.49	78.31	76.23	77.09
31	76.30	74.58	75.44	---	---	---	78.12	74.58	76.20	79.18	78.06	78.72
MONTH	76.99	72.60	75.25	76.98	72.65	75.55	78.12	73.54	75.84	79.18	74.58	76.78

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	79.27	76.20	77.70	77.19	76.37	76.68	78.73	75.03	77.13	78.05	76.45	77.40
2	76.20	75.33	75.66	76.66	74.60	75.62	78.46	76.63	77.61	78.34	76.70	77.77
3	75.61	74.58	75.05	74.76	73.77	74.31	78.61	76.80	77.71	77.59	76.60	77.19
4	75.56	74.76	75.18	76.19	74.69	75.56	78.09	77.27	77.62	77.23	75.79	76.40
5	75.55	74.28	74.94	77.14	76.19	76.71	77.46	76.88	77.17	76.85	75.92	76.42
6	75.80	74.27	75.06	77.55	76.71	77.10	77.26	74.64	76.21	77.55	75.62	76.49
7	76.84	75.27	76.30	76.98	76.08	76.47	76.06	74.58	75.32	77.53	76.50	77.00
8	76.57	75.23	75.77	76.70	76.11	76.44	76.32	75.43	75.75	76.82	76.19	76.37
9	76.04	75.25	75.64	76.93	75.90	76.33	75.86	75.48	75.64	77.20	76.64	76.78
10	76.39	75.81	76.20	76.94	75.82	76.28	76.51	75.15	75.82	77.38	76.12	76.81
11	76.40	74.98	75.55	76.73	75.92	76.30	76.72	75.22	75.98	76.48	75.28	75.89
12	75.99	75.12	75.47	77.62	76.17	76.76	76.66	75.06	75.70	77.60	76.17	76.65
13	77.59	75.61	76.50	77.50	76.49	76.92	75.41	73.92	74.83	78.11	77.50	77.86
14	77.67	75.53	76.10	77.46	76.83	77.14	77.48	74.63	75.99	78.93	77.37	78.12
15	76.73	75.58	76.12	77.16	76.70	76.96	77.35	74.69	76.08	78.06	77.36	77.62
16	76.83	76.29	76.48	77.30	76.67	76.98	77.25	75.62	76.25	77.46	76.50	77.05
17	76.62	74.47	75.80	77.58	76.90	77.24	76.16	75.08	75.37	77.48	76.72	77.06
18	75.43	73.95	74.56	77.57	75.60	76.22	75.99	74.66	75.40	77.92	77.34	77.51
19	77.26	75.41	76.64	75.88	74.65	75.28	76.41	75.02	75.76	78.26	77.60	77.91
20	78.19	76.00	77.20	77.23	75.12	76.62	76.78	75.03	75.97	78.89	78.26	78.56
21	78.19	74.91	76.59	77.03	76.23	76.72	77.72	75.74	76.78	78.98	78.78	78.93
22	77.85	75.49	76.84	77.54	76.10	76.81	78.37	76.63	77.19	78.91	78.27	78.71
23	78.71	77.83	78.25	77.95	76.52	77.06	78.98	78.21	78.54	78.31	77.95	78.16
24	77.83	76.50	77.12	77.96	74.70	76.48	78.77	77.16	77.51	78.35	77.70	78.05
25	76.90	76.59	76.76	75.92	74.06	74.71	77.44	76.40	76.87	77.78	77.07	77.32
26	77.74	76.62	77.35	76.56	74.67	75.70	77.34	76.69	76.98	78.61	77.28	77.73
27	77.55	76.76	77.19	78.42	75.97	77.33	78.41	76.70	77.33	78.35	77.47	77.90
28	77.23	76.57	76.85	78.71	77.78	78.14	79.11	76.08	77.89	78.31	77.71	78.06
29	---	---	---	78.61	77.61	78.13	77.34	76.33	76.85	77.88	77.31	77.55
30	---	---	---	78.57	76.76	77.85	77.38	76.71	77.05	77.79	77.21	77.47
31	---	---	---	77.89	75.83	76.96	---	---	---	78.00	77.31	77.76
MONTH	79.27	73.95	76.25	78.71	73.77	76.57	79.11	73.92	76.54	78.98	75.28	77.44

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	78.64	77.29	78.07	76.62	74.74	75.64	75.29	74.14	74.88	77.36	75.38	75.92
2	78.64	77.87	78.26	76.56	74.78	75.71	75.19	73.58	74.17	77.15	74.89	75.81
3	79.69	78.07	78.93	77.88	75.52	76.61	74.36	73.72	73.96	76.98	75.53	76.19
4	79.65	78.68	79.08	77.76	74.92	75.96	75.42	73.95	74.37	77.09	75.60	76.16
5	78.86	78.51	78.69	77.60	74.60	75.74	76.58	74.43	75.49	76.99	75.48	76.44
6	78.60	77.95	78.17	77.64	77.17	77.34	77.32	75.84	76.37	76.98	75.51	76.37
7	78.11	77.67	77.91	77.17	75.66	76.59	77.47	75.59	76.60	76.79	74.23	75.17
8	78.27	77.76	78.01	76.87	74.35	75.30	77.12	74.20	75.46	74.39	72.86	73.40
9	78.92	77.83	78.41	75.90	74.26	74.96	77.15	74.86	76.02	76.54	74.30	75.21
10	78.38	77.47	77.98	77.29	73.93	75.49	77.09	75.00	75.96	76.76	75.64	76.29
11	78.81	77.95	78.22	77.65	76.88	77.26	76.86	73.91	75.11	76.74	75.70	76.23
12	79.17	78.17	78.56	77.58	75.45	76.28	77.32	75.80	76.41	76.83	75.43	76.21
13	79.48	78.91	79.20	76.93	75.45	76.02	76.92	75.09	75.75	76.80	75.31	75.87
14	79.50	78.69	79.17	76.98	75.59	76.25	76.73	75.33	75.93	76.25	75.05	75.45
15	79.81	79.16	79.48	77.00	74.85	75.53	77.44	74.74	75.78	75.53	74.63	75.07
16	79.81	78.64	79.13	77.30	75.76	76.50	77.37	76.06	76.62	77.18	75.09	76.01
17	78.81	78.33	78.68	77.08	75.85	76.42	77.12	76.02	76.40	76.88	75.35	76.15
18	79.30	78.80	79.10	77.27	75.83	76.53	76.55	74.91	75.22	76.88	75.55	76.43
19	79.20	78.58	78.89	77.37	75.65	76.35	77.57	75.62	76.32	76.99	75.50	76.28
20	78.58	77.63	77.96	77.51	75.73	76.52	77.63	74.30	75.60	77.03	75.53	75.96
21	78.36	77.73	78.06	77.71	76.15	76.66	77.07	73.78	75.30	75.67	73.99	74.78
22	78.25	77.46	77.86	76.88	75.39	76.07	77.06	75.45	76.17	75.58	72.76	73.35
23	78.08	76.99	77.56	76.93	75.51	76.13	77.36	75.25	76.02	74.23	72.84	73.53
24	78.13	76.76	77.32	76.52	73.39	74.38	77.21	75.24	75.94	74.01	73.05	73.44
25	78.46	76.57	77.46	74.72	73.70	74.14	75.74	73.59	74.48	73.88	73.33	73.58
26	76.83	75.76	76.28	76.33	74.48	75.09	75.62	74.24	74.72	73.59	72.63	73.21
27	77.13	76.50	76.82	76.48	75.05	75.82	75.80	73.76	74.59	73.69	73.32	73.46
28	77.07	76.42	76.67	76.29	73.94	74.90	76.44	75.45	75.97	73.51	72.92	73.27
29	76.96	75.77	76.02	75.74	74.15	74.72	77.04	75.84	76.48	73.45	72.51	72.98
30	76.02	75.00	75.43	75.16	74.12	74.57	77.12	76.35	76.74	75.38	73.12	73.74
31	---	---	---	75.15	73.45	74.16	77.27	76.34	76.62	---	---	---
MONTH	79.81	75.00	78.05	77.88	73.39	75.79	77.63	73.58	75.66	77.36	72.51	75.07

YEAR	79.81	72.51	76.23									
------	-------	-------	-------	--	--	--	--	--	--	--	--	--

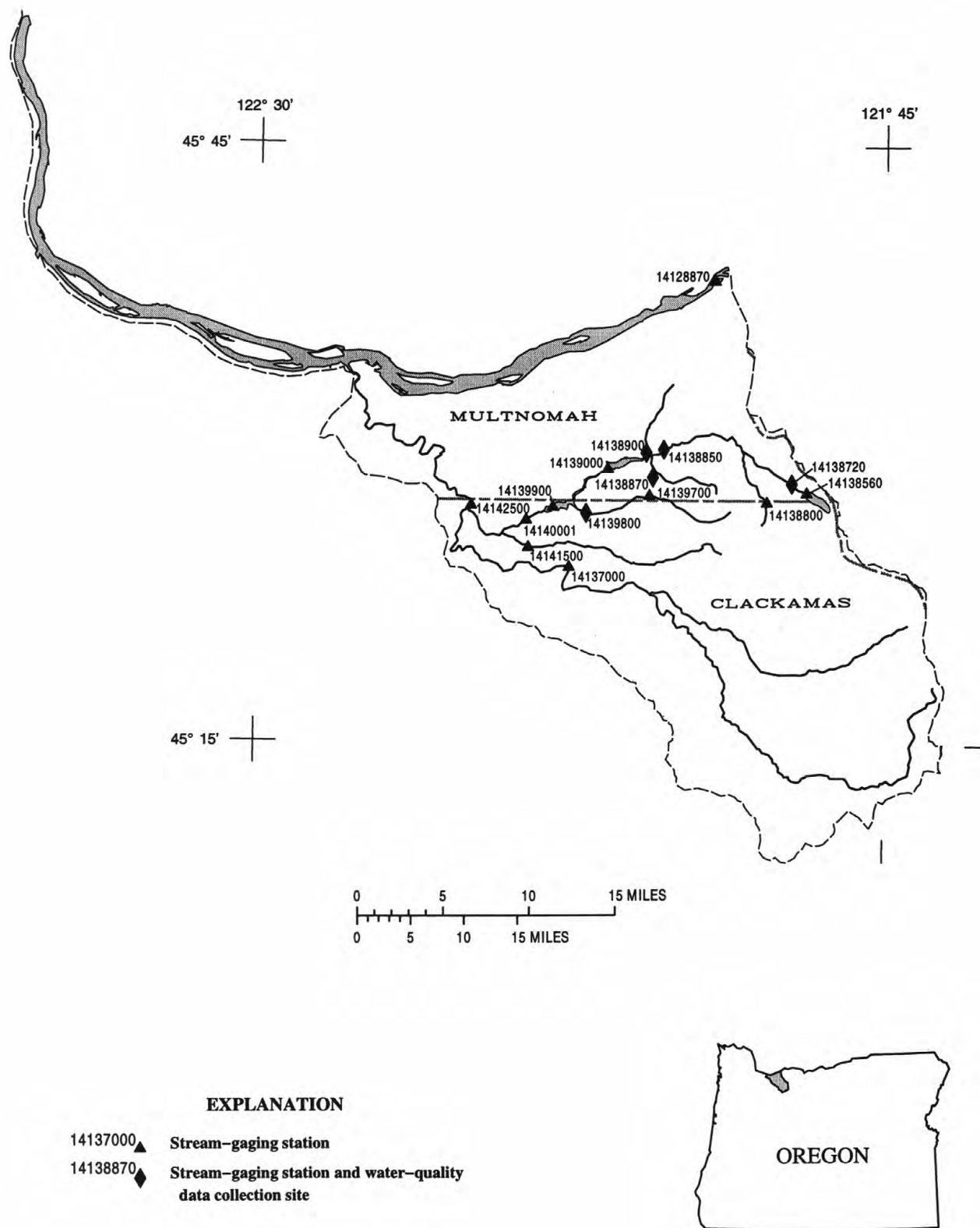


Figure 18. Location of surface-water and water-quality stations in the Columbia River between Bonneville Dam and confluence with the Willamette river and the Sandy River Basin.

COLUMBIA RIVER MAIN STEM

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR

LOCATION.--Lat 45°38'00", long 121°57'33", in sec.21, T.2 N., R.7 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.9 mi downstream from Bonneville Dam left bank powerhouse, 50 ft upstream from Tanner Creek, and at mile 144.5.

DRAINAGE AREA.--239,900 mi², approximately.

PERIOD OF RECORD.--May 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is sea level. Prior to August 15, 1990, at a site 0.5 mi upstream at the same datum.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.11 ft Feb. 9, 1996; minimum, 6.22 ft Sept. 26, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 34.68 ft June 16; minimum, 7.98 ft Nov. 4.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.31	9.92	12.02	13.90	9.92	11.32	17.16	15.14	16.45	30.35	25.10	27.84
2	13.56	10.81	11.74	12.38	8.53	10.38	18.90	16.25	17.24	31.24	30.32	30.80
3	13.02	9.05	11.48	10.34	9.05	9.57	18.42	16.29	17.59	31.00	29.98	30.56
4	13.52	11.68	12.89	14.14	7.98	11.68	18.98	16.26	17.84	30.00	29.03	29.58
5	13.21	9.57	11.12	14.17	10.32	12.67	22.03	18.64	20.37	29.13	27.62	28.00
6	12.41	10.76	11.43	15.04	9.24	11.81	21.79	19.47	20.45	27.93	26.12	26.61
7	12.09	9.01	10.77	14.06	10.17	12.00	20.74	17.51	18.23	26.34	24.86	25.43
8	14.33	10.17	12.54	14.16	9.61	11.92	21.23	17.21	19.46	24.90	22.69	24.38
9	14.23	9.89	11.81	13.84	9.64	12.08	20.70	19.16	19.85	24.33	23.14	23.74
10	13.72	9.26	11.28	12.91	11.65	11.97	20.41	18.91	19.84	24.59	21.88	24.09
11	14.37	10.78	13.18	13.99	9.69	11.98	20.40	18.53	19.88	25.14	22.88	24.22
12	14.39	12.47	13.13	13.60	11.76	12.76	20.48	18.70	19.81	24.02	22.61	23.44
13	13.68	11.95	12.62	13.71	10.15	12.27	21.05	17.56	19.25	24.51	22.48	23.50
14	15.45	11.97	13.63	15.02	9.99	13.10	17.79	16.62	17.15	24.30	22.28	23.60
15	14.25	11.63	13.13	14.23	9.92	12.29	17.43	16.01	16.79	24.15	20.54	23.29
16	13.32	11.20	12.46	13.41	9.99	11.90	19.37	14.39	16.79	23.90	17.85	22.07
17	13.45	10.37	12.00	16.17	10.06	13.44	18.94	14.74	17.01	24.14	20.39	22.38
18	13.63	10.23	12.43	16.87	11.30	14.60	18.47	16.37	17.25	23.67	19.98	21.77
19	13.38	11.86	12.68	19.26	13.00	16.90	18.03	15.31	16.47	22.40	20.53	21.48
20	13.87	11.66	12.90	18.42	16.60	17.58	18.99	15.31	17.66	23.58	20.36	21.28
21	15.40	11.37	13.97	18.41	16.73	17.41	19.00	16.73	18.22	22.46	21.27	21.80
22	14.55	10.46	11.66	18.25	15.83	17.15	18.83	17.63	18.16	22.42	19.93	21.15
23	14.95	9.50	12.47	16.83	15.32	16.02	18.05	16.91	17.42	20.35	18.34	19.72
24	14.60	11.61	13.29	17.38	16.11	16.77	18.47	16.30	17.52	20.61	19.09	19.82
25	---	---	---	17.47	15.47	16.44	20.31	17.63	18.93	21.32	19.31	20.51
26	---	---	---	16.47	14.73	15.73	21.42	18.22	20.20	21.96	20.16	21.13
27	13.27	9.82	10.73	16.17	13.49	15.03	22.74	19.62	21.09	22.21	20.41	21.37
28	15.06	10.11	12.52	15.48	14.41	14.80	22.98	21.31	22.45	21.74	20.72	21.15
29	13.75	12.06	13.10	15.49	13.78	14.81	21.95	20.65	21.34	21.17	19.94	20.51
30	13.58	12.01	12.90	16.70	14.50	15.13	21.80	20.63	21.22	24.69	20.86	21.94
31	14.23	10.01	11.98	---	---	---	25.64	20.52	23.18	28.05	24.69	26.78
MONTH	---	---	---	19.26	7.98	13.72	25.64	14.39	18.87	31.24	17.85	23.68

COLUMBIA RIVER MAIN STEM

127

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	28.53	27.11	27.84	21.92	20.34	21.09	25.40	23.89	24.95	31.39	30.13	31.00
2	27.42	25.52	26.46	22.26	21.76	22.09	26.47	24.73	25.61	31.84	30.73	31.35
3	25.52	23.54	24.22	22.30	18.69	21.18	25.48	22.86	24.06	30.83	29.40	30.21
4	25.06	23.69	24.25	20.44	17.32	19.01	24.45	23.29	23.81	29.65	28.13	28.99
5	25.68	23.26	24.56	21.67	20.32	20.90	24.01	22.61	23.39	28.86	27.51	28.29
6	25.27	22.80	23.93	22.44	20.76	21.50	22.75	20.99	21.91	28.56	26.60	28.00
7	23.94	22.75	23.20	21.82	19.49	20.93	21.13	20.73	20.94	29.41	27.92	28.55
8	22.86	20.74	21.89	21.65	19.81	20.93	22.05	21.04	21.60	28.62	27.74	28.33
9	22.82	21.96	22.58	21.23	18.64	19.41	21.74	21.36	21.60	28.65	28.10	28.35
10	24.08	21.43	22.68	21.39	18.97	20.46	22.13	20.88	21.52	28.79	27.61	28.30
11	21.61	18.81	20.46	22.17	21.32	21.84	22.17	21.53	21.81	28.92	26.68	27.16
12	22.40	21.50	21.97	23.31	21.51	21.99	22.01	20.04	21.64	31.33	27.58	29.02
13	21.56	20.75	21.15	23.40	21.49	22.46	20.04	17.64	18.63	32.45	31.12	32.04
14	22.54	20.98	21.76	22.86	22.08	22.52	21.18	17.75	19.24	32.46	31.58	31.97
15	22.28	20.68	21.71	23.01	21.12	21.91	21.59	18.91	20.22	31.75	30.18	31.13
16	23.21	20.26	21.62	22.07	19.98	21.17	22.01	20.29	21.42	30.78	29.79	30.17
17	23.31	21.51	22.59	23.42	21.26	22.39	22.81	21.30	22.12	31.96	30.38	31.00
18	22.51	19.22	21.01	24.39	21.91	23.22	23.02	21.70	22.50	32.81	31.80	32.12
19	22.83	19.63	21.45	25.18	24.19	24.71	24.73	22.43	23.65	33.20	32.39	32.84
20	24.57	21.16	22.52	25.50	24.73	25.16	25.33	22.08	23.97	33.22	32.62	32.93
21	25.86	22.00	23.57	26.23	24.38	25.02	27.58	23.57	25.00	33.13	32.82	32.99
22	25.63	23.33	24.77	26.44	24.70	25.56	29.70	27.53	28.52	33.08	32.31	32.55
23	25.82	24.73	25.20	26.19	24.94	25.87	31.16	29.59	30.26	32.50	31.55	32.15
24	24.73	22.30	22.93	26.21	24.06	25.56	31.73	30.90	31.41	32.43	31.66	32.22
25	22.50	21.71	22.13	25.11	22.55	23.87	31.50	30.41	31.05	32.11	30.25	31.11
26	22.81	21.41	21.99	27.49	24.04	25.14	30.47	29.22	29.96	31.25	30.08	30.36
27	23.94	20.79	22.21	27.83	23.48	25.44	29.36	28.59	29.00	30.80	29.84	30.24
28	22.93	20.74	21.81	29.10	27.52	28.45	30.14	28.48	29.08	30.78	29.95	30.38
29	---	---	---	28.66	28.32	28.50	30.78	29.59	30.15	31.08	30.22	30.49
30	---	---	---	28.59	27.59	28.14	31.20	30.44	30.89	30.53	29.57	30.03
31	---	---	---	27.70	24.54	25.72	---	---	---	31.50	29.72	30.39
MONTH	28.53	18.81	22.95	29.10	17.32	23.29	31.73	17.64	24.66	33.22	26.60	30.47

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	31.77	30.69	31.17	22.75	20.56	22.11	17.57	16.72	17.18	16.43	13.54	14.45
2	33.07	31.57	32.02	24.11	21.99	22.50	17.66	15.75	16.68	14.90	11.62	13.06
3	34.22	32.75	33.34	24.25	22.49	23.11	16.63	14.06	15.29	14.95	12.29	13.87
4	34.35	33.48	33.92	23.57	21.62	22.75	16.57	14.74	15.45	14.79	11.26	12.93
5	33.86	32.96	33.30	23.15	21.39	22.00	18.92	15.00	16.39	14.78	12.61	13.65
6	33.19	32.37	32.68	23.52	22.23	22.53	20.40	18.53	19.11	14.86	10.93	13.51
7	33.11	32.21	32.55	23.36	21.83	22.60	19.72	17.64	18.47	14.04	11.87	12.79
8	33.12	32.19	32.59	22.65	19.86	21.09	19.93	17.11	18.03	12.63	9.43	11.16
9	32.91	32.02	32.49	21.22	18.85	20.11	19.57	17.53	18.46	12.55	9.04	10.12
10	32.82	32.10	32.38	21.71	20.04	21.14	19.64	15.61	17.51	13.79	10.49	12.52
11	32.86	31.65	32.27	23.56	20.91	21.85	17.40	14.59	15.78	12.97	11.68	12.28
12	33.72	32.24	33.01	23.65	21.59	22.47	18.76	14.64	16.09	14.55	11.77	13.31
13	34.30	33.46	33.97	22.73	19.38	20.58	18.77	16.42	17.20	14.88	11.60	12.87
14	34.47	33.92	34.24	22.49	19.20	20.65	18.70	16.64	17.54	14.33	10.21	12.18
15	34.65	33.86	34.25	22.64	20.36	21.57	18.83	15.54	17.05	13.41	9.93	12.23
16	34.68	34.06	34.44	23.34	21.65	22.42	19.56	15.95	17.43	14.73	9.47	12.59
17	34.30	33.78	33.97	23.52	21.68	22.69	19.08	15.31	16.75	16.06	12.52	14.47
18	33.93	33.16	33.59	23.52	22.02	22.67	19.16	15.28	16.50	16.57	14.64	15.37
19	33.79	32.95	33.37	24.03	22.67	23.13	19.09	15.07	16.92	16.48	14.52	15.35
20	33.34	31.82	32.50	24.03	20.90	21.66	19.68	16.25	17.83	16.32	15.07	15.85
21	32.26	31.11	31.54	22.55	21.51	21.92	19.74	16.87	17.86	16.51	14.54	15.62
22	32.00	30.39	31.00	22.60	20.45	21.41	20.09	17.06	18.43	17.15	13.25	15.62
23	31.25	29.63	30.06	23.25	21.13	21.75	20.05	16.16	17.53	16.19	12.89	14.10
24	30.43	29.23	29.74	22.76	19.33	21.25	17.97	15.02	16.14	17.55	15.58	16.47
25	29.84	27.06	28.92	22.01	20.04	20.88	17.78	15.88	16.67	17.47	15.72	16.36
26	27.23	25.74	26.66	21.98	19.47	20.43	17.26	15.87	16.70	15.82	13.81	15.19
27	27.81	26.47	27.14	20.53	17.33	18.71	17.29	14.28	16.10	16.21	13.89	15.07
28	27.37	26.21	26.64	22.01	18.98	20.51	17.34	14.40	15.54	15.94	13.52	14.80
29	26.33	25.11	26.08	21.95	19.10	19.99	16.93	14.85	15.60	15.30	11.02	13.29
30	25.11	22.67	24.12	19.89	17.30	18.33	17.89	16.14	17.22	14.13	10.14	12.60
31	---	---	---	17.82	16.32	16.80	17.74	15.26	16.91	---	---	---
MONTH	34.68	22.67	31.47	24.25	16.32	21.34	20.40	14.06	16.98	17.55	9.04	13.79

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE 1/4 SE 1/4 sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.

DRAINAGE AREA.--240,000 mi², approximately.

PERIOD OF RECORD.--October 1973 to September 1993, October 1996 to September 1997.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to September 1992 (discontinued).

WATER TEMPERATURE: October 1975 to September 1992 (discontinued).

INSTRUMENTATION.--Specific conductance and temperature recorders from October 1975 to September 1992 (discontinued).

REMARKS.--Boron values less than 16 µg/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 244 microsiemens Jan. 7, 1988; minimum, 95 microsiemens June 26, 27, 1982.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 17, 18, 1977, Aug. 11, 1980, July 31, 1992; minimum recorded, 0.0°C many days in January and February, 1979.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BAROMETRIC PRESSURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER CENT SATURATION) (00301)	HARDNESS, TOTAL (MG/L AS CaCO3) (00900)	CALCIUM, DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)
OCT 1996												
21...	1150	148000	142	7.8	14.5	1.0	9.5	768	93	58	16	4.4
NOV												
26...	1010	133000	160	8.0	8.5	1.4	11.0	776	93	65	18	4.9
JAN 1997												
14...	1110	305000	191	8.0	3.5	57	11.0	768	82	74	19	6.3
FEB												
18...	1120	258000	155	8.1	3.5	18	13.4	770	100	67	18	5.2
APR												
07...	1300	267000	144	8.1	8.0	6.2	13.1	767	109	65	18	5.1
21...	1150	335000	159	7.9	9.5	7.0	12.0	765	104	67	18	5.0
MAY												
05...	1300	384000	141	8.0	10.5	12	12.6	770	112	63	17	4.7
12...	1200	453000	137	7.9	12.0	7.3	12.7	760	119	58	16	4.3
19...	1300	527000	108	7.8	14.0	15	12.4	760	120	50	14	3.7
28...	1100	464000	105	7.7	13.0	7.9	13.8	763	130	45	13	3.1
JUN												
04...	1130	533000	96	7.6	14.0	10	12.9	762	126	43	12	3.0
10...	1010	517000	95	7.6	14.5	12	11.1	759	110	42	12	2.9
23...	1220	442000	103	7.9	15.0	8.6	13.3	769	131	44	13	3.0
JUL												
21...	1130	268000	120	7.9	19.5	4.5	10.4	761	113	53	15	3.7
AUG												
18...	1210	187000	124	7.8	21.5	2.3	9.5	762	107	56	16	3.9

DATE	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY, DIS IT FIELD (MG/L AS CaCO3) (39086)	BICARBONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 1996												
21...	4.6	14	0.3	1.0	59	72	0	10	2.2	0.1	7.4	86
NOV												
26...	6.3	17	0.3	1.4	55	67	0	11	2.8	0.2	8.7	99
JAN 1997												
14...	10.0	22	0.5	1.9	68	83	0	15	5.4	0.2	16	126
FEB												
18...	6.8	18	0.4	1.5	63	77	0	11	3.2	0.2	14	104
APR												
07...	5.5	15	0.3	1.3	62	76	0	11	3.3	0.2	13	101
21...	6.0	16	0.3	1.3	69	84	0	11	3.1	0.2	14	101
MAY												
05...	4.8	14	0.3	1.3	58	71	0	9.9	2.3	0.2	14	94
12...	4.8	15	0.3	1.2	55	67	0	9.1	2.2	0.1	13	94
19...	4.1	15	0.3	1.5	49	60	0	7.4	1.8	0.1	13	84
28...	3.2	13	0.2	0.9	47	58	0	6.0	1.4	0.1	11	61
JUN												
04...	3.2	14	0.2	0.9	41	50	0	5.8	1.3	<0.1	10	72
10...	3.1	14	0.2	0.8	41	50	0	5.3	1.2	0.1	10	67
23...	3.1	13	0.2	0.8	44	54	0	5.6	1.5	0.2	8.5	74
JUL												
21...	3.3	12	0.2	0.9	51	62	0	7.0	1.6	<0.1	6.9	74
AUG												
18...	3.4	11	0.2	0.9	52	63	0	7.7	1.5	0.1	7.4	79

COLUMBIA RIVER MAIN STEM
14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued
WATER-QUALITY DATA

129

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC, DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 1996												
21...	82	0.12	0.040	0.010	<0.2	<0.2	0.15	0.01	0.01	0.005	1.4	0.3
NOV												
26...	87	0.13	<0.002	0.002	<0.2	<0.2	0.24	0.02	<0.01	0.008	1.4	0.4
JAN 1997												
14...	119	0.17	0.025	0.016	<0.2	0.5	0.89	0.22	0.04	0.049	3.2	2.2
FEB												
18...	101	0.14	0.007	<0.001	<0.2	0.2	0.67	0.04	<0.01	0.018	2.1	0.7
APR												
07...	97	0.14	0.005	0.004	<0.2	<0.2	0.35	0.02	<0.01	0.017	1.8	0.7
21...	102	0.14	0.005	0.008	<0.2	<0.2	0.36	0.04	0.02	0.017	2.0	2.3
MAY												
05...	90	0.13	0.006	0.003	<0.2	<0.2	0.24	0.12	0.04	0.017	2.1	1.1
12...	85	0.13	0.004	0.006	<0.2	<0.2	0.21	0.05	0.02	0.013	2.2	0.7
19...	76	0.11	<0.002	0.006	<0.2	<0.2	0.20	0.04	<0.01	0.012	2.3	0.6
28...	68	0.08	<0.002	0.003	<0.2	<0.2	0.15	0.05	<0.01	0.008	2.6	0.5
JUN												
04...	62	0.10	<0.002	0.015	<0.2	<0.2	0.12	0.02	<0.01	0.004	2.5	0.5
10...	61	0.09	<0.002	0.001	<0.2	<0.2	0.10	0.05	<0.01	0.013	2.4	0.3
23...	62	0.10	<0.002	0.002	<0.2	<0.2	0.11	0.04	0.02	0.011	2.1	0.8
JUL												
21...	69	0.10	<0.002	0.002	<0.2	0.2	0.05	0.04	<0.01	0.001	1.9	0.7
AUG												
18...	72	0.11	0.002	0.003	<0.2	<0.2	0.07	<0.01	<0.01	0.005	1.7	0.4

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC, DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1996												
21...	1	<1	1	24	<1	E9.0	<1	<1	<1	2	<3	<1
NOV												
26...	2	<1	1	24	<1	E11.4	<1	<1	<1	<1	4	<1
JAN 1997												
14...	5	<1	1	24	<1	23.4	<1	<1	<1	1	11	<1
FEB												
18...	5	<1	1	26	<1	E15.5	<1	<1	<1	<1	7	<1
APR												
07...	3	<1	<1	23	<1	E15.0	<1	1	<1	1	4	<1
21...	3	<1	1	25	<1	16.3	<1	1	<1	1	4	<1
MAY												
05...	4	<1	1	23	<1	E11.6	<1	1	<1	2	8	<1
12...	4	<1	1	23	<1	E11.2	<1	1	<1	1	11	<1
19...	7	<1	1	20	<1	E8.6	<1	<1	<1	3	12	<1
28...	11	<1	<1	18	<1	E6.5	<1	1	<1	2	17	<1
JUN												
04...	8	<1	<1	18	<1	E5.5	<1	<1	<1	1	14	<1
10...	8	<1	1	18	<1	E6.2	<1	<1	<1	2	12	<1
23...	10	<1	<1	20	<1	E5.7	<1	<1	<1	2	11	<1
JUL												
21...	3	<1	1	24	<1	E8.1	<1	1	<1	1	5	<1
AUG												
18...	2	<1	1	26	<1	E10.7	<1	<1	<1	1	6	<1

E Estimated.

COLUMBIA RIVER MAIN STEM
14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM, NATURAL, DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON, D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE, SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1996												
21...	<4	<1	<1	<1	<1	<1	94	<1	6	2	67	96
NOV												
26...	<4	<1	<1	<1	<1	<1	100	<1	<6	<1	90	103
JAN 1997												
14...	5	<1	<1	<1	<1	<1	110	1	<6	<1	99	96
FEB												
18...	<4	2	<1	<1	<1	<1	99	<1	<6	<1	83	99
APR												
07...	5	<1	<1	<1	<1	<1	97	<1	<6	5	89	114
21...	5	<1	<1	<1	<1	<1	96	<1	<6	2	112	124
MAY												
05...	4	1	<1	<1	<1	<1	87	<1	<6	1	90	124
12...	<4	1	<1	<1	<1	<1	86	<1	<6	2	86	88
19...	<4	2	<1	2	<1	<1	73	<1	<6	4	108	107
28...	<4	1	<1	<1	<1	<1	66	<1	<6	<1	89	108
JUN												
04...	<4	2	<1	<1	<1	<1	64	<1	<6	1	82	104
10...	<4	1	<1	<1	<1	<1	63	<1	<6	1	95	113
23...	<4	1	<1	<1	<1	<1	63	<1	<6	2	108	125
JUL												
21...	<4	<1	<1	<1	<1	<1	73	<1	<6	<1	96	120
AUG												
18...	<4	<1	<1	<1	<1	<1	80	<1	<6	<1	96	118
DATE	HCH ALPHA, D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS, WATER, DISS, REC (UG/L) (04095)	ALPHA BHC, DIS- SOLVED (UG/L) (34253)	P,P' DDE, DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS, DIS- SOLVED (UG/L) (38933)	LINDANE, DIS- SOLVED (UG/L) (39341)
OCT 1996												
21...	83	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
NOV												
26...	93	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JAN 1997												
14...	85	<0.007	<0.002	<0.005	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
FEB												
18...	75	<0.007	<0.002	<0.005	<0.018	E0.001	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
APR												
07...	102	<0.007	<0.002	E0.003	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
21...	105	<0.007	E0.003	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
MAY												
05...	105	<0.007	<0.002	E0.004	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
12...	109	<0.007	<0.002	E0.002	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
19...	109	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
28...	101	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN												
04...	104	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
10...	114	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
23...	108	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL												
21...	121	<0.007	<0.002	E0.003	<0.018	E0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.004
AUG												
18...	104	<0.007	<0.002	<0.005	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

E Estimated.

COLUMBIA RIVER MAIN STEM

131

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	DI- ELDRIN, DIS- SOLVED (UG/L) (39381)	METO- LACHLOR, WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN, SENCOR, WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE, WAT FLT 0.7 U (UG/L) (82660)	TRI- FLUR- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT 1996											
21...	<0.001	<0.002	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002
NOV											
26...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
JAN 1997											
14...	<0.001	<0.002	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	0.005	<0.003	<0.002
FEB											
18...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.004	<0.002	<0.002	E0.004	<0.003	<0.002
APR											
07...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
21...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
MAY											
05...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.004	E0.003	<0.002	0.005	<0.003	<0.002
12...	<0.001	E0.003	<0.005	<0.004	<0.002	E0.002	E0.003	<0.002	<0.004	<0.003	<0.002
19...	<0.001	E0.001	E0.002	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
28...	<0.001	E0.002	<0.005	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
JUN											
04...	<0.001	E0.002	<0.005	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
10...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	E0.003	<0.002	<0.004	<0.003	<0.002
23...	<0.001	E0.001	E0.003	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
JUL											
21...	<0.001	E0.003	<0.005	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
AUG											
18...	<0.001	E0.004	<0.005	<0.004	<0.002	0.004	<0.002	<0.002	<0.004	<0.003	<0.002

DATE	ETHAL- FLUR- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL, WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON, WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION, WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC, WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON, WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP, WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN, WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 1996											
21...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
NOV											
26...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
JAN 1997											
14...	<0.004	<0.002	E0.008	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
FEB											
18...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
APR											
07...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
21...	<0.004	<0.002	<0.007	<0.002	<0.006	0.005	<0.004	<0.010	<0.004	<0.003	<0.002
MAY											
05...	<0.004	<0.002	E0.009	<0.002	<0.006	E0.004	<0.004	<0.010	<0.004	<0.003	<0.002
12...	<0.004	<0.002	E0.005	<0.002	<0.006	0.004	<0.004	<0.010	<0.004	<0.003	<0.002
19...	<0.004	<0.002	<0.007	<0.002	<0.006	0.006	<0.004	<0.010	<0.004	<0.003	<0.002
28...	<0.004	<0.002	<0.007	<0.002	<0.006	0.009	<0.004	<0.010	<0.004	<0.003	<0.002
JUN											
04...	<0.004	<0.002	<0.007	<0.002	<0.006	0.008	<0.004	<0.010	<0.004	<0.003	<0.002
10...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.004	<0.004	<0.010	<0.004	<0.003	<0.002
23...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.003	<0.004	<0.010	<0.004	<0.003	<0.002
JUL											
21...	<0.004	<0.002	E0.004	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
AUG											
18...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002

E Estimated.

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	CARBO- FURAN, WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS, WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE, WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON, WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL, WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL, WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB, WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA, WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE, WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
OCT 1996											
21...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
NOV											
26...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JAN 1997											
14...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB											
18...	<0.003	<0.013	<0.003	<0.017	0.014	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
APR											
07...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
21...	<0.003	<0.013	<0.003	<0.017	0.005	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
MAY											
05...	E0.003	<0.013	<0.003	<0.017	0.007	<0.004	<0.003	<0.002	E0.003	<0.004	<0.003
12...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
19...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.000	<0.002	<0.002	<0.004	<0.003
28...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUN											
04...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.001	<0.002	E0.001	<0.004	<0.003
10...	<0.003	<0.013	<0.003	<0.017	0.005	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
23...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
JUL											
21...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
AUG											
18...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003

DATE	PRO- PARGITE, WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS, WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN, CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN- TIMONY, SED. SUSP. (UG/G) (29816)	ARSENIC, SED. SUSP. (UG/G) (29818)	BARIIUM, SED. SUSP. (UG/G) (29820)	BERYL- LIUM, SED. SUSP. (UG/G) (29822)	CADMIUM, SED. SUSP. (UG/G) (29826)	CHRO- MIUM, SED. SUSP. (UG/G) (29829)	COPPER, SED. SUSP. (UG/G) (29832)	LEAD, SED. SUSP. (UG/G) (29836)
OCT 1996											
21...	<0.013	<0.001	<0.005	1.6	10.2	550	1.5	1.3	66	47	57
NOV											
26...	<0.013	<0.001	<0.005	2.6	10.3	540	1.4	1.2	66	47	37
JAN 1997											
14...	<0.013	<0.001	<0.005	0.9	8.1	640	1.9	0.6	47	58	19
FEB											
18...	<0.013	<0.001	<0.005	1.6	10.1	620	2.0	0.8	65	45	19
APR											
07...	<0.013	<0.001	<0.005	1.1	8.8	650	1.7	0.8	120	53	38
21...	<0.013	<0.001	<0.005	1.1	8.9	590	1.7	0.8	62	46	23
MAY											
05...	<0.013	<0.001	<0.005	1.1	7.9	670	1.8	1.2	65	44	26
12...	<0.013	<0.001	<0.005	1.4	8.0	650	1.7	1.1	63	41	27
19...	<0.013	<0.001	<0.005	1.6	7.3	670	1.5	1.3	55	39	31
28...	<0.013	<0.001	<0.005	1.5	11.4	730	1.7	0.9	65	44	33
JUN											
04...	<0.013	<0.001	<0.005	4.0	6.3	710	1.5	1.0	58	52	30
10...	<0.013	<0.001	<0.005	1.3	8.8	650	1.5	1.0	62	50	31
23...	<0.013	E0.004	<0.005	1.2	9.3	700	1.5	1.1	58	49	36
JUL											
21...	<0.013	<0.009	<0.005	1.4	8.9	620	1.5	1.1	51	54	30
AUG											
18...	<0.013	<0.001	<0.005	1.8	10.6	610	1.6	1.9	58	63	34

E Estimated.

COLUMBIA RIVER MAIN STEM
14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

133

WATER-QUALITY DATA

DATE	MAN- GANESE, SED. SUSP. (UG/G) (29839)	MERCURY, SED. SUSP. (UG/G) (29841)	MOLYB- DENUM, SED. SUSP. (UG/G) (29843)	NICKEL, SED. SUSP. (UG/G) (29845)	SELE- NIUM, SED. SUSP. (UG/G) (29847)	SILVER, SED. SUSP. (UG/G) (29850)	VANA- DIUM, SED. SUSP. (UG/G) (29853)	ZINC, SED. SUSP. (UG/G) (29855)	ALUM- INUM, SED,SUS PERCENT (30221)	CARBON, SED. SUSP. PERCENT (30244)	IRON SEDI- MENT SUSP. PERCENT (30269)
OCT 1996											
21...	1600	<0.01	<50	42	0.6	<1.0	110	230	7.4	4.3	4.2
NOV											
26...	1500	--	--	43	0.7	<1.0	110	230	6.4	4.9	4.2
JAN 1997											
14...	1100	0.04	<5	35	0.3	<0.5	150	150	7.8	3.1	6.8
FEB											
18...	1000	0.02	<10	41	0.4	<1.0	120	180	8.0	3.3	5.4
APR											
07...	1500	0.06	10	81	0.6	<0.5	120	220	7.4	4.2	5.4
21...	1300	0.13	<10	40	0.6	<1.0	120	200	7.2	3.3	5.1
MAY											
05...	1200	0.07	<5	38	0.4	<0.5	130	200	7.7	2.1	5.1
12...	1200	0.07	<5	35	0.4	<0.5	120	210	7.4	2.1	4.7
19...	1000	0.07	<5	32	0.3	<0.5	120	210	7.6	1.7	4.6
28...	1100	0.04	<5	39	0.4	<0.5	120	210	7.7	3.5	4.5
JUN											
04...	940	0.06	<5	31	0.3	<0.5	120	330	7.3	1.6	4.4
10...	990	0.09	<5	38	0.3	<0.5	120	220	8.0	1.9	4.4
23...	1100	0.12	<5	34	0.4	<0.5	120	220	8.0	2.1	4.5
JUL											
21...	1200	0.11	<5	31	0.6	<0.5	110	240	6.9	3.0	4.4
AUG											
18...	1500	0.16	<5	41	0.6	<0.5	110	270	6.4	3.7	4.6
DATE	PHOS- PHORUS, SEDI- MENT SUSP. PERCENT (30292)	SULFUR, SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM, SEDI- MENT SUSP. PERCENT (30317)	COBALT, SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM, SEDI- MENT SUSP. (UG/G) (35040)	URANIUM, SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM, SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC, SUS- PENDEED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1996											
21...	0.14	0.2	0.50	18	260	<100	25	4.0	8	3200	90
NOV											
26...	0.15	0.6	0.49	17	330	--	26	--	5	1800	96
JAN 1997											
14...	0.18	0.2	0.62	23	220	<50	35	3.2	90	74100	98
FEB											
18...	0.13	0.2	0.56	19	220	<100	34	3.2	31	21600	98
APR											
07...	0.13	0.4	0.53	21	250	<50	35	--	13	9370	94
21...	0.19	0.3	0.54	20	270	<100	44	3.1	22	19900	90
MAY											
05...	0.12	0.1	0.58	20	270	<50	31	2.1	34	35300	75
12...	0.11	0.1	0.54	18	290	<50	29	2.0	30	36700	77
19...	0.12	0.1	0.56	19	310	<50	27	1.7	63	89600	68
28...	0.12	1.9	0.50	20	300	<50	32	1.7	40	50100	79
JUN											
04...	0.11	<0.1	0.54	18	320	<50	24	1.5	72	104000	56
10...	0.10	0.1	0.52	18	310	<50	27	1.8	77	107000	66
23...	0.11	<0.1	0.50	20	310	<50	27	2.0	29	34600	82
JUL											
21...	0.14	0.2	0.49	16	240	<50	27	2.9	18	13000	94
AUG											
18...	0.15	0.2	0.48	18	260	<50	32	--	7	3530	95

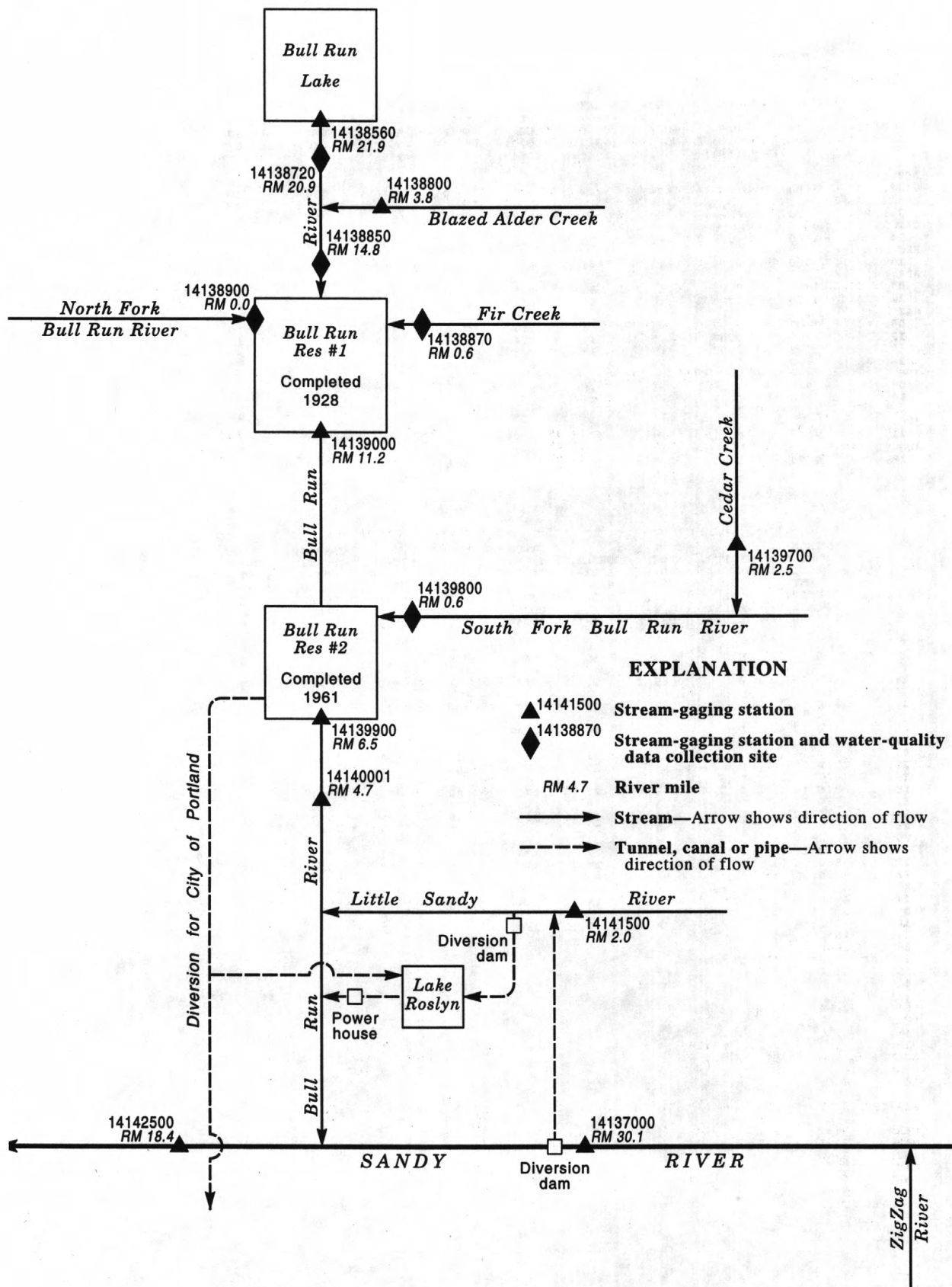


Figure 19. Schematic diagram showing gaging stations and diversions in the Sandy River Basin.

14137000 SANDY RIVER NEAR MARMOT, OR

LOCATION (revised).--Lat 45°23'55", long 122°07'33", in NW 1/4 sec.18, T.2 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, on right bank 0.6 mi west/northwest of Marmot, 0.3 mi upstream from Marmot Dam of Portland General Electric Co., 7.2 mi downstream from Salmon River, and at mile 30.3.

DRAINAGE AREA.--263 mi² (revised).

PERIOD OF RECORD.--August 1911 to current year. Monthly discharges only, January to September 1916, October 1918 to June 1919, published in WSP 1318. Published as "at Marmot" October 1912 to September 1913. Records for January 1916 to June 1919, published as "below dam, near Marmot," obtained by combining records for Sandy River below dam, near Marmot, with records for Sandy River Canal near Marmot.

REVISED RECORDS.--WSP 594: Drainage area. WSP 1288: 1912(M), 1915, 1922, 1924, 1934(M). WSP 1318: 1932(M).

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by ENRON). Aug. 15, 1911, to Dec. 20, 1915, and July 2, 1919, to Oct. 19, 1933, nonrecording gage at site 1.5 mi upstream at different datum. Oct. 20, 1933, to Sept. 30, 1958, water-stage recorder at site 1.1 mi upstream at different datum. Sept. 30, 1958 to Mar. 11, 1997, water-stage recorder at site 0.6 mi upstream, at different datum.

REMARKS.--Records good except for those above 6,000 ft³/s and estimated daily discharges, which are fair and those above 8,000 ft³/s, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--86 years (water years 1912-97), 1,361 ft³/s, 70.28 in/yr, 986,000 acre-ft/yr, includes monthly discharges published in WSP 1318.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,400 ft³/s Dec. 22, 1964, gage height, 17.05 ft, site and datum then in use, from rating curve extended above 7,000 ft³/s; maximum gage height, 20.40 ft, Feb. 7, 1996, site and datum then in use; minimum, 190 ft³/s Oct. 13, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1630	a11,500	13.39	Jan. 1	0400	a10,600	13.10
Dec. 4	2130	a11,700	13.45	Jan. 2	0930	a10,400	13.03
Dec. 25	0700	*a13,900	*14.07	Jan. 31	2130	a13,300	13.90
Dec. 26	1900	a9,670	12.78				

Minimum discharge, 292 ft³/s Oct. 3, 4.

a At site and datum then in use.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	964	4960	8850	8150	1710	1680	2870	1730	1260	518	381
2	297	861	3500	9450	4440	2180	1540	2530	1420	1000	509	386
3	293	821	2680	6110	3140	1780	1490	2340	1400	857	523	388
4	293	921	4970	4080	2480	1540	1410	2250	1430	812	528	376
5	340	890	6930	3090	2080	1400	1340	2120	1350	827	528	371
6	350	1450	4180	2530	1820	1610	1270	2190	1210	805	554	357
7	331	2120	4070	2710	1640	2720	1300	2060	1150	758	541	340
8	321	1540	5600	2490	1480	2380	1590	1970	1090	742	473	339
9	318	1280	4010	2200	1360	3630	1530	1980	1040	1130	447	346
10	316	1120	3400	3710	1270	6580	1440	2040	1020	1120	436	368
11	312	1010	2920	3290	1220	4540	1340	2160	989	1060	429	412
12	306	942	2640	2570	1280	3370	1260	2280	998	908	434	395
13	344	1250	2560	2140	1210	2680	1380	2290	936	833	439	358
14	537	1740	2220	1870	1940	2240	2670	2180	925	785	426	412
15	1070	1960	1890	1660	2020	2520	3100	2150	923	753	446	466
16	844	1820	1740	1520	1780	4210	2680	2030	925	728	424	633
17	737	2220	1530	2190	1780	3950	2440	1940	927	708	409	813
18	1980	2720	1380	3050	1800	3300	2320	1820	908	684	402	824
19	1610	8230	1280	2590	3210	3690	2710	1670	828	657	404	636
20	1060	5140	1620	2420	2670	4460	4420	1580	771	655	411	468
21	864	3340	1610	2240	2130	3470	3500	1440	784	679	440	413
22	1600	3470	1430	1990	1820	2780	3000	1350	840	663	426	396
23	1570	2780	1520	1800	1600	2390	3280	1360	848	610	414	383
24	4080	3390	4160	1610	1450	2160	3200	1300	789	581	532	381
25	3430	3550	10800	1480	1360	2070	2720	1250	730	562	452	390
26	2200	2730	8200	1360	1380	2340	2520	1170	706	548	438	402
27	1530	2910	7280	1250	1380	2360	2900	1230	684	543	447	e500
28	1440	5360	4540	1380	1270	2310	2680	1350	667	551	408	e400
29	1750	4150	4830	1330	---	2050	3080	1440	716	575	401	e350
30	1370	3460	5950	3120	---	1900	3110	1380	733	549	380	e350
31	1130	---	5530	9770	---	1790	---	1610	---	529	373	---
TOTAL	32924	74139	119930	95850	59160	86110	68900	57330	29467	23472	13992	13034
MEAN	1062	2471	3869	3092	2113	2778	2297	1849	982	757	451	434
MAX	4080	8230	10800	9770	8150	6580	4420	2870	1730	1260	554	824
MIN	293	821	1280	1250	1210	1400	1260	1170	667	529	373	339
AC-FT	65300	147100	237900	190100	117300	170800	136700	113700	58450	46560	27750	25850
CFSM	4.04	9.40	14.7	11.8	8.03	10.6	8.73	7.03	3.73	2.88	1.72	1.65
IN.	4.66	10.49	16.96	13.56	8.37	12.18	9.75	8.11	4.17	3.32	1.98	1.84

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1997, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1912	656	2168	1960	239	1988
1913	1617	4777	1996	236	1937
1914	2087	6278	1965	445	1977
1915	2023	4752	1953	498	1937
1916	1891	4971	1996	464	1977
1917	1658	3983	1972	631	1941
1918	1891	3134	1962	658	1941
1919	1805	3443	1949	743	1992
1920	1220	3457	1917	420	1992
1921	644	1385	1917	354	1992
1922	429	663	1974	268	1940
1923	417	1056	1959	244	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1912 - 1997
ANNUAL TOTAL	676706	674308	
ANNUAL MEAN	1849	1847	1357
HIGHEST ANNUAL MEAN			2018
LOWEST ANNUAL MEAN			766
HIGHEST DAILY MEAN	33800	Feb 7	41400
LOWEST DAILY MEAN	293	Oct 3	193
ANNUAL SEVEN-DAY MINIMUM	301	Sep 28	196
ANNUAL RUNOFF (AC-FT)	1342000		982900
ANNUAL RUNOFF (CFSM)	7.03	7.02	5.16
ANNUAL RUNOFF (INCHES)	95.72	95.38	70.09
10 PERCENT EXCEEDS	3730	3580	2640
50 PERCENT EXCEEDS	1260	1430	995
90 PERCENT EXCEEDS	345	402	352

e Estimated

SANDY RIVER BASIN

14138560 BULL RUN LAKE NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'39", long 121°50'34", in SE 1/4 SE 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in main cabin on northwest side of Bull Run Lake, near outlet structure, 10.7 mi northeast of Brightwood, and at mile 21.9.

DRAINAGE AREA.--3.5 mi².

PERIOD OF RECORD.--October 1992 to current year.

REVISED RECORDS.--WDR- OR-95-1: 1993, 1994.

GAGE.--Water-stage recorder. Datum of gage is 3,147.2 ft above sea level, Portland Water Bureau datum.

REMARKS.--Bull Run Lake was formed by natural processes, including a large landslide. A temporary log crib dam was constructed in 1917 to increase the capacity of the lake. In 1920 the log crib dam was reconstructed. A concrete dam and improved outlet valve were constructed in 1958. A lower outlet and tunnel was constructed in 1961. Portland Water Bureau releases water from the lake to augment streamflows during periods of low flow.

COOPERATION.--Capacity table provided by Portland Water Bureau, extended above 3,180 ft³/s by U.S. Geological Survey, Oct. 1, 1996.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 48,340 acre-ft Feb. 9, 1996, elevation, 3,185.02 ft; minimum contents observed, 31,080 acre-ft Oct. 29, 1992, elevation, 3,143.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,690 acre-ft Mar. 20, elevation, 3,181.35 ft; minimum contents, 40,120 acre-ft Oct. 12, 14, elevation, 3,166.49 ft.

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

2,905	0	3,140	29,510
2,940	229	3,150	33,410
2,980	1,270	3,160	37,380
3,020	3,740	3,180	46,080
3,060	8,880	3,186	48,780
3,100	17,280		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3167.36	3168.35	3172.49	3178.04	3181.02	3180.10	3180.46	3180.90	3180.57	3178.33	3175.32	3171.87
2	3167.26	3168.30	3172.78	3178.66	3180.96	3180.13	3180.36	3180.79	3180.53	3178.24	3175.20	3171.76
3	3167.17	3168.32	3172.79	3178.97	3180.82	3180.09	3180.28	3180.75	3180.52	3178.12	3175.08	3171.66
4	3167.20	3168.37	3173.42	3179.03	3180.73	3180.02	3180.20	3180.71	3180.50	3178.02	3174.96	3171.55
5	3167.11	3168.35	3173.87	3179.23	3180.62	3179.96	3180.10	3180.69	3180.44	3177.91	3174.85	3171.44
6	3167.01	3168.65	3174.02	3179.07	3180.50	3180.03	3180.02	3180.69	3180.37	3177.81	3174.72	3171.33
7	3166.92	3168.66	3174.17	3179.13	3180.41	3180.12	3179.99	3180.65	3180.30	3177.71	3174.59	3171.23
8	3166.83	3168.69	3174.27	3179.14	3180.32	3180.08	3179.96	3180.62	3180.22	3177.66	3174.47	3171.06
9	3166.73	3168.70	3174.43	3179.19	3180.22	3180.53	3179.90	3180.64	3180.14	3177.70	3174.36	3170.98
10	3166.65	3168.69	---	3179.28	3180.12	3180.70	3179.82	3180.69	3180.07	3177.71	3174.18	3170.90
11	3166.59	3168.66	---	3179.31	3180.12	3180.73	3179.75	3180.76	3180.00	3177.65	3174.08	3170.84
12	3166.50	3168.68	---	3179.32	3180.07	3180.69	3179.65	3180.82	3179.93	3177.57	3173.97	3170.74
13	3166.56	3168.84	---	3179.22	3180.04	3180.58	3179.71	3180.87	3179.85	3177.48	3173.85	3170.69
14	3166.71	3168.99	---	3179.19	3180.14	3180.49	3180.01	3180.90	3179.76	3177.39	3173.73	3170.60
15	3166.76	3169.02	---	3179.13	3180.13	3180.66	3180.17	3180.90	3179.66	3177.29	3173.61	3170.62
16	3166.72	3169.13	3174.71	3179.10	3180.12	3180.95	3180.32	3180.90	3179.57	3177.19	3173.49	3170.83
17	3166.70	3169.28	3174.69	3179.27	3180.21	3180.96	3180.38	3180.88	3179.45	3177.07	3173.37	3170.84
18	3167.10	3169.49	3174.57	3179.38	3180.28	3181.06	3180.49	3180.82	3179.38	3176.97	3173.27	3170.87
19	3167.10	3170.04	3174.53	3179.40	3180.56	3181.18	3180.87	3180.75	3179.26	3176.86	3173.15	3170.78
20	3167.05	3170.22	3174.63	3179.48	3180.55	3181.34	3181.12	3180.68	3179.16	3176.75	3173.06	3170.68
21	3167.00	3170.35	3174.59	3179.50	3180.48	3181.26	3181.08	3180.62	3179.11	3176.64	3172.95	3170.62
22	3167.27	3170.48	3174.54	3179.50	3180.41	3181.10	3181.08	3180.53	3179.06	3176.52	3172.84	3170.52
23	3167.43	3170.54	3174.62	3179.51	3180.29	3181.94	3181.19	3180.51	3179.01	3176.40	3172.73	3170.39
24	3167.96	3170.76	3175.01	3179.44	3180.24	3180.79	3181.15	3180.49	3178.90	3176.28	3172.68	3170.31
25	3168.15	3170.90	3175.51	3179.38	3180.16	3180.70	3181.04	3180.41	3178.79	3176.16	3172.57	3170.22
26	3168.19	3170.96	3175.87	3179.29	3180.12	3180.78	3181.00	3180.36	3178.68	3176.05	3172.52	3170.29
27	3168.19	3171.31	3176.21	3179.28	3180.07	3180.80	3181.00	3180.37	3178.56	3175.93	3172.38	3170.25
28	3168.35	3171.68	3176.31	3179.29	3179.99	3180.70	3180.94	3180.40	3178.47	3175.81	3172.30	3170.15
29	3168.37	3171.84	3176.66	3179.21	---	3180.61	3180.96	3180.44	3178.37	3175.69	3172.19	3170.07
30	3168.42	3172.16	3177.01	3179.63	---	3180.52	3181.00	3180.46	3178.33	3175.57	3172.08	3170.04
31	3168.38	---	3177.24	3180.70	---	3180.54	---	3180.57	---	3175.45	3171.98	---
MAX	3168.42	3172.16	---	3180.70	3181.02	3181.34	3181.19	3180.90	3180.57	3178.33	3175.32	3171.87
MIN	3166.50	3168.30	---	3178.04	3179.99	3179.96	3179.65	3180.36	3178.33	3175.45	3171.98	3170.04
(†)	40930	42580	44840	46400	46080	46320	46530	46340	45330	44040	42500	41650
(‡)	+390	+1650	+2260	+1560	-320	+240	+210	-190	-1010	-1290	-1540	-850

CAL YR 1996 MAX --- MIN --- AC-FT# -1340

WTR YR 1997 MAX --- MIN --- AC-FT# +1110

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

137

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'08" (revised), long 121°51'55", in SE 1/4 NE 1/4 sec.19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 1.0 mi downstream from outlet structure at Bull Run Lake, 10.4 mi northeast of Brightwood, and at mile 20.9.

DRAINAGE AREA.--5.08 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,840 ft above sea level, from topographic map.

REMARKS.--Records fair. Regulation at times by Bull Run Lake.

AVERAGE DISCHARGE.--5 years (water years 1993-97), 26.9 ft³/s, 19,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 148 ft³/s Feb. 7, 1996, gage height, 3.05 ft, from rating curve extended above 63 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 8.2 ft³/s Oct. 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 113 ft³/s Mar. 24, gage height, 2.77 ft; minimum discharge, 16 ft³/s Oct. 7-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	20	36	58	57	34	62	103	40	26	23	19
2	17	20	35	69	49	33	57	99	39	25	23	19
3	17	20	34	64	49	32	52	96	40	25	23	19
4	17	20	42	59	58	31	47	91	40	25	23	19
5	17	20	46	56	67	30	44	85	40	25	23	19
6	17	20	42	53	71	31	42	80	40	25	22	19
7	17	21	41	51	69	34	39	76	39	25	22	19
8	16	21	43	48	63	33	37	73	38	24	22	19
9	16	21	41	46	57	39	34	69	37	25	22	18
10	16	21	39	46	50	42	33	67	36	25	22	18
11	16	21	38	44	46	40	32	64	35	25	22	18
12	16	21	37	42	41	40	31	63	33	24	22	18
13	16	21	36	40	38	42	31	63	32	24	21	18
14	17	22	35	38	37	44	33	65	32	24	21	18
15	17	22	33	36	36	49	37	66	31	24	21	18
16	e17	22	32	35	35	64	37	68	30	24	21	19
17	e17	24	31	35	35	61	37	69	29	24	21	19
18	e17	25	30	36	34	63	37	70	29	24	21	19
19	e17	33	29	35	37	73	40	71	28	24	20	18
20	e17	32	29	35	37	88	50	70	28	24	20	18
21	e17	30	28	35	37	97	53	68	28	24	20	18
22	19	29	27	34	38	103	60	66	27	24	20	18
23	19	28	27	34	39	109	75	62	27	24	20	18
24	23	28	29	33	39	112	90	57	27	24	20	18
25	23	28	40	32	39	109	101	53	26	24	20	18
26	22	28	37	32	38	105	106	49	26	24	20	18
27	21	29	39	31	36	96	109	47	26	24	20	18
28	20	34	36	32	35	88	109	44	26	23	20	18
29	21	33	40	31	---	79	108	42	26	24	20	18
30	20	33	46	36	---	74	106	41	26	24	19	18
31	20	---	48	54	---	68	---	40	---	23	19	---
TOTAL	559	747	1126	1310	1267	1943	1729	2077	961	753	653	551
MEAN	18.0	24.9	36.3	42.3	45.3	62.7	57.6	67.0	32.0	24.3	21.1	18.4
MAX	23	34	48	69	71	112	109	103	40	26	23	19
MIN	16	20	27	31	34	30	31	40	26	23	19	18
AC-FT	1110	1480	2230	2600	2510	3850	3430	4120	1910	1490	1300	1090

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1997, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997
MEAN	14.1	21.9	29.2	35.6	34.8
MAX	18.0	37.0	49.1	67.3	55.8
(WY)	1997	1996	1996	1996	1997
MIN	10.5	11.9	16.4	15.3	15.6
(WY)	1993	1994	1993	1993	1993

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1993 - 1997
ANNUAL TOTAL	12572	13676	
ANNUAL MEAN	34.3	37.5	26.9
HIGHEST ANNUAL MEAN			37.5
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	130	112	130
LOWEST DAILY MEAN	16	16	8.4
ANNUAL SEVEN-DAY MINIMUM	16	16	8.6
ANNUAL RUNOFF (AC-FT)	24940	27130	19480
10 PERCENT EXCEEDS	60	68	45
50 PERCENT EXCEEDS	30	32	22
90 PERCENT EXCEEDS	18	18	13

e Estimated

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1996 to current year.

TEMPERATURE: October 1995 to current year.

INSTRUMENTATION.--Water-quality monitor and data logger.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 32 microsiemens Oct. 10-16, 1996, but may have been higher during period of missing record; minimum, 22 microsiemens Jan. 31, 1997.

TEMPERATURE: Maximum 6.5°C many days each year; minimum, 3.0°C Feb. 6, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 32 microsiemens Oct. 10-16, but may have been higher during period of missing record; minimum, 22 microsiemens Jan. 31.

TEMPERATURE: Maximum 6.5°C many days during October, January, and September; minimum, 4.0°C many days during April and May.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	30	30	30	28	27	28	28	27	28	28	25	26
2	30	30	30	28	27	28	28	28	28	27	25	26
3	30	30	30	28	28	28	28	28	28	28	27	28
4	31	30	30	28	28	28	28	23	27	28	28	28
5	31	30	30	28	28	28	28	26	27	29	28	29
6	31	30	30	28	28	28	28	28	28	29	28	29
7	31	30	30	28	28	28	28	28	28	29	28	29
8	31	30	31	28	28	28	28	28	28	30	28	29
9	31	31	31	28	28	28	28	28	28	29	28	29
10	32	31	31	28	28	28	28	28	28	29	28	28
11	32	31	31	28	28	28	29	28	29	29	28	28
12	32	31	31	28	28	28	29	28	28	29	28	28
13	32	31	31	28	28	28	29	28	28	29	28	28
14	32	31	32	28	28	28	29	28	29	29	28	28
15	32	31	32	28	28	28	29	28	29	29	28	28
16	32	---	---	28	28	28	29	28	29	29	28	28
17	---	---	---	28	28	28	29	28	29	29	28	28
18	---	---	---	28	28	28	29	28	29	28	28	28
19	---	---	---	28	25	27	29	28	29	28	28	28
20	---	---	---	28	27	28	29	28	28	28	28	28
21	---	28	---	28	28	28	29	28	28	28	28	28
22	28	27	28	28	28	28	29	28	28	28	28	28
23	29	27	28	28	28	28	29	28	28	28	27	28
24	28	26	27	28	28	28	29	26	28	28	27	28
25	28	27	28	28	28	28	28	25	26	28	27	28
26	28	28	28	28	28	28	28	27	27	28	27	28
27	28	27	28	28	27	28	28	26	27	28	27	27
28	28	27	27	28	27	27	28	28	28	28	27	27
29	28	27	27	28	28	28	28	25	27	28	27	27
30	28	27	28	28	27	28	27	25	27	28	25	26
31	28	27	28	---	---	---	27	25	27	26	22	24
MONTH	---	---	---	28	25	28	29	23	28	30	22	28
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	26	23	25	26	26	26	26	26	26	26	25	26
2	27	26	26	26	26	26	26	26	26	26	25	26
3	27	26	27	26	26	26	26	26	26	26	26	26
4	27	27	27	26	26	26	26	26	26	26	26	26
5	27	26	27	26	26	26	26	26	26	26	26	26
6	27	26	27	26	26	26	26	26	26	26	26	26
7	28	27	27	26	25	26	26	26	26	26	26	26
8	28	27	27	26	26	26	26	26	26	26	26	26
9	28	27	27	26	23	25	26	26	26	26	26	26
10	28	27	27	26	24	25	26	26	26	26	26	26
11	28	27	27	26	26	26	26	26	26	26	26	26
12	28	27	28	26	26	26	26	26	26	26	26	26
13	28	27	27	26	26	26	26	26	26	26	26	26
14	27	26	27	26	26	26	26	25	25	26	26	26
15	27	26	27	26	24	25	26	25	25	26	26	26
16	27	26	27	25	24	24	27	25	26	26	26	26
17	27	26	26	25	25	25	26	25	26	26	26	26
18	27	26	26	25	25	25	26	25	26	26	26	26
19	26	26	26	25	25	25	26	24	25	26	26	26
20	26	26	26	25	24	25	25	24	25	26	26	26
21	26	26	26	26	25	25	25	25	25	26	26	26
22	27	26	26	26	25	26	25	25	25	26	25	26
23	27	26	26	26	26	26	25	25	25	26	26	26
24	26	26	26	26	26	26	25	25	25	26	26	26
25	26	26	26	26	26	26	26	25	25	26	26	26
26	26	26	26	26	26	26	26	25	26	26	26	26
27	26	26	26	26	26	26	26	26	26	26	26	26
28	26	26	26	26	26	26	26	26	26	26	26	26
29	---	---	---	26	26	26	26	25	26	26	26	26
30	---	---	---	26	26	26	26	25	26	26	26	26
31	---	---	---	26	26	26	---	---	---	26	26	26
MONTH	28	23	27	26	23	26	27	24	26	26	25	26

SANDY RIVER BASIN

139

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	26	26	26	26	26	26	26	26	26	28	28	28
2	26	26	26	26	26	26	27	26	26	28	27	27
3	26	26	26	27	26	26	27	26	26	27	27	27
4	26	26	26	27	26	26	27	26	26	28	27	27
5	26	26	26	27	26	26	27	26	26	27	27	27
6	26	26	26	27	26	26	27	26	26	28	27	27
7	26	26	26	27	26	26	27	26	26	28	27	27
8	26	26	26	27	---	---	28	26	27	28	27	27
9	26	26	26	---	---	---	28	27	27	28	27	28
10	26	26	26	---	---	---	28	27	27	28	27	27
11	26	26	26	---	---	---	28	27	28	28	27	27
12	26	26	26	---	---	---	28	27	28	28	27	27
13	26	26	26	---	---	---	28	27	28	28	27	27
14	26	26	26	---	26	---	28	27	28	28	27	27
15	26	26	26	26	26	26	28	27	28	28	27	27
16	26	26	26	26	26	26	28	27	28	28	27	28
17	26	26	26	26	26	26	28	27	28	28	27	28
18	26	26	26	26	26	26	28	27	28	28	27	28
19	26	26	26	26	26	26	28	27	28	28	28	28
20	26	26	26	27	26	26	28	27	28	28	28	28
21	26	26	26	27	26	26	28	27	28	28	28	28
22	26	26	26	27	26	26	28	28	28	28	27	28
23	26	26	26	27	26	26	28	28	28	28	27	28
24	26	26	26	26	26	26	28	28	28	28	27	28
25	26	26	26	26	26	26	28	28	28	28	28	28
26	26	26	26	26	26	26	28	28	28	28	27	28
27	26	26	26	26	26	26	28	28	28	28	28	28
28	26	26	26	26	26	26	28	28	28	28	28	28
29	26	26	26	26	26	26	28	28	28	28	28	28
30	26	26	26	27	26	26	28	28	28	28	28	28
31	---	---	---	26	26	26	28	28	28	---	---	---
MONTH	26	26	26	---	---	---	28	26	27	28	27	28

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
2	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
3	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
4	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.0	5.5	6.0	6.0	6.0
5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0
6	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
7	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0	6.5	6.5	6.5
8	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
9	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5
10	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
11	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5
12	6.0	6.0	6.0	6.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0
13	6.0	6.0	6.0	6.5	6.0	6.5	6.0	5.5	6.0	6.0	6.0	6.0
14	6.5	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
15	6.0	6.0	6.0	6.5	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
16	---	---	---	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
17	---	---	---	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
18	---	---	---	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
19	---	---	---	6.0	5.5	5.5	6.5	6.0	6.5	6.0	6.0	6.0
20	---	---	---	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
21	---	---	---	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
22	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.5	6.0	6.0	6.0
23	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.0	6.0	6.0	6.0
24	6.0	6.0	6.0	6.0	6.0	6.0	6.5	5.5	6.0	6.0	6.0	6.0
25	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	6.0	6.0	6.0
26	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	6.0	6.0	6.0
27	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0	6.0	5.5	6.0
28	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
29	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	6.5	6.0	6.0
30	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	6.0	5.5	6.0
31	6.0	6.0	6.0	---	---	---	6.0	5.5	6.0	6.0	5.0	5.5
MONTH	---	---	---	6.5	5.5	6.0	6.5	5.0	6.0	6.5	5.0	6.0

SANDY RIVER BASIN

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	5.5	5.5	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.0	4.5
2	6.0	5.5	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.0	4.5
3	6.0	6.0	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.5	4.5
4	6.0	6.0	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.5	4.5
5	6.0	6.0	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.5	4.5
6	6.0	6.0	6.0	5.5	5.5	5.5	5.0	4.5	5.0	4.5	4.5	4.5
7	6.0	6.0	6.0	5.5	5.0	5.5	5.0	4.5	5.0	4.5	4.0	4.5
8	6.0	6.0	6.0	5.5	5.5	5.5	5.0	4.5	4.5	4.5	4.5	4.5
9	6.0	6.0	6.0	5.5	4.5	5.0	5.0	4.5	4.5	4.5	4.0	4.5
10	6.0	6.0	6.0	5.5	5.0	5.0	5.0	4.5	4.5	4.5	4.0	4.5
11	6.0	6.0	6.0	5.5	5.0	5.5	5.0	4.5	4.5	4.5	4.5	4.5
12	6.0	6.0	6.0	5.5	5.0	5.5	5.0	4.5	4.5	4.5	4.5	4.5
13	6.0	6.0	6.0	5.5	5.0	5.5	5.0	4.5	4.5	4.5	4.5	4.5
14	6.0	6.0	6.0	5.5	5.0	5.5	4.5	4.5	4.5	4.5	4.5	4.5
15	6.0	6.0	6.0	5.5	4.5	5.0	5.0	4.5	4.5	4.5	4.5	4.5
16	6.0	6.0	6.0	5.0	4.5	5.0	5.0	4.5	4.5	4.5	4.0	4.5
17	6.0	6.0	6.0	5.0	5.0	5.0	5.0	4.5	4.5	4.5	4.0	4.5
18	6.0	6.0	6.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.5
19	6.0	5.5	5.5	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.5
20	6.0	5.5	6.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
21	6.0	5.5	6.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
22	6.0	5.5	6.0	5.5	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
23	6.0	5.5	6.0	5.5	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
24	6.0	5.5	6.0	5.5	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
25	6.0	5.5	6.0	5.5	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.0
26	6.0	5.5	6.0	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.0	4.5
27	6.0	5.5	5.5	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
28	6.0	5.5	5.5	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
29	---	---	---	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5
30	---	---	---	5.0	5.0	5.0	4.5	4.0	4.5	4.5	4.5	4.5
31	---	---	---	5.0	4.5	5.0	---	---	---	4.5	4.5	4.5
MONTH	6.0	5.5	5.9	5.5	4.5	5.2	5.0	4.0	4.6	4.5	4.0	4.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
2	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
3	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
4	4.5	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
5	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
6	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
7	4.5	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
8	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
9	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
10	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
11	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
12	4.5	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
13	4.5	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
14	5.0	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
15	5.0	4.5	4.5	5.5	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
16	5.0	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.0
17	5.0	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.0
18	5.0	4.5	4.5	5.5	5.0	5.0	6.0	5.5	5.5	6.0	6.0	6.0
19	5.0	4.5	4.5	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
20	5.0	4.5	4.5	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
21	4.5	4.5	4.5	5.5	5.0	5.5	6.0	5.5	5.5	6.0	6.0	6.0
22	4.5	4.5	4.5	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
23	5.0	4.5	4.5	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
24	5.0	4.5	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
25	5.0	4.5	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
26	5.0	4.5	5.0	5.5	5.0	5.5	6.0	5.5	6.0	6.0	6.0	6.0
27	5.0	4.5	5.0	5.5	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0
28	5.0	4.5	5.0	5.5	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0
29	5.0	4.5	5.0	5.5	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0
30	5.0	5.0	5.0	5.5	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0
31	---	---	---	5.5	5.5	5.5	6.0	6.0	6.0	---	---	---
MONTH	5.0	4.5	4.6	5.5	5.0	5.2	6.0	5.5	5.7	6.5	6.0	6.0

SANDY RIVER BASIN

141

14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR

LOCATION.--Lat 45°27'10", long 121°53'25", in NW 1/4 SE 1/4 sec.25, T.1 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 600 ft downstream from the confluence of Bedrock and Hickman Creeks and 8.6 mi north of Rhododendron, and at mile 3.78.

DRAINAGE AREA.--8.17 mi².

PERIOD OF RECORD.--October 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--34 years (water years 1964-97), 58.4 ft³/s, 97.06 in/yr, 42,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,610 ft³/s Dec. 22, 1964, gage height, 8.25 ft, from rating curve extended above 330 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.2 ft³/s Oct. 16, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1430	714	4.12	Jan. 1	0100	593	3.77
Dec. 4	1900	832	4.44	Jan. 2	0830	693	4.06
Dec. 25	0330	825	4.42	Jan. 31	1930	*847	*4.48
Dec. 26	1700	603	3.80	Mar. 9	2130	658	3.96
Dec. 29	1900	553	3.65				

Minimum discharge, 2.5 ft³/s Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	34	276	458	408	58	48	141	54	36	7.4	3.5
2	2.7	27	143	531	188	63	42	105	37	24	7.0	3.5
3	2.7	27	83	255	106	41	38	92	34	19	6.5	3.5
4	3.9	47	335	133	68	33	34	99	32	17	6.2	3.5
5	7.2	38	318	81	48	30	31	90	33	15	5.8	3.3
6	3.8	168	145	62	39	78	29	103	27	15	5.7	3.3
7	3.3	168	229	111	33	245	31	83	24	14	5.4	3.3
8	3.1	85	322	92	28	123	50	74	22	14	5.3	3.1
9	3.0	56	168	75	25	387	46	76	20	43	4.9	3.1
10	2.9	43	137	215	22	331	41	81	18	55	4.6	3.2
11	3.1	35	99	145	22	182	37	89	17	59	4.6	4.1
12	3.6	32	97	89	27	110	33	89	20	39	4.3	4.1
13	16	72	99	59	25	73	69	81	17	30	4.3	3.7
14	58	135	66	44	141	55	294	72	16	24	4.3	7.0
15	74	114	47	36	139	134	263	63	15	21	4.3	13
16	40	103	41	32	92	383	184	56	14	18	4.2	41
17	25	170	34	143	113	261	152	51	13	17	4.0	48
18	209	140	30	230	129	194	129	44	13	15	3.9	49
19	109	455	26	146	307	249	200	39	12	14	3.9	27
20	52	219	72	129	153	301	305	35	11	13	4.0	18
21	38	140	59	105	87	183	184	31	14	12	4.0	14
22	191	176	43	73	58	120	143	28	16	12	3.8	12
23	123	114	44	53	44	91	199	28	19	11	3.7	10
24	377	214	304	41	37	75	207	28	16	11	7.4	9.0
25	266	191	585	35	33	73	141	26	14	10	4.6	8.3
26	129	119	438	30	36	127	118	24	12	9.5	4.4	11
27	70	180	376	e28	35	136	141	27	12	9.0	4.2	30
28	86	304	178	66	30	118	113	28	12	8.5	4.3	15
29	113	183	323	48	---	84	154	33	12	8.1	4.0	12
30	65	185	340	304	---	67	159	30	14	7.9	3.7	13
31	44	---	312	694	---	58	---	54	---	7.6	3.5	---
TOTAL	2127.0	3974	5769	4543	2473	4463	3615	1900	590	608.6	148.2	382.5
MEAN	68.6	132	186	147	88.3	144	121	61.3	19.7	19.6	4.78	12.8
MAX	377	455	585	694	408	387	305	141	54	59	7.4	49
MIN	2.7	27	26	28	22	30	29	24	11	7.6	3.5	3.1
AC-FT	4220	7880	11440	9010	4910	8850	7170	3770	1170	1210	294	759
CFSM	8.40	16.2	22.8	17.9	10.8	17.6	14.7	7.50	2.41	2.40	.59	1.56
IN.	9.68	18.09	26.27	20.69	11.26	20.32	16.46	8.65	2.69	2.77	.67	1.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1997, BY WATER YEAR (WY)

	30.5	90.2	105	105	85.3	68.7	79.7	71.7	38.2	11.1	5.64	11.1
MEAN	30.5	90.2	105	105	85.3	68.7	79.7	71.7	38.2	11.1	5.64	11.1
MAX	82.5	218	288	207	221	167	150	165	115	35.4	27.6	35.5
(WY)	1968	1996	1965	1974	1996	1972	1990	1969	1964	1983	1968	1977
MIN	1.57	12.5	22.6	19.2	17.5	17.7	33.1	18.1	4.74	3.95	2.37	1.67
(WY)	1988	1994	1977	1985	1969	1992	1983	1992	1992	1992	1967	1991

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1964 - 1997

ANNUAL TOTAL	28730.8	30593.3	
ANNUAL MEAN	78.5	83.8	
HIGHEST ANNUAL MEAN			58.4
LOWEST ANNUAL MEAN			88.1
HIGHEST DAILY MEAN	1510	Feb 7	1780
LOWEST DAILY MEAN	1.9	Sep 11	1.3
ANNUAL SEVEN-DAY MINIMUM	2.0	Sep 7	1.3
ANNUAL RUNOFF (AC-FT)	56990		42280
ANNUAL RUNOFF (CFSM)	8.61		7.14
ANNUAL RUNOFF (INCHES)	130.82		97.06
10 PERCENT EXCEEDS	184		132
50 PERCENT EXCEEDS	35		31
90 PERCENT EXCEEDS	2.9		3.5

e Estimated

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'50", long 122°00'50", near center of sec.12, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 1.2 mi upstream from North Fork, 7.0 mi southeast of Multnomah Falls, and at mile 14.8.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-91-1: 1990.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,080 ft above sea level, from topographic map.

REMARKS.--Records good. Regulation at times since 1915 by Bull Run Lake, usable capacity, 12,270 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1967-97), 413 ft³/s, 117.10 in/yr, 299,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,140 ft³/s Feb. 6, 1996, gage height, 13.60 ft; minimum discharge, 30 ft³/s Oct. 28-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1400	4,640	10.03	Dec. 29	1900	4,030	9.51
Dec. 4	1900	*4,840	*10.20	Jan. 1	0130	3,810	9.31
Dec. 25	0330	4,710	10.09	Jan. 31	1100	4,770	10.14

Minimum discharge, 45 ft³/s Oct. 1-4.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	260	1330	2640	2450	552	422	780	454	308	87	60
2	45	222	766	2990	1110	673	388	645	347	241	84	60
3	45	220	538	1570	705	451	370	593	336	201	83	59
4	53	325	2030	842	527	365	343	595	345	179	81	58
5	92	293	1900	576	441	333	318	544	357	164	79	58
6	57	887	873	469	387	610	298	632	311	163	78	57
7	51	813	1290	704	350	1560	302	551	284	152	76	56
8	49	490	1850	616	319	800	409	498	263	148	74	55
9	48	366	943	513	297	2060	385	473	241	419	73	54
10	47	297	849	1310	279	1860	350	467	224	410	71	56
11	48	251	709	859	268	1090	320	486	209	407	70	62
12	52	242	740	583	312	735	297	478	209	321	69	62
13	160	529	721	441	310	542	408	451	195	272	68	60
14	358	972	538	372	951	e450	1390	421	185	237	67	90
15	492	826	416	315	811	e800	1280	398	174	208	66	204
16	324	713	359	281	586	2430	893	375	163	190	66	395
17	217	1180	301	826	614	1430	725	356	158	174	64	640
18	1350	1080	267	1270	680	1060	656	332	158	162	65	616
19	785	3140	244	786	1500	1300	1030	311	145	150	65	375
20	468	1260	418	699	918	1660	1750	295	136	139	66	258
21	355	811	409	608	627	978	966	277	157	132	67	198
22	1150	940	335	479	487	701	748	261	194	126	63	161
23	699	643	387	398	406	577	1100	263	227	120	62	137
24	2200	1050	1840	340	357	519	1080	259	198	114	97	121
25	1690	978	3260	300	331	511	765	244	173	108	72	110
26	790	668	2250	266	350	683	654	227	159	104	69	127
27	469	967	2430	243	344	705	673	247	148	100	68	259
28	539	1550	1020	375	313	730	604	250	142	96	68	164
29	643	961	2210	351	---	594	778	301	146	93	67	139
30	429	984	2270	1660	---	517	799	279	161	92	63	127
31	325	---	2200	3730	---	464	---	392	---	89	61	---
TOTAL	14076	23918	35693	27412	17030	27740	20501	12681	6599	5819	2209	4878
MEAN	454	797	1151	884	608	895	683	409	220	188	71.3	163
MAX	2200	3140	3260	3730	2450	2430	1750	780	454	419	97	640
MIN	45	220	244	243	268	333	297	227	136	89	61	54
AC-FT	27920	47440	70800	54370	33780	55020	40660	25150	13090	11540	4380	9680
CFSM	9.48	16.6	24.0	18.5	12.7	18.7	14.3	8.54	4.59	3.92	1.49	3.39
IN.	10.93	18.58	27.72	21.29	13.23	21.54	15.92	9.85	5.12	4.52	1.72	3.79

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1997, BY WATER YEAR (WY)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	242	617	714	701	620	510	524	435	280	116	84.3	126																			
MAX	535	1325	1434	1238	1216	1120	834	885	699	292	231	294																			
(WY)	1968	1996	1978	1996	1972	1993	1969	1974	1983	1968	1977																				
MIN	36.5	72.4	193	177	167	148	242	150	54.8	54.0	43.7	40.9																			
(WY)	1988	1994	1977	1985	1993	1992	1967	1992	1977	1977	1967	1994																			

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1967 - 1997

ANNUAL TOTAL	191352	198556	413
ANNUAL MEAN	523	544	643
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	7480	3730	7480
LOWEST DAILY MEAN	42	45	30
ANNUAL SEVEN-DAY MINIMUM	44	50	31
ANNUAL RUNOFF (AC-FT)	379500	393800	299100
ANNUAL RUNOFF (CFSM)	10.9	11.4	8.62
ANNUAL RUNOFF (INCHES)	148.61	154.20	117.10
10 PERCENT EXCEEDS	1150	1260	880
50 PERCENT EXCEEDS	315	357	258
90 PERCENT EXCEEDS	50	67	60

e Estimated

WATER-QUALITY RECORDS

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

[illegible]

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	17	17	17	20	18	19	25	24	25	29	27	27
2	18	17	18	19	19	19	25	24	25	29	27	28
3	19	17	18	20	19	20	26	25	25	28	27	28
4	18	18	18	21	20	20	26	25	25	28	27	28
5	18	17	18	22	20	21	26	25	26	28	27	27
6	18	18	18	22	20	21	26	25	26	28	27	27
7	19	18	18	22	21	21	26	25	26	28	27	27
8	19	19	19	22	21	22	26	25	25	28	27	27
9	19	19	19	21	17	18	26	25	25	28	27	28
10	20	19	19	18	17	18	26	25	26	28	27	28
11	20	19	20	18	17	17	26	25	26	28	27	28
12	20	19	19	20	18	19	28	26	26	27	27	27
13	20	20	20	20	19	20	28	26	26	27	26	27
14	21	20	20	21	20	20	27	26	26	27	26	26
15	21	20	20	21	20	21	26	25	26	26	24	25
16	21	20	20	21	21	21	27	25	26	24	21	23
17	21	20	21	22	21	21	26	26	26	21	19	20
18	21	20	20	21	21	21	26	26	26	20	18	19
19	21	20	20	23	21	22	27	26	26	20	19	20
20	21	20	21	23	23	23	27	26	26	21	20	20
21	22	20	21	24	23	23	27	26	26	22	21	21
22	20	19	20	24	23	23	27	26	26	22	22	22
23	20	19	19	24	23	23	27	26	26	23	22	23
24	20	19	19	24	23	24	28	25	26	23	23	23
25	21	20	20	24	24	24	27	25	26	25	23	24
26	21	20	20	24	24	24	27	26	27	25	23	24
27	22	21	21	25	24	24	28	26	27	24	23	23
28	22	21	21	25	24	24	27	26	27	23	23	23
29	22	21	21	25	24	25	27	26	27	24	23	23
30	22	20	21	25	24	25	28	27	27	24	23	24
31	---	---	---	25	24	25	28	27	27	---	---	---
MONTH	22	17	20	25	17	22	28	24	26	29	18	25

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	8.5	8.5	6.0	5.0	5.5	6.0	4.0	4.5	5.0	4.5	4.5
2	9.5	8.5	9.0	6.5	5.5	6.0	4.0	2.5	3.5	4.5	4.0	4.5
3	10.0	9.0	9.5	6.5	6.0	6.5	3.5	3.5	3.5	4.5	3.5	4.0
4	10.5	10.0	10.5	6.5	5.5	6.0	4.0	3.0	3.5	3.5	3.0	3.5
5	11.5	10.5	11.0	5.5	5.0	5.5	4.5	3.0	4.0	3.5	3.5	3.5
6	11.5	10.5	10.5	6.5	5.5	6.0	3.5	3.0	3.5	4.0	3.0	3.5
7	10.5	10.0	10.0	6.5	5.5	6.0	4.0	3.5	4.0	4.5	4.0	4.0
8	11.0	10.0	10.5	7.0	6.5	6.5	4.5	4.0	4.5	4.5	4.0	4.0
9	11.5	11.0	11.0	6.5	5.5	6.0	5.0	4.5	4.5	4.5	4.0	4.5
10	11.5	11.5	11.5	7.0	6.0	6.5	4.5	4.0	4.5	5.0	4.5	4.5
11	11.5	11.0	11.0	7.5	7.0	7.5	4.5	4.0	4.0	4.5	4.0	4.5
12	11.0	10.0	10.5	8.0	7.0	7.5	4.5	3.5	4.0	4.0	1.0	1.5
13	10.0	9.5	10.0	8.0	6.5	7.5	4.5	3.5	4.5	1.0	.5	1.0
14	9.5	9.0	9.0	6.5	6.0	6.5	4.0	4.0	4.0	1.5	1.0	1.0
15	9.5	7.5	8.5	6.0	6.0	6.0	4.0	3.5	3.5	1.5	1.0	1.0
16	7.5	7.0	7.5	6.0	5.5	5.5	4.5	3.5	4.0	2.0	1.0	1.5
17	7.0	6.0	6.5	6.0	5.0	5.5	3.5	2.0	2.5	3.0	2.0	2.0
18	8.0	6.0	7.5	5.5	4.5	5.0	2.5	1.5	2.0	4.0	3.0	3.5
19	6.5	6.0	6.0	5.5	4.5	5.0	3.0	2.5	3.0	4.5	3.5	4.0
20	6.5	6.0	6.0	5.0	4.5	4.5	4.0	3.0	3.5	4.0	4.0	4.0
21	7.0	5.5	6.0	5.0	4.5	4.5	3.5	3.0	3.0	4.0	3.5	3.5
22	7.5	7.0	7.5	5.0	4.5	5.0	3.5	3.0	3.0	3.5	3.0	3.0
23	7.5	6.5	7.0	4.5	4.0	4.0	3.0	2.5	3.0	3.0	3.0	3.0
24	7.5	6.5	7.5	5.5	4.5	5.0	3.5	3.0	3.5	3.5	3.0	3.0
25	7.0	6.0	6.5	6.0	5.0	5.5	4.0	2.5	3.5	3.0	2.0	2.5
26	6.5	5.5	6.0	5.5	4.5	5.0	3.5	2.0	3.0	2.0	1.0	1.5
27	6.5	5.5	6.0	6.5	5.5	5.5	4.0	3.5	4.0	1.5	1.0	1.0
28	7.5	6.0	6.5	6.0	5.5	5.5	3.5	3.0	3.0	3.0	1.5	2.0
29	7.0	6.0	6.5	5.5	5.0	5.5	4.5	2.5	3.5	4.0	3.0	3.0
30	7.0	6.0	6.5	6.0	5.5	5.5	4.5	4.0	4.0	4.0	3.5	3.5
31	6.0	5.5	5.5	---	---	---	5.0	4.5	4.5	4.0	3.5	4.0
MONTH	11.5	5.5	8.3	8.0	4.0	5.7	6.0	1.5	3.6	5.0	.5	3.0

SANDY RIVER BASIN

145

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	4.0	4.0	3.5	2.5	3.0	4.5	3.0	3.5	6.0	4.0	5.0
2	4.0	3.5	4.0	3.5	2.0	3.0	5.0	3.0	4.0	7.0	4.0	5.0
3	4.0	3.5	3.5	3.0	2.0	2.5	4.5	3.5	4.0	7.0	5.5	6.0
4	3.5	3.0	3.0	3.5	2.5	3.0	5.0	3.5	4.0	7.5	5.5	6.5
5	3.0	2.5	2.5	3.5	3.0	3.5	5.0	3.0	4.0	8.0	6.0	7.0
6	3.0	2.5	2.5	3.5	3.5	3.5	5.5	3.5	4.5	7.5	6.0	7.0
7	2.5	2.5	2.5	3.5	3.0	3.5	5.5	5.0	5.0	8.0	5.0	6.5
8	3.0	2.0	2.5	4.0	3.0	3.5	5.5	4.5	5.0	9.0	6.0	7.5
9	3.0	2.0	2.5	4.0	3.0	3.5	4.5	4.5	4.5	9.5	6.5	8.0
10	3.5	2.0	2.5	3.5	3.0	3.0	5.0	4.0	4.5	10.5	6.5	8.5
11	3.5	2.5	3.0	3.5	2.5	3.5	5.0	3.5	4.5	11.0	7.5	9.0
12	3.5	3.0	3.5	3.0	2.5	3.0	5.5	3.0	4.0	11.0	7.5	9.0
13	4.0	3.0	3.5	4.0	2.5	3.0	5.5	4.5	5.0	11.0	7.5	9.0
14	4.5	3.5	4.0	---	---	---	5.0	4.5	4.5	11.0	8.0	9.0
15	4.5	3.5	4.0	4.0	---	---	7.0	4.5	5.5	10.0	8.0	9.0
16	5.0	3.5	4.0	4.0	3.5	3.5	6.5	5.0	5.5	11.0	8.0	9.5
17	4.5	4.5	4.5	4.5	4.0	4.0	6.5	5.0	5.5	10.5	8.0	9.0
18	4.5	4.0	4.0	4.5	4.0	4.5	6.0	4.5	5.5	10.0	7.0	8.5
19	4.5	3.0	3.5	5.0	4.5	4.5	6.0	5.5	5.5	10.5	7.0	8.5
20	4.0	3.5	3.5	4.5	4.0	4.5	5.5	4.5	5.0	9.0	7.5	8.0
21	4.5	3.5	3.5	5.0	3.0	4.0	6.0	4.0	5.0	9.5	6.5	7.5
22	4.0	3.0	3.5	5.5	3.5	4.5	6.0	5.0	6.0	8.5	6.5	7.5
23	4.0	3.0	3.5	6.0	4.5	5.0	5.5	5.0	5.5	8.0	7.5	7.5
24	4.5	3.5	4.0	6.0	4.0	5.0	5.5	4.5	5.0	8.0	7.0	7.5
25	4.5	3.5	4.0	7.0	4.5	5.5	7.5	4.5	6.0	7.5	7.0	7.0
26	4.5	4.0	4.5	6.0	4.0	5.5	8.0	6.0	7.0	10.0	7.0	8.0
27	4.0	2.5	3.0	5.0	3.5	4.0	7.5	5.5	6.0	9.5	8.5	9.0
28	3.5	3.0	3.5	4.5	3.5	4.0	6.0	5.0	5.5	10.0	8.5	9.5
29	---	---	---	5.5	3.5	4.5	6.0	5.5	5.5	11.0	9.0	10.0
30	---	---	---	5.0	4.0	4.5	5.5	4.5	5.0	11.0	7.0	10.0
31	---	---	---	4.5	3.0	3.5	---	---	---	10.5	9.5	10.0
MONTH	5.0	2.0	3.4	---	---	---	8.0	3.0	5.0	11.0	4.0	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.5	8.5	9.0	10.5	9.5	10.0	14.0	12.0	13.0	13.0	12.5	12.5
2	11.0	8.0	9.0	12.0	9.0	10.5	14.0	12.0	13.0	13.5	12.5	13.0
3	10.0	9.0	9.5	13.0	9.5	11.0	14.5	12.5	13.5	13.5	12.5	13.0
4	9.5	8.5	9.0	15.0	11.0	12.5	15.5	13.0	14.0	13.5	12.5	13.0
5	10.0	8.5	9.0	13.5	12.0	12.5	15.5	13.0	14.0	13.0	12.5	13.0
6	11.0	7.5	9.0	12.5	11.5	12.0	16.0	14.0	15.0	12.5	11.5	12.0
7	9.5	8.5	9.0	13.5	10.5	12.0	15.0	13.5	14.5	12.0	11.0	11.5
8	11.5	8.0	9.5	13.0	11.5	12.0	14.5	13.0	13.5	12.5	11.5	12.0
9	12.5	8.5	10.0	12.0	10.5	11.5	14.0	12.0	13.0	13.0	12.0	12.5
10	12.0	9.5	10.5	10.5	9.5	10.0	14.0	12.5	13.5	13.0	12.5	12.5
11	11.5	9.5	10.5	11.0	9.5	10.0	14.5	12.5	13.5	12.5	12.0	12.0
12	10.5	9.5	9.5	12.5	9.5	11.0	15.0	13.0	14.0	12.0	11.5	11.5
13	9.5	8.5	9.0	13.5	10.0	11.5	14.5	13.0	14.0	11.5	10.5	11.0
14	11.0	8.5	9.5	13.0	10.5	12.0	15.0	13.0	14.0	11.5	11.0	11.0
15	13.5	9.5	11.5	13.5	11.0	12.5	14.5	13.0	13.5	11.5	10.5	11.0
16	13.5	11.0	12.0	14.0	11.0	12.5	14.0	12.0	13.0	11.0	10.5	10.5
17	13.0	11.0	11.5	13.0	11.5	12.0	14.5	13.0	13.5	11.0	10.5	10.5
18	11.5	10.5	11.0	13.5	11.0	12.5	14.5	13.0	13.5	10.5	10.0	10.5
19	12.0	9.5	10.5	14.5	11.0	12.5	13.5	12.0	12.5	10.5	9.0	9.5
20	12.0	9.0	10.5	15.5	12.0	13.5	13.0	12.0	12.5	11.0	9.5	10.0
21	11.5	9.0	10.0	14.5	12.5	13.0	13.5	11.5	12.5	11.5	9.5	10.5
22	9.5	8.5	9.0	13.5	11.5	12.5	14.0	12.5	13.0	11.5	10.0	11.0
23	9.5	8.5	9.0	14.0	11.5	12.5	14.0	13.0	13.5	12.0	10.5	11.0
24	12.0	8.5	10.0	14.0	11.5	13.0	14.0	12.5	13.0	12.5	11.5	12.0
25	12.0	9.5	10.5	14.0	12.0	13.0	13.5	12.5	13.0	12.5	11.5	12.0
26	12.0	9.5	10.5	14.0	11.5	12.5	13.0	12.5	13.0	12.5	11.5	12.0
27	12.5	9.5	11.0	14.5	12.0	13.0	12.5	12.0	12.5	11.5	10.5	11.0
28	11.5	9.5	10.5	15.0	12.5	13.5	12.5	12.0	12.0	11.0	10.0	10.5
29	12.5	9.5	10.5	14.5	13.0	14.0	13.0	12.0	12.0	11.5	10.0	10.5
30	11.5	9.5	10.5	14.0	12.5	13.5	13.0	12.0	12.5	11.5	10.5	11.0
31	---	---	---	14.0	12.0	13.0	13.0	12.0	12.5	---	---	---
MONTH	13.5	7.5	10.0	15.5	9.0	12.2	16.0	11.5	13.2	13.5	9.0	11.5

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'49", long 122°01'28", in NE 1/4 SE 1/4 sec.14, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, on right bank, 6.4 mi north of Brightwood and 0.6 mi above Bull Run Reservoir Number One.

DRAINAGE AREA.--5.46 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-78-1: 1976. WDR OR-82-2: 1976(P), 1978-79(P), 1981, WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,440 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--22 years (water years 1976-97), 35.6 ft³/s, 88.66 in/yr, 25,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,290 ft³/s Dec. 2, 1977, gage height, 5.64 ft; minimum discharge, 1.5 ft³/s Oct. 19-21, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1300	*423	*4.28	No other peak greater than base discharge.			
Minimum discharge, 2.4 ft ³ /s Oct. 2-4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	32	113	195	189	63	45	74	36	49	6.8	3.3
2	2.4	29	84	212	108	81	42	66	29	32	6.5	3.1
3	2.4	29	66	144	78	59	41	61	30	26	6.4	3.1
4	3.8	35	184	101	62	48	39	58	32	22	5.9	3.0
5	9.8	32	165	77	53	43	37	52	37	19	5.7	2.9
6	4.0	69	105	64	46	73	35	59	31	18	5.5	2.8
7	3.3	71	149	81	41	149	36	53	28	16	5.3	2.8
8	3.0	50	182	73	38	95	52	47	25	16	5.1	2.7
9	2.9	39	114	65	35	197	46	42	22	55	5.0	2.6
10	2.9	33	103	124	33	179	43	39	20	44	4.8	2.6
11	3.2	30	91	97	32	125	39	38	18	41	4.7	4.0
12	3.7	29	96	72	34	93	36	37	17	33	4.6	3.4
13	17	58	90	58	35	71	45	35	16	29	4.4	2.9
14	35	103	72	49	101	60	114	33	15	25	4.3	7.2
15	54	95	60	42	85	107	119	31	14	22	4.2	22
16	37	82	52	39	64	210	89	29	13	20	4.1	40
17	28	111	43	92	59	134	72	27	12	18	3.9	66
18	116	106	39	121	65	106	68	24	12	16	3.9	53
19	78	287	35	85	120	113	95	22	11	15	3.9	33
20	51	134	51	75	93	137	130	21	10	14	4.1	24
21	42	103	53	66	72	96	90	19	13	13	4.1	18
22	103	110	44	57	60	73	75	18	15	12	3.7	14
23	73	83	53	50	50	62	100	18	17	11	3.6	11
24	152	113	173	43	44	56	104	19	15	11	7.4	9.4
25	139	101	283	39	40	52	78	17	13	9.9	4.5	7.9
26	89	76	238	36	42	63	65	15	12	9.5	4.2	9.7
27	59	92	210	33	41	62	65	18	11	8.9	4.0	18
28	65	119	117	48	37	65	59	18	11	8.4	4.1	10
29	74	99	210	44	---	59	72	23	11	8.0	3.9	8.7
30	52	100	193	125	---	55	75	20	15	7.5	3.6	7.8
31	39	---	183	273	---	49	---	32	---	7.2	3.4	---
TOTAL	1346.9	2450	3651	2680	1757	2835	2006	1065	561	636.4	145.6	398.9
MEAN	43.4	81.7	118	86.5	62.8	91.5	66.9	34.4	18.7	20.5	4.70	13.3
MAX	152	287	283	273	189	210	130	74	37	55	7.4	66
MIN	2.4	29	35	33	32	43	35	15	10	7.2	3.4	2.6
AC-FT	2670	4860	7240	5320	3490	5620	3980	2110	1110	1260	289	791
CFSM	7.96	15.0	21.6	15.8	11.5	16.7	12.2	6.29	3.42	3.76	.86	2.44
IN.	9.18	16.69	24.87	18.26	11.97	19.32	13.67	7.26	3.82	4.34	.99	2.72

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1997, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	19.5	57.2	65.4	54.9	57.8	45.8	48.8	33.5	22.8	9.39	5.29	9.03										
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7										
(WY)	1996	1996	1978	1976	1982	1997	1993	1977	1981	1983	1978	1977										
MIN	1.97	6.09	15.3	16.6	16.9	14.0	28.6	14.6	3.80	3.50	2.95	2.57										
(WY)	1988	1994	1977	1979	1977	1992	1983	1992	1992	1992	1996	1991										

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1976 - 1997

ANNUAL TOTAL	16748.3	19532.8	
ANNUAL MEAN	45.8	53.5	
HIGHEST ANNUAL MEAN			35.6
LOWEST ANNUAL MEAN			53.5
HIGHEST DAILY MEAN	560	287	616
LOWEST DAILY MEAN	1.6	2.4	1.5
ANNUAL SEVEN-DAY MINIMUM	1.7	2.8	1.6
ANNUAL RUNOFF (AC-FT)	33220	38740	25810
ANNUAL RUNOFF (CFSM)	8.38	9.80	6.53
ANNUAL RUNOFF (INCHES)	114.11	133.08	88.66
10 PERCENT EXCEEDS	107	115	76
50 PERCENT EXCEEDS	27	40	22
90 PERCENT EXCEEDS	2.8	4.1	3.7

SANDY RIVER BASIN

147

14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 49 microsiemens May 6, 1988, Aug. 13, 1990; minimum, 7 microsiemens Nov. 30, 1994.

pH: Maximum recorded, 7.7 units Sept. 13, 1990, but may have been higher during periods of missing record; minimum recorded, 6.0 units Sept. 5, 6, 8, 1991, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 16.0°C Sept. 1, 1987, June 23, 24, July 18, 19, 1992; minimum recorded, 0.0°C on several days in 1978-80, 1983, 1989, 1991, 1993, Nov. 24-26, 1994, Feb. 13, 15, 1995, Jan. 30, 31, 1996.

TURBIDITY: Maximum recorded, 11 NTU Nov. 25, 1991; minimum recorded, 0.04 NTU Feb. 15, 16, 1993.

SEDIMENT CONCENTRATION: Maximum, 200 mg/L Jan. 23, Feb. 20, 1982; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum, 345 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 27 microsiemens several days in October, August, and September; minimum, 13 microsiemens Dec. 25, 29, Jan. 31, Feb. 1.

WATER TEMPERATURE: Maximum, 13.5°C Aug. 5, 6, 12-14; minimum, 2.0°C several days in January.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	25	25	25	20	19	19	17	16	17	15	14	15
2	25	25	25	20	20	20	18	16	17	15	14	14
3	26	25	25	20	20	20	18	17	18	16	15	16
4	26	25	26	20	19	19	18	14	16	17	16	17
5	27	25	26	19	19	19	16	14	16	18	17	18
6	27	26	26	19	16	18	17	16	17	18	18	18
7	27	26	26	19	18	18	17	15	16	18	17	17
8	27	26	26	19	19	19	16	15	15	18	17	17
9	27	26	26	20	19	19	17	16	17	18	17	18
10	27	25	26	20	20	20	17	17	17	17	15	16
11	26	25	26	21	20	20	17	17	17	17	16	16
12	26	25	25	21	20	21	17	17	17	17	16	17
13	26	25	25	20	19	20	18	17	17	18	17	18
14	26	22	25	19	17	18	18	18	18	18	18	18
15	22	21	22	18	18	18	18	18	18	19	18	18
16	21	20	21	18	18	18	19	18	18	19	18	19
17	21	20	21	18	17	18	19	18	19	18	15	17
18	20	18	19	18	17	18	19	19	19	16	15	15
19	19	18	19	18	---	---	19	19	19	17	16	16
20	19	19	19	19	16	17	19	18	18	17	16	17
21	20	19	19	19	18	18	18	17	18	17	16	17
22	20	17	18	18	17	18	18	18	18	17	17	17
23	18	18	18	19	17	18	19	17	18	18	17	17
24	18	16	17	19	17	18	17	14	16	18	18	18
25	17	16	17	18	17	18	15	13	14	18	18	18
26	18	17	18	19	18	18	15	14	14	19	18	18
27	19	16	18	19	16	18	16	14	15	19	18	19
28	19	15	18	17	16	17	17	15	16	18	18	18
29	18	16	17	18	17	18	17	13	15	18	17	18
30	19	17	18	18	16	18	15	14	15	18	14	16
31	20	18	19	---	---	---	15	14	15	15	13	14
MONTH	27	15	22	21	---	---	19	13	17	19	13	17

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	17	16	17	21	17	18	24	23	23	27	26	26
2	18	17	17	18	17	18	24	23	23	27	26	26
3	18	17	17	19	18	18	24	23	24	27	26	26
4	18	17	17	19	19	19	24	23	24	27	26	26
5	17	16	17	20	19	19	25	24	24	27	26	26
6	18	17	17	20	19	20	25	24	25	26	25	26
7	18	17	18	21	19	20	25	24	25	26	26	26
8	18	18	18	22	19	21	25	24	25	26	26	26
9	19	18	18	20	16	17	25	25	25	26	25	26
10	19	18	19	17	17	17	25	25	25	27	26	26
11	19	18	19	18	17	17	26	25	25	27	25	26
12	20	19	19	18	17	18	26	25	26	26	25	26
13	21	19	20	19	18	18	26	25	26	26	25	26
14	21	19	20	19	19	19	26	25	26	26	25	25
15	22	20	21	20	19	19	26	25	25	26	25	25
16	22	20	21	20	19	19	26	25	25	25	21	23
17	22	20	21	22	19	20	26	25	26	21	19	20
18	22	20	21	22	21	22	26	25	26	20	19	20
19	22	20	21	23	21	22	26	25	26	20	20	20
20	22	21	22	23	21	22	26	26	26	21	20	20
21	22	20	21	23	21	22	26	25	26	21	21	21
22	21	20	21	23	21	22	26	26	26	22	21	21
23	21	20	20	23	22	23	26	25	26	22	22	22
24	22	20	21	23	23	23	26	25	26	23	22	22
25	22	21	22	24	23	23	27	26	26	23	22	23
26	22	21	22	24	23	23	27	26	26	23	22	23
27	22	21	22	24	21	23	26	25	26	24	23	23
28	22	21	22	23	22	23	26	25	26	24	23	23
29	22	21	22	23	21	23	26	26	26	24	23	23
30	22	20	22	23	22	23	26	26	26	24	23	23
31	---	---	---	23	22	23	26	26	26	---	---	---
MONTH	22	16	20	24	16	20	27	23	25	27	19	24

SANDY RIVER BASIN

149

14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	8.0	8.5	6.0	5.5	5.5	5.5	4.5	4.5	5.0	4.5	5.0
2	9.0	8.5	9.0	6.0	5.5	6.0	4.5	3.0	4.0	4.5	4.5	4.5
3	9.5	9.0	9.5	6.5	6.0	6.0	4.5	4.0	4.0	4.5	4.0	4.0
4	10.5	9.5	10.0	6.0	5.5	5.5	4.5	3.5	4.0	4.0	4.0	4.0
5	10.5	10.0	10.0	5.5	5.0	5.0	5.0	4.0	4.5	4.5	4.0	4.0
6	10.0	9.5	10.0	6.0	5.5	5.5	4.5	4.0	4.5	4.0	4.0	4.0
7	10.0	9.5	10.0	6.0	5.5	6.0	4.5	4.0	4.5	4.5	4.0	4.0
8	10.5	9.5	10.0	6.5	6.0	6.0	5.0	4.5	4.5	4.5	4.0	4.5
9	11.0	10.5	10.5	6.0	6.0	6.0	5.0	5.0	5.0	5.0	4.5	4.5
10	11.0	10.5	11.0	7.0	6.0	6.5	5.0	4.0	5.0	5.0	4.5	4.5
11	11.0	10.5	10.5	7.0	6.5	7.0	5.0	4.5	4.5	5.0	4.0	4.5
12	10.5	10.0	10.0	7.5	7.0	7.0	5.0	4.5	5.0	4.0	2.0	3.0
13	10.0	9.0	9.5	7.5	6.5	7.0	5.0	4.0	4.5	2.0	2.0	2.0
14	9.0	8.5	9.0	6.5	6.0	6.5	4.5	4.5	4.5	2.5	2.0	2.5
15	9.0	7.5	8.0	6.0	6.0	6.0	4.5	4.0	4.5	2.5	2.5	2.5
16	7.5	6.5	7.0	6.0	5.5	6.0	4.5	4.0	4.5	3.0	2.0	2.5
17	7.0	6.0	6.5	6.0	5.5	5.5	4.0	3.0	3.5	3.5	3.0	3.0
18	7.5	6.5	7.0	5.5	5.0	5.5	3.5	3.0	3.5	4.0	3.5	4.0
19	6.5	6.0	6.5	5.5	4.5	5.0	4.0	3.5	3.5	4.5	4.0	4.5
20	6.5	6.0	6.5	5.5	5.0	5.0	4.0	3.5	4.0	4.5	4.0	4.5
21	6.5	6.0	6.0	5.5	5.0	5.0	3.5	3.0	3.5	4.0	3.5	4.0
22	7.0	6.5	7.0	5.5	5.0	5.0	4.0	3.5	3.5	3.5	3.5	3.5
23	7.0	6.5	6.5	5.0	4.5	5.0	4.0	3.0	3.5	3.5	3.0	3.5
24	7.0	6.0	7.0	5.5	5.0	5.5	4.0	3.5	4.0	3.5	3.5	3.5
25	6.5	5.5	6.0	6.0	5.5	5.5	4.0	3.5	4.0	3.5	3.0	3.0
26	6.0	6.0	6.0	5.5	5.0	5.5	4.5	3.5	4.0	3.0	2.0	2.5
27	6.0	5.5	6.0	6.0	5.5	6.0	4.5	4.0	4.0	2.5	2.0	2.0
28	6.5	6.0	6.0	6.0	5.0	5.5	4.0	3.5	4.0	3.5	2.5	3.0
29	6.5	6.0	6.0	5.5	5.0	5.5	4.5	3.5	4.0	4.0	3.0	3.5
30	6.5	6.0	6.0	6.0	5.5	5.5	4.5	4.5	4.5	4.0	3.5	4.0
31	6.0	5.5	5.5	---	---	---	5.0	4.5	4.5	4.5	4.0	4.0
MONTH	11.0	5.5	8.0	7.5	4.5	5.8	5.5	3.0	4.2	5.0	2.0	3.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	4.5	4.5	3.5	3.0	3.5	4.0	3.0	3.5	5.0	4.0	4.5
2	4.5	4.0	4.0	4.0	3.0	3.5	4.0	3.0	3.5	6.0	4.0	5.0
3	4.0	4.0	4.0	3.5	3.0	3.5	4.0	3.5	4.0	6.0	5.5	6.0
4	4.0	3.5	4.0	3.5	3.5	3.5	4.5	3.5	4.0	6.5	5.5	6.0
5	3.5	3.0	3.5	4.0	3.5	3.5	4.5	3.0	4.0	7.0	6.0	6.5
6	3.5	3.0	3.0	4.0	3.5	3.5	5.0	3.5	4.0	6.5	6.0	6.5
7	3.5	3.0	3.0	3.5	3.0	3.5	5.0	4.5	4.5	7.0	5.0	6.0
8	3.5	2.5	3.0	4.0	3.5	3.5	4.5	4.5	4.5	7.5	6.0	7.0
9	3.0	2.5	3.0	4.0	3.0	3.5	4.5	4.0	4.0	8.0	6.5	7.5
10	3.5	3.0	3.0	4.0	3.0	3.5	4.5	4.0	4.5	8.5	7.0	8.0
11	4.0	3.0	3.5	4.0	3.0	3.5	4.5	3.5	4.0	9.5	7.5	8.5
12	3.5	3.0	3.5	3.5	3.0	3.5	5.0	3.5	4.0	9.5	8.0	8.5
13	4.0	3.5	3.5	4.0	3.0	3.5	5.0	4.5	4.5	9.5	8.0	9.0
14	4.0	3.5	3.5	4.0	3.5	4.0	4.5	4.0	4.5	9.5	8.0	9.0
15	4.5	3.5	4.0	4.0	3.5	3.5	5.5	4.5	5.0	9.5	8.5	9.0
16	5.0	4.0	4.5	4.0	3.5	3.5	5.5	5.0	5.5	10.0	8.0	9.0
17	4.5	4.0	4.5	4.5	4.0	4.0	5.5	5.0	5.5	10.0	8.5	9.0
18	4.5	4.0	4.0	4.5	4.0	4.5	5.5	5.0	5.5	9.5	8.0	8.5
19	4.5	3.5	4.0	4.5	4.0	4.5	5.5	5.5	5.5	9.5	7.5	8.5
20	4.0	3.5	4.0	4.5	4.0	4.0	5.5	4.5	5.0	8.5	7.5	8.0
21	4.5	3.5	4.0	4.5	3.5	4.0	5.5	4.5	5.0	9.0	7.0	8.0
22	4.0	3.5	4.0	5.0	4.0	4.5	6.0	5.0	5.5	8.5	7.0	8.0
23	4.0	3.5	4.0	5.0	4.5	5.0	5.5	5.0	5.0	8.0	7.5	7.5
24	4.5	3.5	4.0	5.5	4.5	5.0	5.5	4.5	5.0	7.5	7.0	7.5
25	5.0	4.0	4.5	5.5	4.5	5.0	6.5	4.5	5.5	7.5	7.0	7.0
26	4.5	3.5	4.5	5.5	4.0	5.0	7.0	6.0	6.5	9.0	7.0	8.0
27	3.5	3.0	3.5	4.5	4.0	4.0	6.5	5.5	6.0	9.0	8.0	8.5
28	3.5	3.5	3.5	4.0	3.0	3.5	5.5	5.0	5.5	9.0	8.5	9.0
29	---	---	---	5.0	3.5	4.0	5.5	5.0	5.5	9.5	8.5	9.0
30	---	---	---	4.5	4.0	4.5	5.5	4.5	5.0	10.0	9.0	9.5
31	---	---	---	4.0	3.0	3.5	---	---	---	10.0	9.0	9.5
MONTH	5.0	2.5	3.8	5.5	3.0	3.9	7.0	3.0	4.8	10.0	4.0	7.8

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'40", long 122°02'05", near line between SE 1/4 and SW 1/4 sec.11, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, Mount Hood National Forest, on left bank 7.0 mi southeast of Multnomah Falls and at mouth.

DRAINAGE AREA.--8.32 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,060 ft above sea level, from topographic map. Prior to Oct. 1, 1978, and from June 13, 1989 to July 1990 (during bridge construction), at site 700 ft upstream at datum 18.7 ft higher. From Oct. 1, 1978 to June 13, 1989, and July 1990 to present, site located 5 ft upstream from bridge, on left bank wing wall.

REMARKS.--Records good except those above 100 ft³/s and estimated daily discharges, which are fair, and 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.--32 years (water years 1966-97), 74.0 ft³/s, 120.79 in/yr, 53,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,700 ft³/s, probably affected by surge from release of water temporarily impounded by landslide upstream from station, Jan. 20, 1972, gage height, 9.89 ft, from floodmark, from rating curve extended above 850 ft³/s on basis of estimate of peak flow from slope-area survey; minimum discharge, 8.6 ft³/s Oct. 19-29, 1987.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1330	841	5.11	Dec. 25	0130	729	4.95
Dec. 4	1630	*923	*5.22				

Minimum discharge, 9.3 ft³/s Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.8	49	203	430	401	99	66	118	78	53	19	16
2	9.7	42	128	440	212	130	61	97	52	35	19	15
3	9.6	45	99	266	134	86	58	96	59	31	19	15
4	11	65	387	160	99	66	e55	99	68	28	18	15
5	16	54	332	115	76	62	50	80	56	27	18	15
6	11	155	191	94	65	137	47	99	47	27	18	15
7	10	121	268	123	57	305	50	79	43	26	18	15
8	10	82	365	101	51	161	71	70	39	27	18	15
9	9.9	64	205	90	46	349	59	65	37	81	17	14
10	9.8	54	187	218	43	306	e55	61	34	65	17	15
11	10	46	153	135	43	199	e50	60	33	58	17	16
12	13	45	165	99	50	135	47	59	33	45	17	15
13	40	84	157	75	52	106	77	55	31	39	17	15
14	70	140	124	66	152	84	202	51	30	36	17	22
15	72	125	95	57	116	198	185	49	29	33	17	59
16	e50	140	79	52	84	384	147	45	28	31	16	92
17	e40	262	66	191	93	260	122	42	28	30	16	146
18	e200	198	58	233	106	191	111	40	30	29	16	157
19	e150	538	51	144	227	218	187	37	27	27	16	82
20	e100	236	91	141	149	250	330	36	25	26	17	53
21	e70	168	83	122	113	157	178	34	30	25	17	42
22	e150	183	68	99	86	118	138	32	35	25	16	35
23	e130	112	86	81	70	100	195	35	36	24	16	31
24	329	213	316	69	62	84	166	36	30	23	26	29
25	287	163	498	62	57	80	122	32	27	22	19	26
26	135	108	414	54	63	102	104	30	26	22	17	32
27	85	183	449	50	58	99	107	38	25	21	19	46
28	106	256	214	79	51	114	99	35	25	21	18	31
29	104	166	399	67	---	95	135	44	27	20	17	28
30	72	187	377	261	---	81	130	36	32	20	16	26
31	58	---	426	539	---	72	---	75	---	20	16	---
TOTAL	2377.8	4284	6734	4713	2816	4828	3404	1765	1100	997	544	1133
MEAN	76.7	143	217	152	101	156	113	56.9	36.7	32.2	17.5	37.8
MAX	329	538	498	539	401	384	330	118	78	81	26	157
MIN	9.6	42	51	50	43	62	47	30	25	20	16	14
AC-FT	4720	8500	13360	9350	5590	9580	6750	3500	2180	1980	1080	2250
CFSM	9.22	17.2	26.1	18.3	12.1	18.7	13.6	6.84	4.41	3.87	2.11	4.54
IN.	10.63	19.15	30.11	21.07	12.59	21.59	15.22	7.89	4.92	4.46	2.43	5.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1997, 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	1992	1993	1994	1995	1996	1997	
MEAN	43.1	108	130	132	110	89.5	89.4	72.4	48.2	25.2	17.6	24.6																					
MAX	88.2	222	285	309	231	200	147	137	111	62.7	35.2	54.4																					
(WY)	1969	1996	1976	1975	1996	1972	1993	1972	1974	1983	1968	1977																					
MIN	9.08	16.9	33.4	32.1	35.3	28.8	49.5	28.3	14.6	12.6	10.6	10.9																					
(WY)	1988	1994	1977	1979	1993	1992	1967	1992	1992	1992	1994	1987																					

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1966 - 1997

	1996	1997	1966-1997
ANNUAL TOTAL	34113.6	34695.8	
ANNUAL MEAN	93.2	95.1	
HIGHEST ANNUAL MEAN			74.0
LOWEST ANNUAL MEAN			121
HIGHEST DAILY MEAN	1900	539	46.1
LOWEST DAILY MEAN	9.6	9.6	1910
ANNUAL SEVEN-DAY MINIMUM	9.9	11	8.6
ANNUAL RUNOFF (AC-FT)	67660	68820	8.7
ANNUAL RUNOFF (CFSM)	11.2	11.4	8.89
ANNUAL RUNOFF (INCHES)	152.53	155.13	120.79
10 PERCENT EXCEEDS	199	212	153
50 PERCENT EXCEEDS	57	61	47
90 PERCENT EXCEEDS	11	17	15

e Estimated

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.

pH: October 1980 to September 1981, August 1990 to September 1992.

WATER TEMPERATURE: October 1978 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity values herein are recorded values and may not reflect actual extremes for the day. Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 103 microsiemens Jan. 13, 1981 (cement spill); minimum, 7 microsiemens Jan. 31, 1995, Feb. 19, 1995.

pH: Maximum recorded, 9.8 units Jan. 13, 1981 (cement spill); minimum recorded, 6.3 units June 19, 1981.

WATER TEMPERATURE: Maximum, 14.5°C several days in 1988, 1992, 1993, 1994; minimum, 0.0°C on several days during winter periods.

TURBIDITY: Maximum recorded, 25 NTU Nov. 24, 1990; minimum recorded, 0.06 NTU Sept. 7, 13, 14, 1992.

SEDIMENT CONCENTRATION: Maximum daily, 205 mg/L Dec. 25, 1980; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 765 tons Feb. 23, 1986; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 45 microsiemens Oct. 4; minimum, 11 microsiemens several days in November, December, January, and February.

WATER TEMPERATURE: Maximum recorded, 13.5°C Aug. 6; minimum, 1.0°C Jan. 13.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	44	42	43	22	21	22	15	13	14	13	11	12
2	44	42	43	23	22	23	16	15	16	13	12	12
3	44	42	43	24	23	23	17	15	16	14	12	13
4	45	40	42	23	21	21	17	11	14	15	14	15
5	43	38	39	22	21	22	13	11	13	16	15	16
6	42	41	42	22	16	19	15	13	14	17	16	17
7	43	42	43	18	16	17	15	12	14	16	16	16
8	43	42	43	20	18	19	13	12	12	17	16	17
9	43	43	43	21	19	20	14	13	13	18	15	17
10	43	42	43	22	21	21	14	13	14	15	13	14
11	43	42	42	23	22	22	15	14	14	16	15	16
12	42	40	42	23	22	23	15	14	14	18	16	17
13	40	33	36	22	19	20	15	14	15	19	18	18
14	37	23	32	19	17	18	16	15	15	20	19	19
15	26	23	25	18	17	18	17	16	17	21	20	20
16	---	25	---	18	16	17	18	17	17	21	20	21
17	---	---	---	16	15	15	19	18	18	20	13	16
18	---	---	---	17	15	16	21	19	20	15	13	14
19	---	---	---	16	11	14	21	21	21	16	14	15
20	---	---	---	17	15	16	21	18	19	16	15	15
21	22	---	---	17	16	17	19	18	19	16	15	16
22	---	16	---	17	16	16	20	19	19	18	16	17
23	19	---	---	18	17	17	20	17	19	18	17	18
24	17	14	15	18	15	16	17	12	15	19	18	19
25	16	15	15	17	16	16	14	12	13	20	19	20
26	18	16	17	18	16	17	14	12	13	21	20	21
27	19	18	19	16	13	15	14	12	13	22	21	21
28	20	16	19	14	12	13	15	13	14	21	18	19
29	19	17	18	15	14	14	15	12	13	20	19	20
30	20	19	19	15	13	14	13	12	13	20	13	15
31	21	20	21	---	---	---	13	11	12	13	11	12
MONTH	---	---	---	24	11	18	21	11	15	22	11	17

SANDY RIVER BASIN

153

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	23	20	21	30	25	27	38	37	37	41	40	41
2	25	23	24	31	29	30	38	37	38	41	40	41
3	25	22	23	32	31	31	38	37	38	41	40	41
4	22	21	22	33	32	32	39	38	38	42	40	41
5	24	22	23	34	32	33	39	38	39	42	40	41
6	25	24	24	33	32	33	40	38	39	42	40	41
7	26	25	25	34	33	33	39	38	39	42	41	41
8	27	25	26	35	31	---	39	38	38	42	41	41
9	29	27	27	31	22	24	39	38	39	42	41	42
10	29	28	29	24	23	24	40	39	39	42	41	42
11	30	29	29	25	23	24	40	39	39	42	40	41
12	30	29	29	26	25	25	40	39	40	41	40	41
13	31	30	30	29	26	27	40	39	40	41	40	41
14	31	30	30	30	28	29	40	39	40	40	37	38
15	32	31	31	30	29	30	40	39	40	37	30	32
16	33	31	32	31	30	30	40	39	40	30	22	27
17	33	31	32	31	30	31	40	39	40	22	20	21
18	32	30	31	32	31	31	41	39	40	22	19	20
19	33	32	32	33	32	32	41	40	40	24	21	22
20	34	33	33	34	32	33	41	40	40	26	24	25
21	34	29	32	34	32	33	40	39	40	28	26	27
22	31	29	30	34	33	33	41	40	40	30	28	28
23	31	29	30	35	33	34	41	40	41	31	29	30
24	32	30	31	35	34	34	41	35	37	32	31	31
25	33	32	32	35	34	35	40	38	39	32	31	32
26	33	32	33	36	35	35	41	39	40	32	30	31
27	34	33	33	36	35	36	40	38	39	31	29	30
28	34	33	34	37	36	36	40	39	39	32	31	31
29	34	32	33	37	36	36	40	39	40	33	32	32
30	35	30	32	37	36	37	41	40	40	33	33	33
31	---	---	---	37	36	37	41	40	41	---	---	---
MONTH	35	20	29	37	22	---	41	35	39	42	19	34

SANDY RIVER BASIN

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	7.5	8.0	6.5	5.5	6.0	5.5	3.5	4.5	4.5	4.0	4.0
2	9.0	7.5	8.5	6.5	6.0	6.0	4.0	2.5	3.5	4.5	4.0	4.0
3	9.5	8.0	9.0	6.5	6.0	6.5	3.5	3.0	3.5	4.0	3.0	3.5
4	9.5	9.0	9.0	6.0	5.5	6.0	4.0	3.0	3.5	3.5	3.0	3.5
5	10.0	9.5	9.5	5.5	5.0	5.5	4.0	2.5	3.5	3.5	3.0	3.5
6	10.0	8.5	9.0	6.5	5.5	6.0	3.5	2.5	3.0	3.5	3.0	3.5
7	10.0	8.5	9.0	6.5	5.5	6.0	4.0	3.5	3.5	4.0	3.5	4.0
8	10.5	9.0	9.5	7.0	6.5	6.5	4.0	3.5	3.5	4.5	4.0	4.0
9	11.0	9.5	10.0	7.0	6.0	6.5	4.5	4.0	4.0	4.5	4.0	4.5
10	10.5	9.5	10.0	7.0	6.0	6.5	4.5	3.5	4.0	5.0	4.5	4.5
11	9.5	9.0	9.5	8.0	7.0	7.5	4.0	3.5	4.0	5.0	4.0	4.5
12	9.0	8.5	9.0	8.0	7.0	7.5	4.5	3.5	4.0	4.0	1.5	2.0
13	9.5	9.0	9.5	8.0	7.0	7.5	4.5	3.5	4.0	1.5	1.0	1.5
14	9.5	8.5	9.0	7.0	6.0	6.5	4.0	3.5	3.5	2.0	1.5	1.5
15	9.0	7.5	8.5	6.0	6.0	6.0	4.0	3.0	3.5	2.0	1.5	2.0
16	7.5	---	---	6.0	5.5	5.5	4.0	3.0	4.0	2.5	1.5	2.0
17	---	---	---	5.5	5.0	5.0	3.0	2.5	3.0	3.0	2.5	3.0
18	---	---	---	5.0	4.5	5.0	3.0	2.5	2.5	4.0	3.0	3.5
19	---	---	---	5.0	3.5	4.5	3.5	2.5	3.0	4.0	3.5	4.0
20	---	---	---	4.5	3.5	4.0	3.5	3.0	3.5	4.0	3.5	4.0
21	6.5	---	---	4.5	4.0	4.5	3.0	2.5	3.0	4.0	3.0	3.5
22	7.0	---	7.0	5.0	4.5	4.5	3.5	3.0	3.0	3.0	2.5	3.0
23	---	---	---	4.5	4.0	4.0	3.5	2.5	3.0	3.0	2.5	3.0
24	7.5	6.5	7.5	5.0	4.5	5.0	3.5	3.5	3.5	3.0	2.5	3.0
25	6.5	6.0	6.5	5.5	5.0	5.0	3.5	2.5	3.0	3.0	2.5	2.5
26	6.5	5.5	6.0	5.0	4.5	5.0	3.5	2.5	3.0	2.5	1.5	2.0
27	6.5	5.5	6.0	6.0	5.0	5.5	3.5	3.0	3.0	2.5	1.5	2.0
28	7.0	6.0	6.5	5.5	5.0	5.0	3.0	2.5	2.5	3.0	2.5	3.0
29	7.0	6.0	6.5	5.0	5.0	5.0	4.0	3.0	3.5	4.0	3.0	3.5
30	7.0	6.0	6.5	6.0	5.0	5.5	4.0	3.5	3.5	4.0	3.5	4.0
31	6.0	5.5	6.0	---	---	---	4.5	3.5	4.0	4.5	4.0	4.0
MONTH	---	---	---	8.0	3.5	5.7	5.5	2.5	3.4	5.0	1.0	3.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	4.0	4.0	3.5	3.0	3.0	4.0	3.0	3.5	6.0	4.5	5.0
2	4.0	3.5	4.0	3.0	2.0	2.5	4.5	3.0	3.5	6.5	4.5	5.5
3	4.0	3.5	3.5	3.0	2.5	2.5	4.5	3.5	4.0	7.0	6.5	7.0
4	3.5	3.0	3.5	3.0	3.0	3.0	5.0	3.5	---	7.5	6.5	7.0
5	3.5	2.5	3.0	3.5	3.0	3.0	5.0	3.5	4.0	8.5	7.0	7.5
6	3.0	2.5	2.5	3.5	3.0	3.0	5.5	3.5	4.5	8.0	7.5	7.5
7	3.0	2.5	2.5	3.0	3.0	3.0	5.5	5.0	5.0	8.5	6.0	7.0
8	3.0	2.0	2.5	3.5	2.5	3.0	5.0	4.5	5.0	9.5	7.0	8.0
9	3.0	2.5	2.5	3.5	3.0	3.5	4.5	4.5	4.5	10.0	8.0	9.0
10	3.5	2.5	3.0	3.5	3.0	3.0	5.0	---	---	10.5	8.5	9.5
11	3.5	2.5	3.0	3.5	2.0	3.0	5.0	---	---	11.5	9.5	10.0
12	3.5	3.0	3.0	3.0	2.0	2.5	5.5	3.5	4.5	12.0	9.5	10.5
13	3.5	3.0	3.5	3.5	2.5	3.0	5.5	4.5	5.0	11.5	10.0	10.5
14	4.0	3.5	3.5	4.0	3.0	3.5	5.0	4.5	5.0	12.0	10.0	11.0
15	4.5	3.5	4.0	4.0	3.0	3.5	7.5	4.5	6.0	11.5	10.5	11.0
16	5.0	4.0	4.5	3.5	3.0	3.0	7.0	5.5	6.5	11.5	9.5	10.5
17	4.5	4.0	4.5	4.0	3.0	3.5	7.0	5.5	6.0	11.5	9.5	10.0
18	4.5	4.0	4.0	4.0	3.5	4.0	6.5	6.0	6.0	11.0	8.5	9.5
19	4.0	3.0	3.5	4.5	4.0	4.0	6.5	6.0	6.5	11.0	8.5	9.5
20	3.5	3.0	3.5	4.5	3.5	4.0	6.5	5.0	6.0	9.5	8.5	9.0
21	4.5	3.0	3.5	4.5	2.5	3.5	6.5	4.0	5.0	10.0	7.5	8.5
22	4.0	3.0	3.5	5.0	3.5	4.5	6.5	5.5	6.0	9.5	7.5	8.5
23	4.5	3.0	3.5	5.5	4.5	5.0	6.5	5.0	5.5	8.5	8.0	8.5
24	4.5	3.5	4.0	5.5	4.0	5.0	6.0	5.0	5.5	8.5	7.5	8.0
25	5.0	4.0	4.5	6.5	4.5	5.5	7.5	5.0	6.0	8.0	7.5	8.0
26	4.5	3.5	4.5	6.0	4.5	5.5	8.0	7.0	7.5	9.5	7.5	8.5
27	3.5	3.0	3.0	5.0	4.0	4.5	8.0	6.5	7.0	10.0	8.5	9.0
28	3.5	3.0	3.5	4.5	3.5	4.0	6.5	6.0	6.5	10.5	9.0	9.5
29	---	---	---	5.0	3.5	4.5	6.5	6.0	6.0	11.0	9.5	10.5
30	---	---	---	5.0	4.5	4.5	6.5	5.5	6.0	11.5	10.0	10.5
31	---	---	---	4.5	3.0	3.5	---	---	---	11.0	10.0	10.5
MONTH	5.0	2.0	3.5	6.5	2.0	3.7	8.0	---	---	12.0	4.5	8.9

SANDY RIVER BASIN

155

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	9.5	10.0	10.5	9.5	10.0	12.5	10.0	11.0	11.5	10.0	10.5
2	11.0	8.5	9.5	11.5	9.0	10.0	12.5	10.0	11.0	12.0	10.0	10.5
3	10.5	9.5	10.0	12.0	9.0	10.5	12.5	10.0	11.0	11.5	10.0	10.5
4	10.0	9.5	9.5	12.5	10.0	11.0	13.0	10.5	11.5	12.0	10.0	11.0
5	10.0	9.0	9.5	11.5	10.5	11.0	13.0	10.5	11.5	11.0	10.0	10.5
6	10.5	8.0	9.0	11.5	10.5	10.5	13.5	11.5	12.0	11.0	9.0	10.0
7	9.5	8.5	9.0	12.0	9.5	10.5	12.5	10.5	11.5	11.0	9.0	10.0
8	10.5	8.5	9.5	11.0	---	---	12.0	10.0	11.0	11.5	9.5	10.5
9	11.5	8.5	10.0	12.0	10.5	11.5	12.0	10.0	11.0	11.5	10.0	10.5
10	11.5	9.5	10.0	10.5	10.0	10.0	12.5	10.0	11.0	11.0	10.5	10.5
11	10.5	9.5	10.0	10.5	9.5	10.0	12.5	10.0	11.0	10.5	10.0	10.0
12	9.5	9.0	9.5	11.5	9.5	10.5	13.0	10.5	11.5	10.0	9.5	9.5
13	9.5	9.0	9.0	12.0	9.5	10.5	13.0	10.5	11.5	9.5	8.5	9.0
14	10.0	9.0	9.0	12.0	10.5	11.0	13.0	10.5	11.5	10.5	9.5	10.0
15	12.0	9.0	10.0	12.5	10.5	11.0	11.5	10.5	11.0	11.0	10.0	10.5
16	12.0	10.0	10.5	12.5	10.0	11.0	12.0	10.0	10.5	11.0	10.5	10.5
17	11.0	10.0	10.5	11.0	10.5	11.0	12.0	10.0	11.0	11.0	10.5	10.5
18	10.5	9.5	10.0	12.0	10.0	11.0	11.0	10.5	10.5	11.0	10.0	10.5
19	10.5	9.0	9.5	12.5	10.0	11.0	12.0	9.5	10.5	10.5	9.0	10.0
20	10.5	8.5	9.5	13.0	10.5	12.0	10.5	10.0	10.5	11.0	9.5	10.0
21	9.5	9.0	9.0	12.0	10.5	11.0	12.0	10.0	10.5	11.0	9.5	10.0
22	9.5	9.0	9.0	12.0	10.5	11.0	12.0	10.0	11.0	11.5	9.5	10.5
23	9.5	8.5	9.0	12.5	10.0	11.0	12.0	10.0	11.0	11.5	10.0	10.5
24	11.0	8.5	9.5	12.5	10.0	11.0	12.0	10.5	11.0	12.0	10.5	11.0
25	10.5	9.0	9.5	12.0	10.0	11.0	12.0	10.5	11.0	12.0	10.5	11.5
26	10.5	9.0	9.5	12.0	9.5	10.5	11.0	10.5	11.0	11.0	10.5	10.5
27	11.0	8.5	9.5	12.5	10.0	11.0	11.5	10.0	10.5	11.0	10.0	10.5
28	10.0	8.5	9.5	13.0	10.5	11.5	11.0	10.0	10.5	10.5	9.5	10.0
29	11.5	9.0	10.0	12.5	10.5	11.5	12.0	10.0	10.5	11.0	9.5	10.0
30	10.0	9.0	9.5	12.5	10.0	11.0	11.5	9.5	10.5	10.5	10.0	10.5
31	---	---	---	12.0	10.0	11.0	11.5	9.5	10.5	---	---	---
MONTH	12.0	8.0	9.6	13.0	---	---	13.5	9.5	11.0	12.0	8.5	10.3

SANDY RIVER BASIN

14139000 BULL RUN RESERVOIR NUMBER ONE NEAR BULL RUN, OR

LOCATION.--Lat 45°28'50", long 122°04'50", in NW 1/4 SW 1/4 sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in control house of Bear Creek Dam on Bull Run River, 8.2 mi northeast of Bull Run, and at mile 11.2.

DRAINAGE AREA.--74.6 mi².

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1937, published as Bull Run Reservoir. October 1937 to September 1967, published as Lake Ben Morrow. Prior to October 1975, monthend contents only.

REVISED RECORDS.--WSP 814: 1935(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Portland Water Bureau). Prior to Oct. 9, 1930, Oct. 1, 1962 to Dec. 31, 1975, nonrecording gage. Oct. 9, 1930 to Sept. 30, 1962, water-stage recorder at present site and datum.

REMARKS.--Midnight readings Jan. 2-5, July 31 to Aug. 4, Aug. 16, Aug. 24 to Sept. 4, furnished by Portland General Electric. Lake is formed by concrete dam completed in March 1929 for water supply of city of Portland. Storage began about Apr. 29, 1929; first filling occurred May 15, 1929. Capacity, 26,930 acre-ft at crest of spillway, elevation, 1,036.0 ft; capacity increased in October 1954 to 30,140 acre-ft at elevation 1,044.0 ft by installation of three gates 40 ft wide and 8 ft high. No dead storage. Water is used for power generation by Portland General Electric Co. and municipal supply for city of Portland.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,600 acre-ft Mar. 31, 1931, elevation, 1,047.40 ft; minimum contents observed, 169 acre-ft Jan. 10, 1960, elevation, 887.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 30,680 acre-ft June 27, elevation, 1,045.25 ft; minimum contents, 9,010 acre-ft Oct. 14, elevation, 974.96 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	995.82	1034.08	1035.64	1040.81	1037.76	1034.81	1034.65	1034.43	1044.66	1044.80	1039.37	1015.6
2	996.29	1034.29	1035.55	1038.81	1035.77	1034.37	1034.28	1034.16	1044.39	1044.93	1038.66	1015.2
3	995.88	1034.08	1034.71	1036.65	1035.16	1034.67	1034.62	1034.56	1044.75	1045.03	1037.78	1014.7
4	996.54	1034.19	1040.56	1035.77	1034.68	1034.78	1034.50	1034.18	1044.79	1045.17	1037.30	1013.8
5	997.49	1034.33	1037.21	1034.70	1034.53	1034.54	1034.58	1034.69	1044.43	1045.16	1036.07	1012.69
6	997.06	1035.70	1035.88	1034.71	1034.74	1035.20	1034.41	1037.18	1044.57	1045.16	1035.27	1011.47
7	995.98	1034.92	1038.23	1035.71	1034.38	1036.60	1034.53	1040.92	1044.79	1044.93	1034.30	1010.23
8	996.51	1035.21	1037.39	1034.50	1034.46	1035.61	1034.88	1042.14	1044.49	1045.03	1033.38	1008.99
9	997.02	1034.58	1035.90	1034.55	1034.49	1039.21	1034.65	1043.50	1044.71	1044.97	1032.51	1007.04
10	994.82	1034.41	1035.93	1035.88	1034.46	1037.14	1034.69	1043.92	1044.58	1045.19	1032.42	1005.77
11	987.31	1034.26	1035.94	1035.80	1034.50	1035.72	1034.77	1043.71	1044.49	1044.90	1030.94	1004.71
12	982.38	1034.38	1035.93	1035.15	1034.62	1035.62	1034.75	1043.27	1044.93	1044.94	1031.42	1003.77
13	976.93	1035.94	1035.90	1034.51	1034.77	1034.36	1035.00	1043.53	1044.92	1044.75	1031.90	1004.34
14	978.47	1035.90	1034.74	1034.52	1035.47	1034.48	1036.66	1043.66	1044.92	1045.17	1032.37	1002.65
15	984.68	1035.81	1034.47	1034.56	1034.75	1036.48	1035.76	1043.73	1044.79	1044.95	1030.43	1004.62
16	988.50	1035.90	1034.28	1035.10	1035.02	1038.10	1035.71	1044.09	1044.65	1044.98	1026.6	1007.33
17	991.11	1035.79	1034.39	1035.65	1034.66	1036.22	1034.66	1043.93	1044.88	1044.84	1023.80	1013.30
18	1004.48	1034.41	1034.62	1035.88	1034.92	1035.81	1034.85	1043.89	1045.01	1044.92	1022.30	1018.82
19	1012.14	1039.68	1034.44	1035.35	1035.97	1035.87	1036.16	1043.95	1044.99	1045.07	1021.12	1021.90
20	1016.53	1036.02	1034.63	1035.62	1035.83	1036.45	1036.70	1043.88	1044.90	1044.90	1020.48	1022.17
21	1019.75	1035.24	1034.42	1034.86	1034.72	1035.87	1035.71	1043.88	1045.01	1044.42	1019.88	1023.53
22	1028.88	1035.40	1034.91	1034.74	1034.73	1034.97	1034.95	1044.04	1045.09	1044.25	1020.28	1023.31
23	1034.40	1034.92	1034.79	1034.81	1034.71	1034.65	1035.55	1044.43	1044.72	1044.95	1018.60	1023.39
24	1037.51	1035.80	1039.79	1034.43	1035.07	1034.63	1035.91	1044.80	1044.79	1043.80	1017.9	1024.26
25	1036.53	1035.74	1038.57	1034.65	1034.92	1036.64	1035.62	1044.52	1044.93	1044.45	1017.3	1023.37
26	1035.24	1035.05	1040.01	1034.64	1034.79	1038.12	1034.39	1044.66	1045.05	1043.15	1017.2	1022.97
27	1034.61	1036.23	1038.16	1034.37	1034.77	1036.88	1034.40	1044.69	1045.04	1042.57	1016.9	1024.73
28	1034.51	1036.41	1035.94	1034.62	1034.22	1035.47	1034.65	1044.65	1044.89	1041.97	1016.6	1025.86
29	1034.40	1035.48	1040.00	1034.75	---	1035.18	1035.43	1044.56	1044.83	1041.20	1016.4	1025.41
30	1034.02	1035.88	1038.30	1038.21	---	1034.48	1034.93	1044.59	1045.21	1041.75	1016.0	1025.16
31	1034.61	---	1039.43	1041.02	---	1034.91	---	1044.71	---	1040.36	1015.8	---
MAX	1037.51	1039.68	1040.56	1041.02	1037.76	1039.21	1036.70	1044.80	1045.21	1045.19	1039.37	1025.86
MIN	976.93	1034.08	1034.28	1034.37	1034.22	1034.36	1034.28	1034.16	1044.39	1040.36	1015.80	1002.65
(†)	26400	26880	28270	28910	26250	26520	26520	30450	30660	28640	19790	22960
(‡)	+12490	+480	+1390	+640	-2660	+270	0	+3930	+210	-2020	-8850	+3170

CAL YR 1996 MAX 1045.67 MIN 976.93 AC-FT† +700

WTR YR 1997 MAX 1045.21 MIN 976.93 AC-FT‡ +9050

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

157

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.

REVISED RECORDS.--WDR OR 96-1: 1989(M), 1991 (M).

GAGE.--Water-stage recorder. Elevation of gage is 1,960 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--32 years (water years 1966-97), 66.7 ft³/s, 114.36 in/yr, 48,360 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 940 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. 19	1400	773	4.06	Dec. 29	2130	520	3.66
Dec. 4	2000	766	4.05	Jan. 2	1000	537	3.69
Dec. 7	2300	543	3.70	Jan. 31	1130	728	3.99
Dec. 25	0530	*958	*4.35	Mar. 9	1800	706	3.96
Dec. 26	1600	585	3.77				

Minimum discharge, 7.0 ft³/s Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	44	215	340	389	122	65	131	63	68	16	11
2	7.3	37	131	449	202	138	59	99	44	40	15	11
3	7.3	38	93	274	122	87	56	89	47	34	15	10
4	8.5	63	311	153	88	66	52	84	52	30	15	10
5	17	52	325	100	70	61	48	68	63	28	14	10
6	10	142	169	80	59	140	45	79	47	28	14	10
7	8.8	135	280	118	52	305	48	65	42	26	14	10
8	8.2	82	371	97	46	161	79	56	38	26	14	9.8
9	7.7	61	186	87	43	431	65	51	34	109	13	9.3
10	7.7	48	169	234	40	394	60	47	31	81	13	9.2
11	8.2	40	139	149	41	249	53	44	29	76	13	12
12	9.2	41	155	e100	54	152	47	41	29	55	13	12
13	36	101	150	e70	52	102	72	39	27	45	13	11
14	74	161	104	e60	169	80	245	36	26	39	13	19
15	100	151	77	e50	130	166	235	34	25	34	12	38
16	58	150	67	e45	94	387	143	32	24	31	12	74
17	38	238	54	182	91	248	103	30	23	29	12	100
18	247	219	46	218	104	178	99	28	23	27	12	95
19	160	562	42	135	237	188	145	27	22	25	12	56
20	90	236	86	125	165	244	205	26	21	24	12	38
21	66	165	75	105	111	149	127	25	26	23	12	29
22	176	176	60	84	84	102	105	25	30	22	12	24
23	116	115	87	71	68	82	166	26	30	21	12	21
24	313	203	379	60	57	70	183	27	27	20	19	19
25	297	152	651	53	52	65	114	26	24	19	14	17
26	153	102	460	47	58	87	89	24	22	19	13	20
27	88	133	402	46	54	93	91	29	21	18	13	38
28	103	229	197	74	48	117	78	28	21	18	13	23
29	116	176	337	62	---	88	124	39	21	17	12	19
30	75	162	334	252	---	76	131	32	26	17	12	18
31	56	---	297	580	---	69	---	58	---	17	11	---
TOTAL	2469.5	4214	6449	4500	2780	4897	3132	1445	958	1066	410	783.3
MEAN	79.7	140	208	145	99.3	158	104	46.6	31.9	34.4	13.2	26.1
MAX	313	562	651	580	389	431	245	131	63	109	19	100
MIN	7.3	37	42	45	40	61	45	24	21	17	11	9.2
AC-FT	4900	8360	12790	8930	5510	9710	6210	2870	1900	2110	813	1550
CFSM	10.0	17.7	26.2	18.3	12.5	19.9	13.2	5.88	4.03	4.34	1.67	3.29
IN.	11.58	19.77	30.25	21.11	13.04	22.97	14.69	6.78	4.49	5.00	1.92	3.67

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1997, 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	1992	1993	1994	1995	1996	1997
MEAN	40.0	97.4	113	115	100	85.4	86.4	63.8	42.9	22.0	15.6	21.9																				
MAX	86.5	211	232	218	202	181	130	136	115	53.9	38.1	51.4																				
(WY)	1968	1996	1978	1975	1996	1972	1974	1969	1981	1983	1968	1977																				
MIN	5.43	15.5	29.4	31.9	29.8	22.6	46.5	30.6	12.8	10.9	8.68	7.86																				
(WY)	1988	1994	1977	1981	1993	1992	1967	1992	1992	1992	1970	1987																				

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1966 - 1997
ANNUAL TOTAL	31757.4	33103.8	
ANNUAL MEAN	86.8	90.7	66.7
HIGHEST ANNUAL MEAN			105
LOWEST ANNUAL MEAN			41.8
HIGHEST DAILY MEAN	1440	Feb 7	1440
LOWEST DAILY MEAN	7.1	Sep 12	4.8
ANNUAL SEVEN-DAY MINIMUM	7.4	Sep 7	4.9
ANNUAL RUNOFF (AC-FT)	62990		48360
ANNUAL RUNOFF (CFSM)	10.9		8.42
ANNUAL RUNOFF (INCHES)	148.98		114.36
10 PERCENT EXCEEDS	196		143
50 PERCENT EXCEEDS	48		41
90 PERCENT EXCEEDS	9.2		12

e Estimated

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'38", long 122°06'20", in NE 1/4 NE 1/4 sec.31, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 6.2 mi northeast of Bull Run, and at mile 0.6.

DRAINAGE AREA.--15.4 mi²

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR OR-91-1: 1989.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 990 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--23 years (water years 1975-97), 112 ft³/s, 98.51 in/yr, 80,890 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,630 ft³/s Feb. 7, 1996, gage height, 9.54 ft, from rating curve extended above 1,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 5.4 ft³/s Oct. 13, 1994.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 11	1330	2,050	7.58	Jan. 31	1230	1,780	7.18
Dec. 25	0600	*2,140	*7.70				

Minimum discharge, 13 ft³/s Oct. 1-4, 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	89	355	662	876	201	103	224	102	111	23	18
2	13	73	252	1040	408	282	95	187	76	79	23	17
3	13	70	193	691	263	203	92	165	79	65	22	17
4	14	102	613	385	200	157	87	152	88	57	21	17
5	25	91	710	259	155	135	81	129	109	52	21	17
6	17	193	338	180	128	233	76	141	91	48	21	16
7	15	241	529	261	109	511	78	122	78	44	21	16
8	14	166	835	223	94	330	128	106	69	42	21	16
9	14	120	383	183	85	785	122	93	61	158	21	15
10	13	95	297	537	77	875	115	83	56	144	20	16
11	14	78	259	377	74	504	101	76	51	136	20	20
12	15	73	282	261	94	308	90	70	49	105	20	20
13	45	164	267	178	89	212	112	64	46	86	20	17
14	85	273	211	133	261	163	322	59	44	71	19	27
15	167	295	162	108	253	247	387	55	41	62	19	54
16	105	276	134	92	196	539	254	51	39	56	19	93
17	72	404	108	340	179	374	197	48	37	51	19	168
18	387	412	90	512	194	267	186	44	37	48	19	166
19	308	1400	78	325	386	265	229	41	34	44	19	115
20	197	546	131	289	314	359	319	39	32	41	19	77
21	142	319	133	250	239	241	232	38	36	38	20	60
22	290	320	115	189	191	166	194	36	44	36	19	49
23	233	232	144	149	154	129	254	39	44	33	18	42
24	576	332	673	121	130	109	302	39	40	32	29	37
25	590	281	1500	103	116	104	220	37	35	30	22	33
26	309	206	1030	88	122	126	172	33	33	29	20	34
27	189	225	854	78	117	142	166	39	32	28	20	57
28	177	384	377	123	106	167	144	38	31	26	20	38
29	212	326	575	107	---	145	205	52	32	26	20	33
30	151	282	625	403	---	128	219	44	38	25	19	31
31	115	---	547	1310	---	114	---	77	---	24	18	---
TOTAL	4531	8068	12800	9957	5610	8521	5282	2421	1584	1827	632	1336
MEAN	146	269	413	321	200	275	176	78.1	52.8	58.9	20.4	44.5
MAX	590	1400	1500	1310	876	875	387	224	109	158	29	168
MIN	13	70	78	78	74	104	76	33	31	24	18	15
AC-FT	8990	16000	25390	19750	11130	16900	10480	4800	3140	3620	1250	2650
CFSM	9.49	17.5	26.8	20.9	13.0	17.8	11.4	5.07	3.43	3.83	1.32	2.89
IN.	10.95	19.49	30.92	24.05	13.55	20.58	12.76	5.85	3.83	4.41	1.53	3.23

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1997, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	63.0	169	196	184	181	146	147	99.5	70.6	33.4	22.3	32.9											
MAX	146	313	413	321	353	275	215	162	180	91.2	53.2	93.4											
(WY)	1977	1996	1997	1997	1996	1997	1976	1977	1981	1983	1978	1977											
MIN	8.31	23.3	50.4	58.3	54.7	53.8	89.6	47.1	15.4	14.8	11.7	9.03											
(WY)	1988	1994	1977	1979	1977	1992	1983	1992	1992	1992	1994	1994											

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1975 - 1997

ANNUAL TOTAL	58576	62569	112
ANNUAL MEAN	160	171	171
HIGHEST ANNUAL MEAN			75.4
LOWEST ANNUAL MEAN			2830
HIGHEST DAILY MEAN	2830	Feb 7	1500
LOWEST DAILY MEAN	12	Sep 2	13
ANNUAL SEVEN-DAY MINIMUM	12	Sep 7	15
ANNUAL RUNOFF (AC-FT)	116200	124100	80890
ANNUAL RUNOFF (CFSM)	10.4	11.1	7.25
ANNUAL RUNOFF (INCHES)	141.50	151.14	98.51
10 PERCENT EXCEEDS	347	383	238
50 PERCENT EXCEEDS	86	105	73
90 PERCENT EXCEEDS	15	20	16

SANDY RIVER BASIN

159

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 September 1992.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: June 1990 to September 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 56 microsiemens Oct. 31, 1988; minimum, 9 microsiemens Jan. 4, 1983.
 pH: Maximum recorded, 8.0 units Aug. 17, Oct. 2, 1990, but may have been higher in water year 1990, 1992 during period of missing record; minimum recorded, 6.4 units Dec. 6, 1991, but may have been lower during period of missing record.
 WATER TEMPERATURE: Maximum, 18.0°C June 23, 24, July 18, 19, 1992; minimum, 0.0°C on many days during winter periods.
 TURBIDITY: Maximum recorded, 16 NTU Oct. 16, 1993; minimum recorded, 0.08 NTU Sept. 2, 1994.
 SEDIMENT CONCENTRATION: Maximum daily, 212 mg/L Nov. 7, 1985; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 794 tons Nov. 7, 1985; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 43 microsiemens Sept. 11; minimum, 11 microsiemens Dec. 25, but may have been less during period of missing record.
 WATER TEMPERATURE: Maximum, 15.5°C Aug. 6; minimum, 1.5°C Jan. 14, 26, 27.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	37	37	37	22	21	21	18	17	17	---	---	---
2	38	37	37	23	22	22	19	18	18	---	---	---
3	38	37	38	23	22	23	20	19	20	---	---	---
4	39	37	38	23	21	22	20	13	18	---	---	---
5	38	35	36	22	21	22	17	14	16	---	---	---
6	37	36	37	22	18	20	19	17	18	20	---	---
7	38	37	37	19	18	18	19	14	17	20	19	19
8	38	38	38	20	19	20	17	14	15	20	19	19
9	38	38	38	21	20	20	18	17	18	20	19	20
10	38	37	38	22	21	21	18	17	18	19	16	17
11	38	37	38	23	22	22	19	18	18	18	17	17
12	38	37	38	23	23	23	18	17	18	19	18	18
13	38	31	35	23	20	21	18	18	18	20	19	20
14	32	25	30	20	18	19	19	18	19	21	20	21
15	25	24	24	19	18	18	20	19	20	22	21	22
16	24	23	24	19	18	18	21	20	20	22	22	22
17	24	23	24	18	17	17	21	21	21	22	16	19
18	24	18	20	17	17	17	22	21	22	17	16	16
19	19	18	19	17	13	15	22	22	22	18	17	18
20	20	19	20	18	15	17	22	20	21	19	18	18
21	21	20	20	18	17	18	20	20	20	19	18	18
22	21	18	19	18	17	17	21	20	21	20	19	19
23	19	18	19	19	18	18	21	18	21	21	20	20
24	19	16	17	19	17	17	18	12	16	21	21	21
25	---	---	---	18	17	18	15	11	13	22	21	22
26	---	---	---	19	18	19	15	14	14	23	22	23
27	21	20	20	19	18	19	---	---	---	23	23	23
28	21	---	20	18	16	17	---	---	---	23	21	22
29	20	---	20	18	17	17	---	---	---	22	22	22
30	21	19	20	18	17	18	---	---	---	22	15	18
31	21	20	21	---	---	---	---	---	---	15	13	14
MONTH	---	---	---	23	13	19	---	---	---	---	---	---

SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	22	21	22	31	24	25	35	35	35	42	39	40
2	23	22	23	25	24	24	36	35	35	40	40	40
3	24	23	23	26	25	25	37	35	36	40	39	40
4	23	22	23	28	26	26	37	36	36	41	40	40
5	22	21	22	29	27	28	37	36	37	41	40	40
6	23	22	22	29	28	29	38	36	37	41	40	40
7	23	23	23	30	29	29	37	36	37	41	40	40
8	24	23	24	31	30	30	37	36	37	41	40	40
9	25	24	24	30	22	24	38	37	37	42	40	41
10	26	25	25	22	22	22	38	37	37	42	41	41
11	26	26	26	23	22	22	39	37	38	43	39	41
12	27	26	26	23	22	22	39	38	38	40	39	39
13	29	27	28	25	23	23	39	38	38	40	39	40
14	29	28	29	26	24	24	39	38	38	40	37	38
15	30	29	30	26	25	25	39	38	38	37	31	33
16	30	30	30	26	25	26	39	38	39	31	27	30
17	32	30	31	27	26	26	40	38	39	27	24	25
18	31	30	31	28	27	27	40	38	39	25	23	24
19	32	31	31	29	28	29	40	39	39	24	24	24
20	32	31	32	30	29	30	40	39	39	26	24	25
21	33	31	32	30	30	30	40	39	39	28	26	27
22	31	30	31	31	30	31	40	39	40	28	27	27
23	31	30	30	32	31	31	40	39	39	30	28	28
24	32	30	31	32	32	32	40	37	38	31	29	29
25	32	31	32	32	32	32	39	37	38	31	30	30
26	33	32	32	33	32	33	39	39	39	31	30	30
27	33	32	33	34	33	34	40	39	39	31	29	30
28	33	33	33	34	34	34	39	39	39	31	30	30
29	33	33	33	34	34	34	40	39	39	31	30	31
30	34	31	33	35	34	34	40	39	39	32	31	31
31	---	---	---	35	35	35	40	39	40	---	---	---
MONTH	34	21	28	35	22	28	40	35	38	43	23	34

SANDY RIVER BASIN

161

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	8.5	9.0	---	---	---	6.5	4.0	5.0	5.5	5.0	5.5
2	9.5	8.5	9.0	---	---	---	---	---	---	---	---	---
3	10.0	9.0	9.5	7.0	6.0	6.5	4.5	3.5	4.5	5.0	5.0	5.0
4	10.5	10.0	10.0	6.5	6.0	6.5	4.5	4.0	4.5	5.0	4.0	4.5
5	11.0	10.5	10.5	6.0	6.0	6.0	5.0	4.0	4.5	4.5	4.0	4.0
6	10.5	10.5	10.5	6.5	6.0	6.0	5.0	4.5	4.5	4.5	3.5	4.0
7	10.5	10.0	10.5	7.0	6.0	6.5	5.0	4.5	5.0	4.5	4.5	4.5
8	11.0	10.0	10.5	7.0	6.5	7.0	5.5	4.5	5.5	5.0	4.5	4.5
9	11.0	10.5	11.0	6.5	6.0	6.5	6.0	5.5	6.0	5.0	4.5	5.0
10	11.5	11.0	11.0	7.0	6.0	6.5	6.0	5.0	5.5	5.0	4.5	5.0
11	11.5	11.0	11.5	7.5	7.0	7.5	5.5	5.0	5.0	5.0	4.5	5.0
12	11.0	10.5	11.0	8.0	7.0	7.5	5.5	5.0	5.5	4.5	2.0	2.5
13	10.5	10.0	10.5	8.0	7.0	7.5	5.5	4.5	5.5	2.0	---	---
14	10.0	9.5	9.5	7.5	6.5	7.0	5.0	4.5	4.5	2.0	1.5	2.0
15	9.5	8.5	9.5	6.5	6.5	6.5	5.0	4.5	4.5	2.0	---	---
16	8.5	7.5	8.0	6.5	6.0	6.5	5.0	4.0	4.5	3.0	2.0	2.5
17	8.0	7.0	7.5	---	---	---	4.0	3.5	3.5	3.5	3.0	3.0
18	8.5	7.0	8.0	---	---	---	3.5	3.0	3.5	4.0	3.5	4.0
19	7.0	6.5	7.0	---	---	---	3.5	3.5	3.5	4.5	4.0	4.0
20	7.0	6.5	7.0	---	---	---	4.5	3.5	4.0	4.5	4.0	4.5
21	7.0	6.0	6.5	---	---	---	4.0	3.5	3.5	4.0	3.5	4.0
22	7.5	7.0	7.5	---	---	---	4.0	3.5	4.0	3.5	3.0	3.5
23	7.5	7.0	7.5	---	---	---	4.0	3.5	3.5	3.5	3.0	3.0
24	---	---	---	---	---	---	4.0	3.5	4.0	3.5	3.0	3.0
25	---	---	---	---	---	---	4.5	3.5	4.0	3.0	3.0	3.0
26	7.0	6.0	6.5	---	---	---	4.5	4.0	4.5	3.0	1.5	2.0
27	6.5	6.0	6.5	7.0	---	---	5.0	4.5	4.5	2.5	1.5	2.0
28	7.5	6.5	7.0	6.5	6.0	6.0	4.5	3.5	4.0	3.5	2.5	3.0
29	7.5	7.0	7.0	6.0	6.0	6.0	4.5	3.5	4.0	3.5	3.0	3.5
30	---	---	---	6.5	6.0	6.0	5.0	4.0	4.5	4.0	3.5	3.5
31	---	---	---	---	---	---	5.5	5.0	5.0	---	---	---
MONTH	---	---	---	---	---	---	6.5	3.0	4.5	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.0	4.5	4.0	3.5	3.5	4.5	3.5	4.0	6.5	5.0	5.5
2	4.5	4.0	4.5	3.5	2.5	3.5	5.0	3.5	4.5	7.5	5.0	6.0
3	4.5	4.0	4.0	3.0	2.5	3.0	5.0	4.5	4.5	7.5	6.5	7.0
4	4.0	3.5	4.0	3.5	3.0	3.5	5.5	4.0	5.0	8.0	6.5	7.0
5	3.5	3.0	3.0	4.0	3.5	3.5	5.5	4.0	4.5	8.5	7.0	8.0
6	3.5	2.5	3.0	4.0	3.5	4.0	6.0	4.0	5.0	8.0	7.5	8.0
7	3.5	3.0	3.0	4.0	3.5	3.5	6.0	5.5	6.0	9.0	6.5	7.5
8	3.5	3.0	3.0	4.5	3.5	4.0	6.0	5.5	5.5	10.0	7.0	8.5
9	3.5	2.5	3.0	4.0	3.5	4.0	5.5	5.0	5.0	10.0	8.0	9.0
10	3.5	2.5	3.0	4.5	4.0	4.0	5.5	5.0	5.5	11.0	8.5	9.5
11	3.0	2.5	3.0	4.5	3.5	4.5	5.5	4.5	5.0	12.0	9.5	10.5
12	3.5	3.0	3.0	4.0	3.5	4.0	6.0	4.0	5.0	12.0	10.0	11.0
13	4.0	3.0	3.5	4.5	3.5	4.0	6.0	5.5	6.0	12.0	10.0	11.0
14	4.5	4.0	4.0	5.0	4.0	4.5	5.5	5.5	5.5	12.0	10.5	11.5
15	4.5	4.0	4.0	5.0	4.5	5.0	7.0	5.0	6.0	11.5	11.0	11.5
16	5.0	4.0	4.5	5.0	4.5	4.5	7.0	6.0	6.5	12.0	10.0	11.0
17	5.0	5.0	5.0	5.5	4.5	5.0	7.5	6.0	6.5	12.0	10.5	11.5
18	5.0	4.5	4.5	5.5	5.0	5.5	6.5	6.0	6.5	11.5	10.0	11.0
19	5.0	4.0	4.5	6.0	5.5	5.5	7.0	6.5	6.5	11.5	10.0	10.5
20	4.0	4.0	4.0	5.5	5.0	5.5	7.0	6.0	6.5	11.0	9.5	10.0
21	4.5	3.5	4.0	5.5	4.0	5.0	6.5	5.0	6.0	10.0	9.0	9.5
22	4.0	3.5	3.5	6.0	4.5	5.0	7.0	6.0	6.5	10.0	9.0	9.5
23	4.0	3.0	3.5	6.0	5.5	6.0	6.5	5.5	6.5	9.5	9.0	9.5
24	4.5	3.5	4.0	6.5	5.0	6.0	6.5	5.5	6.0	9.0	8.5	9.0
25	4.5	3.5	4.0	7.0	5.5	6.0	8.0	5.5	6.5	9.0	8.5	8.5
26	4.5	4.0	4.5	6.5	5.5	6.5	8.5	6.5	7.5	10.0	8.5	9.5
27	4.0	3.0	3.5	5.5	4.5	5.5	8.0	6.5	7.0	10.5	10.0	10.0
28	4.0	3.5	3.5	5.5	4.5	5.0	7.0	6.5	6.5	10.5	10.0	10.5
29	---	---	---	6.0	4.0	5.0	7.0	6.5	6.5	11.0	10.0	10.5
30	---	---	---	5.5	5.0	5.5	6.5	5.5	6.0	11.5	10.5	11.0
31	---	---	---	5.0	3.0	4.5	---	---	---	11.0	10.5	11.0
MONTH	5.0	2.5	3.8	7.0	2.5	4.7	8.5	3.5	5.8	12.0	5.0	9.5

SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	9.5	10.0	10.5	10.0	10.5	14.0	12.5	13.0	13.5	12.5	13.0
2	11.5	9.0	10.0	11.5	9.0	10.0	14.0	12.5	13.5	13.5	12.5	13.0
3	11.0	10.0	10.5	12.0	9.5	11.0	14.5	13.0	13.5	13.5	12.5	13.0
4	10.0	9.5	9.5	13.0	11.0	12.0	15.0	13.5	14.0	13.5	13.0	13.0
5	10.5	9.0	9.5	13.0	11.5	12.0	15.0	13.5	14.5	13.5	13.0	13.0
6	10.5	8.0	9.5	12.5	11.5	11.5	15.5	14.0	14.5	13.0	12.0	12.5
7	10.0	9.0	9.5	12.5	11.0	12.0	15.0	14.0	14.5	12.5	11.5	12.0
8	11.0	8.5	9.5	12.0	11.5	12.0	14.5	13.5	14.0	13.0	11.5	12.5
9	11.5	9.0	10.5	12.0	10.5	11.0	14.5	13.0	13.5	13.0	12.0	12.5
10	11.5	10.0	11.0	10.5	10.0	10.0	14.5	13.0	13.5	13.0	12.5	13.0
11	11.5	10.5	11.0	10.5	9.5	10.0	14.5	13.0	14.0	13.0	12.5	12.5
12	11.0	10.0	10.5	11.5	9.5	10.5	15.0	13.5	14.0	12.5	12.0	12.0
13	10.5	10.0	10.0	12.0	10.0	11.0	15.0	14.0	14.5	12.0	11.0	11.5
14	11.0	9.5	10.0	12.0	10.5	11.5	15.0	13.5	14.5	11.5	11.5	11.5
15	12.0	10.5	11.0	12.0	11.0	11.5	14.5	13.5	14.0	11.5	11.0	11.0
16	12.5	11.5	12.0	12.5	11.0	11.5	14.0	13.0	13.5	11.0	11.0	11.0
17	12.5	11.5	12.0	12.0	11.5	11.5	14.5	13.0	14.0	11.0	11.0	11.0
18	11.5	11.0	11.5	12.5	11.0	11.5	14.0	13.5	14.0	11.0	10.5	10.5
19	11.5	10.5	11.0	13.0	11.0	12.5	14.0	12.5	13.5	10.5	9.5	10.0
20	12.0	10.0	11.0	14.0	12.5	13.0	13.5	13.0	13.0	10.5	9.5	10.0
21	11.5	10.0	11.0	13.5	12.0	13.0	13.5	12.5	13.0	10.5	9.5	10.0
22	10.0	9.5	10.0	13.0	12.0	12.0	13.5	12.5	13.0	10.5	10.0	10.5
23	10.0	9.5	10.0	13.0	12.0	12.5	14.0	13.0	13.5	11.0	10.5	10.5
24	11.5	9.5	10.5	13.5	12.0	12.5	13.5	13.0	13.5	12.0	11.0	11.5
25	11.5	10.5	11.0	13.5	12.5	13.0	13.5	13.0	13.0	12.0	11.5	12.0
26	11.5	10.5	11.0	13.5	12.0	12.5	13.5	13.0	13.5	12.0	11.0	11.5
27	11.5	10.5	11.0	14.0	12.0	13.0	13.0	12.5	13.0	11.0	10.5	11.0
28	11.5	10.5	11.0	14.0	13.0	13.5	13.0	12.5	12.5	11.0	10.0	10.5
29	12.0	10.5	11.0	14.0	13.0	13.5	13.0	12.0	12.5	10.5	10.0	10.5
30	11.5	10.5	11.0	14.0	13.0	13.5	13.0	12.0	12.5	11.0	10.5	11.0
31	---	---	---	14.0	12.5	13.5	13.0	12.0	12.5	---	---	---
MONTH	12.5	8.0	10.6	14.0	9.0	11.9	15.5	12.0	13.5	13.5	9.5	11.6

SANDY RIVER BASIN

163

14139900 BULL RUN RESERVOIR NUMBER TWO NEAR BULL RUN, OR

LOCATION.--Lat 45°26'55", long 122°08'45", on line between secs.25 and 26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of Bull Run, and at mile 6.5.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORD.--December 1961 to current year. Prior to October 1975, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Portland Water Bureau). Prior to Dec. 31, 1975, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth and rockfill dam with concrete spillway built by Portland Water Bureau. Storage began about Dec. 20, 1961; first filling occurred Dec. 24, 1961. Capacity, 20,990 acre-ft at crest of spillway, elevation, 860.0 ft. Dead storage negligible. Water is used as municipal supply for city of Portland and for power generation by Portland General Electric Co.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 23,660 acre-ft Dec. 22, 1964, elevation, 866.00 ft; no contents at times during low-flow periods.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,370 acre-ft Nov. 19, elevation, 863.12 ft; minimum contents, 15,070 acre-ft Oct. 10, elevation, 845.19 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	849.98	859.60	860.47	861.60	861.30	858.75	859.71	859.66	859.82	859.86	859.72	858.44
2	849.12	859.75	859.68	861.67	860.37	859.16	860.11	859.38	859.92	859.70	859.64	858.08
3	848.79	859.86	858.66	860.93	859.46	859.48	859.72	858.90	859.82	859.93	859.66	857.79
4	847.94	859.38	862.23	860.03	859.53	859.24	859.76	859.54	859.84	859.59	859.34	857.73
5	847.20	858.36	861.14	859.40	859.11	859.57	859.25	858.65	859.92	859.69	859.71	857.84
6	847.12	861.23	860.31	859.37	859.03	859.29	859.44	858.63	859.85	859.88	859.67	858.10
7	847.55	860.89	861.40	858.97	859.51	860.90	859.76	858.25	859.82	859.84	859.65	858.34
8	846.74	859.59	861.22	859.16	859.54	859.85	859.75	859.49	859.88	859.88	859.64	858.53
9	845.85	859.69	860.40	859.80	859.54	861.87	859.58	859.44	859.75	859.80	859.56	859.18
10	846.78	859.36	860.39	860.60	859.28	861.19	859.94	859.81	859.69	859.68	858.69	859.36
11	851.30	859.59	859.79	859.82	859.44	860.66	859.88	859.78	859.79	859.85	859.04	859.61
12	853.77	859.12	859.95	859.58	859.15	859.94	859.83	859.13	859.77	859.78	857.75	859.72
13	857.11	859.38	859.68	859.68	859.28	859.50	859.76	859.17	859.76	859.94	856.45	858.93
14	858.47	859.98	859.40	859.10	859.66	859.49	860.71	859.79	859.69	859.59	855.11	859.79
15	858.83	859.78	859.45	859.76	859.63	859.23	860.35	859.82	859.78	859.89	855.86	859.27
16	858.73	859.21	859.78	859.50	859.20	861.37	859.55	859.69	859.86	859.79	858.39	859.51
17	858.53	860.86	859.42	859.57	859.56	860.81	859.91	859.82	859.78	859.92	859.77	859.49
18	859.67	861.40	859.40	860.42	859.52	860.58	859.53	859.83	859.85	859.93	859.82	859.53
19	859.14	862.20	859.55	859.76	860.75	860.68	859.96	859.78	859.84	859.75	859.84	859.16
20	859.36	860.87	859.73	858.74	859.92	860.82	860.85	859.84	859.82	859.66	859.79	859.81
21	859.47	860.39	859.28	859.11	859.45	859.92	859.58	859.86	859.92	859.95	859.81	859.03
22	860.27	860.33	859.69	859.45	859.74	859.11	858.65	859.97	859.78	859.97	858.95	859.46
23	860.27	859.34	859.44	859.22	859.64	859.66	859.92	859.98	859.84	859.07	859.52	859.52
24	861.75	860.54	861.86	858.98	859.13	858.26	860.14	859.70	859.89	859.81	859.87	858.82
25	860.99	860.17	861.72	858.83	859.08	858.27	859.45	859.98	859.91	858.88	859.89	859.49
26	860.05	859.20	862.24	859.48	859.17	860.74	859.23	859.86	859.85	859.61	859.58	859.91
27	859.45	859.50	861.49	859.35	859.31	860.91	859.65	859.96	859.78	859.56	859.54	859.37
28	859.25	860.82	860.49	859.51	859.49	859.41	859.49	859.85	859.85	859.54	859.41	858.68
29	859.09	860.16	861.98	859.56	---	859.27	858.95	859.82	859.87	859.78	859.14	859.06
30	859.39	860.50	861.41	861.32	---	859.27	859.34	859.77	859.76	858.75	858.86	859.29
31	859.53	---	861.43	862.59	---	859.04	---	859.63	---	859.40	858.70	---
MAX	861.75	862.20	862.24	862.59	861.30	861.87	860.85	859.98	859.92	859.97	859.89	859.91
MIN	845.85	858.36	858.66	858.74	859.03	858.26	858.65	858.25	859.69	858.75	855.11	857.73
(†)	20790	21220	21630	22140	20780	20580	20710	20840	20890	20740	20430	20690
(‡)	+3880	+430	+410	+510	-1360	-200	+130	+130	+50	-150	-310	+260

CAL YR 1996 MAX 864.66 MIN 845.85 AC-FT† +100

WTR YR 1997 MAX 862.59 MIN 845.85 AC-FT† +3780

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

‡ Change in contents, in acre-feet.

14140001 BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'15", long 122°10'40", in NE 1/4 SW 1/4 sec.34, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 1.8 mi downstream from Bull Run Reservoir Number Two, 2.7 mi northeast of Bull Run, and at mile 4.7.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--September 1907 to current year. Records for January 1895 to August 1907, published in WSP 370, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1288: 1910-11, 1913, 1920-23, 1926, 1929. WSP 1318: 1919(M). WSP 1568: 1952. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 567.90 ft above sea level (levels by Portland Water Bureau). Prior to July 27, 1909, nonrecording gage at site 1.5 mi upstream at different datum. July 27, 1909, to Sept. 30, 1959, water-stage recorder at site 2.5 mi upstream at different datums.

REMARKS.--Records good above 2,000 ft³/s, records fair except those below 50 ft³/s and estimated daily discharges, which are poor. Flow regulated since 1915 by Bull Run Lake capacity, 12,270 acre-ft, since 1929 by Bull Run Reservoir Number One (station 14139000), since 1958 by North Fork Reservoir, capacity, 1,030 acre-ft, and since 1961 by Bull Run Reservoir Number Two (station 14139900). All records given herein include flow diverted from Bull Run Reservoir Number Two for city of Portland, and that used by Portland General Electric Co. for power generation, which returns to Bull Run River downstream from station. Total diversion, 164,100 acre-ft of which 34,610 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.--90 years (water years 1908-97), 779 ft³/s, 98.87 in/yr, 564,400 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, 9,070 ft³/s Dec. 25, gage height, 12.08 ft; minimum discharge, 2.4 ft³/s Oct. 1-4.

Combined flow, maximum discharge, 9,380 ft³/s (of which approximately 142 ft³/s were diverted for Portland water supply) Dec. 25; minimum daily, 153 ft³/s Oct. 14, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	162	670	2560	4770	6080	1230	648	1440	726	664	294	194
2	180	409	1920	6040	3080	1600	662	1290	589	413	303	228
3	197	510	1720	3970	1900	989	680	1120	523	274	305	232
4	195	743	2210	2370	1260	938	616	987	594	354	305	241
5	171	785	5140	1740	1080	796	649	1010	694	243	291	244
6	157	605	2770	1170	769	1300	501	642	515	218	291	220
7	167	1690	2480	1350	655	2450	447	288	452	310	295	219
8	172	1190	4730	1440	604	2220	697	287	485	241	293	231
9	182	864	2930	969	544	2950	756	499	383	815	303	235
10	183	714	2090	2160	559	4920	546	575	408	702	315	232
11	183	489	1910	1990	479	3160	554	773	348	726	323	218
12	182	558	1840	1480	609	2070	532	938	244	553	319	196
13	155	695	1830	1100	527	1730	673	642	304	462	310	209
14	153	1720	1630	955	1420	e1620	1810	455	318	388	319	204
15	156	1810	1090	546	1600	e1300	2590	556	281	328	305	210
16	153	1720	859	603	1130	3720	1820	493	272	335	277	210
17	154	2120	813	1640	1070	3430	1430	500	225	304	293	211
18	223	2640	584	2290	1150	2300	1260	467	193	258	317	219
19	573	6030	577	1910	2150	2380	1460	425	231	261	303	229
20	235	4330	828	1690	2020	2860	2700	406	252	295	245	230
21	194	2390	1050	1390	1610	2200	2260	377	215	255	213	264
22	204	2150	597	1050	961	1700	1750	291	298	248	223	232
23	344	1850	1060	983	860	1060	1670	308	402	255	233	211
24	2720	1840	2320	912	758	1250	1950	356	269	259	237	221
25	3780	2100	7550	713	686	548	1700	345	206	260	214	215
26	2260	1790	5080	484	702	279	1510	312	217	288	196	203
27	1370	1590	6000	646	651	1360	1130	341	228	303	183	200
28	1250	2490	3280	726	657	1910	1090	395	245	301	198	204
29	1380	2350	3310	677	---	1130	1370	474	222	260	195	204
30	936	1850	5020	1820	---	1050	1440	394	235	270	205	201
31	562	---	4310	6290	---	839	---	659	---	292	181	---
TOTAL	18933	50692	80088	55874	35571	57289	36901	18045	10574	11135	8284	6567
MEAN	611	1690	2583	1802	1270	1848	1230	582	352	359	267	219
MAX	3780	6030	7550	6290	6080	4920	2700	1440	726	815	323	264
MIN	153	409	577	484	479	279	447	287	193	218	181	194
AC-FT	37550	100500	158900	110800	70560	113600	73190	35790	20970	22090	16430	13030
MEAN†	876	1704	2612	1821	1198	1848	1232	648	357	324	118	277
CFSM†	8.19	15.9	24.4	17.0	11.2	17.3	11.5	6.06	3.33	3.03	1.11	2.58
IN.†	9.44	17.78	28.15	19.62	11.66	19.92	12.85	6.98	3.72	3.49	1.28	2.88
AC-FT†	53880	101420	160580	111960	66540	113650	73330	39850	21230	19920	7272	16460

CAL YR 1996 TOTAL 389962 MEAN 1065 MAX 18200 MIN 114 AC-FT 773500 MEAN† 1066 CFSM† 10.0 IN.† 135.68 AC-FT† 774100
WTR YR 1997 TOTAL 389953 MEAN 1068 MAX 7550 MIN 153 AC-FT 773500 MEAN† 1086 CFSM† 10.1 IN.† 137.79 AC-FT† 786130

e Estimated

† Adjusted for change in contents in Bull Run Reservoir Number One and Bull Run Reservoir Number Two.

14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°24'55", long 122°10'20", in NE 1/4 NE 1/4 sec.10, T.2 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 0.25 mi upstream from Portland General Electric Co. dam and tunnel from Sandy River, 3.0 mi east of Bull Run, and at mile 1.95.

DRAINAGE AREA.--22.3 mi².

PERIOD OF RECORD.--May to July 1911, October 1911 to March 1912, June 1912 to April 1913, July 1919 to current year. Monthly discharge only for some periods in water years 1911-13, published in WSP 1318.

REVISED RECORDS.--WSP 1154: 1949. WSP 1248: Drainage area. WSP 1288: 1912, 1920-21(M), 1922-23, 1931, 1945. WSP 1318: 1920. WDR OR-82-2: 1972(P), 1974-76(P), 1978-81(P).

GAGE.--Water-stage recorder. Elevation of gage is 720 ft above sea level, from topographic map. May 23, 1911, to Apr. 29, 1913, nonrecording gage at site 0.85 mi downstream at different datum, 0.5 mi downstream from Sandy River diversion tunnel. July 1, 1919, to Sept. 30, 1931, water-stage recorder at site 0.1 mi downstream at different datum. Oct 1, 1931, to Nov. 3, 1967, at site 0.1 mi downstream at datum 712 ft above sea level. Nov. 4, 1967, to Aug. 8, 1971, water-stage recorder at site 0.1 mi downstream at datum 697.44 ft above sea level (Portland General Electric Co. bench mark).

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

AVERAGE DISCHARGE.--78 years (water years 1920-97), 145 ft³/s, 88.31 in/yr, 105,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,320 ft³/s Nov. 20, 1921, gage height, 9.18 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s; minimum discharge, 8.0 ft³/s Aug. 20, Sept. 16, 17, 1940.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1400	1,720	5.72	Dec. 25	0600	*1,950	*6.00

Minimum discharge, 15 ft³/s Oct. 1-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	99	483	751	726	175	140	e234	e136	e92	e26	19
2	15	84	332	839	429	243	127	e194	e104	e72	e25	19
3	15	83	271	554	298	205	124	e178	e101	e60	e25	19
4	16	126	583	377	230	177	119	e179	e104	e54	e24	19
5	37	112	688	280	186	160	112	e163	e107	e49	e24	18
6	22	269	435	226	158	219	106	e190	e93	e49	e23	18
7	18	281	530	298	139	399	e100	e165	e85	e46	e23	18
8	17	176	788	250	123	298	e123	e149	e79	e44	e22	18
9	16	130	489	204	111	590	e116	e142	e72	e126	22	17
10	16	106	396	590	102	782	e105	e140	e67	e123	22	18
11	16	89	322	379	98	565	e96	e146	e63	e122	21	26
12	19	83	320	256	113	401	e89	e143	e63	e96	21	25
13	55	172	306	195	107	301	e122	e135	e59	e82	21	22
14	115	328	254	160	344	237	e417	e126	e56	e71	21	32
15	192	352	208	137	281	365	e384	e119	e52	e62	21	47
16	111	292	187	122	205	692	e268	e113	e49	e57	21	83
17	73	389	153	363	205	505	e218	e107	e47	e52	20	130
18	417	424	133	468	211	369	e197	e100	e47	e49	20	139
19	293	1260	120	303	416	391	e309	e93	e44	e45	20	92
20	178	626	189	272	282	521	e525	e89	e41	e42	21	61
21	139	446	185	239	221	338	e290	e83	e47	e40	22	47
22	418	452	148	198	185	249	e224	e78	e58	e38	20	39
23	267	319	169	169	153	207	e330	e79	e68	e36	20	35
24	745	484	630	143	132	181	e324	e78	e59	e34	37	31
25	591	410	1320	129	121	170	e230	e73	e52	e32	26	29
26	328	289	1010	115	140	225	e196	e68	e48	e31	23	31
27	199	352	794	104	139	222	e202	e74	e44	e30	23	54
28	207	542	484	142	120	223	e181	e75	e43	e29	23	38
29	267	423	649	122	---	186	e233	e90	e44	e28	23	33
30	170	390	626	451	---	168	e240	e84	e48	e28	21	30
31	124	---	573	1020	---	153	---	e118	---	e27	20	---
TOTAL	5111	9588	13775	9856	5975	9917	6247	3805	1980	1746	701	1207
MEAN	165	320	444	318	213	320	208	123	66.0	56.3	22.6	40.2
MAX	745	1260	1320	1020	726	782	525	234	136	126	37	139
MIN	15	83	120	104	98	153	89	68	41	27	20	17
AC-FT	10140	19020	27320	19550	11850	19670	12390	7550	3930	3460	1390	2390
CFSM	7.39	14.3	19.9	14.3	9.57	14.3	9.34	5.50	2.96	2.53	1.01	1.80
IN.	8.53	15.99	22.98	16.44	9.97	16.54	10.42	6.35	3.30	2.91	1.17	2.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1997, BY WATER YEAR (WY)

	MEAN	87.5	212	246	239	211	186	196	162	102	39.8	23.4	38.7
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	19.2	13.8	10.1	12.4	12.4
(WY)	1988	1930	1977	1937	1977	1941	1941	1947	1992	1940	1940	1938	1938

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1920 - 1997
ANNUAL TOTAL	69852	69908	
ANNUAL MEAN	191	192	145
HIGHEST ANNUAL MEAN			223
LOWEST ANNUAL MEAN			87.6
HIGHEST DAILY MEAN	2820	Feb 7	3500
LOWEST DAILY MEAN	14	Sep 9	8.0
ANNUAL SEVEN-DAY MINIMUM	14	Sep 7	9.0
ANNUAL RUNOFF (AC-FT)	138600	138700	105000
ANNUAL RUNOFF (CFSM)	8.56	8.59	6.50
ANNUAL RUNOFF (INCHES)	116.52	116.62	88.31
10 PERCENT EXCEEDS	445	448	304
50 PERCENT EXCEEDS	115	124	97
90 PERCENT EXCEEDS	16	22	18

e Estimated

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.

REVISED RECORDS.--WDR OR-96-1: 1986 (P).

GAGE.--Water-stage recorder. Elevation of gage is 240 ft above sea level, from topographic map. April 1910 to September 1914, staff gage at present site at different datum. October 1929 to September 1966, water-stage recorder at site 0.8 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. 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 193,800 acre-ft from Bull Run River during the 1995 water year, of which 64,430 acre-ft were used for power generation by Portland General Electric Company and returned to Bull Run River.

AVERAGE DISCHARGE.--54 years (water years 1911-14, 1930-66, 1985-97) 2,310 ft³/s, 1,674,000 acre-ft/yr. 13 years (water years 1985-97), 2,166 ft³/s, 1,569,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,400 ft³/s Dec. 22, 1964, gage height, 22.3 ft, site and datum then in use; minimum discharge, 45 ft³/s Sept. 26, 1962, minimum daily, 63 ft³/s Oct. 12, Nov. 9, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,600 ft³/s Dec. 25, gage height, 17.43 ft; minimum discharge, 202 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	239	1780	8530	15300	16800	3180	2450	4700	2620	1980	605	483
2	338	1350	6370	17700	8940	4470	2320	4120	2040	1400	554	444
3	328	1360	5150	11900	5960	3340	2270	3710	1920	1140	577	440
4	325	1720	7720	7660	4470	2970	2120	3400	2120	1030	607	401
5	468	1810	14500	5720	3760	2620	2060	3280	2270	954	567	458
6	385	2030	e8000	4390	3070	3320	1870	3090	1580	917	617	406
7	291	4220	e7500	4690	2710	5830	1740	2460	1590	959	635	374
8	324	2890	e12000	4560	2420	5330	2440	2340	1610	840	531	394
9	342	2320	e8500	3680	2190	7270	2430	2520	1380	1970	506	394
10	322	1940	e6500	6700	2090	13400	2110	2640	1360	1870	461	422
11	340	1580	e5500	6100	1920	9150	1960	2930	1280	1830	556	469
12	354	1490	e5200	4630	2130	6440	1860	3180	1180	1420	498	504
13	511	2080	e5000	3710	1970	5050	2060	2970	1180	1270	495	476
14	867	3720	4460	3180	3730	3780	4780	2560	1180	1140	469	541
15	1290	4280	3490	2580	4070	4700	6350	2680	1110	992	511	560
16	1050	3940	3070	2370	3270	9100	4880	2470	1100	952	493	791
17	868	4780	2740	4340	3180	8510	4160	2360	1040	847	471	1050
18	2340	6090	2310	6320	3270	6300	3780	2230	1010	830	464	1100
19	2500	17700	2180	5220	5950	6780	4430	2020	983	767	470	915
20	1530	12000	2790	4740	5340	8350	7810	1900	866	761	485	622
21	1350	7020	3110	4180	4250	6470	6330	1740	891	754	501	559
22	2060	6670	2470	3540	3190	4890	5120	1550	1090	761	492	529
23	2060	5450	2840	3220	2810	3730	5430	1550	1230	717	472	486
24	7100	6120	7170	2880	2500	3700	5660	1610	980	655	633	453
25	7900	6590	21600	2590	2300	2790	4760	1590	880	628	556	509
26	4880	5210	16300	2160	2350	2700	4270	1500	791	653	502	458
27	3090	5060	15700	2160	2340	3860	4340	1470	803	618	523	587
28	2770	8790	9290	2410	2190	4550	4020	1680	802	617	498	501
29	3450	7560	9310	2250	---	3380	4840	1870	817	644	476	479
30	2540	6070	12600	5390	---	3120	5000	1760	859	645	441	504
31	1840	---	11300	17700	---	2770	---	2230	---	588	382	---
TOTAL	54052	143620	233200	173970	109170	161850	113650	76110	38562	31149	16048	16309
MEAN	1744	4787	7523	5612	3899	5221	3788	2455	1285	1005	518	544
MAX	7900	17700	21600	17700	16800	13400	7810	4700	2620	1980	635	1100
MIN	239	1350	2180	2160	1920	2620	1740	1470	791	588	382	374
AC-FT	107200	284900	462600	345100	216500	321000	225400	151000	76490	61780	31830	32350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1997, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	906	3481	3370	3304	3772	2939	3190	2183	1432	684	441	424	
MAX	2077	7882	7523	5612	8793	5221	4010	2920	2465	1212	620	812	
(WY)	1996	1996	1997	1997	1996	1997	1988	1993	1985	1993	1993	1985	
MIN	242	354	1568	1204	1196	1183	2155	998	479	390	308	310	
(WY)	1988	1994	1987	1985	1993	1992	1986	1992	1992	1992	1992	1994	

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1985 - 1997
ANNUAL TOTAL	1212654	1167690	
ANNUAL MEAN	3313	3199	2166
HIGHEST ANNUAL MEAN			3456
LOWEST ANNUAL MEAN			1463
HIGHEST DAILY MEAN	57500	Feb 7	57500
LOWEST DAILY MEAN	239	Oct 1	190
ANNUAL SEVEN-DAY MINIMUM	311	Sep 28	232
ANNUAL RUNOFF (AC-FT)	2405000		1569000
10 PERCENT EXCEEDS	7040		4540
50 PERCENT EXCEEDS	2180		1490
90 PERCENT EXCEEDS	359		348

e Estimated

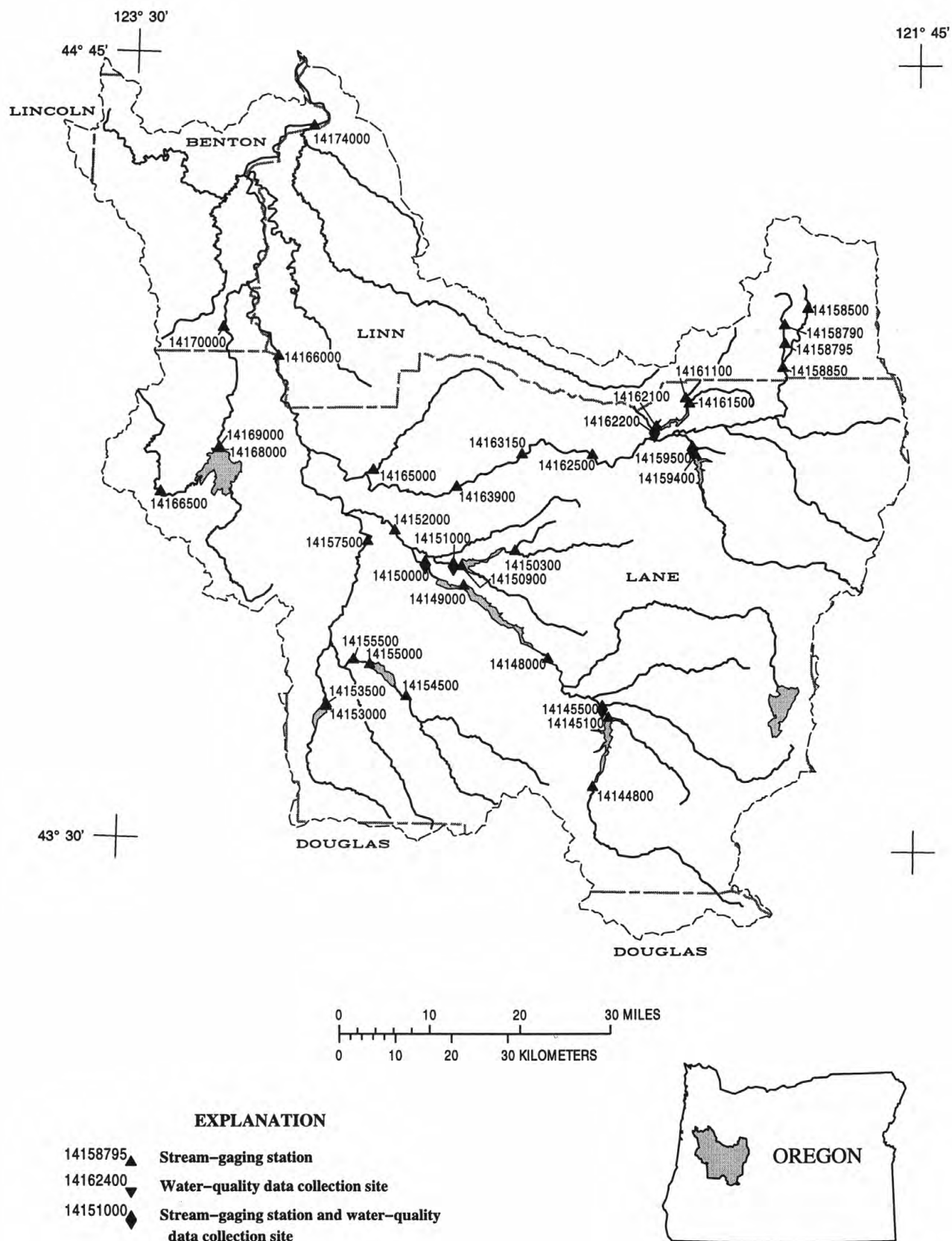


Figure 20. Location of surface-water and water-quality stations in the Willamette River Basin upstream from the Luckiamute River..

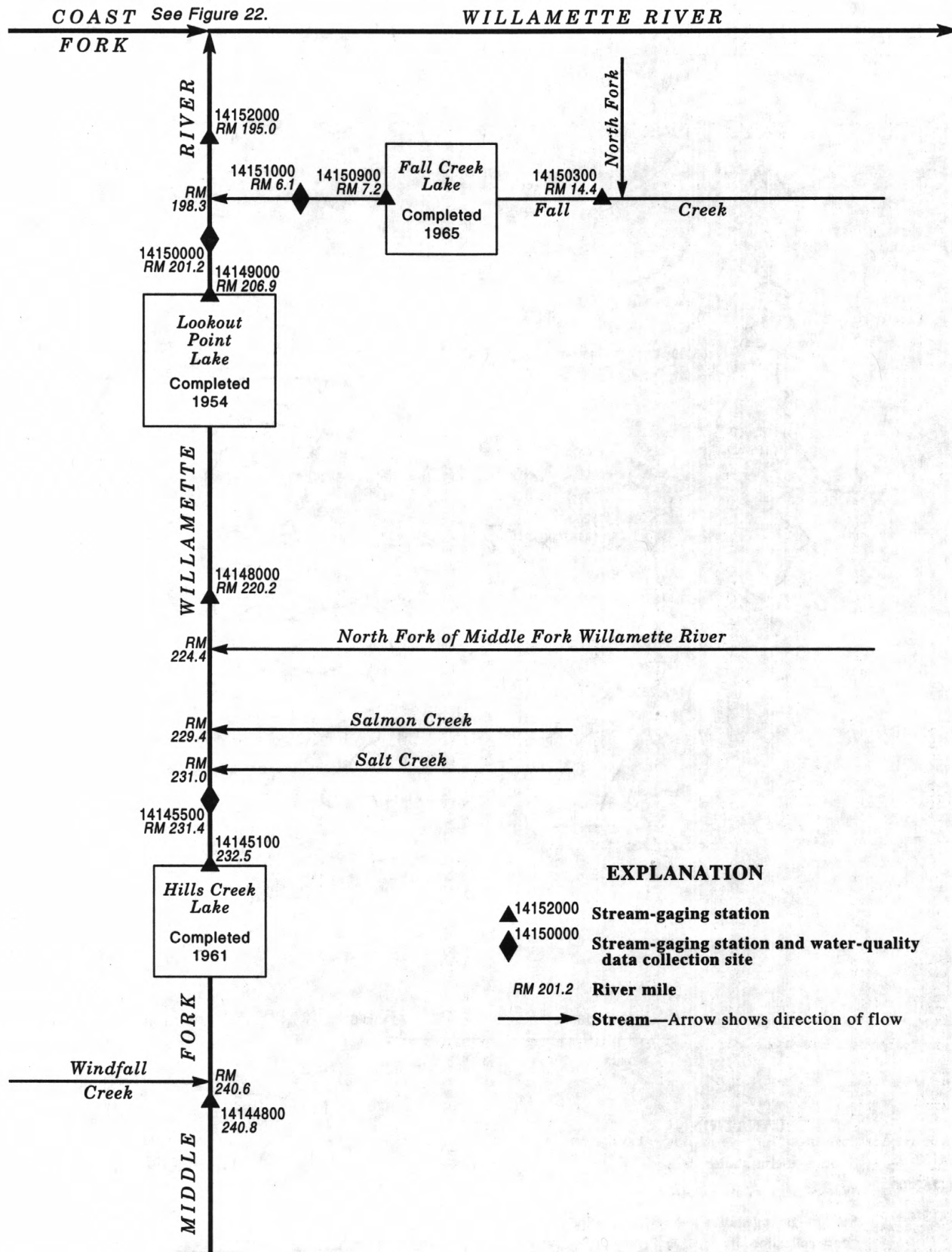


Figure 21. Schematic diagram showing gaging stations in the Middle Fork Willamette River Basin..

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 September 1997 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,556.83 ft above sea level (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 fair. 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.--39 years (water years 1959-97), 811 ft³/s, 42.73 in/yr, 587,800 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, 164 ft³/s Aug. 25, 26, 1992.

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. 18	2130	19,500	13.55	Dec. 31	0200	13,000	12.05
Dec. 4	unknown	unknown	unknown	Jan. 1	0500	*19,900	*13.62
Dec. 8	unknown	unknown	unknown	Jan. 31	1730	12,500	12.11
Dec. 26	1430	11,400	11.57	Apr. 20	0800	4,330	9.28

Minimum discharge, 277 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	282	588	e2400	15700	6840	915	931	1650	892	531	338	315
2	284	548	e2200	11800	3430	1390	888	1440	791	481	337	312
3	285	524	e1800	6780	2270	1190	869	1360	864	458	334	312
4	288	513	e2800	3630	1800	1040	841	1290	991	447	333	310
5	295	489	e6500	2430	1500	952	796	1250	934	439	331	310
6	292	476	e4600	1880	1340	1020	757	1250	832	431	328	310
7	292	510	e3600	1600	1280	1150	758	1220	768	422	326	306
8	291	495	e6000	1410	1200	1220	798	1200	710	413	324	305
9	291	477	e5000	1280	1110	1150	764	1260	674	427	323	304
10	293	464	e4000	1210	1030	1310	732	1340	644	430	320	320
11	295	458	e3000	1130	981	1570	699	1470	629	412	319	340
12	298	449	e2600	1050	992	1390	678	1570	673	401	316	329
13	342	517	e2400	959	940	1230	680	1550	652	393	316	317
14	342	609	e2000	925	941	1120	782	1460	599	387	315	355
15	336	625	e1700	884	925	1220	822	1390	577	382	315	407
16	331	652	e1600	851	911	1410	891	1310	564	379	313	442
17	322	685	e1500	971	1050	1740	944	1250	553	376	314	612
18	575	7890	1360	997	1010	1510	1090	1210	543	376	314	493
19	512	e10500	1220	993	1490	1520	1680	1130	524	369	312	417
20	410	e3800	1620	1010	1460	1900	3500	1060	509	365	374	370
21	378	e1700	1740	1000	1270	1740	2490	965	509	361	345	350
22	459	e1500	1520	961	1130	1500	2150	887	498	357	326	339
23	523	e1300	1410	897	1020	1350	2670	869	488	355	322	331
24	1020	e1400	1470	843	937	1280	2310	952	473	351	389	323
25	1100	e1600	4510	1020	881	1260	1850	863	461	350	337	319
26	799	e1300	9810	1700	873	1320	1650	788	454	348	336	321
27	642	e1100	7450	1460	868	1310	1710	787	449	345	338	323
28	689	e1400	5340	1870	816	1240	1580	796	445	344	328	316
29	1020	e1300	6700	1750	---	1110	1590	907	453	343	325	312
30	782	e1200	7800	1710	---	1050	1740	850	579	344	319	310
31	665	---	9990	8030	---	986	---	918	---	342	317	---
TOTAL	14733	45069	115640	78731	40295	40093	39640	36242	18732	12159	10184	10430
MEAN	475	1502	3730	2540	1439	1293	1321	1169	624	392	329	348
MAX	1100	10500	9990	15700	6840	1900	3500	1650	991	531	389	612
MIN	282	449	1220	843	816	915	678	787	445	342	312	304
AC-FT	29220	89390	229400	156200	79930	79520	78630	71890	37150	24120	20200	20690
CFSM	1.84	5.82	14.5	9.84	5.58	5.01	5.12	4.53	2.42	1.52	1.27	1.35
IN.	2.12	6.50	16.67	11.35	5.81	5.78	5.72	5.23	2.70	1.75	1.47	1.50

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1997, BY WATER YEAR (WY)

	330	793	1238	1227	1169	1067	1078	1107	771	402	295	280
MEAN	330	793	1238	1227	1169	1067	1078	1107	771	402	295	280
MAX	636	1805	3922	2730	2619	2842	1839	1898	1538	740	415	377
(WY)	1963	1974	1965	1970	1996	1972	1993	1993	1974	1971	1976	1971
MIN	210	261	271	273	271	432	518	407	262	234	183	196
(WY)	1988	1994	1977	1977	1977	1977	1968	1992	1992	1992	1992	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1959 - 1997
ANNUAL TOTAL	475453	461948	
ANNUAL MEAN	1299	1266	811
HIGHEST ANNUAL MEAN			1266
LOWEST ANNUAL MEAN			360
HIGHEST DAILY MEAN	10500	Nov 19	23700
LOWEST DAILY MEAN	278	Sep 11	171
ANNUAL SEVEN-DAY MINIMUM	281	Sep 7	172
ANNUAL RUNOFF (AC-FT)	943100	916300	587800
ANNUAL RUNOFF (CFSM)	5.04	4.91	3.14
ANNUAL RUNOFF (INCHES)	68.55	66.61	42.73
10 PERCENT EXCEEDS	2580	2060	1530
50 PERCENT EXCEEDS	868	863	592
90 PERCENT EXCEEDS	294	319	255

e Estimated

WILLAMETTE RIVER BASIN

14145100 HILLS CREEK LAKE NEAR OAKRIDGE, OR

LOCATION.--Lat 43°42'30", long 122°25'25", in NW 1/4 sec.35, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, near right end of Hills Creek Dam on Middle Fork Willamette River, 600 ft downstream from Hills Creek, 3.5 mi southeast of Oakridge, and at mile 232.5.

DRAINAGE AREA.--389 mi².

PERIOD OF RECORD.--August 1961 to current year. Prior to October 1971, published as Hills Creek Reservoir near Oakridge.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1961 by the Corps of Engineers; storage began August 1961. Total capacity is 355,600 acre-ft at elevation 1,543.0 ft, top of spillway gates, and usable capacity is 248,900 acre-ft between elevations 1,414.0 ft, minimum power pool, and 1,543.0 ft. Reservoir used for flood control and power generation. Figures given herein represent total contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 354,200 acre-ft June 25, 1971, elevation, 1,542.52 ft; minimum contents, 104,800 acre-ft Jan. 2, 1969, elevation, 1,412.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 352,700 acre-ft June 30, July 1, elevation, 1,541.98 ft; minimum contents, 154,500 acre-ft Jan. 28, elevation, 1,447.44 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1515.53	1491.93	1494.16	1523.71	1470.83	1495.40	1516.93	1534.45	1541.36	1541.84	1540.66	1540.03
2	1514.58	1490.97	1493.73	1527.73	1474.07	1497.47	1517.64	1534.45	1541.26	1541.76	1540.64	1539.98
3	1513.63	1489.97	1492.01	1528.61	1475.72	1498.96	1518.34	1534.35	1541.28	1541.65	1540.62	1539.92
4	1512.70	1488.96	1494.71	1526.91	1476.63	1500.13	1519.01	1534.13	1541.44	1541.53	1540.61	1539.85
5	1511.76	1487.91	1500.90	1523.92	1477.03	1501.17	1519.65	1534.37	1541.52	1541.39	1540.58	1539.61
6	1510.82	1486.83	1502.21	1520.22	1477.08	1502.26	1520.21	1535.05	1541.52	1541.25	1540.54	1538.94
7	1509.87	1485.78	1504.56	1516.08	1477.05	1503.28	1520.80	1535.66	1541.50	1541.10	1540.51	1538.26
8	1508.91	1484.70	1513.52	1511.55	1476.83	1503.96	1521.43	1536.23	1541.52	1540.99	1540.48	1537.47
9	1507.93	1483.57	1518.53	1506.71	1476.47	1504.06	1522.00	1536.86	1541.70	1540.97	1540.45	1536.65
10	1506.97	1482.42	1521.74	1501.52	1476.01	1504.48	1522.57	1537.58	1541.76	1540.97	1540.42	1535.84
11	1505.99	1481.24	1522.37	1496.04	1475.99	1505.33	1523.10	1538.41	1541.82	1540.96	1540.38	1535.04
12	1505.01	1480.03	1521.44	1490.32	1476.79	1505.81	1523.60	1539.33	1541.87	1540.94	1540.34	1534.22
13	1504.14	1478.94	1520.17	1485.34	1477.79	1505.91	1524.10	1540.00	1541.87	1540.91	1540.31	1533.38
14	1503.21	1478.00	1518.11	1480.83	1478.84	1505.88	1524.66	1540.23	1541.85	1540.90	1540.27	1532.60
15	1502.29	1477.16	1515.41	1476.91	1479.90	1505.94	1525.24	1540.41	1541.85	1540.89	1540.23	1531.92
16	1501.34	1476.33	1511.79	1473.45	1480.91	1506.44	1525.89	1540.49	1541.86	1540.89	1540.20	1531.25
17	1500.37	1475.64	1507.63	1470.19	1482.08	1507.53	1526.58	1540.52	1541.88	1540.89	1540.15	1530.87
18	1499.86	1489.03	1503.13	1467.08	1483.22	1508.14	1527.46	1540.50	1541.89	1540.89	1540.11	1530.29
19	1499.19	1505.32	1498.50	1464.10	1485.40	1508.67	1528.90	1540.55	1541.86	1540.88	1540.07	1529.58
20	1498.33	1509.65	1494.17	1461.20	1486.54	1509.69	1531.44	1540.67	1541.83	1540.87	1540.15	1528.79
21	1497.61	1508.64	1489.93	1459.72	1487.80	1510.47	1532.39	1540.71	1541.82	1540.83	1540.17	1527.96
22	1497.15	1506.59	1485.34	1458.86	1489.07	1510.92	1532.52	1540.76	1541.82	1540.81	1540.16	1527.09
23	1496.81	1503.91	1480.59	1457.17	1490.14	1511.12	1532.93	1540.92	1541.82	1540.78	1540.16	1526.22
24	1496.76	1501.41	1475.59	1454.15	1491.04	1511.46	1532.63	1541.14	1541.80	1540.75	1540.23	1525.32
25	1496.47	1499.00	1476.03	1451.15	1491.89	1512.10	1532.49	1541.25	1541.78	1540.73	1540.25	1524.41
26	1495.42	1496.57	1486.74	1449.87	1492.71	1512.96	1532.61	1541.31	1541.79	1540.72	1540.25	1523.51
27	1494.75	1494.36	1494.03	1447.92	1493.56	1513.81	1532.48	1541.37	1541.78	1540.72	1540.25	1522.58
28	1494.20	1494.17	1498.89	1447.70	1494.31	1514.53	1532.83	1541.40	1541.85	1540.72	1540.23	1521.63
29	1494.15	1493.57	1505.31	1450.02	---	1515.10	1533.38	1541.40	1541.88	1540.71	1540.19	1520.69
30	1493.60	1492.60	1510.80	1452.59	---	1515.62	1534.11	1541.35	1541.98	1540.68	1540.14	1519.74
31	1492.82	---	1515.90	1463.03	---	1516.22	---	1541.36	---	1540.68	1540.08	---
MAX	1515.53	1509.65	1522.37	1528.61	1494.31	1516.22	1534.11	1541.40	1541.98	1541.84	1540.66	1540.03
MIN	1492.82	1475.64	1475.59	1447.70	1470.83	1495.40	1516.93	1534.13	1541.26	1540.68	1540.07	1519.74
(†)	236600	236200	287600	180100	239700	288300	332000	351000	352700	349200	347500	296600
(‡)	-52300	-400	+	51400	-107500	+59600	+43700	+19000	+1700	-3500	-1700	-50900

CAL YR 1996 MAX 1541.53 MIN 1460.49 AC-FT† +88300
WTR YR 1997 MAX 1541.98 MIN 1447.70 AC-FT‡ +7700

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

WILLAMETTE RIVER BASIN

171

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 sea level (levels by Corps of Engineers). Oct. 3, 1913, to Sept. 30, 1914, nonrecording gage and Sept. 1, 1935, to Aug. 18, 1960, water-stage recorder at sites 400 ft and 1,000 ft downstream, respectively, at different datum.

REMARKS.--Records good. Discharges for period Sept. 4-30 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1961 by Hills Creek Lake (station 14145100). No diversions upstream from station.

AVERAGE DISCHARGE.--63 years (water years 1914, 1936-97), 1,151 ft³/s, 39.87 in/yr, 833,900 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s Dec. 28, 1945, gage height, 12.06 ft, site and datum then in use, from rating curve extended above 13,000 ft³/s; minimum observed discharge, 0.70 ft³/s Sept. 8-11, 13, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,610 ft³/s Jan. 2, gage height, 8.38 ft; minimum discharge, 139 ft³/s Jan. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	1660	3900	5830	1130	337	360	1800	1010	875	417	419
2	1410	1660	4170	7500	1660	343	340	1990	1010	714	416	418
3	1400	1660	4750	8040	1670	343	344	1990	1010	702	408	415
4	1390	1650	4830	7950	1650	341	328	1980	1010	699	408	430
5	1390	1660	4600	8030	1680	331	318	1280	1010	698	414	610
6	1380	1650	4040	7970	1710	335	318	684	1010	698	413	1200
7	1380	1670	3390	7910	1710	603	319	687	959	698	405	1200
8	1380	1680	1500	7950	1700	1020	323	688	778	634	394	1310
9	1380	1680	2200	7920	1690	1530	304	690	567	546	392	1440
10	1380	1670	3420	8010	1690	1530	286	690	683	497	392	1440
11	1380	1690	4580	7980	1210	1530	286	691	698	499	396	1440
12	1380	1700	5630	7900	532	1540	284	693	767	501	396	1440
13	1380	1700	5980	6800	302	1550	306	955	812	500	396	1450
14	1380	1700	5960	5920	304	1550	314	1370	780	471	396	1450
15	1380	1710	5960	5140	303	1550	320	1390	691	450	394	1450
16	1380	1700	6600	4450	307	1550	320	1390	649	451	395	1450
17	1380	1610	6970	4330	309	1560	323	1390	646	454	394	1450
18	1380	1860	7000	4190	314	1560	325	1380	648	450	395	1450
19	1380	2050	6860	3950	314	1560	461	1130	659	451	393	1450
20	1390	3310	7030	3870	1140	1560	1120	984	627	450	395	1460
21	1190	5930	6950	2660	604	1530	1970	988	597	447	396	1470
22	1000	5970	6940	1950	310	1520	2650	893	595	436	397	1470
23	1010	5930	6790	2510	316	1520	3010	804	594	433	395	1480
24	1500	5980	6970	3500	318	1250	3610	814	582	433	394	1470
25	2150	5940	5940	3980	324	841	2750	816	561	424	395	e1490
26	2290	5230	614	3960	326	702	2050	818	526	399	400	e1500
27	1540	4430	538	3930	333	714	2450	823	535	398	390	1490
28	1530	3980	540	3020	327	724	1640	920	466	396	406	1490
29	1560	3950	567	874	---	706	1420	1010	564	403	419	1490
30	1660	3910	2220	548	---	712	1430	1010	658	419	419	1500
31	1660	---	5070	320	---	573	---	1010	---	418	419	---
TOTAL	44800	86920	142509	158892	24183	33015	30279	33758	21702	16044	12439	38222
MEAN	1445	2897	4597	5126	864	1065	1009	1089	723	518	401	1274
MAX	2290	5980	7030	8040	1710	1560	3610	1990	1010	875	419	1500
MIN	1000	1610	538	320	302	331	284	684	466	396	390	415
AC-FT	88860	172400	282700	315200	47970	65490	60060	66960	43050	31820	24670	75810
MEAN†	594	2891	5432	3376	1938	1855	1745	1398	752	460	373	419
CFSM†	1.52	7.38	13.86	8.61	4.94	4.73	4.45	3.57	1.92	1.17	0.95	1.07
IN.†	1.75	8.23	15.98	9.93	5.15	5.46	4.96	4.11	2.14	1.35	1.10	1.19
AC-FT†	36560	172000	334100	207600	107600	114100	103800	85960	44750	28320	22970	24910

CAL YR 1996 TOTAL 662026 MEAN 1809 MAX 7030 MIN 300 AC-FT 1313000 MEAN† 1931 CFSM† 4.92 IN.† 67.01 AC-FT† 1401000
WTR YR 1997 TOTAL 642763 MEAN 1761 MAX 8040 MIN 284 AC-FT 1275000 MEAN† 1772 CFSM† 4.52 IN.† 61.37 AC-FT† 1283000

e Estimated

† Adjusted for change in contents, in Hills Creek Lake.

WILLAMETTE RIVER BASIN

14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to September 1997 (discontinued).

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, 15.0°C several days in October and September; minimum, 5.5°C several days in March and April, but may have been lower during period of missing record Jan. 15 to Mar. 19.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.0	13.5	14.0	13.0	12.5	12.5	8.5	8.0	8.0	6.5	6.5	6.5
2	14.0	13.5	14.0	12.5	12.0	12.5	8.0	8.0	8.0	6.5	6.5	6.5
3	14.0	14.0	14.0	12.5	12.0	12.5	8.0	7.5	8.0	6.5	6.5	6.5
4	14.5	14.0	14.0	12.5	12.0	12.0	7.5	7.5	7.5	6.5	6.5	6.5
5	14.0	14.0	14.0	12.5	12.0	12.0	7.5	7.5	7.5	6.5	6.5	6.5
6	14.5	14.0	14.5	12.0	12.0	12.0	7.5	7.5	7.5	6.5	6.5	6.5
7	14.5	14.0	14.0	12.0	12.0	12.0	7.5	7.0	7.0	6.5	6.5	6.5
8	14.5	14.0	14.5	12.0	11.5	12.0	7.0	7.0	7.0	6.5	6.0	6.5
9	14.5	14.0	14.5	12.0	11.5	12.0	7.0	7.0	7.0	6.5	6.0	6.5
10	15.0	14.0	14.5	12.0	11.5	11.5	7.0	7.0	7.0	6.5	6.0	6.5
11	14.5	14.5	14.5	12.0	11.5	11.5	7.0	7.0	7.0	6.5	6.0	6.0
12	15.0	14.5	14.5	11.5	11.5	11.5	7.0	7.0	7.0	6.5	6.0	6.0
13	15.0	14.5	14.5	11.5	11.5	11.5	7.0	7.0	7.0	6.0	6.0	6.0
14	15.0	14.5	15.0	11.5	11.0	11.0	7.0	7.0	7.0	6.0	6.0	6.0
15	15.0	14.5	14.5	11.0	11.0	11.0	7.0	7.0	7.0	---	---	---
16	15.0	14.5	14.5	11.0	11.0	11.0	7.0	7.0	7.0	---	---	---
17	15.0	14.5	15.0	11.0	10.5	11.0	7.0	6.5	7.0	---	---	---
18	15.0	14.5	14.5	10.5	9.5	10.5	6.5	6.5	6.5	---	---	---
19	14.5	14.5	14.5	10.0	8.0	9.0	6.5	6.5	6.5	---	---	---
20	14.5	14.5	14.5	9.5	8.0	9.0	6.5	6.5	6.5	---	---	---
21	14.5	14.0	14.0	9.5	9.0	9.0	6.5	6.5	6.5	---	---	---
22	14.0	13.5	14.0	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
23	14.0	13.5	13.5	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
24	14.5	13.5	14.0	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
25	14.5	14.0	14.0	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
26	---	14.0	---	9.0	8.5	9.0	7.0	6.5	6.5	---	---	---
27	---	---	---	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
28	---	---	---	8.5	8.5	8.5	6.5	6.5	6.5	---	---	---
29	---	12.5	---	8.5	8.5	8.5	6.5	6.5	6.5	---	---	---
30	13.0	12.5	13.0	8.5	8.0	8.5	6.5	6.5	6.5	---	---	---
31	13.0	12.5	13.0	---	---	---	6.5	6.5	6.5	---	---	---
MONTH	---	---	---	13.0	8.0	10.6	8.5	6.5	6.9	---	---	---

WILLAMETTE RIVER BASIN

173

14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	6.0	5.5	6.0	7.5	6.5	7.0
2	---	---	---	---	---	---	6.5	6.0	6.0	7.5	6.5	7.5
3	---	---	---	---	---	---	6.5	6.0	6.0	8.0	7.0	7.5
4	---	---	---	---	---	---	6.5	6.0	6.5	7.5	7.0	7.5
5	---	---	---	---	---	---	7.0	6.0	6.5	7.5	7.0	7.5
6	---	---	---	---	---	---	6.5	6.0	6.5	8.0	7.0	7.5
7	---	---	---	---	---	---	7.0	6.0	6.5	8.0	6.5	7.0
8	---	---	---	---	---	---	7.0	6.0	6.5	8.0	6.0	7.0
9	---	---	---	---	---	---	7.0	6.0	6.5	8.0	6.0	7.0
10	---	---	---	---	---	---	7.0	6.0	6.5	7.5	6.0	7.0
11	---	---	---	---	---	---	6.5	6.0	6.5	8.0	6.5	7.0
12	---	---	---	---	---	---	6.5	6.0	6.5	7.5	6.5	7.0
13	---	---	---	---	---	---	7.0	6.5	6.5	8.0	6.5	7.0
14	---	---	---	---	---	---	7.0	6.0	6.5	8.0	7.0	7.5
15	---	---	---	---	---	---	7.0	6.5	7.0	8.0	7.0	7.5
16	---	---	---	---	---	---	7.0	6.5	7.0	8.0	7.0	7.5
17	---	---	---	---	---	---	7.0	6.5	7.0	8.0	7.0	7.5
18	---	---	---	---	---	---	7.5	6.0	7.0	8.0	7.0	7.5
19	---	---	---	---	---	---	7.5	6.5	7.0	8.0	7.0	7.5
20	---	---	---	---	5.5	---	7.5	6.5	7.0	8.0	6.5	7.5
21	---	---	---	6.5	5.5	6.0	7.5	7.0	7.0	8.0	6.5	7.5
22	---	---	---	6.5	6.0	6.0	7.5	7.0	7.0	8.0	6.5	7.0
23	---	---	---	6.5	6.0	6.0	7.5	7.0	7.5	8.0	6.5	7.0
24	---	---	---	6.5	5.5	6.0	7.5	7.0	7.5	7.5	7.0	7.0
25	---	---	---	6.5	5.5	6.0	8.0	7.5	7.5	7.5	7.0	7.0
26	---	---	---	6.5	5.5	6.0	8.0	7.5	7.5	7.5	7.0	7.0
27	---	---	---	7.0	5.5	6.0	8.0	7.5	7.5	8.0	7.0	7.5
28	---	---	---	6.0	5.5	6.0	8.0	7.5	7.5	7.5	7.0	7.5
29	---	---	---	6.5	5.5	6.0	8.0	7.5	7.5	8.0	7.0	7.5
30	---	---	---	6.5	5.5	6.0	7.5	7.0	7.0	8.0	7.0	7.5
31	---	---	---	7.0	5.5	6.0	---	---	---	8.0	7.0	7.5
MONTH	---	---	---	---	---	---	8.0	5.5	6.8	8.0	6.0	7.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	8.5	7.0	7.5	8.5	8.0	8.5	9.5	8.5	9.0	10.0	9.0	9.5
2	8.0	7.0	7.5	8.5	7.5	8.0	9.5	8.0	9.0	10.0	9.0	9.5
3	8.5	7.0	7.5	8.5	8.0	8.5	9.5	8.5	9.0	10.5	9.5	10.0
4	8.0	7.0	7.5	9.0	8.0	8.5	10.5	8.0	9.0	10.5	9.0	10.0
5	8.0	7.0	7.5	9.0	8.0	8.5	10.0	8.0	9.0	11.5	9.5	10.0
6	8.0	7.0	7.5	8.5	8.0	8.5	10.0	8.5	9.0	11.5	11.0	11.5
7	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	12.0	11.0	11.5
8	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	12.0	11.0	11.5
9	8.5	7.0	7.5	9.0	8.0	8.0	10.0	8.0	9.0	12.0	11.5	12.0
10	9.0	7.0	8.0	9.0	7.5	8.0	9.5	8.5	9.0	12.0	11.5	12.0
11	8.5	7.0	8.0	9.0	7.5	8.5	10.0	8.5	9.0	12.0	11.5	12.0
12	8.5	7.5	8.0	8.5	8.0	8.5	10.0	8.5	9.0	12.5	12.0	12.0
13	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	12.5	12.0	12.0
14	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	13.0	12.0	12.5
15	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	12.5	12.0	12.5
16	9.0	7.5	8.0	9.0	8.0	8.5	10.0	8.0	9.0	12.5	12.5	12.5
17	8.5	7.5	8.0	8.5	8.0	8.5	9.5	9.0	9.0	13.0	12.5	12.5
18	9.0	7.0	8.0	9.5	8.0	8.5	10.0	8.0	9.5	13.0	12.5	13.0
19	8.5	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.0	13.0	13.0	13.0
20	9.0	7.5	8.0	9.0	8.0	8.5	9.5	8.5	9.0	14.0	13.0	13.0
21	8.5	7.5	8.0	9.0	8.0	8.5	10.0	9.0	9.0	13.5	13.0	13.0
22	8.5	7.5	8.0	9.5	7.5	8.5	10.0	9.0	9.5	15.0	13.0	13.5
23	9.0	7.5	8.0	9.0	8.0	8.5	10.0	8.5	9.5	13.5	13.0	13.5
24	9.0	7.5	8.5	9.0	8.0	8.5	9.5	9.0	9.5	13.5	13.5	13.5
25	9.0	7.5	8.5	9.5	8.0	8.5	10.0	9.0	9.5	14.0	13.5	13.5
26	9.0	7.5	8.0	9.5	8.0	8.5	10.0	9.0	9.0	14.0	13.5	14.0
27	8.5	8.0	8.5	9.5	8.0	8.5	10.0	9.0	9.5	14.0	13.5	13.5
28	8.5	7.5	8.0	9.5	8.0	8.5	9.5	9.0	9.5	14.0	13.5	14.0
29	8.5	7.5	8.0	9.0	8.0	8.5	10.0	9.0	9.5	14.0	13.5	14.0
30	9.0	7.5	8.0	9.5	8.0	8.5	10.0	9.0	9.5	14.0	14.0	14.0
31	---	---	---	9.5	8.0	9.0	10.0	9.0	9.5	---	---	---
MONTH	9.0	7.0	7.9	9.5	7.5	8.5	10.5	8.0	9.2	15.0	9.0	12.3

14148000 MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OR

LOCATION.--Lat 43°48'05", long 122°33'35", in SW 1/4 sec.27, T.20 S., R.2 E., Lane County, Hydrologic Unit 17090001, on left bank 0.5 mi downstream from Whitehead Creek, 4.2 mi downstream from North Fork of Middle Fork Willamette River, 7.0 mi northwest of Oakridge, and at mile 220.2.

DRAINAGE AREA.--924 mi².

PERIOD OF RECORD.--March 1911 to September 1912, July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "near Hazeldell" 1911-12 and as "at Eula" 1923-50.

REVISED RECORDS.--WSP 694: 1925-28. WSP 814: Drainage area at Eula. WSP 1248: 1924, 1925(M), 1926-28, 1929(M), 1930, 1933, 1946(M). WSP 1398: 1927(M). WSP 1638: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 934.76 ft above sea level. Mar. 22, 1911, to Sept. 30, 1912, nonrecording gage at site 4.0 mi upstream, just downstream from North Fork at different datum. July 1, 1923, to Aug. 11, 1935, nonrecording gage and Aug. 12, 1935, to Sept. 30, 1950, water-stage recorder at site 4.0 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Discharges for the period Jan. 7-25 and May 6 to June 24 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1961 by Hills Creek Lake (station 14145100); 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.--39 years (water years 1912, 1924-61), 2,725 ft³/s, 1,974,000 acre-ft/yr.
36 years (water years 1962-97), 2,864 ft³/s, 2,075,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,800 ft³/s Dec. 28, 1945, gage height, 18.8 ft, from floodmark, site and datum then in use, from rating curve extended above 39,000 ft³/s; minimum discharge, 322 ft³/s Aug. 30, 1961, caused by closing outlet gates at Hills Creek Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1861 and prior to March 1911, 17.0 ft in February 1890 at site used 1923-50, from information by local resident, discharge, about 55,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,800 ft³/s Nov. 19, gage height, 10.34 ft; minimum discharge, 904 ft³/s Aug. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1950	3110	12600	23100	e16000	2260	2450	5910	3210	2360	1090	948
2	1940	2950	10700	22400	e9000	3440	2330	5810	2980	2030	1080	942
3	1920	2850	10100	21000	e6500	3130	2290	5630	3030	1910	1060	934
4	1920	2840	12900	17000	6180	2740	2200	5450	3340	1840	1050	943
5	1970	2800	21000	14500	5370	2480	2090	4650	3280	1810	1050	1060
6	1940	2730	13500	13000	4870	2450	2000	3820	3090	1770	1040	1840
7	1910	3010	11900	12200	4590	2940	1960	3720	2900	1740	1010	1830
8	1880	2950	16800	11600	4340	3700	2080	3580	2580	1650	999	1930
9	1870	2870	15000	11100	4080	4170	2060	3590	2230	1620	994	2080
10	1860	2790	14300	11000	3910	4840	1960	3640	2250	1620	986	2110
11	1860	2750	13300	10700	3360	6700	1860	3790	2240	1540	985	2170
12	1860	2710	12800	10400	2690	5900	1770	3960	2390	1480	971	2190
13	1990	2940	12900	9180	2260	5160	1770	4180	2430	1450	958	2160
14	2070	3510	11600	8080	2320	4700	2110	4470	2290	1400	955	2230
15	2030	3850	10500	7210	2350	4810	2300	4390	2120	1350	951	2360
16	2070	3720	10400	6370	2270	5840	2340	4250	2010	1330	947	2590
17	1970	3700	10200	6480	2370	7710	2420	4110	1950	1320	941	2830
18	2460	16300	9830	6430	2320	6360	2600	4000	1930	1320	930	2700
19	2640	31700	9430	6110	3450	5860	3500	3620	1900	1300	924	2520
20	2330	18200	10300	6120	4510	6350	6540	3290	1820	1270	988	2380
21	2040	14400	10500	4980	3570	5940	6860	3120	1790	1250	997	2320
22	1920	12600	10100	4000	2790	5180	6960	2890	1800	1230	960	2280
23	2270	11300	9760	4380	2510	4720	8250	2710	1780	1210	936	2250
24	4380	11900	10100	5300	2280	4180	9010	2910	1720	1200	1090	2210
25	5940	12300	20700	6120	2170	3540	7430	2820	1640	1180	995	2200
26	4880	10300	26000	e12500	2140	3400	6040	2650	1560	1120	971	2220
27	3410	8620	15900	e9000	2200	3600	6490	2620	1560	1110	977	2240
28	3240	10400	10700	e9500	2170	3500	5520	2730	1480	1100	963	2210
29	4200	9990	10200	e6500	---	3230	5500	3100	1640	1100	973	2190
30	3750	9150	12900	e5000	---	3030	5580	2970	2040	1120	961	2190
31	3380	---	17800	e19500	---	2810	---	3050	---	1110	952	---
TOTAL	79850	229240	404720	320760	112570	134670	116270	117430	66980	44840	30684	61057
MEAN	2576	7641	13060	10350	4020	4344	3876	3788	2233	1446	990	2035
MAX	5940	31700	26000	23100	16000	7710	9010	5910	3340	2360	1090	2830
MIN	1860	2710	9430	4000	2140	2260	1770	2620	1480	1100	924	934
AC-FT	158400	454700	802800	636200	223300	267100	230600	232900	132900	88940	60860	121100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1996, BY WATER YEAR (WY)

	1450	3027	4248	4165	3914	3414	3587	3496	2566	1245	985	1182
MEAN	1450	3027	4248	4165	3914	3414	3587	3496	2566	1245	985	1182
MAX	4185	7306	13540	10120	8460	8423	6785	6408	7098	2139	1753	2639
(WY)	1951	1985	1965	1965	1996	1932	1937	1949	1933	1933	1982	1966
MIN	541	500	959	771	710	1167	1454	1113	811	591	491	398
(WY)	1945	1930	1937	1937	1977	1992	1941	1992	1992	1926	1931	1961

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1912 - 1996
ANNUAL TOTAL	1732544	1719071	
ANNUAL MEAN	4734	4710	2766
HIGHEST ANNUAL MEAN			4337
LOWEST ANNUAL MEAN			1416
HIGHEST DAILY MEAN	31700	Nov 19	60300
LOWEST DAILY MEAN	815	Sep 2	334
ANNUAL SEVEN-DAY MINIMUM	829	Aug 27	343
ANNUAL RUNOFF (AC-FT)	3437000		2004000
10 PERCENT EXCEEDS	11000		5460
50 PERCENT EXCEEDS	2940		2010
90 PERCENT EXCEEDS	987		765

e Estimated

WILLAMETTE RIVER BASIN

175

14149000 LOOKOUT POINT LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°54'50", long 122°45'00", in SE 1/4 sec.13, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in elevator house at right end of spillway section of dam on Middle Fork Willamette River, 1.5 mi east of Lowell, and at mile 206.9.

DRAINAGE AREA.--991 mi².

PERIOD OF RECORD.--November 1953 to current year. Prior to October 1971, published as Lookout Point Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Nov. 7, 1953, to Dec. 4, 1954, approximate elevations obtained from reference marks and Dec. 5, 1954, to Feb. 4, 1955, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1954 by Corps of Engineers. Planned storage began in November 1953. Total capacity is 455,800 acre-ft at elevation 929 ft, and usable capacity is 349,200 acre-ft between elevations 819 ft and 929 ft, top of spillway gates. Reservoir used for flood control, improvement of navigation, power generation, pollution abatement, and other purposes. Figures given herein represent total contents. Lake elevation data for periods Oct. 1-31, Apr. 8-11 obtained from U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database.

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, 446,800 acre-ft May 17, elevation, 926.89 ft; minimum contents, 128,400 acre-ft Jan. 25, elevation, 829.51 ft.

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

810	89,600	860	205,500	900	338,900
820	108,600	870	235,500	910	377,400
830	129,500	880	267,800	920	417,800
840	152,500	890	302,300	930	460,200
850	177,700				

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	872.23	876.14	876.26	898.22	844.66	868.45	900.82	920.11	925.84	922.98	908.38	881.33
2	871.66	875.32	874.11	902.04	845.59	870.37	901.25	920.23	925.71	922.78	907.66	880.36
3	871.29	873.82	871.55	905.21	844.66	871.99	901.87	920.38	925.59	922.52	906.87	879.40
4	871.01	872.22	873.38	905.62	842.68	873.34	902.44	920.38	925.62	922.19	906.10	878.47
5	870.69	870.61	882.08	904.33	841.75	874.40	902.95	920.39	925.70	921.94	905.33	877.57
6	870.33	868.88	884.35	902.17	841.55	875.43	903.40	920.52	925.83	921.64	904.53	877.12
7	869.97	867.21	885.60	899.36	841.98	876.73	903.51	919.94	926.03	921.36	903.71	876.66
8	869.57	865.33	894.92	896.30	843.59	878.37	903.61	919.84	926.09	921.03	902.84	876.54
9	869.18	863.39	900.38	892.97	845.05	880.34	903.83	920.44	925.99	920.71	902.05	875.99
10	868.81	861.35	903.58	889.49	846.34	882.50	904.28	921.09	925.91	920.31	901.24	875.53
11	868.42	859.25	904.38	885.72	848.10	884.78	904.70	921.79	925.90	919.89	900.33	875.32
12	868.07	857.11	902.53	881.73	849.47	886.13	904.94	922.57	926.03	919.45	899.48	874.96
13	867.85	855.12	900.73	876.92	850.49	886.78	905.29	923.41	926.03	918.98	898.65	874.65
14	867.60	853.71	898.22	872.59	851.55	887.12	905.85	924.49	926.07	918.53	897.80	874.42
15	867.44	852.57	895.06	866.19	852.60	887.61	906.45	925.44	926.03	918.02	896.95	874.35
16	867.26	851.33	891.64	858.89	853.58	888.89	907.06	926.35	925.93	917.52	896.00	874.31
17	866.76	850.05	887.98	851.20	854.63	891.11	907.74	926.71	925.82	917.01	895.05	874.51
18	866.93	861.00	884.06	844.86	855.63	892.45	908.49	926.52	925.69	916.48	894.11	874.64
19	866.91	881.69	879.72	840.80	857.70	893.43	909.67	926.19	925.55	915.79	893.11	874.58
20	866.86	887.71	876.29	837.82	860.38	894.72	912.49	926.02	925.27	915.26	892.20	874.38
21	866.59	888.27	872.99	835.52	862.23	895.66	914.90	925.86	925.11	914.91	891.25	874.18
22	866.36	887.92	869.33	833.72	863.44	896.22	916.16	925.79	924.92	914.36	890.29	873.93
23	866.29	886.68	865.36	832.11	864.47	896.52	917.40	925.64	924.66	913.81	889.43	873.69
24	867.78	887.05	861.84	830.66	865.35	896.51	919.03	925.64	924.48	913.24	888.64	873.44
25	870.31	886.93	868.00	829.53	866.03	897.10	919.64	925.62	924.22	912.66	887.76	873.19
26	871.99	885.17	882.79	830.49	866.79	897.73	919.27	925.54	923.92	912.05	886.87	872.99
27	872.82	882.52	889.97	830.65	867.67	898.54	919.79	925.52	923.42	911.45	885.98	872.74
28	873.29	881.22	889.55	831.38	868.02	899.25	919.83	925.78	923.12	910.83	885.06	872.47
29	874.54	879.66	888.79	831.28	---	899.77	919.84	925.95	922.86	910.19	884.15	872.26
30	875.39	876.74	889.16	830.79	---	900.23	919.91	925.99	923.04	909.59	883.26	872.02
31	876.02	---	891.87	837.24	---	900.63	---	925.92	---	908.99	882.30	---
MAX	876.02	888.27	904.38	905.62	868.02	900.63	919.91	926.71	926.09	922.98	908.38	881.33
MIN	866.29	850.05	861.84	829.53	841.55	868.45	900.82	919.84	922.86	908.99	882.30	872.02
(†)	254700	257100	309000	145900	229400	341300	417500	442600	430500	373500	275600	241900
(‡)	+11400	+2400		-163100	+83500	+111900	+76200	+25100	-12100	-57000	-97900	-33700

CAL YR 1996 MAX 926.93 MIN 832.72 AC-FT† +105500

WTR YR 1997 MAX 926.71 MIN 829.53 AC-FT‡ -1400

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR

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.

DRAINAGE AREA.--1,001 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1946 to current year. Prior to October 1954, published as "at Lowell".

REVISID RECORDS.--WSP 1638: 1948(P).

GAGE.--Water-stage recorder. Datum of gage is 592.30 ft above sea level (levels by Corps of Engineers). Prior to Aug. 23, 1950, nonrecording gage and Aug. 23, 1950, to Sept. 30, 1954, at site 4.0 mi upstream at different datum, and June 9, 1955, to Feb. 18, 1977, at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. 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).

AVERAGE DISCHARGE.--51 years (water years 1947-97), 3,124 ft³/s, 2,263,000 acre-ft/yr, unadjusted.
44 years (water years 1954-97), 3,056 ft³/s, 2,214,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,600 ft³/s Jan. 18, 1953, gage height, 12.46 ft, site and datum then in use, from rating curve extended above 33,000 ft³/s; minimum daily discharge, 100 ft³/s Nov. 25, 1960.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 13.9 ft Dec. 28, 1945, former site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,500 ft³/s Dec. 16, gage height, 10.86 ft; minimum discharge, 1,080 ft³/s Nov. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2370	2770	13800	10800	5860	2160	2270	5370	3090	2200	2190	2540
2	2370	4090	14300	13800	9040	1600	1680	5370	3070	2210	2490	2520
3	2380	5380	14300	13700	9050	1290	1360	5230	3030	2210	2470	2500
4	2380	5360	10600	15000	9020	1280	1310	5180	3040	2190	2460	2490
5	2390	5360	7170	16000	7030	1320	1290	4450	2800	2200	2470	2470
6	2380	5360	10200	16300	5340	1330	1290	3330	2570	2190	2520	2480
7	2370	5500	10700	16400	4350	1320	1790	4520	2200	2180	2490	2490
8	2360	5780	1870	16300	2680	1320	2040	3540	2210	2200	2470	2490
9	2340	5780	6070	16300	2400	1300	1790	2150	2180	2270	2470	2450
10	2340	5770	9280	16200	2450	1710	1290	2030	2180	2270	2500	2570
11	2360	5750	12200	16300	1460	3390	1280	2030	2120	2230	2510	2570
12	2360	5750	16300	16300	1260	3850	1310	2000	1980	2240	2510	2540
13	2350	5790	16200	16300	1270	4460	1310	2060	2100	2220	2470	2540
14	2360	5790	16200	14400	1270	4420	1300	2040	2030	2220	2490	2510
15	2390	5660	16100	16400	1270	4320	1300	2010	2050	2210	2480	2490
16	2390	5630	16300	16300	1260	4300	1290	1980	2070	2210	2610	2480
17	2370	5560	16300	16300	1260	4300	1290	3010	2010	2220	2620	2510
18	2360	4300	16300	14100	1270	4290	1270	3960	2000	2240	2610	2510
19	2730	1190	16300	11100	1280	4270	1290	4000	2070	2230	2680	2470
20	2290	7170	15700	10000	1290	4300	1310	3480	2050	2230	2710	2500
21	2320	13100	15500	7950	1300	4320	1870	3190	2050	2220	2670	2490
22	2330	13100	15500	6620	1300	4320	4240	2780	2080	2200	2640	2490
23	2330	13300	15500	6620	1300	4320	5590	2810	2030	2240	2520	2470
24	2350	11800	15000	7390	1310	4220	5470	2580	2030	2220	2530	2470
25	2330	12700	10700	8050	1300	2610	6110	2550	2020	2240	2510	2460
26	2330	13400	1430	8050	1290	2430	6840	2520	2030	2240	2510	2470
27	2320	13400	3680	8030	1270	2270	5140	2530	2050	2230	2530	2480
28	2340	13300	11700	6630	2020	2230	5240	2130	2050	2240	2520	2470
29	2320	13100	12000	5030	---	2290	5440	2540	2020	2240	2480	2460
30	2330	14200	12400	5090	---	2280	5370	2690	2030	2210	2530	2450
31	2320	---	12100	5300	---	2230	---	3050	---	2190	2540	---
TOTAL	73260	235140	381700	373060	81200	90050	80370	97110	67240	68840	78200	74830
MEAN	2363	7838	12310	12030	2900	2905	2679	3133	2241	2221	2523	2494
MAX	2730	14200	16300	16400	9050	4460	6840	5370	3090	2270	2710	2570
MIN	2290	1190	1430	5030	1260	1280	1270	1980	1980	2180	2190	2450
AC-FT	145300	466400	757100	740000	161100	178600	159400	192600	133400	136500	155100	148400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1997, BY WATER YEAR (WY)

MEAN	2955	4602	5466	4856	2915	2355	2252	2757	2399	1637	1924	2527
MAX	5266	8779	12310	13510	7634	8084	4854	5464	5072	2221	2981	3932
(WY)	1963	1985	1997	1965	1972	1957	1993	1996	1984	1997	1993	1972
MIN	1051	1627	981	1050	668	525	437	526	816	1053	1083	1366
(WY)	1993	1955	1955	1977	1977	1977	1977	1977	1977	1957	1966	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1954 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	1749610		1701000			
ANNUAL MEAN	4780		4660		3056	
HIGHEST ANNUAL MEAN					4660	1997
LOWEST ANNUAL MEAN					1392	1977
HIGHEST DAILY MEAN	16300	Dec 12	16400	Jan 7	28900	Dec 27 1964
LOWEST DAILY MEAN	1190	Nov 19	1190	Nov 19	100	Nov 25 1960
ANNUAL SEVEN-DAY MINIMUM	1350	Apr 1	1270	Feb 12	344	May 4 1977
ANNUAL RUNOFF (AC-FT)	3470000		3374000		2214000	
10 PERCENT EXCEEDS	12100		13300		6150	
50 PERCENT EXCEEDS	2470		2490		2200	
90 PERCENT EXCEEDS	1420		1320		1160	

WILLAMETTE RIVER BASIN

177

14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1955 to September 1997 (discontinued).

INSTRUMENTATION.--Temperature recorder since August 1955.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 20.5°C several days in September, 1992; 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, 18.5°C Sept. 12; minimum, 5.5°C several days in January and February.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	15.5	16.0	13.0	12.0	12.5	9.0	9.0	9.0	7.0	7.0	7.0
2	16.5	15.5	16.0	12.5	12.0	12.0	9.0	8.5	8.5	7.0	7.0	7.0
3	17.0	15.5	16.0	12.5	12.0	12.0	8.5	8.5	8.5	7.0	7.0	7.0
4	16.5	15.5	16.0	12.0	11.5	12.0	8.5	8.5	8.5	7.0	6.5	7.0
5	16.0	16.0	16.0	12.0	11.5	11.5	8.5	8.0	8.5	7.0	6.5	7.0
6	17.0	16.0	16.0	11.5	11.5	11.5	8.0	8.0	8.0	7.0	6.5	6.5
7	17.0	16.0	16.0	12.0	11.5	11.5	8.0	7.5	7.5	7.0	6.5	7.0
8	17.0	16.0	16.0	12.0	11.5	11.5	8.0	7.5	8.0	7.0	7.0	7.0
9	17.5	16.0	16.5	12.0	11.5	11.5	7.5	7.5	7.5	7.0	6.5	6.5
10	17.0	16.0	16.0	12.0	11.5	12.0	7.5	7.5	7.5	7.0	6.5	6.5
11	17.0	16.0	16.0	12.0	12.0	12.0	7.5	7.5	7.5	6.5	6.5	6.5
12	16.5	16.0	16.0	12.0	12.0	12.0	7.5	7.5	7.5	6.5	6.0	6.5
13	16.5	15.5	16.0	12.0	12.0	12.0	7.5	7.5	7.5	6.0	6.0	6.0
14	15.5	15.5	15.5	12.0	11.5	11.5	7.5	7.0	7.0	6.0	6.0	6.0
15	15.5	15.0	15.5	11.5	11.5	11.5	7.0	7.0	7.0	6.0	6.0	6.0
16	15.5	15.0	15.0	11.5	11.5	11.5	7.0	7.0	7.0	6.0	6.0	6.0
17	15.0	14.5	15.0	11.5	11.0	11.5	7.0	7.0	7.0	6.0	6.0	6.0
18	15.0	14.5	14.5	11.0	10.5	11.0	7.0	6.5	7.0	6.0	6.0	6.0
19	14.5	14.0	14.5	11.5	10.5	11.0	7.0	6.5	6.5	6.0	6.0	6.0
20	15.0	14.0	14.5	11.0	10.0	10.5	7.0	6.5	7.0	6.0	6.0	6.0
21	14.0	14.0	14.0	10.0	9.5	9.5	7.0	6.5	6.5	6.0	5.5	6.0
22	14.0	14.0	14.0	9.5	9.5	9.5	6.5	6.5	6.5	6.0	5.5	5.5
23	14.0	13.5	14.0	9.5	9.0	9.0	6.5	6.5	6.5	5.5	5.5	5.5
24	14.5	13.5	14.0	9.5	9.5	9.5	6.5	6.5	6.5	5.5	5.5	5.5
25	14.0	13.5	13.5	9.5	9.0	9.0	6.5	6.5	6.5	5.5	5.5	5.5
26	14.0	13.5	13.5	9.0	9.0	9.0	7.5	6.5	7.0	5.5	5.5	5.5
27	14.0	13.0	13.5	9.0	9.0	9.0	7.0	7.0	7.0	5.5	5.5	5.5
28	13.5	13.0	13.0	9.0	9.0	9.0	7.0	6.5	6.5	6.0	5.5	5.5
29	13.0	12.5	13.0	9.0	9.0	9.0	7.0	6.5	6.5	6.0	5.5	5.5
30	13.0	12.5	12.5	9.0	9.0	9.0	7.0	6.5	6.5	6.0	5.5	6.0
31	13.0	12.0	12.5	---	---	---	7.0	6.5	7.0	6.5	6.0	6.0
MONTH	17.5	12.0	14.9	13.0	9.0	10.8	9.0	6.5	7.3	7.0	5.5	6.2

WILLAMETTE RIVER BASIN

14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.5	6.0	6.0	7.0	6.5	6.5	---	---	---	9.0	8.0	8.5
2	6.0	6.0	6.0	7.0	6.0	6.5	---	---	---	9.0	8.0	8.5
3	6.5	6.0	6.0	7.0	6.0	6.5	---	---	---	9.5	8.0	8.5
4	6.5	6.5	6.5	7.0	6.0	6.5	---	---	---	9.5	8.5	9.0
5	6.5	6.5	6.5	7.5	6.0	6.5	---	---	---	10.5	9.0	9.5
6	6.5	6.0	6.5	7.5	6.5	6.5	---	---	---	10.5	9.0	9.5
7	6.5	6.0	6.5	7.0	6.5	7.0	---	---	---	9.5	9.0	9.0
8	6.5	6.0	6.0	8.0	6.5	7.0	9.0	---	---	11.0	9.5	9.5
9	6.5	6.0	6.0	8.5	7.0	7.5	9.0	7.5	8.0	11.5	9.0	10.0
10	6.5	6.0	6.0	7.5	7.0	7.0	9.5	7.5	8.0	11.5	9.0	10.0
11	6.5	6.0	6.0	7.5	7.0	7.0	10.0	7.0	8.5	12.0	9.5	10.5
12	7.0	6.0	6.0	7.5	6.5	7.0	9.5	7.5	8.0	12.5	9.5	10.5
13	6.5	6.0	6.0	7.0	6.5	6.5	8.5	8.0	8.0	12.5	9.5	11.0
14	7.0	6.0	6.5	7.0	6.5	6.5	9.0	8.5	8.5	12.5	10.0	11.0
15	7.5	5.5	6.5	7.5	7.0	7.0	10.5	8.0	9.0	12.5	10.0	11.0
16	7.0	6.0	6.5	7.0	6.5	7.0	10.0	7.5	8.5	12.0	10.0	10.5
17	7.5	6.5	6.5	7.0	6.5	6.5	11.0	8.0	9.0	11.5	10.0	11.0
18	7.5	6.5	7.0	7.0	6.5	6.5	9.5	8.5	8.5	11.5	10.0	11.0
19	7.5	6.5	7.0	7.0	6.5	7.0	9.0	8.5	9.0	11.0	10.0	10.5
20	8.0	6.5	7.0	7.5	6.5	7.0	10.0	8.5	9.0	11.0	10.0	10.5
21	7.5	6.0	6.5	7.5	6.5	7.0	10.0	8.5	9.0	11.0	10.5	10.5
22	8.0	6.0	6.5	7.5	7.0	7.0	9.5	8.0	9.0	11.0	10.0	10.5
23	8.0	6.0	6.5	7.5	7.0	7.0	8.5	7.5	8.0	10.5	10.0	10.5
24	8.0	6.0	6.5	7.5	7.0	7.0	8.5	7.5	8.0	11.0	10.0	10.0
25	7.5	6.0	6.5	9.0	7.0	8.0	9.0	7.5	8.0	11.0	9.5	10.0
26	7.0	6.5	7.0	8.5	7.5	7.5	8.5	8.0	8.5	11.5	9.5	10.5
27	7.0	6.5	6.5	8.5	7.5	8.0	9.0	8.5	9.0	11.5	10.0	10.5
28	7.5	6.5	7.0	9.0	7.5	8.0	9.0	9.0	9.0	11.0	10.0	10.5
29	---	---	---	9.0	7.5	8.0	9.5	8.5	9.0	12.0	10.0	10.5
30	---	---	---	8.0	7.5	7.5	9.0	8.0	8.5	11.5	10.0	11.0
31	---	---	---	---	7.5	---	---	---	---	11.0	10.5	11.0
MONTH	8.0	5.5	6.4	---	6.0	---	---	---	---	12.5	8.0	10.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.0	10.5	11.0	13.5	11.5	12.5	15.5	13.5	14.5	17.5	16.0	16.5
2	11.5	10.5	11.0	14.0	12.0	12.5	15.5	14.0	14.5	17.5	16.0	16.5
3	11.5	10.5	11.0	14.0	11.5	12.5	15.5	14.0	14.5	18.0	16.0	16.5
4	11.5	10.5	10.5	14.5	12.0	12.5	16.0	14.0	15.0	18.0	16.5	17.0
5	11.5	10.5	11.0	14.0	12.0	13.0	16.0	14.0	15.0	17.5	16.5	16.5
6	12.0	10.5	11.0	14.5	12.5	13.0	16.0	14.0	15.0	18.0	16.5	17.0
7	11.5	10.5	11.0	14.5	12.5	13.0	16.0	14.5	15.0	18.0	16.5	17.0
8	12.5	10.5	11.0	14.5	12.5	13.0	16.0	14.5	15.0	18.0	16.5	17.0
9	13.0	10.5	11.5	13.5	12.5	13.0	16.0	14.5	15.0	18.0	16.5	17.0
10	13.0	10.5	11.5	14.0	12.5	13.0	16.5	14.5	15.0	17.0	17.0	17.0
11	11.5	10.5	11.0	14.0	12.0	13.0	16.5	14.5	15.0	17.5	17.0	17.0
12	12.0	11.0	11.5	14.5	12.0	13.0	16.5	14.5	15.5	18.5	17.0	17.5
13	11.5	11.0	11.0	13.5	12.0	13.0	16.5	15.0	15.5	17.5	16.5	17.0
14	13.0	11.0	11.5	14.0	12.0	13.0	16.5	15.0	15.5	17.5	16.5	17.0
15	13.5	11.0	12.0	14.5	12.0	13.0	16.5	15.0	15.5	17.0	16.5	16.5
16	13.5	11.5	12.0	14.5	12.0	13.0	16.5	15.0	15.5	16.5	16.0	16.5
17	12.5	11.0	11.5	13.5	12.0	12.5	15.5	15.0	15.5	17.0	16.0	16.5
18	13.5	11.0	12.0	14.5	12.0	13.0	16.5	15.0	15.5	17.0	15.5	16.0
19	13.5	11.5	12.5	14.5	12.0	13.0	16.5	15.0	15.5	17.0	15.5	16.0
20	13.5	11.5	12.5	14.5	12.0	13.0	15.5	15.5	15.5	17.0	15.5	16.0
21	13.0	11.5	12.0	14.0	12.5	13.0	16.5	15.0	15.5	17.0	15.5	16.0
22	13.0	11.5	12.0	14.5	12.5	13.5	16.5	15.0	15.5	17.0	15.5	16.0
23	13.0	11.5	12.0	15.0	12.5	13.5	17.0	15.5	16.0	17.0	15.5	16.0
24	13.5	11.5	12.0	15.0	13.0	14.0	17.0	15.5	16.0	17.0	16.0	16.5
25	13.5	11.5	12.0	15.0	13.0	14.0	17.0	15.5	16.0	17.5	16.0	16.5
26	13.5	11.5	12.5	15.5	13.0	14.0	16.5	15.5	16.0	17.0	16.0	16.0
27	14.0	12.0	12.5	15.5	13.5	14.0	17.0	15.5	16.0	17.0	15.5	16.0
28	12.5	12.0	12.0	15.5	13.5	14.0	17.0	15.5	16.0	17.0	15.5	16.0
29	14.0	12.0	12.5	14.5	13.5	14.0	17.0	16.0	16.0	17.0	15.5	16.0
30	12.5	12.0	12.0	15.5	13.5	14.0	17.5	16.0	16.5	16.5	15.5	16.0
31	---	---	---	15.5	13.5	14.0	17.5	16.0	16.5	---	---	---
MONTH	14.0	10.5	11.6	15.5	11.5	13.2	17.5	13.5	15.5	18.5	15.5	16.5

WILLAMETTE RIVER BASIN

179

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 sea level.

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.--34 years (water years 1964-97), 413 ft³/s, 47.50 in/yr, 298,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s Nov. 19, 1996, gage height, 12.48 ft, from floodmark; minimum discharge, 15 ft³/s Aug. 30, 31, Sept. 1, 1992.

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. 19	unknown	*12,700	*a12.48	Dec. 26	0200	9,920	10.86
Dec. 5	unknown	unknown	unknown	Jan. 31	1600	5,650	8.00
Dec. 8	unknown	unknown	unknown				

Minimum discharge, 23 ft³/s Oct. 2-4, 10-12.
a From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	213	e3300	2680	2920	632	532	1060	307	319	49	34
2	23	173	e1900	2010	1710	1550	535	914	235	217	47	33
3	23	147	e1300	2480	1160	1100	507	766	229	159	46	33
4	24	194	e4300	1660	863	837	461	620	279	130	45	32
5	53	222	e5400	1130	670	698	404	519	370	113	44	31
6	37	211	e2600	835	550	779	363	462	289	102	43	32
7	29	330	e3200	704	515	1180	350	398	230	93	41	31
8	26	257	e6400	597	456	1330	393	355	197	86	40	30
9	25	208	e4000	521	408	1080	399	318	175	149	39	30
10	23	171	e3600	497	369	1560	355	291	156	140	38	32
11	23	145	e2600	460	359	2460	316	271	144	113	37	81
12	24	128	e2200	414	515	1710	288	251	154	98	36	73
13	101	304	e2400	369	464	1280	312	230	154	88	35	48
14	99	902	e1600	339	460	1040	492	214	136	83	34	103
15	142	1110	e1100	314	434	1270	526	201	124	77	34	183
16	152	919	e760	296	397	1800	439	189	115	73	34	191
17	78	961	e650	410	390	2420	380	179	109	71	33	429
18	470	5710	e530	381	384	1460	364	169	105	71	35	261
19	484	e9000	e470	344	1390	1040	414	160	98	67	34	193
20	289	e3700	e830	377	1310	928	1040	150	93	64	52	121
21	189	e1600	987	403	911	744	783	143	111	63	55	89
22	238	e1300	811	387	678	605	739	138	126	62	41	73
23	288	e1000	727	357	536	512	1210	144	108	60	37	64
24	1360	e1200	1290	326	444	442	1370	172	96	58	109	58
25	1800	e1500	6750	466	389	395	949	167	88	56	61	53
26	953	e1000	7660	1530	384	383	695	138	83	55	49	58
27	451	e700	3660	941	452	412	605	142	79	53	53	68
28	357	e1800	2340	1190	462	571	549	164	81	52	43	56
29	678	e1700	2220	1030	---	466	1040	352	96	50	40	51
30	417	e1500	2080	1070	---	423	1010	214	214	50	37	48
31	285	---	2020	4060	---	454	---	217	---	50	35	---
TOTAL	9165	38305	79685	28578	19980	31561	17820	9708	4781	2922	1356	2619
MEAN	296	1277	2570	922	714	1018	594	313	159	94.3	43.7	87.3
MAX	1800	9000	7660	4060	2920	2460	1370	1060	370	319	109	429
MIN	23	128	470	296	359	383	288	138	79	50	33	30
AC-FT	18180	75980	158100	56680	39630	62600	35350	19260	9480	5800	2690	5190
CFSM	2.51	10.8	21.8	7.81	6.05	8.63	5.03	2.65	1.35	.80	.37	.74
IN.	2.89	12.08	25.12	9.01	6.30	9.95	5.62	3.06	1.51	.92	.43	.83

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1997, 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	1992	1993	1994	1995	1996	1997	
MEAN	120	574	843	874	678	612	546	345	199	72.6	45.5	55.7																							
MAX	312	1389	2570	1849	1691	1326	1002	707	662	163	99.8	188																							
(WY)	1983	1974	1997	1972	1986	1972	1993	1991	1984	1983	1968	1986																							
MIN	18.8	44.4	60.6	102	91.8	108	220	98.6	53.8	45.7	21.1	23.7																							
(WY)	1988	1994	1977	1977	1977	1992	1987	1966	1966	1979	1992	1994																							

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1964 - 1997

ANNUAL TOTAL	271199	246480	
ANNUAL MEAN	741	675	413
HIGHEST ANNUAL MEAN			675
LOWEST ANNUAL MEAN			183
HIGHEST DAILY MEAN	9000	9000	9900
LOWEST DAILY MEAN	19	23	15
ANNUAL SEVEN-DAY MINIMUM	19	27	16
ANNUAL RUNOFF (AC-FT)	537900	488900	298900
ANNUAL RUNOFF (CFSM)	6.28	5.72	3.50
ANNUAL RUNOFF (INCHES)	85.50	77.70	47.50
10 PERCENT EXCEEDS	1770	1620	981
50 PERCENT EXCEEDS	300	330	210
90 PERCENT EXCEEDS	25	40	33

e Estimated

WILLAMETTE RIVER BASIN

14150900 FALL CREEK LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°56'40", long 122°45'20", in SW 1/4 sec.1, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in regulating tower near the center of Fall Creek Dam on Fall Creek, 2.2 mi northeast of Lowell, and at mile 7.2.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--January 1966 to current year. Prior to October 1971, published as Fall Creek Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level. Levels by U.S. Army Corps of Engineers (USACE).

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1965 by Corps of Engineers; storage began January 1966. Total capacity is 125,100 acre-ft at elevation 834 ft and usable capacity is 115,500 acre-ft between elevation 728 ft and 834 ft. Reservoir used for flood control, conservation, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by USACE.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 123,200 acre-ft May 30, 31, 1972, May 19, 1991; maximum elevation, 832.98 ft May 31, 1972; minimum contents, no contents Nov. 7 to Dec. 6, 1969, Nov. 14-16, 1970, Nov. 18-25, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 120,800 acre-ft July 3, 4, elevation, 831.65 ft; minimum contents, 1,190 acre-ft Nov. 6, elevation, 693.25.

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

670.4	0	725	8,340	785	53,120
679	59	735	13,270	795	64,590
685	366	745	19,480	805	77,880
695	1,400	755	26,130	815	92,750
705	2,850	765	33,770	825	109,200
715	5,200	775	42,580	833	123,200

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	758.70	694.61	759.53	797.44	749.08	784.52	809.96	825.38	830.85	831.36	828.07	815.64
2	755.72	694.56	758.99	796.33	747.06	788.53	810.77	825.29	830.96	831.55	827.80	814.56
3	752.71	694.88	757.38	795.97	743.20	791.13	811.53	825.62	830.87	831.65	827.60	813.12
4	749.64	694.30	759.72	794.83	741.10	792.44	812.32	825.92	830.89	831.64	827.40	811.63
5	746.64	693.38	767.74	794.11	741.86	793.41	812.99	826.38	831.13	831.52	827.10	810.15
6	743.39	693.89	769.62	793.24	743.54	794.36	813.49	826.87	831.11	831.51	826.90	808.67
7	740.02	695.12	772.28	792.10	745.85	795.93	814.04	827.26	831.12	831.48	826.62	807.11
8	736.82	695.01	787.22	790.38	747.78	797.43	814.66	827.64	831.26	831.44	826.25	805.55
9	733.89	694.17	796.19	788.13	749.43	797.97	815.22	827.98	831.37	831.45	825.94	803.95
10	731.18	693.86	800.91	785.71	750.91	798.76	815.86	828.22	831.36	831.43	825.63	802.31
11	728.33	694.16	804.01	782.78	752.28	799.53	816.26	828.46	831.45	831.36	825.40	800.74
12	725.43	693.57	805.63	779.61	754.15	798.21	816.63	828.63	831.53	831.31	825.08	799.14
13	722.85	694.06	806.70	776.12	755.77	797.77	817.08	828.82	831.55	831.16	824.73	797.45
14	720.64	703.76	806.55	772.56	757.39	797.29	817.84	828.95	831.52	830.99	824.44	795.91
15	719.93	706.93	805.25	768.84	758.99	797.15	818.59	829.08	831.48	830.88	824.04	794.41
16	719.86	703.67	803.26	765.01	760.31	798.15	819.15	829.19	831.40	830.77	823.60	792.72
17	719.23	700.59	800.72	761.35	761.62	800.36	819.72	829.29	831.27	830.62	823.10	791.15
18	721.08	743.81	797.85	757.42	763.00	800.71	820.26	829.35	831.23	830.45	822.54	---
19	722.15	777.07	794.50	753.27	767.00	800.62	820.83	829.40	831.21	830.30	822.04	---
20	719.69	783.69	791.36	749.34	770.88	801.05	821.12	829.45	831.20	830.16	821.62	---
21	716.07	781.28	788.27	745.42	773.53	801.92	821.67	829.48	831.11	829.97	821.13	---
22	712.63	777.55	784.40	741.36	775.41	803.01	821.97	829.49	831.12	829.85	820.63	780.99
23	709.70	772.91	780.04	737.10	776.89	803.92	822.57	829.55	831.13	829.69	820.15	778.81
24	712.91	770.80	775.71	732.53	778.11	804.65	823.35	829.64	831.15	829.50	819.77	776.55
25	712.07	768.17	787.92	730.02	779.10	805.19	823.56	829.79	831.12	829.32	819.31	774.23
26	707.77	763.26	803.59	731.94	780.10	805.46	823.89	829.79	831.00	829.20	818.82	771.77
27	703.91	756.77	804.65	730.57	781.42	805.74	824.22	829.85	831.00	828.99	818.27	769.27
28	707.26	757.94	802.79	731.02	782.72	806.70	824.66	829.96	830.94	828.77	817.81	766.72
29	707.25	758.98	800.86	730.30	---	807.46	825.06	830.35	830.94	828.60	817.23	764.09
30	707.25	757.59	798.66	730.44	---	808.18	825.27	830.49	831.07	828.40	816.73	761.22
31	707.24	---	796.82	744.21	---	809.00	---	830.66	---	828.20	816.17	---
MAX	758.70	783.69	806.70	797.44	782.72	809.00	825.27	830.66	831.55	831.65	828.07	---
MIN	703.91	693.38	757.38	730.02	741.10	784.52	809.96	825.29	830.85	828.20	816.17	---
(†)	3300	28000	66860	18980	50620	83640	109600	119000	117000	114700	94600	30760
(‡)	-27790	+24700	+38860	-47880	+31640	+33020	+25960	+9400	+700	-5000	-20100	-63840

CAL YR 1996 AC-FT† +35380

WTR YR 1997 AC-FT‡ +330

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

181

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 and crest-stage gage. Datum of gage is 637.81 ft above sea level (Corps of Engineers bench mark). Oct. 1 to Dec. 31, 1911, nonrecording gage at site 0.25 mi downstream at different datum. Sept. 9, 1935, to Aug. 3, 1950, nonrecording gage on left bank at present site and datum. Aug. 4, 1950 to Aug. 27, 1982 water-stage recorder. Aug. 27, 1982 gage moved to right bank at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1966 by Fall Creek Lake (station 14150900). No diversion upstream from station.

AVERAGE DISCHARGE.--62 years (water years 1936-97), 580 ft³/s, 42.35 in/yr, 420,210 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, 4,640 ft³/s Dec. 27, gage height, 8.01 ft; minimum discharge, 46 ft³/s Feb. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	425	2450	3390	2350	72	75	1290	228	144	205	458
2	1130	308	2460	3460	2940	82	75	1150	296	152	205	885
3	1100	252	2450	3440	2760	235	75	705	301	165	205	1190
4	1070	350	2510	2910	1770	501	75	506	311	165	247	1190
5	1050	412	2620	1970	687	501	75	290	372	165	272	1180
6	1080	313	2670	1670	256	501	75	174	383	165	278	1170
7	1000	487	2440	1660	63	503	75	147	181	165	278	1170
8	922	458	165	1850	54	660	76	138	134	165	278	1160
9	820	414	603	2000	53	940	77	136	132	178	278	1190
10	732	330	970	2010	53	1280	77	134	131	199	278	1200
11	719	253	973	2220	55	2480	77	132	131	205	276	1190
12	704	272	1150	2180	57	2920	78	131	131	205	294	1180
13	690	411	1460	2140	57	1980	78	131	155	205	307	1170
14	608	493	1920	2100	57	1640	78	131	190	205	306	1170
15	335	1230	2290	2060	57	1640	78	131	191	205	342	1170
16	226	1660	2460	2030	58	1660	79	131	193	205	413	1310
17	227	1570	2540	1990	59	1670	78	131	193	205	452	1500
18	230	1500	2580	1950	60	1680	78	131	162	205	462	1490
19	426	213	2700	1900	65	1450	85	131	141	205	462	1350
20	827	1840	2950	1860	66	958	1060	131	141	205	467	1260
21	866	3690	3070	1820	66	459	597	131	141	205	466	1220
22	838	3640	3280	1770	66	102	705	131	141	205	465	1210
23	814	3650	3240	1710	66	102	946	131	142	205	462	1190
24	1160	3620	3620	1650	66	133	972	131	142	205	466	1180
25	2460	3700	3400	1260	66	163	979	132	141	205	462	1170
26	1890	3710	946	1690	66	352	627	131	142	205	462	1200
27	1100	3800	4040	1710	68	384	479	131	144	205	462	1200
28	808	2270	4490	1530	68	73	442	132	144	205	462	1180
29	884	2460	4470	1650	---	72	962	134	144	205	458	1150
30	1150	2450	4400	1390	---	72	1160	133	144	205	458	1200
31	674	---	3990	1410	---	73	---	131	---	205	458	---
TOTAL	27690	46181	79307	62380	12109	25338	10393	7429	5522	5968	11386	35483
MEAN	893	1539	2558	2012	432	817	346	240	184	193	367	1183
MAX	2460	3800	4490	3460	2940	2920	1160	1290	383	205	467	1500
MIN	226	213	165	1260	53	72	75	131	131	144	205	458
AC-FT	54920	91600	157300	123700	24020	50260	20610	14740	10950	11840	22580	70380
MEAN†	445	1952	3190	1233	1002	1354	783	393	196	111	40	110
CFSM†	2.39	10.49	17.15	6.63	5.39	7.28	4.21	2.11	1.05	0.60	0.22	0.59
IN.†	2.76	11.70	19.78	7.64	5.61	8.40	4.69	2.43	1.17	0.69	0.25	0.66
AC-FT†	27340	116100	196200	75820	55660	83280	46570	24140	11650	6840	2480	6540

CAL YR 1996 TOTAL 348317 MEAN 952 MAX 4490 MIN 28 AC-FT 690900 MEAN† 1001 CFSM† 5.38 IN.† 73.22 AC-FT† 726300
WTR YR 1997 TOTAL 329186 MEAN 902 MAX 4490 MIN 53 AC-FT 652900 MEAN† 902 CFSM† 4.85 IN.† 65.85 AC-FT† 653200

† Adjusted for change in contents, in Fall Creek Lake.

WILLAMETTE RIVER BASIN

14151000 FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1950 to September 1997 (discontinued).

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, 18.5°C several days in October and September; minimum, 6.0°C several days in February and March, but may have been lower during period of missing record.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	18.0	18.0	18.0	8.5	7.0	7.5	8.5	8.0	8.5	8.0	7.5	7.5
2	18.0	18.0	18.0	8.5	7.0	7.5	8.5	8.0	8.0	8.0	7.5	8.0
3	18.5	18.0	18.0	8.5	7.5	8.0	8.0	8.0	8.0	8.0	7.5	8.0
4	18.0	18.0	18.0	9.0	8.0	8.5	8.0	7.5	7.5	8.0	8.0	8.0
5	18.0	18.0	18.0	8.5	7.5	8.0	7.5	7.5	7.5	8.0	7.5	8.0
6	18.5	18.0	18.5	7.5	7.0	7.0	7.5	7.5	7.5	7.5	7.5	7.5
7	18.5	18.0	18.5	9.0	7.5	8.0	7.5	7.5	7.5	7.5	7.0	7.0
8	18.5	18.5	18.5	9.0	8.0	8.5	8.0	7.5	8.0	7.0	7.0	7.0
9	18.5	18.5	18.5	8.5	7.0	8.0	8.0	7.5	8.0	7.0	7.0	7.0
10	18.5	18.5	18.5	8.0	7.5	8.0	7.5	7.5	7.5	7.0	7.0	7.0
11	18.5	18.5	18.5	9.0	8.0	8.5	7.5	7.5	7.5	7.5	7.0	7.0
12	18.5	18.5	18.5	9.5	9.0	9.0	7.5	7.5	7.5	7.5	7.0	7.5
13	18.5	18.0	18.0	10.0	9.5	10.0	7.5	7.5	7.5	7.5	7.0	7.5
14	18.0	16.5	17.0	10.0	9.0	9.0	7.5	7.5	7.5	7.0	7.0	7.0
15	16.5	15.0	16.0	9.0	8.5	8.5	7.5	7.5	7.5	---	---	---
16	15.0	13.5	14.5	8.5	8.0	8.5	7.5	7.5	7.5	---	---	---
17	14.0	13.0	13.5	8.5	8.0	8.0	7.5	7.0	7.5	---	---	---
18	13.5	12.5	13.0	8.5	8.0	8.5	7.0	7.0	7.0	---	---	---
19	12.5	11.0	11.5	10.5	8.5	9.5	7.0	7.0	7.0	---	---	---
20	12.0	11.0	11.5	9.0	8.5	9.0	7.0	6.5	7.0	---	---	---
21	12.0	11.0	11.5	9.0	9.0	9.0	7.0	6.5	7.0	---	---	---
22	11.5	11.0	11.0	9.0	9.0	9.0	7.0	6.5	7.0	---	---	---
23	11.5	11.0	11.0	9.0	9.0	9.0	6.5	6.5	6.5	---	---	---
24	11.0	10.5	10.5	9.0	9.0	9.0	6.5	6.5	6.5	---	---	---
25	10.5	9.0	9.5	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---
26	9.0	9.0	9.0	9.0	8.5	8.5	8.0	7.0	7.0	---	---	---
27	9.0	8.5	8.5	8.5	8.5	8.5	7.0	7.0	7.0	---	---	---
28	8.5	8.0	8.5	8.5	8.5	8.5	7.5	7.0	7.5	---	---	---
29	9.0	8.0	8.5	8.5	8.5	8.5	8.0	7.0	7.5	---	---	---
30	9.0	8.5	9.0	8.5	8.5	8.5	8.0	7.0	7.5	---	---	---
31	8.5	7.5	8.0	---	---	---	8.0	7.5	7.5	---	---	---
MONTH	18.5	7.5	14.2	10.5	7.0	8.5	8.5	6.5	7.4	---	---	---

WILLAMETTE RIVER BASIN

183

14151000 FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	7.0	6.5	6.5	9.0	7.5	8.0	8.0	8.0	8.0
2	---	---	---	6.5	6.0	6.5	10.0	7.0	8.0	8.5	8.0	8.0
3	---	---	---	7.0	6.0	6.5	9.0	7.0	8.0	8.5	8.0	8.5
4	---	---	---	6.5	6.5	6.5	10.0	7.0	8.0	9.5	8.5	9.0
5	---	---	---	7.0	6.5	6.5	10.0	7.0	8.5	12.0	9.0	10.0
6	---	---	---	6.5	6.5	6.5	9.5	7.0	8.0	11.5	10.0	10.5
7	6.5	6.0	6.5	6.5	6.0	6.5	8.5	7.5	8.0	11.0	8.5	10.0
8	6.5	6.0	6.0	6.5	6.0	6.5	9.0	7.0	8.0	11.5	10.0	11.0
9	7.0	6.0	6.0	6.5	6.0	6.5	9.0	7.0	8.0	11.5	10.5	11.0
10	6.5	6.0	6.0	6.5	6.0	6.5	9.5	7.5	8.0	11.5	10.5	11.0
11	7.0	6.0	6.5	6.5	6.5	6.5	10.0	7.0	8.0	12.0	10.5	11.0
12	7.5	6.0	6.5	6.5	6.5	6.5	9.0	7.0	8.0	12.0	10.5	11.0
13	7.0	6.0	6.5	6.5	6.5	6.5	8.0	7.5	7.5	12.0	10.5	11.0
14	8.0	6.5	7.0	6.5	6.5	6.5	8.0	7.5	8.0	12.0	10.5	11.0
15	8.0	6.5	7.0	6.5	6.5	6.5	10.0	7.5	8.5	12.0	10.5	11.5
16	8.0	7.0	7.5	6.5	6.5	6.5	9.5	7.5	8.0	12.0	10.5	11.5
17	7.5	6.5	7.0	7.0	6.5	7.0	10.0	7.5	8.5	12.5	10.5	11.5
18	8.0	6.5	7.0	7.0	6.5	7.0	8.5	7.5	8.0	12.5	10.5	11.5
19	7.5	6.5	7.0	7.0	7.0	7.0	8.0	8.0	8.0	12.5	10.5	11.5
20	8.0	6.5	7.0	7.0	7.0	7.0	8.0	7.0	7.5	12.5	11.0	11.5
21	8.0	6.5	7.0	8.0	7.0	7.5	7.5	7.0	7.5	12.5	10.5	11.5
22	8.0	6.0	7.0	9.5	7.5	8.0	8.0	7.5	7.5	12.0	11.0	11.5
23	8.0	6.0	7.0	9.0	7.5	8.0	8.0	7.5	8.0	11.5	11.0	11.5
24	8.0	6.5	7.0	9.0	7.5	8.0	8.0	7.5	8.0	12.0	11.0	11.5
25	7.5	6.5	7.0	9.0	7.5	8.0	8.5	8.0	8.0	12.5	11.0	11.5
26	7.0	6.5	6.5	8.0	7.0	7.5	9.0	8.0	8.5	12.5	11.0	11.5
27	7.0	6.0	6.5	7.5	7.0	7.0	9.5	8.0	8.5	13.0	11.5	11.5
28	7.5	6.5	6.5	9.0	7.5	8.0	9.5	8.5	9.0	12.0	11.0	11.5
29	---	---	---	10.0	7.5	8.5	9.0	8.0	8.0	13.0	11.5	12.0
30	---	---	---	9.0	7.0	8.0	8.0	8.0	8.0	13.0	11.5	12.0
31	---	---	---	9.0	7.5	8.0	---	---	---	12.5	11.5	12.0
MONTH	---	---	---	10.0	6.0	7.0	10.0	7.0	8.1	13.0	8.0	10.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	12.5	9.5	10.5	15.0	14.0	14.0	17.5	17.0	17.5	10.0	9.5	10.0
2	10.0	9.5	9.5	15.0	13.5	14.0	18.0	17.0	17.5	10.0	9.0	9.5
3	10.0	9.0	9.5	15.0	14.0	14.5	18.0	17.5	17.5	9.5	9.0	9.5
4	12.5	9.5	10.0	15.0	14.0	14.5	18.0	15.0	16.5	9.5	9.5	9.5
5	11.0	9.5	10.0	15.5	14.0	14.5	16.0	9.0	13.0	10.0	9.5	10.0
6	11.0	10.0	10.5	15.0	14.0	14.5	9.5	9.0	9.0	10.0	10.0	10.0
7	13.0	11.0	12.5	15.0	14.0	14.5	9.5	9.0	9.0	10.5	10.0	10.5
8	13.5	12.5	13.0	15.0	14.5	14.5	9.5	8.5	9.0	10.5	10.5	10.5
9	14.0	12.5	13.0	15.0	14.0	14.5	9.5	9.0	9.0	11.0	10.5	11.0
10	14.0	12.5	13.0	15.0	14.5	14.5	9.5	9.0	9.0	11.0	11.0	11.0
11	13.5	12.5	13.0	15.0	14.5	15.0	9.5	9.0	9.0	11.0	11.0	11.0
12	13.5	12.5	13.0	15.0	14.5	15.0	9.5	9.0	9.0	11.5	11.0	11.5
13	13.5	12.5	13.0	15.5	14.5	15.0	9.5	9.0	9.0	11.5	11.5	11.5
14	13.5	12.5	13.0	15.5	14.5	15.0	9.5	9.0	9.0	11.5	11.5	11.5
15	14.0	13.0	13.5	15.5	15.0	15.5	9.5	8.5	9.0	11.5	11.5	11.5
16	14.0	13.0	13.5	16.0	15.0	15.5	9.0	8.5	9.0	12.0	11.5	11.5
17	13.5	12.5	13.0	15.5	15.0	15.5	8.5	8.5	8.5	12.0	11.5	12.0
18	14.5	13.0	13.5	16.0	15.0	15.5	9.0	8.5	8.5	13.0	12.0	12.5
19	14.0	13.0	13.5	16.0	15.5	16.0	9.0	8.5	9.0	13.5	13.0	13.0
20	14.5	13.0	13.5	16.0	15.5	16.0	9.0	8.5	8.5	14.5	13.5	14.0
21	14.0	13.0	13.5	16.5	15.5	16.0	9.0	8.5	9.0	15.5	14.5	15.0
22	14.5	13.0	14.0	16.5	15.5	16.0	9.5	8.5	9.0	16.0	15.0	15.5
23	15.0	12.5	14.0	16.5	16.0	16.0	9.5	9.0	9.0	16.5	16.0	16.5
24	14.5	13.0	13.5	16.5	16.0	16.0	9.5	9.0	9.0	17.0	16.5	16.5
25	14.5	13.5	14.0	17.0	16.0	16.5	9.5	9.0	9.0	17.5	17.0	17.0
26	15.0	13.5	14.0	17.0	16.0	16.5	9.5	9.0	9.0	17.5	17.0	17.5
27	15.0	13.5	14.0	17.0	16.0	16.5	9.5	9.0	9.0	18.0	17.5	17.5
28	14.5	13.5	14.0	17.0	16.5	16.5	9.5	9.0	9.5	18.0	18.0	18.0
29	15.0	13.5	14.0	17.0	16.0	17.0	9.5	9.0	9.5	18.5	18.0	18.0
30	14.5	13.5	14.0	17.0	16.5	17.0	10.0	9.5	9.5	18.5	18.0	18.5
31	---	---	---	17.5	16.5	17.0	10.0	9.5	9.5	---	---	---
MONTH	15.0	9.0	12.8	17.5	13.5	15.5	18.0	8.5	10.2	18.5	9.0	13.1

WILLAMETTE RIVER BASIN

14152000 MIDDLE FORK WILLAMETTE RIVER AT JASPER, OR

LOCATION.--Lat 43°59'54", long 122°54'17", in SW 1/4 SW 1/4 sec.14, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090001, on right bank 25 ft downstream from highway bridge at Jasper, 0.1 mi downstream from Hills Creek, and at mile 195.0.

DRAINAGE AREA.--1,340 mi².

PERIOD OF RECORD.--September 1905 to February 1912, July 1913 to March 1917, October 1952 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1907-8, 1910-12, 1914-16, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 513.45 ft above sea level. September 1905 to February 1912 and July 1913 to March 1917, nonrecording gage at approximately same site at datum about 1.5 ft higher. Oct. 22, 1952, to Sept. 30, 1953, nonrecording gage at site 25 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Lookout Point Lake (station 14149000), since 1961 by Hills Creek Lake (station 14145100), and since 1966 by Fall Creek Lake (station 14150900). Continuous water-quality records for the period October 1953 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--54 years (water years 1906-11, 1914-16, 1953-97), 4,099 ft³/s, 2,969,000 acre-ft/yr. 31 years (water years 1967-97), 4,124 ft³/s, 2,987,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s Nov. 23, 1909, gage height, 17.4 ft, datum then in use, from graph based on gage readings, from rating curve extended above 42,000 ft³/s; minimum discharge, 366 ft³/s Dec. 5, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,300 ft³/s Dec. 25, gage height, 10.07 ft; minimum discharge, 1,670 ft³/s Apr. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3750	3590	20200	18100	11100	3190	3040	7600	3610	2610	2550	3180
2	3720	4720	20200	22200	14400	4280	2400	7430	3660	2600	2850	3510
3	3710	5900	20100	22300	13800	3310	1980	6740	3630	2600	2850	3870
4	3700	6130	17500	22400	12500	3180	1900	6440	3660	2580	2870	3860
5	3710	6270	14100	22300	9190	2960	1820	5430	3500	2580	2920	3830
6	3700	6140	16600	22000	6590	2930	1780	4030	3290	2560	2970	3840
7	3640	6460	17200	22000	5450	3070	2230	5200	2700	2550	2960	3850
8	3540	6740	8770	22000	3710	3270	2570	4240	2570	2570	2920	3850
9	3400	6670	11000	22100	3230	3460	2340	2760	2530	2700	2930	3830
10	3270	6540	14000	21900	3200	4310	1770	2550	2530	2740	2950	3980
11	3270	6450	16100	22400	2220	7930	1700	2520	2450	2670	2970	3990
12	3250	6450	21800	22200	2020	8800	1700	2470	2340	2670	2970	3960
13	3280	6750	22300	22200	1970	8400	1710	2520	2470	2640	2950	3950
14	3240	7240	22300	19200	1950	7610	1760	2480	2410	2630	2960	3920
15	3030	8060	22300	22200	1910	7520	1760	2450	2460	2610	2990	3950
16	2870	8530	22400	22000	1860	8140	1720	2400	2460	2600	3190	4090
17	2820	8630	22500	21900	1830	8790	1700	3360	2390	2600	3250	4380
18	2970	13700	22400	19100	1830	7910	1680	4350	2370	2630	3270	4390
19	3640	13700	22400	14500	2360	7310	1720	4450	2400	2630	3340	4170
20	3530	12400	22300	12900	2470	6680	2900	3920	2370	2620	3400	4050
21	3550	20600	22500	11100	2260	5960	2980	3610	2390	2610	3370	3970
22	3520	19800	22500	9090	2120	5370	5490	3210	2400	2590	3310	3950
23	3500	19600	22600	8960	2020	5270	7520	3210	2420	2610	3180	3910
24	4160	19000	22700	9450	1940	5110	7580	3030	2370	2600	3250	3890
25	6030	19400	21200	10200	1880	3550	7870	2980	2350	2620	3200	3860
26	5310	20100	8990	11800	1870	3370	8180	2920	2360	2620	3180	3910
27	4130	19900	10800	11300	1940	3350	6420	2930	2380	2610	3190	3930
28	3730	19700	20300	10200	2650	2990	6330	2550	2390	2610	3190	3900
29	3960	18400	21300	8240	---	2960	7230	3000	2370	2620	3130	3840
30	4160	19800	21500	8010	---	2940	7480	3110	2410	2580	3170	3870
31	3500	---	21200	10900	---	2940	---	3450	---	2550	3190	---
TOTAL	113590	347370	592060	525150	120270	156860	107260	117340	79640	81010	95420	117480
MEAN	3664	11580	19100	16940	4295	5060	3575	3785	2655	2613	3078	3916
MAX	6030	20600	22700	22400	14400	8800	8180	7600	3660	2740	3400	4390
MIN	2820	3590	8770	8010	1830	2930	1680	2400	2340	2550	2550	3180
AC-FT	225300	689000	1174000	1042000	238600	311100	212800	232700	158000	160700	189300	233000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1997, BY WATER YEAR (WY)

	MEAN	3881	6364	7832	6764	4008	3353	3033	3331	2868	1992	2473	3554
MAX	5392	12730	19100	16940	9742	10550	6834	7156	6746	2613	3395	4824	
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1984	1997	1993	1984	
MIN	1586	2618	1517	1327	787	1111	729	844	1187	1248	1765	1830	
(WY)	1993	1988	1977	1977	1977	1977	1977	1973	1977	1978	1984	1968	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1967 - 1997

ANNUAL TOTAL	2508100	2453450	
ANNUAL MEAN	6853	6722	4124
HIGHEST ANNUAL MEAN			6722
LOWEST ANNUAL MEAN			1877
HIGHEST DAILY MEAN	22700	Dec 24	22700
LOWEST DAILY MEAN	1590	Mar 27	1680
ANNUAL SEVEN-DAY MINIMUM	1640	Mar 25	1720
ANNUAL RUNOFF (AC-FT)	4975000	4866000	2987000
10 PERCENT EXCEEDS	17800	20100	8330
50 PERCENT EXCEEDS	3700	3610	3050
90 PERCENT EXCEEDS	1990	2370	1520

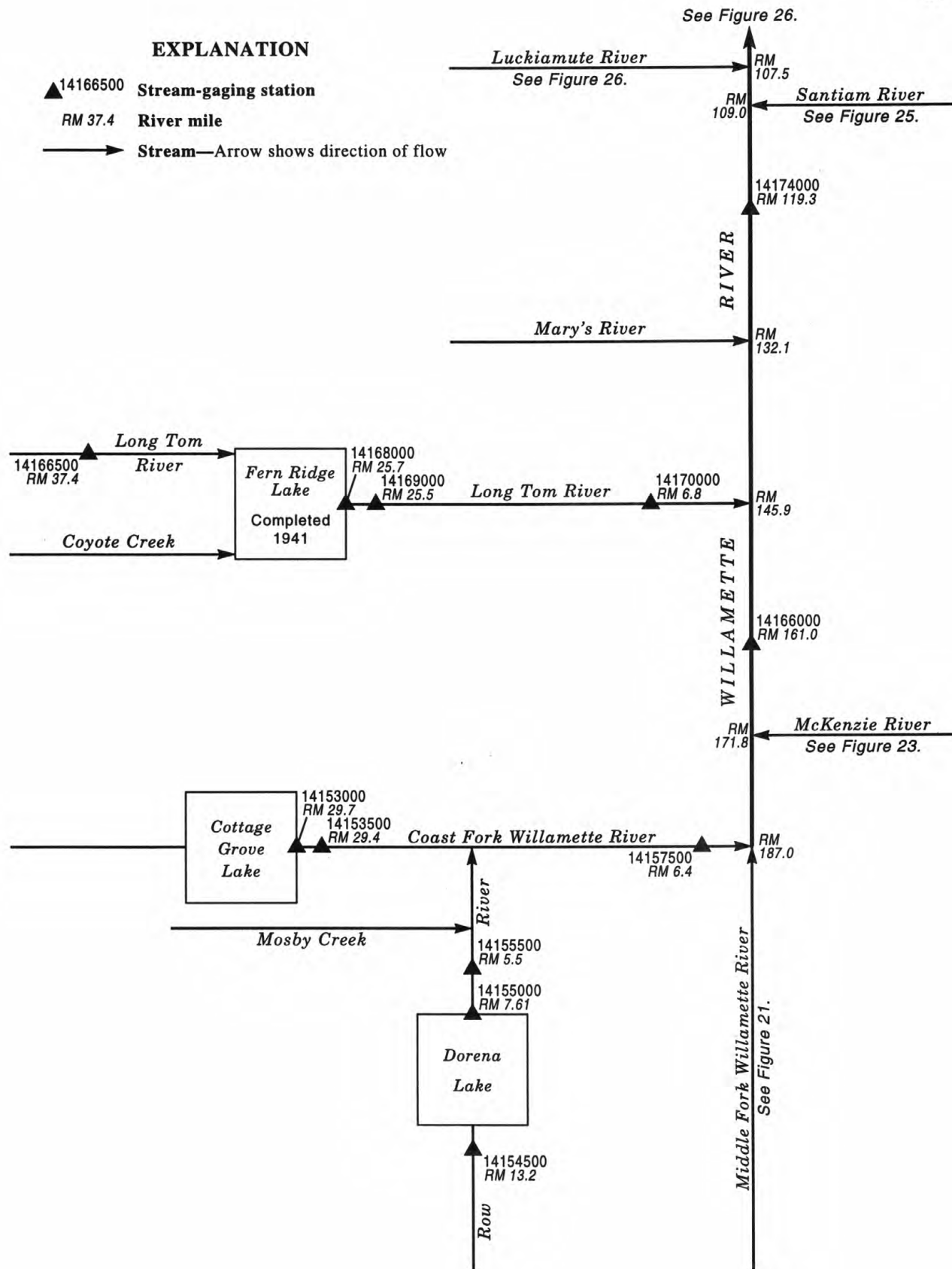


Figure 22. Schematic diagram showing gaging stations in the Long Tom, Coast Fork Willamette and upper Willamette River Basins.

WILLAMETTE RIVER BASIN

14153000 COTTAGE GROVE LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°43'00", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, in east abutment of dam on Coast Fork Willamette River 5.8 mi south of Cottage Grove, and at mile 29.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--October 1942 to current year. Prior to October 1971, published as Cottage Grove Reservoir near Cottage Grove.

REVISED RECORDS.--WSP 1218: 1950.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed by Corps of Engineers in 1942; storage began Oct. 31, 1942. Capacity, 32,930 acre-ft between elevation 719.0 ft. outlet conduit, and 791.0 ft. crest of spillway. Dead storage negligible. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents.

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, 30,370 acre-ft June 14, 15, elevation, 788.74 ft; minimum contents, 2,870 acre-ft Nov. 16, elevation, 749.05 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	774.59	752.43	754.24	772.81	---	767.19	777.52	785.62	788.33	788.51	786.80	784.52
2	773.94	751.02	753.51	770.95	---	769.26	778.02	785.68	788.37	788.49	786.72	784.41
3	773.30	749.90	752.17	767.79	---	768.30	778.47	785.98	788.45	788.47	786.65	784.31
4	772.71	749.75	756.69	762.96	---	768.20	778.87	786.24	788.52	788.43	786.57	784.21
5	772.09	749.69	762.98	756.70	754.18	768.59	779.23	786.45	788.58	788.39	786.49	784.10
6	771.45	749.57	762.05	750.64	754.82	768.86	779.54	786.66	788.62	788.34	786.41	783.99
7	770.78	749.53	762.27	749.83	756.17	769.37	779.84	786.83	788.65	788.29	786.32	783.88
8	770.11	749.44	774.91	750.43	757.04	769.98	780.17	786.99	788.67	788.25	786.23	783.73
9	769.43	749.30	781.03	750.52	757.76	770.24	780.45	787.12	788.68	788.25	786.14	783.55
10	768.73	749.26	783.09	750.26	758.38	770.54	780.67	787.24	788.68	788.22	786.05	783.37
11	768.02	749.20	783.09	750.38	759.01	770.32	780.83	787.34	788.69	788.17	785.96	783.20
12	767.32	749.32	779.73	750.47	759.88	769.48	780.97	787.42	788.71	788.12	785.87	783.03
13	766.74	749.63	776.50	750.03	760.17	769.53	781.13	787.48	788.73	788.07	785.79	782.88
14	766.12	749.59	771.89	749.92	760.14	769.73	781.30	787.54	788.74	788.02	785.70	782.73
15	765.51	749.21	765.25	750.03	760.24	769.96	781.45	787.59	788.73	787.96	785.61	782.54
16	764.87	749.40	760.24	750.05	760.56	770.96	781.59	787.63	788.72	787.90	785.53	782.17
17	764.19	749.99	757.27	750.05	761.09	772.72	781.71	787.68	788.71	787.84	785.44	781.97
18	763.85	770.09	754.65	749.92	761.69	773.40	781.84	787.72	788.69	787.79	785.36	781.62
19	763.25	782.17	753.81	750.12	762.80	773.63	782.03	787.75	788.67	787.73	785.28	781.18
20	762.20	781.67	754.19	750.92	763.02	773.74	782.48	787.77	788.64	787.67	785.27	780.69
21	760.92	777.49	753.48	751.25	763.25	773.97	782.76	787.79	788.64	787.60	785.21	780.18
22	759.59	772.38	752.40	750.73	763.66	774.60	782.91	787.82	788.62	787.54	785.14	779.66
23	758.29	765.44	751.33	750.30	764.01	775.31	783.49	787.84	788.60	787.47	785.10	779.11
24	757.75	761.02	750.60	750.26	764.50	775.77	784.18	787.86	788.58	787.39	785.08	778.57
25	758.72	758.11	753.62	751.48	765.03	775.98	784.49	787.87	788.54	787.32	785.02	778.01
26	757.90	755.50	761.70	750.74	765.54	776.17	784.77	787.86	788.51	787.24	784.99	777.46
27	756.86	753.90	765.95	750.68	765.95	776.38	785.02	787.88	788.46	787.17	784.93	776.91
28	755.91	754.57	766.75	---	766.11	776.59	785.24	788.00	788.45	787.09	784.85	776.35
29	755.64	754.05	768.81	---	---	776.73	785.44	788.11	788.44	787.02	784.79	775.77
30	754.83	752.29	768.84	---	---	776.88	785.57	788.17	788.50	786.95	784.71	775.19
31	753.69	---	767.53	e754.21	---	777.11	---	788.27	---	786.88	784.62	---
MAX	774.59	782.17	783.09	---	---	777.11	785.57	788.27	788.74	788.51	786.80	784.52
MIN	753.69	749.20	750.60	---	---	767.19	777.52	785.62	788.33	786.88	784.62	775.19
(†)	4360	3870	11570	4560	10660	18860	26960	29850	30100	28350	25980	17230
(‡)	-12900	-490	+7700	-7010	+6100	+8200	+8100	+2890	+250	-1750	-2370	-8750

CAL YR 1996 MAX --- MIN --- AC-FT# +6900

WTR YR 1997 MAX --- MIN --- AC-FT# -30

e Estimated

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

187

14153500 COAST FORK WILLAMETTE RIVER BELOW COTTAGE GROVE DAM, OR

LOCATION.--Lat 43°43'15", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank at bridge 0.3 mi downstream from Cottage Grove Dam, 5.5 mi south of Cottage Grove, and at mile 29.4.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1944, published as "near Cottage Grove."

REVISED RECORDS.--WSP 1448: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 711.00 ft above sea level (Corps of Engineers bench mark). Jan. 1 to Oct. 12, 1939, nonrecording gage and Oct. 13, 1939, to Sept. 30, 1944, water-stage recorder at several sites and datums 0.8 mi downstream.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000). Small diversions for irrigation upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--58 years (water years 1940-97), 266 ft³/s, 34.73 in/yr, 192,700 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, 3,420 ft³/s Dec. 12, gage height, 9.16 ft; minimum discharge, 28 ft³/s June 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	288	360	1130	602	1110	365	119	308	50	55	53	65
2	286	339	1260	2220	1510	1120	52	268	50	55	53	65
3	285	262	1250	2520	1330	1440	50	115	50	55	53	65
4	283	116	1040	2470	829	871	50	97	50	55	53	65
5	282	101	1060	2290	411	546	50	86	50	53	53	65
6	280	100	2020	1700	310	519	50	85	50	53	53	67
7	278	99	1820	673	279	519	50	84	50	53	53	67
8	276	99	148	412	358	523	51	72	50	53	53	93
9	275	98	650	412	325	523	52	72	50	55	52	113
10	272	78	1630	412	282	524	75	72	50	55	52	113
11	271	72	2120	332	260	967	89	72	50	55	52	112
12	269	54	2920	305	268	1090	90	72	50	54	52	111
13	269	76	3000	342	379	660	90	72	50	53	52	111
14	266	199	2950	278	415	499	89	72	50	53	52	111
15	265	313	3040	234	343	472	89	72	50	53	52	227
16	263	273	2040	234	259	477	89	68	50	53	52	291
17	260	312	1240	234	185	491	91	55	50	53	52	291
18	299	510	1010	234	160	492	89	58	51	53	52	290
19	397	1730	573	181	387	491	89	58	50	53	52	288
20	418	2540	448	178	607	491	190	58	50	53	52	287
21	426	2980	803	289	462	357	195	58	51	53	52	286
22	419	2860	805	416	323	140	232	58	51	53	52	284
23	412	2950	789	358	272	47	288	80	52	53	51	283
24	417	2110	777	277	185	108	290	87	49	53	52	281
25	567	1480	619	418	139	190	290	87	55	53	50	281
26	651	1160	73	1500	139	190	221	87	55	53	51	281
27	471	839	264	837	233	190	183	69	55	53	51	278
28	398	838	976	867	321	190	165	50	55	53	51	276
29	395	950	833	783	---	190	211	50	55	53	50	275
30	391	1020	1550	518	---	192	280	50	55	53	50	273
31	386	---	2160	481	---	193	---	50	---	53	61	---
TOTAL	10715	24918	40998	23007	12081	15067	3949	2642	1534	1658	1619	5695
MEAN	346	831	1323	742	431	486	132	85.2	51.1	53.5	52.2	190
MAX	651	2980	3040	2520	1510	1440	290	308	55	55	61	291
MIN	260	54	73	178	139	47	50	50	49	53	50	65
AC-FT	21250	49420	81320	45630	23960	29890	7830	5240	3040	3290	3210	11300
MEAN†	136	822	1448	628	541	619	268	132	55.3	25.0	13.7	42.9
CFSM†	1.31	7.90	13.92	6.04	5.20	5.95	2.58	1.27	0.53	0.24	0.13	0.41
IN.†	1.51	8.82	16.05	6.96	5.42	6.87	2.87	1.47	0.59	0.28	0.15	0.46
AC-FT†	8350	48930	89020	38620	30060	38090	15930	8130	3290	1540	840	2550

CAL YR 1996 TOTAL 167603 MEAN 458 MAX 3040 MIN 30 AC-FT 332400 MEAN† 469 CFSM† 4.51 IN.† 61.19 AC-FT† 339300
WTR YR 1997 TOTAL 143883 MEAN 394 MAX 3040 MIN 47 AC-FT 285400 MEAN† 394 CFSM† 3.79 IN.† 51.46 AC-FT† 285370

† Adjusted for change in contents, in Cottage Grove Lake.

WILLAMETTE RIVER BASIN

14154500 ROW RIVER ABOVE PITCHER CREEK, NEAR DORENA, OR

LOCATION.--Lat 43°44'10", long 122°52'20", in NE 1/4 sec.24, T.21 S., R.2 W., Lane County, Hydrologic Unit 17090002, on right bank 0.5 mi upstream from Pitcher Creek, 1.2 mi northwest of Dorena, and at mile 13.2.

DRAINAGE AREA.--211 mi².

PERIOD OF RECORD.--September 1935 to current year. Prior to October 1949, published as "at Star."

GAGE.--Water-stage recorder. Datum of gage is 856.16 ft above sea level. Sept. 16, 1935, to Oct. 17, 1938, nonrecording gage at site 450 ft upstream at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Slight regulation caused by upstream logponds. No diversions upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--62 years (water years 1936-97), 597 ft³/s, 38.46 in/yr, 432,600 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)
Nov. 18	2130	*30,100	*17.25	Dec. 26	0200	10,900	10.71
Dec. 4	2200	14,600	12.11	Jan. 1	0500	10,600	10.61
Dec. 8	1230	12,600	11.35	Jan. 31	1800	8,030	9.56

Minimum discharge, 23 ft³/s Oct. 1-4, 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	369	4490	7160	4440	893	554	1230	277	358	38	35
2	23	295	2640	4650	2420	3020	549	953	222	233	38	34
3	23	249	1970	4120	1560	1760	542	800	214	170	37	34
4	23	243	4760	2490	1150	1250	519	664	375	134	37	33
5	35	268	7360	1620	866	1010	469	558	389	110	36	33
6	36	235	3610	1150	698	1080	420	495	312	95	35	33
7	29	388	4320	919	703	1430	397	433	254	84	34	32
8	26	347	10100	763	718	1790	436	387	213	76	33	32
9	25	284	7290	656	662	1390	471	357	181	90	33	32
10	24	235	5340	593	586	1810	428	330	160	106	32	32
11	23	201	4060	541	530	3220	379	317	142	86	32	39
12	23	174	3010	490	650	2100	342	300	154	75	31	50
13	63	290	3320	431	705	1530	325	270	151	68	31	45
14	118	727	2490	391	726	1200	393	243	137	65	30	66
15	79	1280	1640	359	746	1280	439	222	121	61	29	150
16	113	1120	1180	335	648	2010	425	201	110	58	29	366
17	75	1120	933	356	643	3460	408	186	101	56	29	590
18	419	14000	754	377	633	1940	401	171	93	56	30	389
19	506	15400	633	370	1730	1480	509	156	85	54	31	256
20	290	5840	967	410	1710	1440	1560	143	81	51	37	158
21	185	2680	1330	451	1160	1120	1060	132	85	49	57	109
22	207	1970	1140	475	862	846	776	125	96	49	41	81
23	317	1590	981	410	678	685	1350	136	90	47	36	68
24	1300	2030	1240	363	556	583	1870	173	81	45	79	60
25	2140	2250	5460	682	480	520	1200	179	74	44	62	55
26	1330	1500	9040	2850	464	511	848	141	68	43	46	53
27	728	1090	4800	1610	580	520	805	141	65	42	47	57
28	710	2640	3330	1690	631	598	700	148	65	41	42	53
29	1670	2950	4740	1470	---	529	1010	271	89	40	39	50
30	793	2070	4590	1220	---	495	1220	194	251	40	37	48
31	509	---	5050	4800	---	515	---	199	---	40	36	---
TOTAL	11865	63835	112568	44202	27935	42015	20805	10255	4736	2566	1184	3073
MEAN	383	2128	3631	1426	998	1355	694	331	158	82.8	38.2	102
MAX	2140	15400	10100	7160	4440	3460	1870	1230	389	358	79	590
MIN	23	174	633	335	464	495	325	125	65	40	29	32
AC-FT	23530	126600	223300	87670	55410	83340	41270	20340	9390	5090	2350	6100
CFSM	1.81	10.1	17.2	6.76	4.73	6.42	3.29	1.57	.75	.39	.18	.49
IN.	2.09	11.25	19.85	7.79	4.93	7.41	3.67	1.81	.83	.45	.21	.54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1997, BY WATER YEAR (WY)

MEAN	159	773	1180	1164	1092	1000	832	560	274	76.9	37.8	46.6
MAX	1152	2569	4114	2606	2322	2168	2161	1333	847	236	107	259
(WY)	1951	1974	1965	1971	1986	1972	1937	1963	1993	1983	1976	1978
MIN	12.8	19.2	58.0	86.0	81.1	159	290	116	52.1	26.3	15.0	15.7
(WY)	1988	1937	1977	1977	1977	1992	1941	1987	1987	1940	1940	1951

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1936 - 1997

ANNUAL TOTAL	407905	345039	597
ANNUAL MEAN	1114	945	1008
HIGHEST ANNUAL MEAN			233
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	15400	15400	23800
LOWEST DAILY MEAN	19	23	11
ANNUAL SEVEN-DAY MINIMUM	19	27	11
ANNUAL RUNOFF (AC-FT)	809100	684400	432600
ANNUAL RUNOFF (CFSM)	5.28	4.48	2.83
ANNUAL RUNOFF (INCHES)	71.92	60.83	38.46
10 PERCENT EXCEEDS	3020	2450	1430
50 PERCENT EXCEEDS	443	377	277
90 PERCENT EXCEEDS	24	36	27

WILLAMETTE RIVER BASIN

189

14155000 DORENA LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'10", long 122°57'15", in SE 1/4 sec.32, T.20 S., R.2 W., Lane County, Hydrologic Unit 17090002, on left end of Dorena Dam on Row River, 5.0 mi east of Cottage Grove, and at mile 7.61.

DRAINAGE AREA.--265 mi².

PERIOD OF RECORD.--October 1949 to current year. Prior to October 1971, published as Dorena Reservoir near Cottage Grove.

REVISED RECORDS.--WRD OR-78-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete outlet and spillway, completed in 1949 by Corps of Engineers; controlled storage began Oct. 11, 1949. Capacity, 77,580 acre-ft between elevations 739.0 ft, sill of outlet gates, and 835.0 ft, crest of spillway. Dead storage, 18 acre-ft below elevation 739.0 ft. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents.

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, 72,870 acre-ft July 3, elevation, 832.45 ft; minimum contents, 5,920 acre-ft Dec. 4, elevation, 768.12 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	809.33	775.27	776.83	817.10	791.52	796.68	812.56	825.41	831.61	832.31	831.01	828.83
2	808.22	773.18	773.67	817.11	789.22	798.90	813.38	825.49	831.84	832.27	830.96	828.69
3	807.15	771.09	769.46	815.32	784.23	797.00	814.21	825.73	831.97	832.44	830.89	828.48
4	806.10	770.45	781.76	810.02	778.76	796.57	814.93	825.97	832.06	832.40	830.82	828.25
5	805.04	770.37	798.46	802.61	775.96	797.55	815.54	826.32	831.94	832.34	830.76	828.05
6	803.86	770.06	799.18	794.45	776.96	798.74	816.04	826.78	831.83	832.26	830.68	827.82
7	802.81	770.52	801.71	785.73	778.58	799.77	816.46	827.19	831.84	832.16	830.60	827.44
8	801.65	769.95	820.85	778.98	780.05	800.74	817.04	827.53	831.91	832.05	830.52	827.08
9	800.46	769.47	829.52	774.61	781.03	801.02	817.67	827.83	831.98	832.00	830.44	826.16
10	799.28	769.45	831.23	771.70	781.61	801.93	818.13	828.08	831.97	831.95	830.35	825.23
11	798.05	769.61	830.40	770.57	782.06	802.99	818.52	828.31	831.93	831.90	830.26	824.24
12	796.79	769.64	827.19	770.52	783.19	801.96	818.86	828.50	831.91	831.88	830.19	823.53
13	795.70	769.81	823.99	770.25	784.20	801.67	819.18	828.65	831.86	831.88	830.10	822.82
14	794.72	770.74	819.29	770.07	785.06	801.14	819.62	828.76	831.81	831.87	829.99	821.98
15	793.61	771.82	812.87	770.14	785.85	800.74	820.12	828.85	831.72	831.87	829.91	821.69
16	792.59	770.57	804.68	770.06	786.59	801.98	820.56	828.97	831.64	831.82	829.80	821.43
17	791.46	769.41	796.15	770.11	787.44	805.96	820.96	829.14	831.55	831.81	829.71	821.54
18	791.08	808.99	787.42	770.19	788.24	806.71	821.39	829.27	831.56	831.77	829.62	821.23
19	790.59	827.14	777.52	770.23	790.11	806.63	821.94	829.39	831.58	831.74	829.52	820.60
20	789.16	827.57	773.02	770.56	790.29	806.42	822.23	829.52	831.57	831.71	829.52	819.79
21	787.22	823.10	771.40	771.10	790.95	806.41	822.21	829.58	831.62	831.67	829.48	818.90
22	785.32	817.30	770.56	771.56	791.65	807.04	822.02	829.67	831.64	831.60	829.37	817.97
23	783.77	810.12	770.69	771.04	792.27	807.63	822.66	829.76	831.68	831.55	829.34	817.02
24	783.81	803.67	770.30	770.88	792.74	808.00	823.97	829.98	831.69	831.51	829.33	816.05
25	784.56	797.15	785.06	771.97	793.31	808.25	824.33	830.14	831.70	831.43	829.32	815.04
26	782.40	789.25	806.93	774.25	793.97	808.70	824.53	830.25	831.64	831.40	829.29	814.05
27	780.70	779.82	815.10	771.45	794.80	809.30	824.75	830.36	831.62	831.33	829.22	813.05
28	779.43	777.84	815.12	771.49	795.50	810.03	825.03	830.60	831.63	831.26	829.16	811.92
29	780.91	777.46	814.64	770.45	---	810.58	825.41	830.93	831.65	831.21	829.08	810.95
30	778.66	772.02	813.25	770.87	---	811.01	825.51	831.13	831.97	831.16	828.99	809.89
31	777.04	---	812.86	785.49	---	811.75	---	831.33	---	831.09	828.91	---
MAX	809.33	827.57	831.23	817.11	795.50	811.75	825.51	831.33	832.06	832.44	831.01	828.83
MIN	777.04	769.41	769.46	770.06	775.96	796.57	812.56	825.41	831.55	831.09	828.91	809.89
(†)	10730	7900	16200	24230	41490	60880	70840	72000	70410	66570	39250	
(‡)	-29140	-2830	+34970	-26670	+8030	+17260	+19390	+9960	+1160	-1590	-3840	-27320

CAL YR 1996 MAX 832.53 MIN 769.30 AC-FT‡ +25590
WTR YR 1997 MAX 832.44 MIN 769.41 AC-FT‡ -620

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

WILLAMETTE RIVER BASIN

14155500 ROW RIVER NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'35", long 122°59'25", in NE 1/4 sec.36, T.20 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank 1.7 mi upstream from Mosby Creek, 2.1 mi downstream from Dorena Dam, 3.5 mi east of Cottage Grove, and at mile 5.5.

DRAINAGE AREA.--270 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1947, published as "near Dorena."

GAGE.--Water-stage recorder. Datum of gage is 685.24 ft above sea level (levels by Corps of Engineers). Jan. 5 to Oct. 12, 1939, nonrecording gage at site 180 ft upstream at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1949 by Dorena Lake (station 14155000). No diversion upstream from station.

AVERAGE DISCHARGE.--58 years (water years 1940-97), 747 ft³/s, 37.57 in/yr, 541,200 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, 7,070 ft³/s Nov. 21, gage height, 9.82 ft; minimum discharge, 57 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	684	963	3910	5390	2840	648	246	1500	98	96	88	96
2	679	897	3960	5370	3940	2600	188	1080	98	148	88	128
3	674	789	3320	6030	3900	3210	188	793	169	188	88	202
4	670	455	2130	6420	3310	1890	188	625	349	188	88	202
5	664	360	1870	6260	1950	904	188	417	561	188	88	201
6	658	358	4030	5450	639	831	189	260	453	188	88	198
7	652	365	3830	4770	532	1210	191	202	268	188	88	198
8	646	548	325	3320	539	1580	192	202	184	188	88	414
9	640	443	2020	2030	579	1480	191	202	137	191	88	761
10	633	297	5110	1420	596	1580	191	202	222	190	88	757
11	626	224	5620	923	575	2980	191	202	194	148	88	752
12	620	234	6340	637	515	3080	191	202	216	98	88	656
13	615	325	6450	604	583	2040	191	202	216	88	88	591
14	608	701	6450	529	637	1760	191	202	216	88	94	588
15	603	1370	6420	452	662	1760	191	202	216	88	98	588
16	596	1720	6440	448	552	1770	195	153	216	88	98	586
17	590	1680	5570	447	491	1820	195	97	187	88	98	584
18	653	1780	4680	448	495	1840	195	98	113	88	98	678
19	838	6270	4190	452	1230	1800	206	98	90	88	98	748
20	944	6960	2480	481	1960	1800	1420	98	96	88	99	743
21	1000	6950	2000	497	1160	1360	1210	98	96	88	98	738
22	981	6750	1610	545	810	689	1090	98	96	88	97	734
23	962	6740	1240	654	620	510	1090	98	96	88	96	728
24	1410	6450	1560	520	519	510	1100	98	96	88	99	724
25	2390	6100	2010	644	382	510	1110	98	98	88	98	718
26	2470	5360	134	2860	367	397	888	98	129	88	98	715
27	1490	4870	433	2630	469	311	826	98	92	88	97	709
28	1280	3780	3770	2000	565	311	683	101	94	88	96	703
29	1430	3610	5880	1970	---	311	924	100	95	88	96	697
30	1750	3850	6330	1440	---	314	1350	98	96	88	96	691
31	1140	---	6210	1420	---	316	---	99	---	88	96	---
TOTAL	29596	81199	116322	67061	31417	42122	15389	8121	5287	3671	2894	16828
MEAN	955	2707	3752	2163	1122	1359	513	262	176	118	93.4	561
MAX	2470	6960	6450	6420	3940	3210	1420	1500	561	191	99	761
MIN	590	224	134	447	367	311	188	97	90	88	88	96
AC-FT	58700	161100	230700	133000	62320	83550	30520	16110	10490	7280	5740	33380
MEAN†	481	2660	4320	1730	1270	1640	839	424	196	92.5	30.9	102
CFSM†	1.78	9.85	16.0	6.41	4.70	6.07	3.11	1.57	0.73	0.34	0.11	0.38
IN.†	2.05	10.99	18.45	7.39	4.89	7.00	3.47	1.81	0.81	0.40	0.13	0.42
AC-FT†	29560	158270	265670	106330	70350	100810	49910	26070	11650	5690	1900	6060

CAL YR 1996 TOTAL 485027 MEAN 1325 MAX 6960 MIN 103 AC-FT 962100 MEAN† 1360 CFSM† 5.04 IN.† 68.61 AC-FT† 987690
WTR YR 1997 TOTAL 419907 MEAN 1150 MAX 6960 MIN 88 AC-FT 832900 MEAN† 1150 CFSM† 4.26 IN.† 57.81 AC-FT† 832280

† Adjusted for change in contents, in Dorena Lake.

WILLAMETTE RIVER BASIN

191

14157500 COAST FORK WILLAMETTE RIVER NEAR GOSHEN, OR

LOCATION.--Lat 43°58'50", long 122°57'55", in NW 1/4 sec.29, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090002, on right bank at downstream side of bridge on State Highway 58, 2.5 mi southeast of Goshen, and at mile 6.4.

DRAINAGE AREA.--642 mi².

PERIOD OF RECORD.--August 1905 to February 1912, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1248: 1905-12. WSP 1935: 1956.

GAGE.--Water-stage recorder. Datum of gage is 473.80 ft above sea level. Aug. 23, 1905, to Feb. 7, 1912, nonrecording gage at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000) and since 1949 by Dorena Lake (station 14155000). Several small diversions for logponds and irrigation upstream from station. Several observations of water temperature were made during the year. Continuous water-quality records for the period October 1961 to September 1975 have been collected at this location.

AVERAGE DISCHARGE.--53 years (water years 1906-11, 1951-97), 1,602 ft³/s, 1,161,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft³/s Nov. 22, 1909, gage height, 19.5 ft, site and datum then in use, from rating curve extended above 15,000 ft³/s; minimum discharge, 36 ft³/s Sept. 29, 30, Oct. 11, 12, 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,400 ft³/s Nov. 19, gage height, 17.17 ft; minimum discharge, 132 ft³/s July 26 to Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	977	1550	7530	12900	7560	1910	965	2350	326	225	133	145
2	970	1400	7310	11100	7530	7290	695	1960	294	212	135	145
3	965	1280	6740	12000	6630	7400	644	1400	289	259	136	200
4	969	873	6050	11200	5500	5200	609	1160	462	258	137	234
5	987	632	9570	10000	3780	3060	573	898	705	251	137	238
6	964	612	10400	8640	1980	2710	542	671	709	245	137	238
7	949	606	9810	6440	1840	2900	527	544	451	242	137	243
8	939	733	10800	5080	1980	3350	519	507	350	242	137	269
9	932	731	9540	3350	1810	3150	519	475	260	252	137	841
10	921	563	11500	2830	1680	3240	497	460	297	259	137	865
11	910	420	9960	2020	1540	5300	500	441	301	253	137	867
12	906	390	9660	1610	1720	5990	485	430	308	204	137	826
13	928	538	12400	1460	1660	4480	477	416	335	179	137	721
14	932	933	11700	1320	1850	3450	492	408	320	162	137	735
15	926	1990	10800	1130	1740	3330	501	400	307	153	138	816
16	922	2480	9760	1080	1500	4030	485	385	301	147	144	1010
17	901	2710	7890	1160	1260	5040	470	282	295	145	145	1050
18	994	8220	6340	1130	1190	3950	467	270	230	145	147	1110
19	1520	30900	5550	1060	2430	3470	493	265	191	144	148	1150
20	1480	19400	4340	1250	4140	3450	1860	260	173	142	151	1120
21	1540	12600	4300	1480	2880	2920	2080	259	173	140	164	1090
22	1490	11500	4130	1700	2120	1700	1850	257	175	138	162	1070
23	1470	10800	3770	1710	1610	1220	2430	262	178	137	155	1060
24	1770	10900	3950	1410	1380	1120	2430	292	178	137	159	1050
25	3730	9610	4960	1680	1050	1170	2120	316	173	135	167	1040
26	4150	7970	4990	7030	1010	1100	1740	295	174	133	165	1030
27	2660	6650	4130	5730	1200	955	1550	285	184	132	163	1030
28	1920	7270	6130	4960	1570	1010	1330	270	168	132	160	1020
29	2230	6560	9780	4440	---	927	1520	358	167	132	155	1010
30	2540	6270	10800	3550	---	903	2030	312	174	132	149	1010
31	1870	---	13900	6030	---	1010	---	302	---	132	146	---
TOTAL	45362	167091	248490	136480	72140	96735	31400	17190	8648	5599	4529	23233
MEAN	1463	5570	8016	4403	2576	3120	1047	555	288	181	146	774
MAX	4150	30900	13900	12900	7560	7400	2430	2350	709	259	167	1150
MIN	901	390	3770	1060	1010	903	467	257	167	132	133	145
AC-FT	89980	331400	492900	270700	143100	191900	62280	34100	17150	11110	8980	46080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1997, BY WATER YEAR (WY)

	MEAN	770	2020	3404	3583	2825	2256	1583	1043	591	259	377	543
MAX	3119	6305	9820	7814	6891	5716	4020	3285	2424	588	1115	1057	
(WY)	1951	1974	1965	1909	1961	1957	1963	1963	1993	1957	1955	1978	
MIN	147	121	196	200	203	385	460	247	129	90.3	49.7	63.5	
(WY)	1911	1953	1977	1977	1977	1992	1987	1987	1987	1910	1910	1910	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1906 - 1997

ANNUAL TOTAL	1017521	856897	
ANNUAL MEAN	2780	2348	1602
HIGHEST ANNUAL MEAN			2701
LOWEST ANNUAL MEAN			512
HIGHEST DAILY MEAN	30900	Nov 19	36500
LOWEST DAILY MEAN	130	Aug 13	36
ANNUAL SEVEN-DAY MINIMUM	131	Aug 9	42
ANNUAL RUNOFF (AC-FT)	2018000		1161000
10 PERCENT EXCEEDS	7610		4230
50 PERCENT EXCEEDS	1020		740
90 PERCENT EXCEEDS	141		176

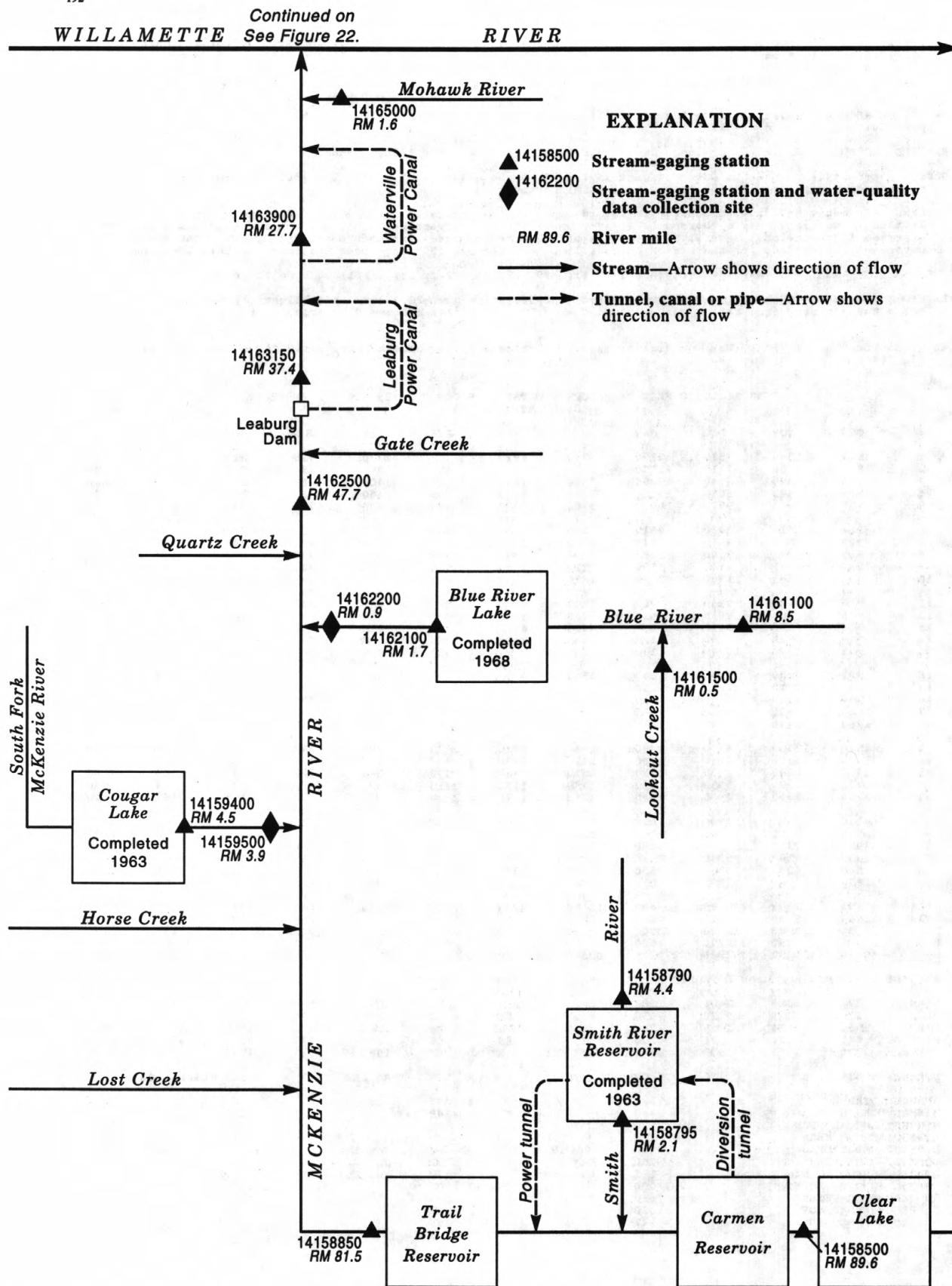


Figure 23. Schematic diagram showing gaging stations and diversions in the McKenzie River Basin.

WILLAMETTE RIVER BASIN

193

14158500 MCKENZIE RIVER AT OUTLET OF CLEAR LAKE, OR

LOCATION.--Lat 44°21'40", long 121°59'40", in SE 1/4 sec.8, T.14 S., R.7 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, on west bank of Clear Lake in narrow channel, 150 ft upstream from outlet and at mile 89.6.

DRAINAGE AREA.--92.4 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--June 1912 to September 1915, October 1947 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1949. WSP 1318: 1915(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,015.32 ft above sea level (levels by Eugene Water and Electric Board). June 20, 1912, to July 31, 1915, nonrecording gage at site 1.0 mi north at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by natural storage in lake. At high stages an undetermined flow enters numerous sinkholes in lava rock along south edge of lake upstream from station.

AVERAGE DISCHARGE.--53 years (water years 1913-15, 1948-97), 458 ft³/s, 67.41 in/yr, 332,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,300 ft³/s Dec. 23, 1964, gage height, 8.15 ft; minimum discharge, 116 ft³/s Oct. 27, 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,330 ft³/s Jan. 1, gage height, 6.50 ft; minimum discharge, 238 ft³/s Oct. 12, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	254	395	1070	2240	1760	617	851	1080	693	524	436	341
2	252	398	993	2300	1290	618	818	1040	680	523	433	339
3	251	400	914	2160	1100	596	793	1030	681	523	429	338
4	250	403	939	1890	1050	576	767	1020	684	521	425	334
5	250	400	1290	1700	1020	563	736	1000	678	518	422	333
6	248	398	1110	1540	997	562	709	998	665	513	419	331
7	246	396	1000	1420	974	565	685	989	652	508	415	329
8	245	391	1050	1310	940	562	675	965	639	503	410	327
9	243	388	1010	1220	907	566	660	958	627	504	403	325
10	242	384	1020	1170	871	657	644	962	617	500	399	324
11	240	382	1000	1120	841	891	630	974	607	497	395	322
12	240	379	966	1060	817	876	620	981	604	494	390	320
13	243	384	925	1000	771	801	619	971	597	493	387	319
14	240	384	861	957	739	775	645	945	587	491	385	320
15	241	382	811	919	713	813	680	929	578	489	381	324
16	241	387	774	882	686	1040	717	912	572	487	379	324
17	242	393	739	872	684	1230	760	897	566	487	375	327
18	258	431	701	858	680	1090	802	879	560	484	373	327
19	259	1050	664	837	717	1050	870	855	554	482	369	328
20	260	1520	642	824	719	1140	1180	833	548	478	368	330
21	263	976	620	809	703	1130	1160	808	546	476	365	332
22	269	862	588	786	692	1060	1100	781	546	473	361	333
23	272	855	571	762	680	1020	1200	759	542	470	359	331
24	299	969	561	739	669	990	1190	739	538	467	361	330
25	321	1070	745	724	657	974	1130	720	534	463	356	328
26	337	980	1430	712	649	988	1100	696	531	459	353	327
27	355	930	1570	679	643	1010	1120	685	529	456	351	322
28	368	1050	1230	686	622	983	1110	684	527	452	350	319
29	380	986	1240	678	---	939	1110	689	525	448	347	317
30	384	934	1640	702	---	910	1100	688	529	444	345	314
31	390	---	1760	1270	---	883	---	687	---	441	343	---
TOTAL	8583	19257	30434	34826	23591	26475	26181	27154	17736	15068	11884	9815
MEAN	277	642	982	1123	843	854	873	876	591	486	383	327
MAX	390	1520	1760	2300	1760	1230	1200	1080	693	524	436	341
MIN	240	379	561	678	622	562	619	684	525	441	343	314
AC-FT	17020	38200	60370	69080	46790	52510	51930	53860	35180	29890	23570	19470
CFSM	3.00	6.95	10.6	12.2	9.12	9.24	9.44	9.48	6.40	5.26	4.15	3.54
IN.	3.46	7.75	12.25	14.02	9.50	10.66	10.54	10.93	7.14	6.07	4.78	3.95

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1997, BY WATER YEAR (WY)

	MEAN	247	374	542	522	537	510	592	682	562	387	300	252
	MAX	428	829	1209	1123	1313	1205	873	1178	1202	737	499	392
	(WY)	1951	1951	1965	1997	1996	1972	1997	1949	1974	1950	1974	1974
	MIN	122	141	209	191	180	224	341	319	203	173	149	132
	(WY)	1993	1988	1977	1977	1977	1977	1955	1992	1992	1977	1992	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1913 - 1997
ANNUAL TOTAL	246439	251004	
ANNUAL MEAN	673	688	458
HIGHEST ANNUAL MEAN			688
LOWEST ANNUAL MEAN			241
HIGHEST DAILY MEAN	2430	Feb 9	3100
LOWEST DAILY MEAN	240	Oct 11	116
ANNUAL SEVEN-DAY MINIMUM	241	Oct 10	117
ANNUAL RUNOFF (AC-FT)	488800	497900	332100
ANNUAL RUNOFF (CFSM)	7.29	7.44	4.96
ANNUAL RUNOFF (INCHES)	99.22	101.05	67.41
10 PERCENT EXCEEDS	1050	1100	801
50 PERCENT EXCEEDS	658	643	393
90 PERCENT EXCEEDS	269	325	209

WILLAMETTE RIVER BASIN

14158790 SMITH RIVER ABOVE SMITH RIVER RESERVOIR, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°20'05", long 122°02'45", in SW 1/4 SW 1/4 sec.24, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 200 ft upstream from Smith River Reservoir, 0.7 mi downstream from Browder Creek, 10 mi north of town of Belknap Springs, and at mile 4.4.

DRAINAGE AREA.--16.2 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR OR 80-2: 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2,610.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Sept. 10, 1964, at datum 1.56 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Eugene Water and Electric Board telemetry at station. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--37 years (water years 1961-97), 90.3 ft³/s, 75.75 in/yr, 65,430 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, 1.2 ft³/s Oct. 13, 1991, result of log jam.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0730	*1,930	*8.72	Jan. 1	0230	1,280	8.09
Dec. 4	1930	995	7.76	Jan. 31	1700	1,420	8.24
Dec. 26	1330	1,170	7.97	Mar. 10	2230	858	7.58
Dec. 29	2130	940	7.69	Apr. 20	0330	924	7.67

Minimum discharge, 3.8 ft³/s Oct. 9-12.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	64	371	1010	764	62	96	185	73	37	8.5	5.1
2	3.9	56	231	926	364	59	87	163	60	30	8.0	5.0
3	3.9	52	162	558	230	54	81	167	65	26	7.7	5.1
4	4.3	52	398	311	168	49	74	160	69	24	7.5	4.9
5	5.6	46	464	213	131	47	69	153	63	22	7.4	4.8
6	4.3	54	261	159	110	54	65	163	55	20	7.2	4.7
7	4.1	69	221	132	97	90	67	151	50	19	6.9	4.6
8	3.9	65	281	111	84	87	77	146	45	18	6.7	4.4
9	3.9	61	212	97	74	115	75	160	41	26	6.5	4.4
10	3.8	56	264	109	67	463	70	178	39	25	6.4	4.5
11	3.8	52	217	107	64	544	65	193	37	23	6.2	5.1
12	4.5	48	206	93	61	269	63	198	38	21	6.0	5.2
13	14	86	170	84	56	180	73	183	35	20	6.0	4.9
14	11	96	130	76	66	138	132	166	32	18	5.8	7.5
15	17	97	109	69	73	228	161	153	30	17	5.6	22
16	15	92	96	64	77	662	184	138	28	16	5.5	25
17	11	104	84	100	107	512	190	128	26	15	5.4	46
18	64	314	74	133	107	309	196	113	25	15	5.6	34
19	39	1470	67	136	196	318	296	99	23	14	5.5	26
20	26	582	69	136	150	403	668	86	21	13	6.1	19
21	22	330	66	124	118	288	356	73	24	13	5.9	16
22	52	302	60	108	100	219	355	65	27	12	5.5	13
23	59	233	57	93	86	185	434	61	25	11	5.3	12
24	236	390	84	81	76	162	328	61	23	11	9.2	11
25	165	317	486	79	70	165	241	58	21	11	6.1	10
26	105	211	1000	81	71	197	217	52	20	10	6.4	12
27	82	207	743	77	69	192	236	58	19	9.7	6.4	11
28	98	322	389	138	62	169	200	64	18	9.4	5.8	10
29	128	216	606	128	---	139	204	70	19	9.1	5.5	9.3
30	98	251	675	257	---	123	202	67	36	8.8	5.3	8.8
31	77	---	724	1130	---	109	---	76	---	8.6	5.2	---
TOTAL	1369.1	6295	8977	6920	3698	6591	5562	3788	1087	532.6	197.1	355.3
MEAN	44.2	210	290	223	132	213	185	122	36.2	17.2	6.36	11.8
MAX	236	1470	1000	1130	764	662	668	198	73	37	9.2	46
MIN	3.8	46	57	64	56	47	63	52	18	8.6	5.2	4.4
AC-FT	2720	12490	17810	13730	7330	13070	11030	7510	2160	1060	391	705
CFSM	2.73	13.0	17.9	13.8	8.15	13.1	11.4	7.54	2.24	1.06	.39	.73
IN.	3.14	14.46	20.61	15.89	8.49	15.13	12.77	8.70	2.50	1.22	.45	.82

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1997, BY WATER YEAR (WY)

MEAN	22.6	117	153	137	140	119	147	150	72.1	16.7	6.71	7.47
MAX	75.9	239	404	293	371	321	270	318	260	51.5	11.7	23.5
(WY)	1969	1996	1965	1970	1996	1993	1993	1971	1974	1971	1968	1978
MIN	3.33	4.47	9.88	13.5	12.8	41.2	50.3	28.1	8.63	5.23	3.22	3.74
(WY)	1988	1994	1977	1977	1977	1992	1967	1992	1992	1992	1992	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1961 - 1997

ANNUAL TOTAL	49584.3	45372.1	90.3
ANNUAL MEAN	135	124	136
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	1910	Feb 7	2590
LOWEST DAILY MEAN	3.5	Sep 11	2.5
ANNUAL SEVEN-DAY MINIMUM	3.6	Sep 7	2.6
ANNUAL RUNOFF (AC-FT)	98350	90000	65430
ANNUAL RUNOFF (CFSM)	8.36	7.67	5.58
ANNUAL RUNOFF (INCHES)	113.86	104.19	75.75
10 PERCENT EXCEEDS	314	305	214
50 PERCENT EXCEEDS	67	67	52
90 PERCENT EXCEEDS	4.3	5.8	5.0

WILLAMETTE RIVER BASIN

195

14158795 SMITH RIVER RESERVOIR NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°18'20", long 122°02'40", in SW 1/4 SW 1/4 sec.36, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Smith River Dam on Smith River, 800 ft upstream from Bunchgrass Creek, 8 mi north of town of Belknap Springs, and at mile 2.1.

DRAINAGE AREA.--18.2 mi².

PERIOD OF RECORD.--March 1963 to current year.

REVISED RECORDS.--WDR OR-86-2: 1985.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Eugene Water and Electric Board).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1963 by Eugene Water and Electric Board; storage began Mar. 18, 1963. Total capacity is 15,000 acre-ft at elevation 2,605.0 ft, top of spillway gates, and usable capacity is 9,900 acre-ft between elevations 2,525.0 ft, minimum power pool, and 2,605.0 ft. Storage of 5,100 acre-ft, below elevation 2,525.0 ft, not normally available for release. Water used for power generation. Figures herein represent total contents and are furnished by Eugene Water and Electric Board.

COOPERATION.--Elevations and area-volume curves furnished by Eugene Water and Electric Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 15,200 acre-ft Dec. 22, 1964, elevation, 2,606.5 ft; minimum contents, 5,700 acre-ft Apr. 11, 14, 1964, elevation, 2,532.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,840 acre-ft Apr. 20, elevation, 2,604.37 ft; minimum contents, 13,120 acre-ft Dec. 28, elevation, 2,593.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	2,599.41	14,010	--
Oct. 31.....	2,596.40	13,520	-490
Nov. 30.....	2,596.78	13,590	+70
Dec. 31.....	2,598.15	13,800	+210
CAL YR 1996.....	--	--	+350
Jan. 31.....	2,598.49	13,860	+60
Feb. 28.....	2,596.36	13,520	-340
Mar. 31.....	2,598.10	13,800	+280
Apr. 30.....	2,601.91	14,420	+620
May 31.....	2,600.41	14,170	-250
June 30.....	2,600.83	14,240	+70
July 31.....	2,601.12	14,290	+50
Aug. 31.....	2,601.62	14,380	+90
Sept. 30.....	2,599.12	13,960	-420
WTR YR 1997.....	--	--	-50

WILLAMETTE RIVER BASIN

14158850 MCKENZIE RIVER BELOW TRAIL BRIDGE DAM, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°16'05", long 122°02'55", in T.15 S., R.6 E., (unsurveyed), Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.4 mi downstream from Trail Bridge Dam, 0.5 mi upstream from Anderson Creek, 5 mi north of town of Belknap Springs, and at mile 81.5.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,980.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Oct. 11, 1963, at datum 5.60 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795). Diurnal fluctuations by powerplants and by Trail Bridge re-regulating reservoir upstream. Water is diverted from McKenzie River in SW 1/4 sec.20, T.14 S., R.7 E., to Smith River Reservoir and returned to river upstream from station. Continuous water-quality records for the period November 1976 to September 1985, July 1992 September 1993 have been collected at this location.

AVERAGE DISCHARGE.--38 years (water years 1960-97), 1,014 ft³/s, 74.84 in/yr, 734,600 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s Dec. 22, 1964, gage height, 12.45 ft, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 185 ft³/s Feb. 3, 1963; minimum daily, 423 ft³/s Nov. 22, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,100 ft³/s June 30, gage height, 10.97 ft, release from Trail Bridge Dam; minimum discharge, 506 ft³/s July 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	651	858	2020	4420	3510	1340	1560	1850	1310	979	887	834
2	657	854	1920	4190	2400	1340	1540	1760	1240	952	869	825
3	658	839	1780	3930	2120	1340	1510	1740	1330	988	864	779
4	663	838	2130	3100	1830	1260	1500	1720	1310	989	867	776
5	680	843	2460	2680	1780	1200	1460	1720	1250	989	873	776
6	670	857	2100	2430	1790	1280	1410	1710	1280	989	874	805
7	660	898	1910	2260	1720	1300	1380	1690	1290	981	870	820
8	657	836	2130	2050	1580	1320	1380	1670	1270	943	843	816
9	641	829	1990	1970	1630	1330	1360	1660	1220	957	849	814
10	636	831	2000	1870	1620	1690	1330	1640	1250	1000	833	800
11	636	832	2000	1910	1550	1990	1330	1670	1240	988	829	777
12	650	831	1930	1840	1530	1760	1300	1710	1210	949	848	783
13	701	880	1850	1710	1510	1660	1300	1690	1190	975	853	777
14	657	888	1730	1720	1430	1580	1370	1650	1200	958	852	811
15	669	890	1680	1610	1440	1610	1400	1640	1160	955	844	847
16	676	892	1580	1580	1520	2230	1450	1630	1150	956	822	865
17	662	934	1620	1630	1460	2300	1410	1560	1150	955	815	843
18	795	1350	1520	1660	1430	2020	1400	1500	1150	941	822	883
19	790	3920	1470	1620	1540	1920	1610	1520	1150	919	824	859
20	743	2410	1420	1620	1550	2100	2200	1510	1150	914	824	853
21	732	2020	1390	1610	1490	2040	2050	1520	1100	924	821	835
22	715	1910	1350	1530	1430	1820	1990	1460	1110	946	826	866
23	745	1740	1350	1530	1390	1810	2150	1370	1120	941	830	867
24	1040	1910	1350	1500	1380	1720	2090	1330	1120	935	831	863
25	993	1890	2030	1430	1370	1680	1940	1370	1120	889	831	867
26	876	1770	3200	1510	1370	1710	1840	1360	1080	902	820	830
27	843	1700	3270	1440	1370	1770	1900	1310	1090	907	801	814
28	864	1860	2650	1540	1360	1730	1880	1320	1090	917	810	821
29	929	1810	2570	1510	---	1680	1810	1360	1090	920	803	822
30	886	1780	3120	1580	---	1620	1850	1380	1120	914	814	818
31	883	---	3300	3160	---	1640	---	1350	---	918	838	---
TOTAL	23058	40700	62820	64140	46100	51790	48700	48370	35540	29390	25987	24746
MEAN	744	1357	2026	2069	1646	1671	1623	1560	1185	948	838	825
MAX	1040	3920	3300	4420	3510	2300	2200	1850	1330	1000	887	883
MIN	636	829	1350	1430	1360	1200	1300	1310	1080	889	801	776
AC-FT	45740	80730	124600	127200	91440	102700	96600	95940	70490	58300	51550	49080
MEAN†	736	1358	2029	2070	1641	1675	1634	1556	1186	949	840	818
CFSM†	4.00	7.38	11.03	11.25	8.92	9.10	8.88	8.46	6.45	5.16	4.56	4.45
IN.†	4.61	8.23	12.72	12.97	9.28	10.50	9.91	9.75	7.19	5.95	5.26	4.96
AC-FT†	45250	80800	124800	127300	91100	103000	97220	95690	70560	58350	51640	48660

CAL YR 1996 TOTAL 491925 MEAN 1344 MAX 5150 MIN 636 AC-FT 975700 MEAN† 1345 CFSM† 7.31 IN.† 99.46 AC-FT† 976000
WTR YR 1997 TOTAL 501341 MEAN 1374 MAX 4420 MIN 636 AC-FT 994400 MEAN† 1373 CFSM† 7.46 IN.† 101.33 AC-FT† 994400

† Adjusted for change in contents in Smith River Reservoir.

WILLAMETTE RIVER BASIN

197

14159400 COUGAR LAKE NEAR RAINBOW, OR

LOCATION.--Lat 44°07'40", long 122°14'25", in SE 1/4 SE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Cougar Dam on South Fork McKenzie River, 2.7 mi south of Rainbow, and at mile 4.5.

DRAINAGE AREA.--207 mi².

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1971, published as Cougar Reservoir near Rainbow.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed in 1963 by the Corps of Engineers; storage began September 1963. Total capacity is 219,100 acre-ft at elevation 1,699 ft, maximum pool, and usable capacity is 164,800 acre-ft between elevations 1,516 ft, minimum power pool, and 1,699 ft. Lake used for flood control and power generation. Figures given herein represent total contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 215,900 acre-ft Apr. 28, 1990, elevation, 1,696.51 ft; minimum contents, 33,690 acre-ft Oct. 31 to Nov. 2, 1965, elevation, 1,475.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 210,100 acre-ft June 4, elevation, 1,691.90 ft; minimum contents, 63,010 acre-ft Jan. 16, elevation, 1,530.58 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1615.50	1573.68	1540.15	1648.06	1577.00	1604.16	1649.05	1681.48	1691.82	1690.47	1681.24	1654.15
2	1613.66	1572.20	1536.32	1658.53	1581.60	1606.22	1650.24	1681.76	1691.75	1690.56	1681.03	1652.85
3	1611.79	1570.61	1534.70	1663.29	1579.46	1607.88	1651.39	1681.99	1691.86	1690.61	1680.80	1651.72
4	1609.95	1569.02	1544.84	1660.75	1573.94	1609.26	1652.46	1682.06	1691.85	1690.62	1680.57	1650.87
5	1608.09	1567.27	1559.71	1654.66	1568.86	1610.53	1653.44	1682.57	1691.80	1690.60	1680.33	1650.00
6	1606.17	1565.53	1561.19	1646.03	1566.83	1611.99	1654.31	1683.71	1691.64	1690.56	1680.10	1649.12
7	1604.18	1563.97	1564.74	1636.20	1566.97	1614.06	1655.28	1684.88	1691.41	1690.51	1679.83	1648.22
8	1602.19	1562.30	1579.32	1625.48	1566.89	1616.36	1656.42	1685.79	1691.15	1690.46	1679.56	1647.31
9	1600.16	1560.52	1589.44	1614.08	1566.51	1618.57	1657.49	1686.62	1690.81	1690.57	1679.28	1646.41
10	1598.09	1558.67	1598.28	1601.99	1566.87	1622.44	1658.47	1687.59	1690.41	1690.60	1679.00	1645.49
11	1595.98	1556.73	1605.07	1589.10	1568.51	1627.86	1659.34	1688.29	1689.98	1690.49	1678.42	1644.61
12	1593.89	1554.85	1607.88	1575.28	1570.25	1630.79	1660.15	1688.66	1689.88	1690.34	1677.35	1643.70
13	1592.07	1553.51	1607.22	1560.42	1571.76	1632.47	1661.08	1688.76	1689.90	1690.17	1676.28	1642.77
14	1590.13	1552.78	1603.75	1544.26	1573.49	1633.52	1662.52	1688.64	1689.86	1689.98	1675.19	1641.91
15	1588.43	1552.14	1598.28	1532.14	1575.23	1635.22	1664.12	1688.41	1689.86	1689.78	1674.09	1641.30
16	1586.44	1551.42	1595.47	1530.74	1576.95	1639.19	1665.84	1688.42	1689.87	1689.56	1672.97	1640.62
17	1584.29	1551.11	1586.21	1531.28	1578.95	1644.41	1667.61	1688.56	1689.86	1689.06	1671.84	1640.33
18	1583.46	1550.52	1576.24	1531.87	1580.87	1647.42	1669.54	1688.77	1689.90	1688.35	1670.70	1639.79
19	1582.14	1549.37	1565.64	1532.25	1584.89	1649.99	1672.17	1689.06	1689.94	1687.63	1669.56	1639.08
20	1580.36	1606.51	1555.91	1532.40	1588.37	1652.24	1676.26	1689.27	1689.96	1686.89	1668.45	1638.27
21	1578.36	1602.32	1549.00	1532.33	1591.08	1652.57	1676.70	1689.61	1690.07	1686.15	1667.30	1637.40
22	1576.77	1596.67	1547.31	1532.30	1593.31	1652.12	1675.83	1690.11	1690.15	1685.38	1666.13	1636.52
23	1575.38	1589.55	1545.57	1532.34	1595.16	1651.18	1675.87	1690.47	1690.18	1684.61	1664.98	1635.61
24	1577.17	1585.72	1543.30	1532.18	1596.78	1649.93	1676.23	1690.64	1690.19	1683.85	1663.94	1634.66
25	1578.47	1581.44	1561.78	1532.53	1598.24	1649.15	1676.91	1690.64	1690.17	1683.08	1662.77	1633.70
26	1578.14	1573.91	1588.81	1534.51	1599.74	1649.08	1677.57	1690.61	1690.14	1682.30	1661.62	1632.78
27	1577.14	1565.36	1603.80	1535.65	1601.24	1649.05	1678.37	1690.82	1690.08	1681.83	1660.43	1631.87
28	1576.47	1559.39	1612.63	1538.09	1602.55	1648.81	1678.93	1691.36	1690.03	1681.83	1659.22	1630.95
29	1576.59	1551.54	1620.28	1540.19	---	1648.24	1679.92	1691.81	1689.99	1681.90	1657.98	1630.01
30	1576.00	1543.10	1627.15	1543.17	---	1647.50	1680.86	1691.74	1690.24	1681.80	1656.71	1629.05
31	1574.98	---	1634.02	1563.01	---	1647.90	---	1691.83	---	1681.52	1655.43	---
MAX	1615.50	1606.51	1634.02	1663.29	1602.55	1652.57	1680.86	1691.83	1691.86	1690.62	1681.24	1654.15
MIN	1574.98	1543.10	1534.70	1530.74	1566.51	1604.16	1649.05	1681.48	1689.86	1681.52	1655.43	1629.05
(†)	94290	71200	146100	82520	117000	160100	196700	210000	208100	197500	168100	141300
(‡)	-35910	-23090	+74900	-60850	+31750	+43100	+36600	+13300	-1900	-10600	-29400	-26800

CAL YR 1996 MAX 1691.83 MIN 1534.70 AC-FT† +57790

WTR YR 1997 MAX 1691.86 MIN 1530.74 AC-FT† +11100

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR

LOCATION.--Lat 44°08'10", long 122°14'50", in NE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 0.2 mi upstream from Cougar Creek, 0.6 mi downstream from Cougar Dam, 2.1 mi south of Rainbow, and at mile 3.9.

DRAINAGE AREA.--208 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,236.42 ft above sea level (Federal Highway Administration bench mark). Oct. 1 to Nov. 4, 1947, nonrecording gage at site 40 ft upstream at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Cougar Lake (station 14159400), usable capacity, 164,800 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--50 years (water years 1948-97), 855 ft³/s, 55.82 in/yr, 619,400 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, 6,570 ft³/s Jan. 6, 10, 11, 14, gage height, 5.39 ft; minimum discharge, 68 ft³/s June 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	1090	4320	301	724	263	349	1410	1030	422	452	915
2	1030	1090	3660	501	1650	275	275	1410	891	423	413	927
3	1040	1090	2450	2320	3200	277	269	1400	863	416	419	843
4	1050	1100	1390	4670	3960	271	264	1410	989	417	421	686
5	1060	1100	1480	5650	3390	267	263	1060	945	422	421	699
6	1060	1110	3070	6330	1980	267	263	707	896	418	422	712
7	1070	1120	2190	6480	1040	269	263	602	862	419	427	712
8	1070	1120	303	6460	996	271	265	709	825	413	428	708
9	1070	1130	309	6380	997	270	267	801	829	417	432	712
10	1080	1120	306	6420	697	522	267	808	825	451	430	725
11	1080	1130	308	6400	267	887	267	1100	825	482	590	733
12	1080	1110	1640	6370	271	875	264	1410	658	489	855	733
13	1080	1090	3010	6310	268	870	265	1510	554	494	862	730
14	1080	1100	3580	6270	267	865	271	1520	561	486	861	735
15	1030	1100	4000	4550	267	866	270	1510	509	486	864	738
16	1110	1110	2600	1170	267	870	266	1250	482	489	869	739
17	1110	1120	5010	775	267	865	263	1100	485	644	875	738
18	1120	904	4980	773	269	845	263	976	442	757	885	745
19	1130	329	4940	854	271	847	463	845	423	756	879	746
20	1130	2290	4850	958	265	1340	1220	806	419	757	880	744
21	1140	5080	3730	979	262	1910	2440	635	424	755	886	744
22	1160	4990	1700	902	263	1920	2980	474	425	761	885	743
23	1160	5010	1640	823	266	1920	2980	540	429	754	885	745
24	1170	4620	2110	819	266	1930	2440	704	426	747	887	754
25	1170	4620	1140	842	269	1620	1670	749	423	745	893	753
26	1160	5010	308	987	270	1400	1400	691	421	742	906	756
27	1130	5000	300	1010	263	1410	1410	570	421	572	907	748
28	1080	4960	437	1020	255	1410	1400	428	421	299	905	742
29	1090	4950	876	1020	---	1400	1400	594	418	265	907	742
30	1080	4940	1600	1030	---	1400	1410	817	409	363	919	737
31	1080	---	1870	553	---	809	---	886	---	453	917	---
TOTAL	33930	71533	70107	89927	23427	29211	26087	29432	18530	16514	22582	22484
MEAN	1095	2384	2262	2901	837	942	870	949	618	533	728	749
MAX	1170	5080	5010	6480	3960	1930	2980	1520	1030	761	919	927
MIN	1030	329	300	301	255	263	263	428	409	265	413	686
AC-FT	67300	141900	139100	178400	46470	57940	51740	58380	36750	32760	44790	44600
MEAN†	510	1997	3480	1912	1409	1642	1485	1166	586	360	250	299
CFSM†	2.45	9.60	16.73	9.19	6.77	7.90	7.14	5.60	2.82	1.73	1.20	1.44
IN.†	2.83	10.71	19.29	10.60	7.05	9.10	7.96	6.46	3.14	2.00	1.39	1.60
AC-FT†	31390	118800	214000	117600	78220	101000	88340	71680	34850	22160	15390	17800

CAL YR 1996 TOTAL 453799 MEAN 1240 MAX 6530 MIN 290 AC-FT 900100 MEAN† 1320 CFSM† 6.35 IN.† 86.35 AC-FT† 957900
WTR YR 1997 TOTAL 453764 MEAN 1243 MAX 6480 MIN 255 AC-FT 900000 MEAN† 1258 CFSM† 6.05 IN.† 82.13 AC-FT† 911100

† Adjusted for change in contents in Cougar Lake.

WILLAMETTE RIVER BASIN

199

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, 14.0°C Oct. 7-18; minimum, 4.0°C Jan. 25, 27.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.5	13.0	13.0	10.5	10.0	10.5	6.5	6.0	6.5	6.0	5.5	6.0
2	13.5	13.0	13.0	10.5	10.0	10.0	6.0	6.0	6.0	6.0	5.5	5.5
3	13.5	13.0	13.0	10.0	9.5	10.0	6.0	6.0	6.0	5.5	5.5	5.5
4	13.5	13.0	13.0	10.0	10.0	10.0	6.5	6.0	6.0	5.5	5.5	5.5
5	13.5	13.0	13.5	10.0	9.5	9.5	6.5	6.0	6.0	5.5	5.5	5.5
6	13.5	13.0	13.5	10.0	9.5	9.5	6.0	6.0	6.0	5.5	5.5	5.5
7	14.0	13.0	13.5	10.0	9.5	9.5	6.0	6.0	6.0	5.5	5.5	5.5
8	14.0	13.5	13.5	10.0	9.5	9.5	6.0	6.0	6.0	5.5	5.5	5.5
9	14.0	13.5	13.5	10.0	9.5	9.5	6.0	6.0	6.0	5.5	5.5	5.5
10	14.0	13.5	13.5	9.5	9.0	9.5	6.0	5.5	6.0	5.5	5.5	5.5
11	14.0	13.5	13.5	9.5	9.0	9.5	6.0	5.5	6.0	5.5	5.5	5.5
12	14.0	13.5	13.5	9.5	9.0	9.0	5.5	5.5	5.5	5.5	5.0	5.0
13	14.0	13.5	13.5	9.5	9.0	9.0	5.5	5.5	5.5	5.0	5.0	5.0
14	14.0	13.5	14.0	9.5	9.0	9.0	5.5	5.5	5.5	5.0	5.0	5.0
15	14.0	13.5	13.5	9.0	9.0	9.0	5.5	5.5	5.5	5.0	4.5	5.0
16	14.0	13.5	13.5	9.0	8.0	8.5	5.5	5.5	5.5	5.0	4.5	4.5
17	14.0	13.5	13.5	8.5	8.0	8.0	5.5	5.5	5.5	4.5	4.5	4.5
18	14.0	13.5	13.5	8.5	8.0	8.0	5.5	5.5	5.5	5.0	4.5	4.5
19	13.5	13.0	13.5	8.0	6.0	7.0	5.5	5.5	5.5	5.0	4.5	4.5
20	13.5	13.0	13.0	7.0	5.5	6.0	5.5	5.5	5.5	4.5	4.5	4.5
21	13.5	13.0	13.0	7.0	7.0	7.0	5.5	5.5	5.5	4.5	4.5	4.5
22	13.0	12.5	12.5	7.0	6.5	7.0	5.5	5.0	5.0	4.5	4.5	4.5
23	13.0	12.5	12.5	7.0	6.5	7.0	5.0	5.0	5.0	4.5	4.5	4.5
24	12.5	12.0	12.5	7.0	7.0	7.0	5.5	5.0	5.0	4.5	4.5	4.5
25	12.0	11.5	11.5	7.0	7.0	7.0	6.5	5.5	6.0	4.5	4.0	4.5
26	11.5	11.0	11.5	7.0	6.5	7.0	6.5	5.5	6.0	4.5	4.5	4.5
27	11.5	11.0	11.0	6.5	6.5	6.5	5.5	5.0	5.5	4.5	4.0	4.5
28	11.0	10.5	10.5	6.5	6.5	6.5	5.5	5.0	5.0	4.5	4.5	4.5
29	11.0	10.5	10.5	6.5	6.5	6.5	5.5	5.5	5.5	4.5	4.5	4.5
30	10.5	10.0	10.5	6.5	6.0	6.5	5.5	5.5	5.5	4.5	4.5	4.5
31	10.5	10.5	10.5	---	---	---	6.0	5.5	5.5	6.0	4.5	5.5
MONTH	14.0	10.0	12.7	10.5	5.5	8.3	6.5	5.0	5.7	6.0	4.0	5.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.5	5.0	5.0	5.0	4.5	5.0	6.0	5.0	5.0	6.0	5.5	5.5
2	5.5	5.0	5.0	5.0	4.5	5.0	6.5	5.0	5.0	6.0	5.0	5.5
3	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.0	5.0	5.5
4	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.0	5.0	6.0	5.5	5.5
5	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.0	5.5	6.5	5.5	6.0
6	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.0	5.0	6.5	5.5	6.0
7	5.0	5.0	5.0	5.5	4.5	5.0	5.5	5.0	5.0	6.5	5.0	6.0
8	5.0	5.0	5.0	5.5	4.5	5.0	6.0	5.0	5.0	6.5	5.5	6.0
9	5.0	5.0	5.0	5.5	5.0	5.0	6.0	5.0	5.0	6.5	5.5	6.0
10	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	6.5	5.5	6.0
11	5.5	5.0	5.0	5.0	4.5	5.0	6.5	5.0	5.5	6.5	5.5	6.0
12	5.5	5.0	5.0	5.0	4.5	5.0	5.5	5.0	5.0	6.5	5.5	6.0
13	5.5	5.0	5.0	5.0	4.5	5.0	5.5	5.0	5.0	6.5	5.5	6.0
14	5.5	5.0	5.0	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	6.0
15	5.5	5.0	5.0	5.0	5.0	5.0	6.5	5.0	5.5	6.5	5.5	6.0
16	6.0	5.0	5.5	5.0	5.0	5.0	6.0	5.0	5.5	6.5	6.0	6.0
17	6.0	5.0	5.5	5.0	5.0	5.0	6.5	5.0	5.5	6.5	5.5	6.0
18	6.0	5.0	5.5	5.0	5.0	5.0	5.5	5.0	5.5	6.5	5.5	6.0
19	5.5	5.0	5.5	5.0	5.0	5.0	5.5	5.0	5.0	6.5	6.0	6.5
20	6.0	5.0	5.5	5.5	5.0	5.0	5.5	5.0	5.5	6.5	5.5	6.0
21	5.5	5.0	5.0	5.5	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.5
22	6.0	5.0	5.0	5.0	5.0	5.0	6.0	5.5	5.5	6.5	5.5	6.0
23	6.0	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.5	5.5	6.0
24	6.0	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.5	5.5	6.5
25	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.5
26	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.0	5.5	6.5	6.0	6.5
27	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.0	5.5	7.0	5.5	6.0
28	5.5	4.5	5.0	5.5	5.0	5.0	6.0	5.0	5.5	6.5	6.0	6.5
29	---	---	---	5.5	5.0	5.0	6.0	5.5	5.5	6.5	6.0	6.5
30	---	---	---	5.5	5.0	5.0	6.0	5.0	5.5	7.0	6.0	6.5
31	---	---	---	5.5	5.0	5.0	---	---	---	7.0	6.0	6.5
MONTH	6.0	4.5	5.1	5.5	4.5	5.0	6.5	5.0	5.3	7.0	5.0	6.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.0	6.5	6.5	8.5	6.5	7.0	9.5	7.0	8.5	11.0	9.5	10.5
2	7.0	6.5	6.5	8.5	6.5	7.5	9.5	7.0	8.5	11.0	10.0	10.5
3	7.0	5.5	6.5	8.5	6.0	7.0	9.5	7.0	8.5	10.5	10.0	10.5
4	7.0	6.5	6.5	8.5	6.0	7.5	10.0	7.0	8.5	11.0	9.5	10.5
5	7.0	6.5	7.0	8.5	6.5	7.0	9.5	7.5	8.5	11.0	9.5	10.5
6	7.0	6.5	6.5	8.5	6.5	7.5	9.5	7.5	8.5	11.0	10.0	10.5
7	7.0	6.0	6.5	9.0	6.0	7.5	10.0	7.5	8.5	11.0	10.0	10.5
8	7.0	6.0	6.5	8.5	6.5	7.5	10.0	7.5	9.0	11.5	10.0	10.5
9	7.0	6.5	7.0	8.0	6.5	7.5	10.0	7.5	9.0	11.5	9.5	10.5
10	7.5	6.5	7.0	8.0	7.0	7.5	10.5	7.5	9.0	11.0	10.0	10.5
11	7.5	6.5	7.0	8.5	7.0	8.0	10.0	7.0	9.0	11.0	10.5	11.0
12	7.5	6.0	7.0	8.5	6.5	7.5	10.0	8.5	9.0	11.5	10.5	11.0
13	7.0	6.0	7.0	8.5	6.5	7.5	10.0	8.5	9.0	11.5	10.5	11.0
14	8.0	6.5	7.0	8.5	6.5	7.5	10.0	8.5	9.5	11.5	10.5	11.0
15	7.5	6.0	7.0	9.0	7.0	8.0	10.0	9.0	9.5	12.0	10.5	11.0
16	7.5	6.5	7.0	9.0	7.0	8.0	10.0	9.0	9.5	11.5	11.0	11.5
17	7.5	6.0	7.0	8.5	7.0	7.5	10.0	8.0	9.5	12.0	11.0	11.5
18	7.5	6.0	7.0	8.5	7.5	8.0	10.0	8.0	9.5	12.0	11.0	11.5
19	8.0	6.0	7.0	8.5	7.5	8.0	10.0	9.0	9.5	12.0	11.5	12.0
20	7.5	6.0	7.0	9.0	7.5	8.0	10.0	9.0	9.5	12.0	11.0	11.5
21	7.5	6.0	7.0	9.0	7.0	8.0	10.0	9.0	9.5	12.5	11.5	12.0
22	7.0	6.5	7.0	9.0	7.0	8.0	10.5	9.0	9.5	12.5	12.0	12.0
23	7.5	6.5	7.0	9.0	7.0	8.5	10.5	9.0	10.0	12.5	11.5	12.0
24	7.5	6.0	7.0	9.0	7.0	8.0	10.0	9.0	9.5	12.5	11.5	12.0
25	8.0	6.0	7.0	9.0	7.0	8.5	10.5	9.5	10.0	13.0	12.0	12.5
26	8.5	6.0	7.0	9.0	7.0	8.5	10.5	9.0	10.0	12.5	12.0	12.5
27	8.0	6.0	7.0	9.0	7.0	8.5	10.5	9.5	10.0	12.5	12.0	12.5
28	7.5	6.0	7.0	9.5	7.0	8.5	10.5	9.0	10.0	12.5	12.0	12.5
29	8.0	6.5	7.0	9.5	7.0	8.0	10.5	9.5	10.0	13.0	12.0	12.5
30	8.0	6.0	7.0	9.5	7.0	8.0	10.5	9.5	10.0	13.0	12.5	12.5
31	---	---	---	9.0	7.0	8.5	11.0	9.5	10.0	---	---	---
MONTH	8.5	5.5	6.9	9.5	6.0	7.8	11.0	7.0	9.3	13.0	9.5	11.4
YEAR	14.0	4.0	7.4									

WILLAMETTE RIVER BASIN

201

14161100 BLUE RIVER BELOW TIDBITS CREEK, NEAR BLUE RIVER, OR

LOCATION.--Lat 44°13'05", long 122°15'50", in SE 1/4 NE 1/4 sec.36, T.15 S., R.4 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.2 mi downstream from Tidbits Creek, 5.5 mi northeast of town of Blue River, and at mile 8.5.

DRAINAGE AREA.--45.8 mi².

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,386.90 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period September 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--34 years (water years 1964-97), 253 ft³/s, 74.94 in/yr, 183,000 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. 19	0700	*6,270	*10.12	Jan. 31	2000	3,920	8.64
Dec. 26	1230	4,060	8.74	Mar. 10	2330	2,830	7.75
Dec. 29	2100	2,450	7.39	Mar. 17	0030	2,200	7.13
Jan. 1	0300	3,270	8.13				

Minimum discharge, 12 ft³/s Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	127	1450	2450	2070	210	207	405	103	117	23	16
2	13	109	790	2190	955	237	194	342	91	86	22	15
3	13	98	e550	1680	570	214	196	315	114	71	22	15
4	13	109	e1600	895	403	190	188	283	134	62	21	15
5	19	106	e2100	562	316	184	174	259	129	56	21	14
6	e15	113	e1300	404	263	262	165	252	109	51	20	14
7	e14	157	e1500	342	237	538	174	229	96	48	19	14
8	e13	137	e2000	299	213	479	212	212	86	46	19	13
9	13	123	e1300	267	193	520	216	210	79	48	18	13
10	13	108	e1200	309	177	1810	199	208	72	61	18	13
11	13	98	916	313	174	1830	182	208	68	57	17	14
12	14	89	933	271	203	884	169	202	76	51	17	14
13	49	165	880	236	191	530	179	185	73	47	16	12
14	45	253	604	214	239	391	372	167	65	45	16	24
15	76	276	422	194	263	708	416	154	61	41	16	61
16	73	311	341	181	250	1770	366	139	57	39	16	108
17	44	508	299	332	277	1530	322	129	54	37	16	173
18	280	1580	259	424	285	862	309	118	52	36	16	132
19	193	4470	228	376	738	750	459	108	49	35	16	e100
20	119	1570	290	359	557	763	1240	100	47	33	18	e70
21	96	816	303	342	381	577	672	92	52	32	20	e55
22	161	734	261	297	301	439	596	86	58	29	17	e45
23	171	585	273	258	251	376	867	86	53	29	16	41
24	661	1030	573	227	220	323	774	87	50	29	29	38
25	510	835	2770	247	200	316	520	91	48	28	22	36
26	296	526	3490	472	204	345	401	79	44	27	20	43
27	205	479	2200	394	210	329	368	84	42	26	22	47
28	208	960	1270	770	190	316	321	92	42	24	19	40
29	291	687	1580	575	---	271	399	112	47	24	18	36
30	204	799	1940	803	---	233	424	97	88	24	17	34
31	156	---	2150	3070	---	225	---	98	---	24	16	---
TOTAL	4005	17958	35772	19753	10531	18412	11281	5229	2139	1363	583	1265
MEAN	129	599	1154	637	376	594	376	169	71.3	44.0	18.8	42.2
MAX	661	4470	3490	3070	2070	1830	1240	405	134	117	29	173
MIN	13	89	228	181	174	184	165	79	42	24	16	12
AC-FT	7940	35620	70950	39180	20890	36520	22380	10370	4240	2700	1160	2510
CFSM	2.82	13.1	25.2	13.9	8.21	13.0	8.21	3.68	1.56	.96	.41	.92
IN.	3.25	14.59	29.05	16.04	8.55	14.95	9.16	4.25	1.74	1.11	.47	1.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1997, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
67.9	180	1969	6.42	1988	
342	731	1974	21.0	1994	
509	1471	1965	33.0	1977	
493	1033	1996	48.3	1977	
440	1066	1996	65.0	1977	
380	995	1972	84.6	1992	
351	597	1993	147	1968	
250	521	1971	70.7	1992	
122	320	1974	27.3	1992	
39.3	90.9	1983	17.7	1992	
21.2	51.9	1968	9.51	1992	
26.1	82.2	1978	8.62	1987	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1964 - 1997
ANNUAL TOTAL	141962	128291	253
ANNUAL MEAN	388	351	404
HIGHEST ANNUAL MEAN			106
LOWEST ANNUAL MEAN			10000
HIGHEST DAILY MEAN	6990	Feb 7	Dec 22 1964
LOWEST DAILY MEAN	12	Sep 9	Oct 27 1987
ANNUAL SEVEN-DAY MINIMUM	12	Sep 7	Oct 23 1987
ANNUAL RUNOFF (AC-FT)	281600	254500	183000
ANNUAL RUNOFF (CFSM)	8.47	7.67	5.52
ANNUAL RUNOFF (INCHES)	115.31	104.20	74.94
10 PERCENT EXCEEDS	881	872	576
50 PERCENT EXCEEDS	173	181	139
90 PERCENT EXCEEDS	15	17	16

e Estimated

WILLAMETTE RIVER BASIN

14161500 LOOKOUT CREEK NEAR BLUE RIVER, OR

LOCATION.--Lat 44°12'35", long 122°15'20", in T.15, R.5 E. (unsurveyed), Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 6.0 mi northeast of town of Blue River, and at mile 0.5.

DRAINAGE AREA.--24.1 mi².

PERIOD OF RECORD.--August 1949 to September 1955, September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,377.76 ft above sea level (Corps of Engineers bench mark).

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1950 to September 1955 and September 1963 to September 1981 have been collected at this location. On Feb. 6, 7, 1996, a series of debris flows from contributing tributaries caused extreme scour and fill throughout the channel.

AVERAGE DISCHARGE.--40 years (water years 1950-55, 1964-97), 124 ft³/s, 70.07 in/yr, 90,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s Feb. 7, 1996, gage height, 10.03 ft, on basis of slope-area measurement of peak flow; minimum discharge, 4.8 ft³/s Sept. 16, 17, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0800	*2,980	*6.99	Jan. 1	0330	1,280	5.41
Dec. 4	1930	2,030	6.23	Jan. 31	1230	2,160	6.35
Dec. 8	0930	1,170	5.26	Mar. 11	0030	1,290	5.43
Dec. 26	0530	2,400	6.55				

Minimum discharge, 9.2 ft³/s several days in October.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	87	709	1100	1250	118	112	263	64	44	17	11
2	9.3	75	503	1010	691	159	102	224	55	36	17	11
3	9.2	66	375	956	468	146	97	212	64	32	16	11
4	9.6	71	852	632	333	123	89	194	70	30	16	10
5	14	65	1150	449	246	113	82	177	68	28	15	10
6	11	69	682	329	195	162	76	169	60	27	15	10
7	10	93	742	265	168	330	82	153	54	26	15	10
8	9.7	85	1050	215	146	320	92	143	51	25	14	9.9
9	9.6	79	774	186	125	297	91	145	48	36	14	9.7
10	9.2	72	747	182	110	880	86	146	44	35	13	10
11	9.2	65	641	173	106	1010	79	150	41	32	13	12
12	9.9	59	634	155	122	619	74	150	44	30	13	12
13	27	105	606	139	114	434	85	136	41	27	13	11
14	23	142	476	127	138	321	167	121	39	27	12	17
15	35	143	355	116	146	409	214	110	36	26	12	34
16	28	183	275	108	142	730	207	98	34	25	12	53
17	19	343	218	164	154	810	191	90	33	24	12	64
18	123	1080	182	183	152	563	189	81	31	23	12	51
19	101	2280	157	182	388	477	281	74	30	22	12	39
20	63	981	187	188	353	504	624	68	30	22	13	29
21	48	553	194	183	262	399	433	62	33	21	13	24
22	82	441	176	167	204	301	397	57	34	21	12	21
23	93	346	201	151	167	239	510	56	31	20	12	19
24	347	548	427	133	142	200	472	57	30	19	19	18
25	319	504	1560	152	124	184	368	56	28	19	14	17
26	196	350	2130	318	117	198	302	51	27	19	14	19
27	134	300	1360	273	112	193	286	54	26	18	15	20
28	132	503	865	420	100	179	238	56	27	18	13	17
29	181	413	808	370	---	148	271	67	28	17	12	16
30	135	408	843	476	---	132	283	58	44	17	12	16
31	106	---	861	1740	---	122	---	62	---	17	11	---
TOTAL	2312.2	10509	20740	11242	6775	10820	6580	3540	1245	783	423	611.6
MEAN	74.6	350	669	363	242	349	219	114	41.5	25.3	13.6	20.4
MAX	347	2280	2130	1740	1250	1010	624	263	70	44	19	64
MIN	9.2	59	157	108	100	113	74	51	26	17	11	9.7
AC-FT	4590	20840	41140	22300	13440	21460	13050	7020	2470	1550	839	1210
CFSM	3.09	14.5	27.8	15.0	10.0	14.5	9.10	4.74	1.72	1.05	.57	.85
IN.	3.57	16.22	32.01	17.35	10.46	16.70	10.16	5.46	1.92	1.21	.65	.94

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1997, BY WATER YEAR (WY)

	MEAN	36.9	153	236	240	222	174	171	135	73.0	25.8	14.9	15.5
MAX	179	350	794	591	640	420	420	300	255	212	46.6	22.2	40.5
(WY)	1951	1997	1965	1953	1996	1972	1993	1950	1950	1983	1976	1978	1978
MIN	5.46	9.36	19.9	25.1	27.0	48.2	69.8	39.2	17.3	12.2	8.26	6.81	6.81
(WY)	1988	1994	1977	1977	1977	1992	1992	1992	1992	1992	1992	1992	1987

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1950 - 1997

ANNUAL TOTAL	82932.0					75580.8						
ANNUAL MEAN	227					207						
HIGHEST ANNUAL MEAN										124		
LOWEST ANNUAL MEAN										207		1997
HIGHEST DAILY MEAN	4700	Feb 7				2280	Nov 19			4890	Dec 22	1964
LOWEST DAILY MEAN	9.2	Sep 11				9.2	Oct 3			5.1	Sep 15	1981
ANNUAL SEVEN-DAY MINIMUM	9.3	Sep 7				9.8	Oct 6			5.2	Oct 22	1987
ANNUAL RUNOFF (AC-FT)	164500					149900				90040		
ANNUAL RUNOFF (CFSM)	9.40					8.59				5.16		
ANNUAL RUNOFF (INCHES)	128.01					116.66				70.07		
10 PERCENT EXCEEDS	508					550				280		
50 PERCENT EXCEEDS	105					100				74		
90 PERCENT EXCEEDS	11					13				12		

WILLAMETTE RIVER BASIN

203

14162100 BLUE RIVER LAKE NEAR BLUE RIVER, OR

LOCATION.--Lat 44°10'20", long 122°19'40", in SE 1/4 SE 1/4 sec.16, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, in intake tower near left end of Blue River Dam on Blue River, 1.4 mi north of town of Blue River, and at mile 1.7.

DRAINAGE AREA.--87.3 mi².

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1971, published as Blue River Reservoir near Blue River.

REVISED RECORDS.--WDR OR-92-1: 1975-77.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1968 by Corps of Engineers; storage began October 1968. Total capacity is 89,520 acre-ft at elevation 1,357 ft, maximum pool, and usable capacity is 85,550 acre-ft between elevations 1,180 ft, minimum flood control pool, and 1,357 ft, maximum pool. Reservoir used for flood control. Figures given herein represent total contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 86,260 acre-ft Apr. 28, 1990, elevation, 1,353.63 ft; minimum contents observed since first filling in 1968, 305 acre-ft Dec. 7, 1973, elevation, 1,125.47 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents recorded, 84,800 acre-ft June 30, elevation, 1,352.09 ft; minimum contents recorded, 2,810 acre-ft Jan. 16, elevation, 1,170.19 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1308.62	1233.09	1209.97	1324.55	1272.63	1289.87	1319.93	1342.67	1350.72	1351.86	1349.90	1348.37
2	1306.69	1228.93	1202.09	1334.63	1268.39	1292.09	1320.76	1343.11	1350.95	1351.58	1349.87	1347.79
3	1304.72	1224.38	1190.17	1339.80	1259.62	1293.57	1321.61	1343.51	1351.15	1351.25	1349.83	1346.62
4	1302.79	1219.74	1222.41	1337.75	1248.81	1294.48	1322.38	1343.94	1351.09	1351.03	1349.79	1345.46
5	1300.79	1214.43	1246.15	1331.90	1239.03	1295.26	1323.05	1344.83	1350.98	1350.90	1349.76	1344.28
6	1298.72	1208.84	1246.08	1324.13	1233.29	1296.71	1323.65	1345.92	1351.07	1350.75	1349.72	1343.11
7	1296.60	1205.27	1251.74	1315.79	1234.76	1300.09	1324.39	1346.86	1351.35	1350.58	1349.67	1341.92
8	1294.47	1201.79	1269.15	1306.51	1237.69	1302.32	1325.30	1347.19	1351.53	1350.44	1349.62	1340.73
9	1292.24	1197.89	1279.23	1296.36	1239.95	1303.52	1326.19	1347.19	1351.59	1350.45	1349.56	1339.54
10	1290.03	1193.52	1288.61	1285.19	1241.92	1308.37	1327.00	1347.37	1351.64	1350.44	1349.50	1338.34
11	1287.76	1188.63	1295.34	1272.11	1243.82	1310.23	1327.70	1347.64	1351.69	1350.38	1349.44	1337.19
12	1285.50	1183.16	1298.04	1256.60	1246.23	1307.88	1328.31	1347.59	1351.81	1350.31	1349.38	1336.01
13	1283.44	1181.95	1297.36	1238.85	1248.34	1305.03	1329.07	1347.43	1351.88	1350.21	1349.32	1334.84
14	1281.29	1185.85	1293.86	1214.54	1250.93	1302.29	1330.85	1347.28	1351.93	1350.15	1349.26	1333.73
15	1279.25	1185.04	1287.95	1183.51	1253.66	1302.04	1332.87	1347.23	1351.96	1350.11	1349.19	1332.82
16	1277.01	1184.93	1283.23	1176.55	1256.13	1307.29	1334.53	1347.47	1351.98	1350.05	1349.13	1331.89
17	1274.55	1189.91	1269.63	1188.83	1258.77	1311.37	1335.96	1347.83	1351.98	1350.03	1349.05	1331.30
18	1274.22	1222.38	1253.62	1199.58	1261.46	1311.71	1336.99	1348.14	1351.98	1350.07	1348.99	1330.30
19	1273.13	1276.48	1234.87	1201.59	1268.40	1311.27	1338.29	1348.46	1351.95	1350.09	1348.92	1328.95
20	1271.30	1282.80	1211.09	1197.16	1273.55	1311.71	1341.34	1348.81	1351.92	1350.10	1348.90	1327.44
21	1269.19	1276.58	1192.18	1192.55	1276.90	1312.48	1339.42	1349.11	1351.97	1350.11	1348.85	1325.83
22	1267.65	1268.98	1189.97	1189.13	1279.34	1313.81	1337.92	1349.37	1351.99	1350.11	1348.78	1324.18
23	1266.23	1259.47	1188.45	1187.60	1281.26	1315.49	1338.34	1349.66	1351.99	1350.10	1348.76	1322.50
24	1267.23	1256.58	1192.84	1184.87	1282.84	1316.45	1338.75	1350.01	1351.97	1350.10	1348.79	1320.80
25	1264.66	1251.01	1249.19	1184.65	1284.21	1316.90	1338.71	1350.30	1351.93	1350.08	1348.75	1319.06
26	1259.53	1240.78	1286.47	1187.26	1285.59	1317.50	1339.02	1350.55	1351.93	1350.06	1348.73	1317.40
27	1252.86	1228.94	1302.03	1183.75	1286.98	1318.05	1339.52	1350.81	1351.95	1350.04	1348.69	1315.70
28	1248.33	1224.29	1307.50	1195.07	1288.19	1318.54	1340.11	1350.92	1351.99	1350.02	1348.63	1313.94
29	1245.77	1213.47	1309.32	1199.18	---	1318.75	1340.95	1350.98	1352.03	1350.00	1348.57	1312.17
30	1242.05	1200.32	1309.34	1208.45	---	1318.87	1341.88	1350.92	1352.01	1349.97	1348.51	1310.36
31	1237.55	---	1311.92	1257.38	---	1319.28	---	1350.80	---	1349.94	1348.44	---
MAX	1308.62	1282.80	1311.92	1339.80	1288.19	1319.28	1341.88	1350.98	1352.03	1351.86	1349.90	1348.37
MIN	1237.55	1181.95	1188.45	1176.55	1233.29	1289.87	1319.93	1342.67	1350.72	1349.94	1348.44	1310.36
(†)	15480	7090	51250	21800	35930	56690	75380	83570	84720	82760	81360	50140
(‡)	-34740	-8390	+44160	-29450	+14130	+20760	+18690	+8190	+1150	-1960	-1400	-31220

CAL YR 1996 MAX 1352.56 MIN 1181.95 AC-FT† +31550
WTR YR 1997 MAX 1352.03 MIN 1176.55 AC-FT† -80

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

WILLAMETTE RIVER BASIN

14162200 BLUE RIVER AT BLUE RIVER, OR

LOCATION.--Lat 44°09'45", long 122°19'55", in NW 1/4 SE 1/4 sec.21, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, on right bank 0.3 mi upstream from Simmonds Creek, 0.7 mi north of town of Blue River, 0.8 mi downstream from Blue River Dam, and at mile 0.9.

DRAINAGE AREA.--87.7 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,056.53 ft above sea level (Corps of Engineers bench mark). Prior to Aug. 25, 1966, nonrecording gage at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1968 by Blue River Lake (station 14162100). No diversion upstream from station. Discharge not adjusted for storage or release from Blue River Lake as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--31 years (water years 1967-97), 459 ft³/s, 332,800 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,270 ft³/s Feb. 23, 1968, gage height, 8.93 ft; minimum discharge, 0.80 ft³/s Oct. 8, 10, 11, 1968; minimum daily, 3.7 ft³/s Oct. 8, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964 reached a stage of 16.5 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,900 ft³/s Dec. 16, gage height, 8.29 ft; minimum discharge, 34 ft³/s Nov. 20, Feb. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	630	794	2150	54	1150	49	161	544	246	267	51	50
2	639	682	2180	206	2900	58	66	544	89	267	51	268
3	638	665	1910	1220	2980	131	49	493	156	267	51	522
4	636	664	733	2590	2880	195	49	403	300	205	52	522
5	646	675	850	3450	2260	192	49	152	297	158	52	522
6	647	652	2020	3760	1330	193	48	41	170	158	52	519
7	645	557	1280	3710	328	195	49	48	51	158	52	518
8	644	496	52	3730	46	349	50	275	86	144	53	518
9	638	480	45	3690	55	689	50	419	122	128	52	518
10	634	464	41	3690	49	1820	50	337	123	128	53	517
11	628	446	47	3730	47	3030	50	301	112	128	53	513
12	624	425	1070	3690	48	2620	50	421	101	128	53	513
13	620	341	2000	3480	49	2090	50	439	101	128	52	513
14	615	357	2310	3150	50	1740	51	405	101	109	51	511
15	631	566	2540	2420	50	1460	52	337	101	96	51	547
16	639	634	2010	625	50	1480	52	182	101	96	51	589
17	633	830	3770	117	51	1510	51	107	101	78	51	589
18	634	1180	3700	131	52	1510	176	108	101	48	51	650
19	633	72	3490	551	59	1510	374	72	101	51	51	689
20	627	1650	3130	966	54	1250	1010	44	101	51	50	685
21	619	3100	2010	936	50	814	2050	44	101	51	50	684
22	616	3050	723	775	49	384	1750	44	101	51	50	680
23	615	3040	752	596	49	105	1470	44	101	51	50	678
24	1060	2590	1170	584	49	246	1320	44	101	51	50	675
25	1620	2650	655	523	49	405	1040	44	101	51	50	672
26	1590	2740	68	952	47	405	702	44	76	51	50	669
27	1550	2450	51	1010	46	406	555	65	61	51	50	666
28	1160	2400	838	811	47	409	447	159	61	51	50	663
29	964	2420	2310	865	---	409	498	216	71	51	50	661
30	947	2410	3190	892	---	409	544	221	209	51	50	657
31	927	---	2650	406	---	301	---	270	---	51	50	---
TOTAL	24349	39480	49745	53310	14874	26364	12913	6867	3644	3354	1583	16978
MEAN	785	1316	1605	1720	531	850	430	222	121	108	51.1	566
MAX	1620	3100	3770	3760	2980	3030	2050	544	300	267	53	689
MIN	615	72	41	54	46	49	48	41	51	48	50	50
AC-FT	48300	78310	98670	105700	29500	52290	25610	13620	7230	6650	3140	33680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1997, BY WATER YEAR (WY)

	MEAN	277	655	964	850	488	390	337	337	238	305	409	254
MAX	785	1459	2189	1720	1594	1766	853	676	549	626	765	566	
(WY)	1997	1974	1978	1997	1996	1972	1993	1971	1984	1979	1971	1997	
MIN	45.7	39.4	63.1	68.1	32.6	12.0	12.0	35.0	63.9	46.6	26.6	27.1	
(WY)	1993	1988	1977	1977	1977	1977	1977	1973	1973	1967	1967	1967	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1967 - 1997

ANNUAL TOTAL	260563	253461	
ANNUAL MEAN	712	694	459
HIGHEST ANNUAL MEAN			727
LOWEST ANNUAL MEAN			192
HIGHEST DAILY MEAN	3790	Feb 15	3770
LOWEST DAILY MEAN	38	Jun 14	41
ANNUAL SEVEN-DAY MINIMUM	40	May 6	44
ANNUAL RUNOFF (AC-FT)	516800	502700	332800
10 PERCENT EXCEEDS	2160	2280	996
50 PERCENT EXCEEDS	472	384	290
90 PERCENT EXCEEDS	46	50	50

WILLAMETTE RIVER BASIN

205

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, 17.0°C Oct. 12-16; minimum, 3.0°C Jan. 15, 16.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	11.0	11.0	10.5	10.0	10.5	7.0	7.0	7.0	7.0	7.0	7.0
2	11.5	11.5	11.5	10.5	10.0	10.5	7.0	6.0	6.5	7.0	6.5	7.0
3	12.0	11.5	12.0	10.5	10.5	10.5	6.0	5.5	6.0	6.5	6.5	6.5
4	12.5	12.0	12.5	11.0	10.5	11.0	7.0	5.5	6.0	6.5	6.5	6.5
5	13.0	12.5	13.0	11.0	10.5	10.5	7.0	6.0	6.5	7.0	6.5	6.5
6	14.0	13.0	13.5	10.5	10.5	10.5	6.5	6.0	6.5	7.0	6.5	6.5
7	14.5	14.0	14.0	10.5	9.5	10.0	7.0	6.0	6.5	6.5	6.5	6.5
8	15.5	14.5	15.0	9.5	9.5	9.5	7.5	7.0	7.0	6.5	6.5	6.5
9	16.0	15.5	15.5	9.5	9.5	9.5	7.0	7.0	7.0	6.5	6.5	6.5
10	16.5	16.0	16.0	9.5	9.0	9.0	7.0	6.5	7.0	6.5	6.5	6.5
11	16.5	16.5	16.5	9.5	9.0	9.0	7.0	6.5	6.5	6.5	6.5	6.5
12	17.0	16.5	16.5	9.5	9.5	9.5	6.5	6.0	6.5	6.5	6.0	6.5
13	17.0	17.0	17.0	9.5	9.5	9.5	6.0	6.0	6.0	6.0	5.5	6.0
14	17.0	17.0	17.0	9.5	8.5	9.0	6.0	6.0	6.0	5.5	4.5	5.0
15	17.0	17.0	17.0	8.5	8.0	8.5	6.5	6.0	6.5	4.5	3.0	4.0
16	17.0	16.5	16.5	8.0	7.5	8.0	6.5	6.5	6.5	3.5	3.0	3.0
17	16.5	16.0	16.5	7.5	7.0	7.0	6.5	6.0	6.5	4.0	3.5	3.5
18	16.0	15.5	16.0	8.5	7.0	7.5	6.0	6.0	6.0	4.0	4.0	4.0
19	15.5	14.0	15.0	8.5	8.0	8.0	6.0	5.5	5.5	5.5	4.0	4.5
20	14.0	14.0	14.0	8.5	7.0	7.5	5.5	5.0	5.5	5.5	5.5	5.5
21	14.0	14.0	14.0	7.5	7.0	7.0	5.5	5.0	5.5	5.5	5.5	5.5
22	14.0	13.5	14.0	7.5	7.0	7.0	5.5	5.0	5.0	5.5	5.0	5.5
23	13.5	13.5	13.5	7.0	7.0	7.0	5.0	5.0	5.0	5.0	4.5	5.0
24	13.5	13.5	13.5	7.5	7.0	7.5	5.5	5.0	5.0	4.5	4.0	4.5
25	13.5	12.5	13.0	7.5	7.0	7.0	7.5	5.5	6.5	4.5	4.0	4.0
26	12.5	12.0	12.0	7.5	7.5	7.5	7.5	7.0	7.0	4.5	4.0	4.5
27	12.0	12.0	12.0	7.5	7.0	7.5	7.0	6.5	6.5	5.0	4.5	4.5
28	12.0	11.5	11.5	7.5	7.0	7.0	6.5	6.0	6.5	5.5	4.5	5.0
29	11.5	11.0	11.5	7.5	7.0	7.0	6.5	6.5	6.5	6.0	5.5	6.0
30	11.0	10.5	11.0	7.0	7.0	7.0	6.5	6.5	6.5	6.0	6.0	6.0
31	10.5	10.5	10.5	---	---	---	7.0	6.5	6.5	7.5	6.0	7.0
MONTH	17.0	10.5	14.0	11.0	7.0	8.6	7.5	5.0	6.3	7.5	3.0	5.5

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.5	6.5	7.0	5.5	5.0	5.5	6.5	6.0	6.0	7.0	7.0	7.0
2	7.0	6.5	6.5	6.0	5.5	5.5	7.5	6.0	6.5	7.0	7.0	7.0
3	6.5	6.5	6.5	6.0	5.5	5.5	6.5	6.0	6.0	7.0	7.0	7.0
4	6.5	6.5	6.5	5.5	5.5	5.5	7.5	6.0	6.5	7.5	7.0	7.0
5	6.5	6.0	6.0	6.0	5.5	5.5	7.5	6.0	6.5	8.5	7.0	7.5
6	6.0	6.0	6.0	5.5	5.5	5.5	7.5	6.0	6.5	8.0	7.0	7.5
7	6.0	5.0	5.5	5.5	5.5	5.5	6.5	6.0	6.0	8.5	7.0	7.5
8	5.5	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5	7.5	7.0	7.0
9	5.5	5.0	5.0	5.5	5.5	5.5	7.0	6.0	6.0	7.5	7.0	7.5
10	5.5	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5	7.5	7.0	7.5
11	5.5	5.0	5.0	6.0	5.5	5.5	7.5	6.0	6.5	8.0	7.5	7.5
12	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5	7.5	7.5	7.5
13	5.5	5.0	5.0	6.0	6.0	6.0	6.5	6.0	6.5	7.5	7.5	7.5
14	6.0	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.5	8.0	7.5	7.5
15	6.0	5.0	5.5	6.0	6.0	6.0	7.5	6.0	6.5	8.0	7.5	7.5
16	6.0	5.0	5.5	6.0	6.0	6.0	7.0	6.5	6.5	8.5	7.5	7.5
17	6.0	5.5	5.5	6.0	6.0	6.0	8.0	6.5	6.5	8.5	7.5	7.5
18	6.0	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.5	8.5	7.5	7.5
19	6.0	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.5	9.5	7.5	8.0
20	6.5	5.5	6.0	6.0	6.0	6.0	6.5	6.5	6.5	9.0	7.5	8.0
21	6.5	5.5	6.0	6.0	6.0	6.0	6.5	6.5	6.5	9.5	7.5	8.0
22	6.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5	9.0	7.5	8.0
23	6.5	5.5	5.5	6.5	5.5	6.0	6.5	6.5	6.5	8.5	7.5	8.0
24	6.5	5.5	6.0	6.5	6.0	6.0	6.5	6.5	6.5	8.5	7.5	8.0
25	6.0	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5	8.0	7.5	7.5
26	6.0	5.5	6.0	6.0	6.0	6.0	7.0	6.5	6.5	9.0	7.5	8.0
27	6.0	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5	9.0	7.5	8.0
28	6.0	5.5	5.5	6.0	6.0	6.0	7.0	6.5	6.5	8.0	7.5	7.5
29	---	---	---	6.0	6.0	6.0	7.0	6.5	7.0	8.0	7.5	7.5
30	---	---	---	6.0	6.0	6.0	7.0	6.5	7.0	8.0	7.5	7.5
31	---	---	---	6.0	6.0	6.0	---	---	---	8.0	7.5	7.5
MONTH	7.5	5.0	5.7	6.5	5.0	5.8	8.0	6.0	6.5	9.5	7.0	7.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	8.0	7.5	8.0	8.0	8.0	8.0	10.0	8.0	8.5	9.5	8.0	8.5
2	9.5	7.5	8.0	8.5	8.0	8.0	10.0	8.0	8.5	9.0	8.0	8.5
3	8.0	7.5	8.0	8.5	8.0	8.0	10.0	8.0	8.5	8.5	8.0	8.0
4	8.0	7.5	8.0	8.5	8.0	8.0	10.0	8.5	8.5	8.5	8.0	8.0
5	8.0	7.5	8.0	8.5	8.0	8.0	10.0	8.5	9.0	8.5	8.0	8.0
6	9.0	7.5	8.0	8.5	8.0	8.0	10.0	8.5	9.0	8.5	8.0	8.0
7	9.5	7.5	8.0	8.5	8.0	8.0	10.0	8.5	8.5	8.5	8.0	8.5
8	9.0	7.5	8.0	8.5	8.0	8.0	10.0	8.0	8.5	8.5	8.0	8.5
9	8.5	7.5	8.0	8.5	8.0	8.0	10.0	8.0	8.5	8.5	8.5	8.5
10	8.5	8.0	8.0	8.5	8.0	8.0	10.0	8.0	8.5	8.5	8.5	8.5
11	8.5	8.0	8.0	9.0	8.0	8.0	10.0	8.0	8.5	8.5	8.5	8.5
12	8.5	8.0	8.0	9.0	8.0	8.0	10.0	8.0	8.5	8.5	8.5	8.5
13	8.0	8.0	8.0	9.0	8.0	8.0	10.0	8.5	8.5	8.5	8.5	8.5
14	9.0	8.0	8.0	9.0	8.0	8.5	10.0	8.0	8.5	8.5	8.5	8.5
15	9.0	8.0	8.0	9.0	8.0	8.5	10.0	8.0	8.5	8.5	8.5	8.5
16	9.0	8.0	8.0	9.0	8.0	8.5	10.0	8.0	8.5	9.0	8.5	8.5
17	8.5	8.0	8.0	8.5	8.0	8.5	9.5	8.0	8.5	9.0	9.0	9.0
18	9.0	8.0	8.0	10.0	8.0	8.5	10.0	8.0	8.5	9.0	9.0	9.0
19	9.0	8.0	8.0	10.0	8.0	8.5	10.0	8.0	8.5	9.5	9.0	9.0
20	9.0	8.0	8.0	10.0	8.0	8.5	8.5	8.0	8.5	9.5	9.5	9.5
21	8.5	8.0	8.0	10.0	8.0	8.5	10.0	8.0	8.5	10.0	9.5	9.5
22	8.5	8.0	8.0	10.0	8.0	8.5	10.0	8.0	8.5	10.0	10.0	10.0
23	8.5	8.0	8.0	10.0	8.0	8.5	9.5	8.0	8.5	10.5	10.0	10.0
24	9.0	8.0	8.0	10.0	8.0	8.5	9.0	8.5	8.5	10.5	10.5	10.5
25	9.0	8.0	8.0	10.0	8.0	8.5	9.0	8.0	8.5	11.0	10.5	11.0
26	9.5	8.0	8.5	10.0	8.0	8.5	9.0	8.5	8.5	11.5	11.0	11.0
27	9.5	8.0	8.5	10.0	8.0	8.5	9.5	8.0	8.5	11.5	11.5	11.5
28	8.5	8.0	8.0	10.0	8.0	8.5	9.0	8.0	8.5	12.0	11.5	12.0
29	9.0	8.0	8.0	9.5	8.0	8.5	9.5	8.0	8.5	12.5	12.0	12.0
30	8.0	8.0	8.0	10.0	8.0	8.5	9.5	8.0	8.5	13.0	12.5	12.5
31	---	---	---	10.0	8.0	8.5	9.5	8.0	8.5	---	---	---
MONTH	9.5	7.5	8.0	10.0	8.0	8.3	10.0	8.0	8.5	13.0	8.0	9.4
YEAR	17.0	3.0	7.8									

WILLAMETTE RIVER BASIN

207

14162500 MCKENZIE RIVER NEAR VIDA, OR

LOCATION.--Lat 44°07'30", long 122°28'10", in NE 1/4 NE 1/4 sec.5, T.17 S., R.3 E., Lane County, Hydrologic Unit 17090004, on right bank 0.4 mi downstream from Mason Creek, 5.4 mi east of Vida, and at mile 47.7.

DRAINAGE AREA.--930 mi² at cableway 0.4 mi downstream, where all discharge measurement are made.

PERIOD OF RECORD.--July 1910 to March 1911 (published as "at Martins Rapids, near Vida"), September 1924 to current year. Monthly discharge only for some periods (water years 1910-11, 1924-25), published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 855.71 ft above sea level (levels by Eugene Water and Electric Board). July 1, 1910, to Mar. 31, 1911, nonrecording gage at site 3 mi downstream at different datum. Sept. 1, 1924, to Nov. 16, 1928, nonrecording gage at site 20 ft upstream at datum 0.15 ft lower. Nov. 17, 1928, to Sept. 23, 1968, water-stage recorder at present site on left bank at datum 0.15 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period June 1961 to September 1985 have been collected at this location.

AVERAGE DISCHARGE.--73 years (water years 1925-97), 4,049 ft³/s, 2,933,000 acre-ft/yr, unadjusted.
29 years (water years 1969-97), 4,156 ft³/s, 3,011,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,400 ft³/s Dec. 28, 1945, gage height, 17.70 ft, site and datum then in use, from rating curve extended above 32,000 ft³/s; minimum discharge, 1,260 ft³/s Nov. 7, 1930, Sept. 17, Oct. 4, 8, 9, 1931.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in January 1923 reached a stage of 17.2 ft, from floodmarks, discharge, 62,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 23,300 ft³/s Nov. 19, gage height, 8.28 ft; minimum discharge, 2,500 ft³/s several days in July and August.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3220	4190	14400	14400	14900	4080	4480	7260	5030	3540	2690	2930
2	3240	3980	12400	13500	13000	5030	4120	6830	4410	3330	2590	3100
3	3240	3900	10600	15500	12600	4650	4020	6650	4480	3280	2580	3310
4	3270	3960	11100	16100	12400	4350	3920	6420	4950	3200	2580	3090
5	3360	3950	15100	16100	11000	4070	3800	5790	4850	3130	2570	3100
6	3330	3950	13900	16100	8680	4320	3680	5210	4500	3090	2570	3120
7	3300	4030	12400	15700	6310	4960	3620	4950	4220	3060	2560	3130
8	3290	3840	12700	15200	5530	5250	3730	5130	4090	2990	2540	3120
9	3280	3760	11100	14700	5410	5350	3690	5420	4030	3130	2530	3110
10	3250	3710	10100	14600	5030	8470	3560	5360	3990	3210	2520	3120
11	3250	3670	9050	14600	4290	12400	3500	5650	3980	3180	2590	3140
12	3280	3610	10400	14200	4410	10100	3410	6280	3860	3080	2950	3130
13	3480	3870	12500	13600	4250	8800	3430	6360	3640	3070	2960	3100
14	3440	4470	12200	13100	4230	7850	3880	6220	3620	3020	2970	3180
15	3490	4780	12100	11300	4210	7930	4110	6070	3510	2980	2960	3400
16	3580	4790	9720	6160	4210	10300	4090	5610	3430	2970	2950	3620
17	3460	5370	12900	5190	4260	11500	4040	5170	3410	3060	2920	3760
18	4300	11200	12600	5260	4200	9400	4100	4940	3330	3190	2920	3700
19	4290	21600	12200	5550	5580	8690	5080	4660	3270	3150	2920	3610
20	3880	15000	12100	6180	5520	9160	9170	4490	3230	3110	2950	3490
21	3740	15000	10500	6170	4910	8890	10300	4240	3220	3120	2950	3410
22	3840	13900	6950	5800	4530	7740	10500	3940	3230	3140	2930	3390
23	3960	13200	6750	5350	4230	7030	11300	3830	3190	3130	2920	3370
24	5970	14000	8460	5200	4060	6840	10600	4010	3160	3100	3090	3370
25	7000	13700	15700	e5300	3920	6540	8700	4070	3120	3050	2980	3360
26	5880	12900	20200	e7000	3910	6360	7410	3920	3040	3020	2990	3350
27	5300	12200	14900	e6300	3960	6490	7340	3810	3020	2920	2950	3320
28	4780	13900	12000	e7000	3870	6500	7010	3800	3010	2580	2930	3270
29	5060	13300	13000	e6700	---	6140	7380	4240	3040	2520	2920	3260
30	4670	12800	15200	e6900	---	5970	7370	4460	3470	2590	2910	3240
31	4460	---	15800	14500	---	5320	---	4620	---	2690	2940	---
TOTAL	123890	252530	379030	323260	173410	220480	171340	159410	111330	94630	87330	98600
MEAN	3996	8418	12230	10430	6193	7112	5711	5142	3711	3053	2817	3287
MAX	7000	21600	20200	16100	14900	12400	11300	7260	5030	3540	3090	3760
MIN	3220	3610	6750	5190	3870	4070	3410	3800	3010	2520	2520	2930
AC-FT	245700	500900	751800	641200	344000	437300	339900	316200	220800	187700	173200	195600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1997, BY WATER YEAR (WY)

	MEAN	2459	4364	5842	5673	5355	4808	4859	4724	3682	2498	2257	2144
MAX	5062	8718	14430	11570	11510	11210	7496	8394	8986	3589	3510	3358	
(WY)	1951	1985	1965	1953	1996	1972	1937	1949	1933	1950	1971	1972	
MIN	1330	1367	1840	1658	1542	2250	2312	2268	1750	1505	1361	1314	
(WY)	1945	1930	1945	1937	1977	1941	1941	1992	1940	1940	1940	1931	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1925 - 1997
ANNUAL TOTAL	2219600	2195240	
ANNUAL MEAN	6064	6014	4049
HIGHEST ANNUAL MEAN			6211
LOWEST ANNUAL MEAN			2447
HIGHEST DAILY MEAN	27200	Feb 7	50000
LOWEST DAILY MEAN	2280	Jul 27	1260
ANNUAL SEVEN-DAY MINIMUM	2310	Jul 24	1270
ANNUAL RUNOFF (AC-FT)	4403000	4354000	2933000
10 PERCENT EXCEEDS	12800	12900	7030
50 PERCENT EXCEEDS	4140	4210	3180
90 PERCENT EXCEEDS	2670	2980	1800

e Estimated

WILLAMETTE RIVER BASIN

14163150 MCKENZIE RIVER BELOW LEABURG DAM, NEAR LEABURG, OR

LOCATION.--Lat 44°07'26", long 122°37'35", in NE 1/4 NE 1/4 sec.1, T.17 S., R.1 E., Lane County, Hydrologic Unit 17090004, on right bank 1.4 mi downstream from Leaburg Dam, 3.0 mi northeast of Leaburg, and at mile 37.4.

DRAINAGE AREA.--1,030 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 710 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Leaburg Power canal. Continuous water temperature records for the period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--8 years (water years 1990-97), 2,673 ft³/s, 1,936,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,900 ft³/s Feb. 7, 1996, gage height, 17.95 ft; minimum discharge, 457 ft³/s Aug. 29, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,500 ft³/s Nov. 19, gage height, 14.38 ft; minimum discharge, 1,020 ft³/s July 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	2270	14500	14800	16200	2520	2830	5720	3130	1560	1180	1150
2	1170	2020	11800	13600	12800	4220	2450	5270	2510	1360	1150	1170
3	1170	1940	9820	15700	11700	3490	2340	5050	2510	1280	1150	1220
4	1190	2020	11200	15600	11200	3020	2200	4790	3000	1220	1280	1140
5	1360	2020	16900	15200	9550	2640	2110	4150	2930	1150	1300	1140
6	1260	1980	14400	15000	7170	3010	1910	3550	2560	1130	1310	1150
7	1250	2110	12900	14400	4720	3990	1840	3260	2260	1130	1300	1150
8	1220	1900	14300	13800	3890	4190	1940	3370	2110	1150	1290	1150
9	1200	1810	12000	13200	3710	4150	1930	3650	2070	1180	1270	1140
10	1200	1750	10300	13000	3350	7570	1780	3570	1980	1170	1240	1140
11	1180	1700	8930	13000	2580	12400	1710	3790	1970	1170	1290	1150
12	1210	1650	9820	12600	2740	9480	1620	4400	1880	1150	2040	1150
13	1470	2000	12200	12000	2540	7790	1640	4490	1620	1160	1790	1140
14	1440	2790	11600	11500	2530	6620	2190	4300	1590	1160	1800	1160
15	1510	3250	11000	9680	2500	6770	2470	4120	1480	1160	1400	1320
16	1560	3390	8420	4450	2440	9820	2360	3730	1390	1160	1170	1650
17	1410	4320	11500	3490	2490	11500	2280	3270	1380	1170	1160	1840
18	2570	13200	11200	3540	2420	8660	2310	3050	1310	1180	1160	1690
19	2600	29000	10600	3720	4090	7450	3240	2750	1220	1160	1160	1560
20	2170	16700	10600	4440	4120	7740	7560	2570	1160	1160	1160	1400
21	2440	14800	9290	4500	3360	7400	8680	2340	1180	1160	1160	1300
22	2680	13000	5470	4130	2900	6160	8790	2020	1170	1160	1160	1250
23	2560	11900	5290	3610	2530	5390	9960	1860	1130	1160	1170	1240
24	4350	13500	7520	3440	2310	5150	9450	2050	1120	1160	1240	1240
25	5650	13000	18300	3480	2150	4840	7210	2120	1140	1150	1160	1240
26	4310	11800	25800	5920	2140	4630	5760	1960	1130	1170	1160	1330
27	3500	10800	16900	5290	2200	4750	5610	1870	1130	1170	1150	1260
28	2910	13200	12200	5910	2110	4810	5280	1830	1140	1170	1140	1200
29	3270	12500	13100	5640	---	4430	5780	2290	1170	1200	1150	1170
30	2800	11700	15400	5830	---	4250	5790	2510	1410	1180	1150	1150
31	2550	---	16400	16000	---	3670	---	2650	---	1170	1150	---
TOTAL	66300	224020	379660	286470	132440	182510	121020	102350	51780	36810	39390	37990
MEAN	2139	7467	12250	9241	4730	5887	4034	3302	1726	1187	1271	1266
MAX	5650	29000	25800	16000	16200	12400	9960	5720	3130	1560	2040	1840
MIN	1140	1650	5290	3440	2110	2520	1620	1830	1120	1130	1140	1140
AC-FT	131500	444300	753100	568200	262700	362000	240000	203000	102700	73010	78130	75350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1997, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1066	3163	4962	4575	4048	2953	3341	3058
MAX	2139	7467	12250	9241	11880	6149	6042	5410
(WY)	1997	1997	1997	1997	1996	1993	1993	1993
MIN	610	741	1269	1380	1330	897	1618	1099
(WY)	1990	1990	1990	1992	1993	1992	1994	1992

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1990 - 1997

	1996 CALENDAR YEAR	1997 WATER YEAR	WATER YEARS 1990 - 1997
ANNUAL TOTAL	1745320	1660740	2673
ANNUAL MEAN	4769	4550	4550
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1994
HIGHEST DAILY MEAN	42700	29000	42700
LOWEST DAILY MEAN	1000	1120	478
ANNUAL SEVEN-DAY MINIMUM	1010	1140	486
ANNUAL RUNOFF (AC-FT)	3462000	3294000	1936000
10 PERCENT EXCEEDS	12100	12300	5860
50 PERCENT EXCEEDS	2430	2500	1300
90 PERCENT EXCEEDS	1020	1160	827

WILLAMETTE RIVER BASIN

209

14163900 MCKENZIE RIVER NEAR WALTERVILLE, OR

LOCATION.--Lat 44°04'13", long 122°46'12", in NW 1/4 NE 1/4 sec.26, T.17 S., R.1 W., Lane County, Hydrologic Unit 17090004, on right bank 0.8 mi downstream from Walterville Power Canal Diversion, 1.7 mi east of Walterville, and at mile 27.7.

DRAINAGE AREA.--1,081 mi².

PERIOD OF RECORD.--October 1989 to current year.

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

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Walterville Power Canal. Continuous water-quality records for period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--8 years (water years 1990-97), 2,935 ft³/s, 2,126,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,100 ft³/s Feb. 7, 1996, gage height, 16.18 ft; minimum discharge, 420 ft³/s Nov. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 30,700 ft³/s Nov. 19, gage height, 13.44 ft; minimum discharge, 1,030 ft³/s Oct. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	2080	15600	16600	18000	3170	4850	5970	3090	1590	1250	1260
2	1100	1810	13100	15300	14300	5340	4880	5440	2450	1370	1250	1290
3	1100	1730	11200	17100	12700	4600	4760	5370	2340	1270	1250	1290
4	1110	1810	11500	16900	12100	4070	4600	5560	2870	1240	1250	1270
5	1160	1840	18500	16300	10900	3910	4460	4990	2820	1250	1250	1260
6	1110	1790	16400	15900	9690	5110	4290	4180	2440	1240	1250	1260
7	1100	1910	14800	15400	7430	6440	4230	3360	2160	1250	1250	1260
8	1100	1800	16600	14600	6470	6760	4310	3310	2010	1240	1260	1260
9	1140	1780	14600	14000	6200	6640	4290	3630	1980	1290	1270	1260
10	1120	1780	12300	13700	4990	9630	3090	3550	1880	1250	1260	1260
11	1110	1710	10900	13600	3280	13900	2100	3690	1890	1230	1270	1270
12	1110	1540	11000	13200	3260	10600	1950	4290	1840	1230	1370	1260
13	1320	1840	13500	12600	3060	8930	1940	4430	1630	1250	1280	1260
14	1380	2650	12800	12000	3000	7710	2410	4270	1590	1230	1260	1270
15	1430	3300	12300	10700	3130	7610	2760	4120	1500	1250	1270	1360
16	1440	3400	9930	5880	3140	10600	2640	3740	1410	1250	1260	1640
17	1370	4420	12200	4480	3170	13000	2570	3220	1390	1280	1260	1740
18	2330	12600	12000	4220	3130	10000	2550	3020	1350	1240	1260	1670
19	2510	29100	11500	4210	4610	8610	3300	2680	1280	1240	1260	1570
20	1900	19100	11400	4950	4950	8660	7290	2450	1250	1240	1270	1400
21	1640	16400	10600	5060	4170	8360	8780	2280	1280	1250	1250	1330
22	1630	14200	6610	4770	3700	7110	8940	1990	1270	1250	1260	1290
23	1750	12900	6180	4220	3320	6220	10100	1840	1230	1270	1270	1290
24	4020	14500	8350	4020	3060	5920	9950	1990	1230	1280	1280	1720
25	5900	14100	18100	3980	2880	5610	7740	2060	1240	1240	1250	2730
26	4380	12800	26500	6360	2850	5320	6250	1930	1240	1250	1260	1710
27	3450	11600	19900	5990	2960	5390	5990	1860	1250	1240	1260	1290
28	2860	14000	14700	6430	2870	5490	5660	1790	1250	1240	1260	1290
29	3160	13600	14600	6310	---	5100	6090	2150	1250	1250	1260	1270
30	2710	12400	16800	6300	---	4910	6110	2410	1440	1250	1260	1260
31	2420	---	18400	15800	---	4740	---	2480	---	1250	1260	---
TOTAL	60970	234490	422870	310880	163320	219460	148880	104050	51850	39200	39170	42290
MEAN	1967	7816	13640	10030	5833	7079	4963	3356	1728	1265	1264	1410
MAX	5900	29100	26500	17100	18000	13900	10100	5970	3090	1590	1370	2730
MIN	1100	1540	6180	3980	2850	3170	1940	1790	1230	1230	1250	1260
AC-FT	120900	465100	838800	616600	323900	435300	295300	206400	102800	77750	77690	83880

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1997, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1288	3549	5211	4784	4374	3501	4232	3127
MAX	1967	7816	13640	10030	12560	7079	7133	4841
(WY)	1997	1997	1997	1997	1996	1997	1993	1993
MIN	683	1363	1249	1181	1216	1408	2621	1420
(WY)	1990	1990	1990	1992	1993	1992	1994	1994

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1990 - 1997
ANNUAL TOTAL	1896100	1837430	
ANNUAL MEAN	5181	5034	2935
HIGHEST ANNUAL MEAN			5034
LOWEST ANNUAL MEAN			1653
HIGHEST DAILY MEAN	44600	29100	44600
LOWEST DAILY MEAN	1080	1100	499
ANNUAL SEVEN-DAY MINIMUM	1090	1110	516
ANNUAL RUNOFF (AC-FT)	3761000	3645000	2126000
10 PERCENT EXCEEDS	13300	13500	6590
50 PERCENT EXCEEDS	2540	2870	1550
90 PERCENT EXCEEDS	1110	1250	924

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 September 1997 (discontinued). 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 sea level. Oct. 1, 1935, to Sept. 30, 1952, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the period Nov. 17 to May 1, and estimated daily discharges, which are poor. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1963 to September 1969 and April 1983 to September 1984 have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s Feb. 7, 1996, gage height, 23.11 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 (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1000	*11,200	*20.77	Dec. 26	0730	8,340	17.55
Dec. 5	0400	5,580	13.91	Jan. 1	0800	5,760	14.17
Dec. 8	1630	7,150	16.05	Jan. 31	2200	7,680	16.73

Minimum discharge, 27 ft³/s Aug. 13-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	204	2850	5230	5700	876	611	926	269	131	42	34
2	32	173	e2300	e4400	3540	2650	558	843	202	105	40	34
3	32	153	e2100	e3900	e2400	2160	529	812	211	91	39	32
4	33	168	2540	e2700	e1850	1730	500	711	229	85	37	32
5	58	170	4890	e2100	e1500	1430	465	633	226	79	36	31
6	53	152	e3800	e1700	e1250	1460	437	608	189	76	34	32
7	40	173	e4000	e1500	1150	1530	448	541	173	74	32	30
8	36	154	6330	e1300	992	1480	451	499	165	71	30	29
9	35	144	5340	e1150	870	1310	426	462	153	105	30	29
10	34	135	4250	e1200	775	1820	401	429	143	117	30	30
11	33	125	3730	e1150	719	2760	376	404	138	94	29	35
12	34	123	3030	e1050	724	2370	356	382	152	82	29	42
13	60	287	e2800	e900	647	2000	376	360	147	75	28	36
14	77	413	e2300	e800	646	1650	441	338	134	71	28	52
15	99	502	e1800	e700	610	1600	439	317	126	67	27	81
16	92	577	e1500	639	579	2250	411	293	119	64	29	155
17	63	1240	e1300	699	549	2940	382	273	113	62	28	156
18	259	3340	e1150	667	534	2170	380	260	116	64	31	156
19	346	9880	e1000	611	893	1720	444	246	107	59	30	132
20	181	5650	e1250	739	996	1620	979	234	103	57	36	82
21	121	3220	e1400	833	853	1350	932	226	106	55	57	65
22	110	2690	1340	843	747	1140	945	219	128	56	39	56
23	124	2170	1560	775	665	970	1350	230	125	53	34	51
24	426	2650	2140	714	600	854	1360	222	112	50	74	48
25	557	2410	3850	844	560	765	1060	216	101	49	58	44
26	503	1910	8010	1540	599	728	850	201	95	47	44	47
27	308	1690	5840	1310	663	690	795	202	91	46	51	62
28	255	2420	4180	1730	667	757	716	201	90	44	42	51
29	525	2330	4140	1450	---	646	883	219	107	43	40	46
30	353	1990	4540	1460	---	611	913	191	102	43	38	45
31	259	---	5020	5420	---	619	---	237	---	42	35	---
TOTAL	5169	47243	100280	50054	32278	46656	19214	11935	4272	2157	1157	1755
MEAN	167	1575	3235	1615	1153	1505	640	385	142	69.6	37.3	58.5
MAX	557	9880	8010	5420	5700	2940	1360	926	269	131	74	156
MIN	31	123	1000	611	534	611	356	191	90	42	27	29
AC-FT	10250	93710	198900	99280	64020	92540	38110	23670	8470	4280	2290	3480
CFSM	.94	8.90	18.3	9.12	6.51	8.50	3.62	2.18	.80	.39	.21	.33
IN.	1.09	9.93	21.08	10.52	6.78	9.81	4.04	2.51	.90	.45	.24	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1997, BY WATER YEAR (WY)

MEAN	113	617	1140	1226	1121	877	597	362	204	77.3	38.9	41.1
MAX	719	1653	3235	2464	2480	1975	1545	762	752	190	91.4	112
(WY)	1951	1951	1997	1965	1996	1972	1937	1996	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 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1936 - 1997

ANNUAL TOTAL	372916		322170			
ANNUAL MEAN	1019		883		532	
HIGHEST ANNUAL MEAN					883	1997
LOWEST ANNUAL MEAN					164	1977
HIGHEST DAILY MEAN	11500	Feb 7	9880	Nov 19	11500	Dec 22 1964
LOWEST DAILY MEAN	26	Sep 12	27	Aug 15	9.6	Aug 18 1966
ANNUAL SEVEN-DAY MINIMUM	28	Aug 29	28	Aug 11	11	Aug 15 1966
ANNUAL RUNOFF (AC-FT)	739700		639000		385400	
ANNUAL RUNOFF (CFSM)	5.76		4.99		3.01	
ANNUAL RUNOFF (INCHES)	78.38		67.71		40.83	
10 PERCENT EXCEEDS	2690		2400		1360	
50 PERCENT EXCEEDS	462		376		256	
90 PERCENT EXCEEDS	34		36		30	

e Estimated

WILLAMETTE RIVER BASIN

211

14166000 WILLAMETTE RIVER AT HARRISBURG, OR

LOCATION.--Lat 44°16'14", long 123°10'21", in NW 1/4 NE 1/4 sec.16, T.15 S., R.4 W., Linn County, Hydrologic Unit 17090003, on right bank 75 ft north of intersection of First Street and Kesling Street in Harrisburg and at mile 161.0.

DRAINAGE AREA.--3,420 mi², approximately.

PERIOD OF RECORD.--October 1944 to current year. Gage-height records collected at same site in 1927-28, 1931, 1934, are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 288.39 ft above sea level. Oct 1 to Nov. 14, 1944, nonrecording gage at bridge 1,110 ft upstream at different datum. Nov. 15, 1944, to Aug. 15, 1973, at site 1,100 ft upstream at datum 2.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by 8 reservoirs upstream from station. Many small diversions upstream from station for irrigation. Continuous water-quality records for the period June 1961 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--24 years (water years 1945-68), 12,320 ft³/s, 8,927,000 acre-ft/yr.
29 years (water years 1969-97), 11,540 ft³/s, 8,360,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 210,000 ft³/s Dec. 29, 1945, gage height, 19.69 ft, from rating curve extended above 115,000 ft³/s; minimum discharge, 1,990 ft³/s Oct. 30, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 20.5 ft was reached in December 1861, and 20.1 ft in February 1890 (information from Corps of Engineers). Flood of Jan. 1, 1943, reached a stage of 19.1 ft from National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 83,800 ft³/s Nov. 19, gage height, 15.56 ft; minimum discharge, 4,790 ft³/s July 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7560	9920	49200	58600	51000	10100	10300	19000	8870	6350	4950	5850
2	7620	9950	49400	56500	45000	21000	9130	18200	8580	6220	5030	5920
3	7610	10700	46800	57400	41100	22100	8260	16700	8100	6030	5120	6760
4	7590	11000	42200	56800	38100	18800	7790	15600	8710	5930	5120	6750
5	7930	11000	51700	54500	31900	14400	7440	14400	9080	5790	5150	6650
6	7840	10700	54000	52400	23300	13400	7120	11300	8720	5750	5200	6770
7	7710	11000	51600	49400	18100	14000	7080	11600	7690	5680	5170	6730
8	7580	11300	52700	47000	15400	15600	7730	11000	7060	5550	5090	6720
9	7450	11200	50900	43900	13400	15300	7700	9790	6790	5780	5090	7000
10	7230	10800	47000	42600	12700	17200	6990	9090	6650	6060	5090	7330
11	7230	10500	48400	41600	11000	29800	6600	8880	6600	5960	5080	7430
12	7260	10400	49200	40700	10300	32700	6410	9290	6610	5780	5270	7460
13	7510	11000	53800	39600	9920	29100	6280	9550	6350	5600	5500	7330
14	7760	12400	53500	36700	9960	24200	6660	9400	6250	5570	5490	7440
15	7550	14800	51400	37600	9750	22700	7320	9150	6180	5470	5510	7580
16	7450	16300	48900	32900	9340	25800	7120	8810	6010	5420	5650	8340
17	7260	18000	45500	29500	8980	34200	7010	8530	5920	5390	5750	8680
18	7950	25900	45500	28800	8840	29100	6870	9200	5830	5610	5810	9170
19	9940	69100	43900	24200	10500	24800	7340	9240	5670	5560	5860	8820
20	9240	72400	42400	22500	15400	23400	11900	8710	5560	5510	6060	8380
21	8990	60700	42200	22500	13100	22100	16800	8250	5570	5420	6130	8130
22	8750	56700	38600	19700	11400	18400	18400	7610	5660	5420	6010	8000
23	8950	53100	36200	18600	10100	16200	22300	7290	5670	5390	5830	7930
24	10200	52700	38300	18000	9310	15200	24300	7370	5530	5420	6140	7850
25	15800	52800	45300	18900	8600	13800	21400	7360	5450	5380	6100	7790
26	17200	50000	57200	27800	8420	12500	19800	7200	5380	5300	5930	7910
27	13500	45700	51300	30300	8650	12500	17500	7050	5320	5330	6040	7930
28	11400	47300	47000	27600	9510	12200	16100	6790	5290	5070	5930	7770
29	11900	47600	51600	25200	---	11600	17100	7200	5420	4850	5860	7710
30	12100	46000	56600	22800	---	11100	18300	7730	5560	4830	5830	7660
31	10800	---	60700	34800	---	11100	---	8000	---	4930	5860	---
TOTAL	284860	880970	1503000	1119400	473080	594400	345050	309290	196080	172350	172650	225790
MEAN	9189	29370	48480	36110	16900	19170	11500	9977	6536	5560	5569	7526
MAX	17200	72400	60700	58600	51000	34200	24300	19000	9080	6350	6140	9170
MIN	7230	9920	36200	18000	8420	10100	6280	6790	5290	4830	4950	5850
AC-FT	565000	1747000	2981000	2220000	938400	1179000	684400	613500	388900	341900	342500	447900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	MEAN	7775	14810	21900	20620	14950	12960	11030	9945	7572	4873	5313	6849
MAX	10970	30850	48480	36750	33520	36070	21680	17120	16150	6283	7117	8986	
(WY)	1985	1985	1997	1971	1996	1972	1993	1996	1984	1969	1971	1972	
MIN	4203	4924	3848	3695	2859	5168	4823	4009	3658	3883	4249	4305	
(WY)	1993	1988	1977	1977	1977	1992	1977	1987	1987	1978	1987	1992	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1969 - 1997

ANNUAL TOTAL	6664280	6276920		
ANNUAL MEAN	18210	17200		11540
HIGHEST ANNUAL MEAN				17800
LOWEST ANNUAL MEAN				5233
HIGHEST DAILY MEAN	72400	Nov 20	72400	Nov 20 1996
LOWEST DAILY MEAN	4600	Jul 11	4830	Jul 30 1977
ANNUAL SEVEN-DAY MINIMUM	4680	Jul 9	4970	2410
ANNUAL RUNOFF (AC-FT)	13220000		12450000	8360000
10 PERCENT EXCEEDS	46900		47100	25100
50 PERCENT EXCEEDS	10000		9170	7880
90 PERCENT EXCEEDS	5460		5540	4550

WILLAMETTE RIVER BASIN

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 sea level (levels by National Weather Service).
Prior to Nov. 6, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the period June 12 to Aug. 6, which are poor. Discharges from once-daily stage readings for the period June 12 to July 30, Aug. 2-5, computed from data obtained through the U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Slight regulation caused by lopond upstream from Noti. No diversion upstream from station.

AVERAGE DISCHARGE.--62 years (water years 1936-97), 229 ft³/s, 34.87 in/yr, 166,000 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)
Nov. 19	1530	4,930	18.03	Dec. 27	0230	2,680	14.84
Dec. 5	1000	2,970	15.37	Dec. 30	0500	4,540	17.57
Dec. 8	2000	3,060	15.51	Feb. 1	0200	2,560	14.55

Minimum discharge, 14 ft³/s Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	47	783	3780	2080	303	275	232	182	e56	e27	23
2	19	43	772	3660	1160	1000	257	219	132	e62	e26	21
3	14	41	872	2570	832	1040	248	211	121	e61	e27	19
4	16	42	938	1540	680	799	238	197	132	e58	e25	19
5	18	49	2580	1130	561	619	228	186	118	e55	e24	19
6	19	47	1580	898	489	574	220	181	106	e52	e25	17
7	18	50	1350	751	464	547	216	171	98	e54	22	18
8	16	49	2550	640	418	506	213	164	96	e52	22	17
9	16	46	2330	563	378	462	206	158	91	e54	21	17
10	16	44	1520	503	349	664	198	149	87	e56	20	19
11	16	42	1460	457	330	1390	189	147	86	e52	19	21
12	18	44	1240	417	341	1150	183	141	e90	e48	18	19
13	39	61	1350	374	309	980	185	136	e103	e48	19	21
14	43	87	1200	345	293	764	200	132	e89	e43	19	41
15	41	93	876	320	279	672	197	129	e81	e43	17	59
16	40	110	701	302	270	658	183	125	e78	e43	17	96
17	34	193	585	350	264	942	173	120	e76	e42	18	84
18	90	743	500	401	249	784	170	115	e66	e39	19	75
19	124	4060	446	367	345	648	193	112	e63	e40	21	72
20	78	2880	421	367	364	571	463	107	e61	e38	20	51
21	50	963	561	395	326	499	351	107	e58	e37	27	39
22	44	846	741	410	296	438	314	105	e68	e36	22	34
23	49	701	721	377	272	396	433	109	e73	e33	19	30
24	88	654	928	343	253	371	403	110	e77	e31	29	28
25	163	591	1040	393	236	345	339	106	e71	e30	29	26
26	134	461	1940	707	230	327	297	101	e67	e32	29	29
27	79	399	2450	609	231	316	269	101	e66	e30	41	35
28	63	598	1680	618	221	323	252	106	e107	e28	33	31
29	79	615	2280	559	---	301	254	121	e63	e27	31	29
30	65	510	4070	533	---	283	240	118	e57	e29	28	27
31	53	---	3490	1650	---	278	---	180	---	e28	24	---
TOTAL	1561	15109	43955	26329	12520	18950	7587	4396	2663	1337	738	1036
MEAN	50.4	504	1418	849	447	611	253	142	88.8	43.1	23.8	34.5
MAX	163	4060	4070	3780	2080	1390	463	232	182	62	41	96
MIN	14	41	421	302	221	278	170	101	57	27	17	17
AC-FT	3100	29970	87180	52220	24830	37590	15050	8720	5280	2650	1460	2050
CFSM	.56	5.64	15.9	9.51	5.01	6.85	2.83	1.59	.99	.48	.27	.39
IN.	.65	6.29	18.31	10.97	5.22	7.89	3.16	1.83	1.11	.56	.31	.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1997, BY WATER YEAR (WY)

MEAN	39.7	204	468	578	552	411	255	128	66.3	30.6	17.0	17.6
MAX	300	708	1425	1260	1283	923	684	340	164	65.2	35.5	34.5
(WY)	1948	1974	1956	1956	1996	1938	1937	1963	1937	1937	1993	1997
MIN	8.00	16.6	23.8	25.2	62.5	131	57.2	54.6	24.7	6.20	3.61	7.42
(WY)	1988	1937	1977	1977	1977	1992	1977	1977	1977	1977	1977	1967

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1936 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	154568			136181					
ANNUAL MEAN	422			373			229		
HIGHEST ANNUAL MEAN							424		1974
LOWEST ANNUAL MEAN							45.5		1977
HIGHEST DAILY MEAN	5360	Feb	7	4070	Dec	30	5850	Dec	22 1964
LOWEST DAILY MEAN	12	Sep	3	14	Oct	3	.04	Aug	13 1977
ANNUAL SEVEN-DAY MINIMUM	13	Sep	6	17	Oct	3	.06	Aug	8 1977
ANNUAL RUNOFF (AC-FT)	306600			270100			166000		
ANNUAL RUNOFF (CFSM)	4.73			4.18			2.57		
ANNUAL RUNOFF (INCHES)	64.39			56.73			34.87		
10 PERCENT EXCEEDS	1160			910			576		
50 PERCENT EXCEEDS	167			132			93		
90 PERCENT EXCEEDS	18			21			15		

e Estimated

WILLAMETTE RIVER BASIN

213

14168000 FERN RIDGE LAKE NEAR ELMIRA, OR

LOCATION.--Lat 44°07'15", long 123°18'00", near center of sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, in control house at spillway section of dam across Long Tom River and Coyote Creek, 4.5 mi northeast of Elmira, and at mile 25.7.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin (see REMARKS).

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1971, published as Fern Ridge Reservoir near Elmira.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earth-fill dam with concrete outlet and spillway, completed in 1941 by Corps of Engineers; storage began Nov. 13, 1941. Total capacity (new capacity table put into use Oct. 1, 1992 based on Dec. 1992 resurvey), 107,400 acre-ft at elevation 375.1 ft, maximum pool elevation. Usable capacity, 93,350 acre-ft between elevations 340.0 ft, sill of outlet gate, and 373.5 ft, normal maximum operating pool level. Reservoir used for flood control and improvement of navigation. Since November 1951, most of flow of Amazon Creek has been diverted in SE 1/4 sec.29, T.17 S., R.4 W., and discharged into Fern Ridge Lake; drainage area at point of diversion, 21.3 mi².

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,500 acre-ft Dec. 27, 1955, elevation, 375.83 ft; minimum contents since first filling in 1942, 163 acre-ft Nov. 11, 1950, elevation, 344.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 94,360 acre-ft May 31, elevation, 373.62 ft; minimum contents, 2,760 acre-ft Nov. 16, elevation, 352.78 ft.

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

349	439	356	6,810	364	30,560	372	81,180
350	835	358	10,680	366	40,480	374	97,590
352	2,090	360	15,830	368	52,350	375	106,400
354	4,030	362	22,410	370	65,980		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	369.59	359.69	362.67	371.01	360.40	365.52	370.51	373.45	373.50	373.30	372.62	371.91
2	369.32	359.22	362.17	372.12	360.79	366.78	370.61	373.45	373.48	373.29	372.59	371.89
3	369.04	358.75	361.67	372.54	360.45	367.81	370.69	373.44	373.49	373.28	372.56	371.86
4	368.78	358.29	362.08	372.35	359.81	368.26	370.77	373.42	373.46	373.27	372.53	371.84
5	368.51	357.79	363.89	371.77	359.22	368.00	370.85	373.44	373.45	373.25	372.50	371.81
6	368.23	357.24	365.00	371.05	358.69	367.60	370.92	373.46	373.44	373.24	372.47	371.79
7	367.95	356.64	365.87	370.17	359.13	367.31	370.99	373.50	373.44	373.22	372.43	371.76
8	367.67	356.14	367.60	369.17	359.81	367.28	371.07	373.51	373.43	373.22	372.40	371.74
9	367.38	355.67	368.60	368.02	360.33	367.43	371.14	373.51	373.43	373.20	372.36	371.72
10	367.08	355.15	368.98	366.73	360.78	367.99	371.20	373.51	373.43	373.18	372.34	371.70
11	366.78	354.58	369.12	365.26	361.19	368.36	371.25	373.52	373.43	373.16	372.30	371.68
12	366.51	354.12	369.01	363.50	361.60	368.38	371.31	373.50	373.47	373.14	372.27	371.66
13	366.24	353.75	368.87	361.73	361.82	368.19	371.37	373.52	373.47	373.13	372.24	371.69
14	365.97	353.37	368.44	359.80	361.89	368.01	371.42	373.52	373.47	373.11	372.21	371.69
15	365.69	352.92	367.73	357.75	361.93	367.92	371.48	373.52	373.47	373.09	372.17	371.77
16	365.38	352.90	366.79	356.03	362.06	367.98	371.53	373.52	373.47	373.07	372.15	371.78
17	365.13	353.15	365.62	354.43	362.24	368.08	371.57	373.51	373.45	373.04	372.11	371.84
18	365.01	356.67	364.28	353.73	362.47	368.17	371.63	373.51	373.44	373.01	372.08	371.86
19	364.72	364.93	362.76	353.70	362.90	368.29	371.81	373.49	373.43	372.99	372.06	371.86
20	364.35	367.68	361.16	353.77	363.27	368.47	372.01	373.49	373.41	372.97	372.08	371.85
21	363.96	367.97	359.60	353.80	363.58	368.69	372.19	373.49	373.39	372.94	372.05	371.85
22	363.96	367.84	358.10	353.78	363.84	368.95	372.42	373.49	373.39	372.90	372.02	371.83
23	364.03	367.35	356.92	353.62	364.06	369.15	372.71	373.51	373.38	372.89	372.03	371.80
24	364.04	366.95	355.56	353.48	364.26	369.34	372.92	373.56	373.37	372.85	372.03	371.78
25	363.65	366.28	354.79	353.93	364.44	369.50	373.06	373.54	373.35	372.82	372.01	371.78
26	363.08	365.53	357.87	354.06	364.61	369.66	373.18	373.53	373.34	372.78	372.02	371.76
27	362.44	364.87	360.84	353.46	364.78	369.83	373.28	373.53	373.32	372.76	372.01	371.73
28	361.92	364.42	362.65	353.76	364.95	369.99	373.41	373.56	373.32	372.73	372.00	371.71
29	361.36	363.81	364.59	353.13	---	370.12	373.44	373.52	373.31	372.70	371.98	371.65
30	360.78	363.11	367.17	353.44	---	370.25	373.45	373.52	373.31	372.68	371.96	371.54
31	360.22	---	369.26	357.62	---	370.39	---	373.55	---	372.65	371.94	---
MAX	369.59	367.97	369.26	372.54	364.95	370.39	373.45	373.56	373.50	373.30	372.62	371.91
MIN	360.22	352.90	354.79	353.13	358.69	365.52	370.51	373.42	373.31	372.65	371.94	371.54
(†)	16480	26730	60730	9850	35040	68840	92930	93770	91760	86350	80710	77590
(‡)	-48560	+10250	+34000	-50880	+25190	+33800	+24090	+840	-2010	-5410	-5640	-3120

CAL YR 1996 MAX 373.57 MIN 352.90 AC-FT† +51840
WTR YR 1997 MAX 373.56 MIN 352.90 AC-FT† +12550

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

WILLAMETTE RIVER BASIN

14169000 LONG TOM RIVER NEAR ALVADORE, OR

LOCATION.--Lat 44°07'25", long 123°17'55", in SW 1/4 NE 1/4 sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, on left bank 0.2 mi downstream from Fern Ridge Dam, 1.7 mi west of Alvadore, and at mile 25.5.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin.

PERIOD OF RECORD.--August 1939 to current year. Prior to October 1943, published as "at Smithfield," and October 1943 to September 1959, as "below Fern Ridge Dam, near Smithfield." Prior to October 1985, published figures included diversion from Fern Ridge Reservoir into Coyote Creek channel (station 14169001).

REVISED RECORDS.--WSP 1248: 1940-41, 1948.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 332.00 ft above sea level (levels by Corps of Engineers). Prior to Sept. 21, 1939, nonrecording gage and Sept. 21, 1939, to Sept. 30, 1943, water-stage recorder at site 2.5 mi downstream at datum 11.09 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Several small diversions for irrigation upstream from station. Approximately 7 ft³/s diverted from Fern Ridge Reservoir into Coyote Creek channel. Discharge not adjusted for storage or release from Fern Ridge Lake as evaporation from reservoir at times exceeds natural flow and diversions, and beginning in November 1951, most of flow of Amazon Creek has been diverted into Fern Ridge Lake.

AVERAGE DISCHARGE.--54 years (water years 1944-97), 519 ft³/s, 376,000 acre-ft/yr (river only), unadjusted. 12 years (water years 1986-97), 461 ft³/s, 334,100 acre-ft/yr, regulated period without diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Jan. 1, 1943, gage height, 15.12 ft, site and datum then in use; minimum daily discharge, 2 ft³/s Aug. 7, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,740 ft³/s Jan. 5, gage height, 9.90 ft; minimum discharge, 26 ft³/s Oct 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	858	828	2850	1980	1620	62	53	510	585	51	65	63
2	845	737	2820	2380	2900	63	53	510	247	45	65	63
3	840	727	2820	3750	2850	60	53	509	253	42	65	65
4	833	716	2240	4830	2590	819	53	432	249	42	65	67
5	826	707	1450	5570	2180	2540	53	224	166	42	65	67
6	819	716	2290	5390	1780	2750	53	96	140	42	66	67
7	811	720	2190	5410	642	2170	53	96	57	42	67	67
8	806	581	1260	5430	63	1270	53	148	53	42	67	67
9	797	514	2380	5440	63	677	65	174	53	46	67	67
10	792	503	3420	5410	63	860	65	176	53	54	67	67
11	786	490	3490	5380	63	2340	54	181	53	54	67	67
12	780	426	3760	5280	63	3030	54	182	53	54	67	67
13	809	366	3910	4520	372	2810	53	87	53	54	68	67
14	796	431	4210	3940	669	2270	53	84	53	54	69	66
15	806	434	4340	3390	675	1880	53	84	53	58	69	57
16	796	376	4310	2470	373	1870	53	117	52	61	69	56
17	757	334	4300	2110	219	1820	53	123	51	61	69	56
18	766	710	4150	1380	139	1530	53	100	50	62	69	56
19	826	71	3970	905	60	1200	53	87	59	63	69	56
20	896	1060	3760	973	60	842	53	75	77	63	70	56
21	874	3010	3930	983	60	404	53	62	76	61	71	56
22	94	3650	3740	983	61	53	53	51	72	58	62	74
23	27	3850	3470	978	61	53	53	49	67	62	56	94
24	292	3710	3300	906	61	53	53	94	65	65	56	96
25	1070	3780	3050	1120	61	53	53	210	61	65	56	96
26	1270	3430	1010	2360	61	53	53	179	58	65	53	96
27	1250	2890	504	2500	61	53	53	150	62	65	45	96
28	1130	2750	955	1870	61	53	53	234	63	65	45	96
29	1050	2880	1520	1860	---	53	487	420	63	65	51	219
30	954	2850	1230	1530	---	53	516	106	59	65	63	518
31	935	---	1750	1130	---	53	---	544	---	65	63	---
TOTAL	25191	44247	88379	92158	17931	31797	2513	6094	3056	1733	1966	2705
MEAN	813	1475	2851	2973	640	1026	83.8	197	102	55.9	63.4	90.2
MAX	1270	3850	4340	5570	2900	3030	516	544	585	65	71	518
MIN	27	71	504	905	60	53	53	49	50	42	45	56
AC-FT	49970	87760	175300	182800	35570	63070	4980	12090	6060	3440	3900	5370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1997, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	795	724	898	1278	823	353	190	191	98.7	62.1	56.4	73.6
MAX	1006	1475	2851	2973	3148	1026	895	497	469	150	73.6	259
(WY)	1992	1997	1997	1996	1996	1997	1993	1996	1993	1993	1993	1996
MIN	469	218	103	308	57.6	21.3	24.5	20.8	34.7	39.1	40.5	38.3
(WY)	1988	1994	1990	1992	1989	1988	1988	1987	1990	1986	1986	1990

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1986 - 1997

	1996	1997	1986-1997
ANNUAL TOTAL	348204	317770	
ANNUAL MEAN	951	871	461
HIGHEST ANNUAL MEAN			871
LOWEST ANNUAL MEAN			213
HIGHEST DAILY MEAN	4340	5570	5570
LOWEST DAILY MEAN	27	27	16
ANNUAL SEVEN-DAY MINIMUM	37	42	17
ANNUAL RUNOFF (AC-FT)	690700	630300	334100
10 PERCENT EXCEEDS	3410	2940	1210
50 PERCENT EXCEEDS	348	96	70
90 PERCENT EXCEEDS	45	53	35

WILLAMETTE RIVER BASIN

215

14170000 LONG TOM RIVER AT MONROE, OR

LOCATION.--Lat 44°18'47", long 123°17'43", in NE 1/4 sec.33, T.14 S., R.5 W., Benton County, Hydrologic Unit 17090003, on left bank in canalized river channel at Monroe, 110 ft upstream from bridge on State Highway 99W, 0.1 mi downstream from Shafer Creek, and at mile 6.8.

DRAINAGE AREA.--391 mi².

PERIOD OF RECORD.--November 1920 to July 1921, October 1921 to April 1926, November 1926 to May 1927, October 1927 to current year. Prior to October 1930, published as "near Monroe."

REVISED RECORDS.--WSP 654: Drainage area. WSP 1248: 1923, 1927, 1928(M). WSP 1288: 1952.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 270.57 ft above sea level. Prior to Nov. 24, 1944, nonrecording gage at various sites ranging from present site to 1.5 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good except for flows below 100 ft³/s, which are fair. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Several small diversions upstream from station.

AVERAGE DISCHARGE.--74 years (water years 1922-25, 1928-97), 754 ft³/s, 546,200 acre-ft/yr, unadjusted.
56 years (water years 1942-97), 775 ft³/s, 561,300 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Jan. 2, 1943, gage height, 17.14 ft, site and datum then in use, from graph based on gage readings, includes some overflow from Willamette River near Junction City; no flow Oct. 20-22, 1944 (water filling pool at gage); minimum discharge observed prior to regulation, 7 ft³/s Sept. 29, Oct. 1, 1939.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,940 ft³/s Nov. 19, gage height, 9.04 ft; minimum discharge, 28 ft³/s July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	927	926	3920	5980	2800	494	249	499	666	69	47	67
2	923	731	3830	5570	3470	2040	201	484	304	58	46	62
3	917	717	3990	5020	3580	1450	182	472	245	48	52	58
4	910	707	4120	5290	3090	1000	175	457	291	43	48	51
5	902	705	4340	5500	2780	2890	166	296	225	39	49	51
6	906	716	4220	5500	2230	3290	159	176	176	39	49	51
7	886	719	4630	5390	1530	2970	156	158	131	38	44	57
8	872	622	5090	5330	523	1820	157	169	89	34	41	56
9	864	494	4460	5250	409	1080	153	199	75	32	40	54
10	846	481	5030	5210	361	1560	152	181	73	38	43	58
11	837	469	5210	5140	336	3800	138	198	71	45	42	58
12	829	445	5100	5050	380	3910	132	187	72	46	36	65
13	834	378	5740	4790	411	3850	129	139	81	52	36	68
14	826	436	5250	3990	746	3090	130	105	82	48	39	76
15	820	471	5110	3680	732	2520	130	105	75	36	39	93
16	805	442	4960	2860	599	2690	123	110	71	41	41	112
17	793	435	4860	2570	388	3030	118	126	68	44	51	124
18	827	1280	4750	2250	351	2280	116	115	57	46	48	126
19	915	6190	4500	1120	431	1720	131	86	52	48	44	105
20	1040	4010	4300	1260	452	1340	405	76	72	56	53	91
21	998	3700	4770	1310	339	882	255	62	79	52	65	77
22	427	4540	4880	1230	294	373	227	53	87	39	61	74
23	52	4530	4650	1150	269	326	529	56	80	38	43	111
24	65	4530	4680	1060	257	293	351	72	71	44	46	111
25	1080	4320	4540	1360	243	264	243	168	70	45	62	109
26	1450	4100	5170	3190	239	253	208	204	61	47	64	112
27	1400	3540	2950	3330	240	251	190	144	60	55	62	115
28	1310	3800	2280	2710	240	284	181	139	67	53	51	114
29	1200	3610	4920	2440	---	239	389	376	71	43	38	140
30	1080	3570	4830	2150	---	220	512	190	72	44	59	406
31	1020	---	5780	3600	---	237	---	307	---	46	68	---
TOTAL	27561	61614	142860	110280	27720	50446	6387	6109	3694	1406	1507	2852
MEAN	889	2054	4608	3557	990	1627	213	197	123	45.4	48.6	95.1
MAX	1450	6190	5780	5980	3580	3910	529	499	666	69	68	406
MIN	52	378	2280	1060	239	220	116	53	52	32	36	51
AC-FT	54670	122200	283400	218700	54980	100100	12670	12120	7330	2790	2990	5660

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1997, BY WATER YEAR (WY)

	MEAN	764	951	1787	2151	1626	908	476	251	96.5	44.2	74.3	200
MAX	1895	3437	5355	6222	4683	2761	2277	1193	697	148	524	960	
(WY)	1948	1951	1956	1956	1956	1957	1963	1963	1993	1993	1951	1955	
MIN	27.1	91.5	55.5	43.5	44.1	136	54.5	50.3	28.6	23.0	20.0	12.4	
(WY)	1942	1953	1977	1977	1977	1978	1977	1987	1987	1965	1944	1943	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1942 - 1997
ANNUAL TOTAL	525577	442436	
ANNUAL MEAN	1436	1212	775
HIGHEST ANNUAL MEAN			1517
LOWEST ANNUAL MEAN			177
HIGHEST DAILY MEAN	8560	Feb 7	6190
LOWEST DAILY MEAN	28	Jul 23	32
ANNUAL SEVEN-DAY MINIMUM	35	Aug 26	38
ANNUAL RUNOFF (AC-FT)	1042000		877600
10 PERCENT EXCEEDS	4620		4530
50 PERCENT EXCEEDS	465		291
90 PERCENT EXCEEDS	41		47

14174000 WILLAMETTE RIVER AT ALBANY, OR

LOCATION.--Lat 44°38'20", long 123°06'20", in SW 1/4 sec.6, T.11 S., R.3 W., Linn County, Hydrologic Unit 17090003, on right bank 5 ft upstream from bridge on U.S. Highway 20 (Ellsworth Street) in Albany, 0.2 mi downstream from Calapooia River, and at mile 119.31.

DRAINAGE AREA.--4,840 mi², approximately.

PERIOD OF RECORD.--November 1878 to April 1888 (fragmentary), January to June 1892, November 1892 to September 1894, December 1894 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 694: Drainage area. WSP 904: 1939. WSP 964: 1881, 1890, 1894, 1897, 1901, 1903, 1908, 1910, 1916, 1923, 1927, 1932(M). WSP 984: 1916. WSP 1248: 1895, 1902, 1907, 1915(M), 1917(M), 1918-19, 1934(M). WSP 1318 (monthly and annual figures only): 1894, 1897, 1901-3, 1907-8, 1910, 1916, 1918-19, 1923, 1927.

GAGE.--Water-stage recorder. Datum of gage is 167.18 ft above sea level. Prior to Sept. 27, 1906, nonrecording gage at site 0.2 mi upstream at datum 5.00 ft higher. Sept. 27, 1906, to Nov. 12, 1934, nonrecording gage at site 300 ft upstream at datum 5.00 ft higher. Nov. 14, 1934, to Sept. 30, 1962, at datum 5.00 ft higher.

REMARKS.--Records good. Discharges for period Sept. 27-30 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) system. Flow regulated by nine reservoirs upstream from station. Albany power canal diverts water from South Santiam River at Lebanon and discharges into Calapooia River near mouth; small diversions for irrigation and municipal water supply.

AVERAGE DISCHARGE.--103 years (water years 1894, 1896-1997), 14,420 ft³/s, 40.46 in/yr, 10,450,000 acre-ft/yr. 29 years (water years 1969-97), 14,360 ft³/s, 40.31 in/yr, 10,400,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 266,000 ft³/s Jan. 14, 1881, gage height, 37.8 ft, present datum; minimum discharge, 1,840 ft³/s Sept. 1, 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 4, 1861, reached a stage of 41.0 ft, discharge, 340,000 ft³/s, from rating curve extended above 220,000 ft³/s. Flood of Feb. 4, 1890, reached a stage of 38.9 ft, discharge, 291,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 101,000 ft³/s Nov. 21, gage height, 27.87 ft; minimum discharge, 5,390 ft³/s July 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8590	11800	54300	92900	55700	12700	13400	21000	10300	6720	5470	6380
2	8710	11100	57700	95100	65300	23200	12300	20900	10400	7030	5510	6360
3	8720	11500	60000	86800	59600	34100	11000	19700	9700	6770	5630	6700
4	8710	12100	57700	78400	51200	29900	10200	18300	9790	6600	5660	7230
5	8890	12100	60300	72700	44700	24100	9720	17200	10300	6430	5630	7070
6	8960	12000	69500	67800	35300	22000	9290	14900	10100	6320	5660	7070
7	8860	11800	73300	63700	27100	21700	8950	13200	9450	6270	5690	7190
8	8740	12200	76400	59600	22400	22200	9360	13200	8420	6190	5650	7140
9	8620	12200	79300	55700	18500	21200	9590	12100	7980	6210	5600	7150
10	8430	11900	74000	52000	16600	23200	9170	11000	7730	6540	5620	7560
11	8320	11600	68000	49800	15300	35700	8540	10600	7620	6660	5620	7740
12	8340	11400	66800	48200	13800	45400	8200	10600	7620	6510	5620	7840
13	8540	11500	66700	46700	13600	43500	7980	10900	7490	6320	5890	7860
14	8790	12500	68700	44700	13200	36500	8110	10800	7340	6220	5930	7920
15	8770	14700	67100	41300	13100	31100	8870	10500	7200	6100	5950	8230
16	8690	16900	62500	40300	12600	31300	9050	10200	7050	6000	6010	8520
17	8570	18700	57700	36000	11900	39100	8770	9780	6890	5970	6150	9290
18	8670	23200	53500	39900	11500	42500	8580	10000	6780	6030	6250	9890
19	10400	50900	51600	34900	12200	34700	8720	10400	6610	6130	6260	9750
20	11200	85100	49400	29200	17600	31500	11700	10100	6470	6130	6400	9350
21	10500	97500	48900	29100	18000	29500	18400	9480	6450	6070	6660	8930
22	10100	83100	50400	26900	15300	25200	19200	9000	6540	6020	6550	8680
23	9450	71400	47600	24100	13500	21200	22900	8530	6660	6010	6430	8550
24	9900	64400	46800	22500	12200	19100	27100	8460	6510	6000	6490	8460
25	14300	63200	51100	22200	11300	17800	25900	8520	6380	5930	6690	e8400
26	19100	61400	65800	28600	10700	15900	23100	8550	6270	5910	6580	e8500
27	17300	57100	84700	37500	10800	15400	20900	8290	6190	5890	6560	8520
28	14300	55000	80000	35900	11500	15200	18900	8170	6130	5830	6540	8420
29	13400	56000	71200	34000	---	14800	18500	8170	6190	5520	6440	8340
30	14000	54900	78700	30600	---	14000	20200	8940	6270	5420	6360	8340
31	13300	---	86100	38300	---	13700	---	9300	---	5450	6370	---
TOTAL	323170	1039200	1985800	1465400	634500	807400	406600	360790	228830	191200	187870	241380
MEAN	10420	34640	64060	47270	22660	26050	13550	11640	7628	6168	6060	8046
MAX	19100	97500	86100	95100	65300	45400	27100	21000	10400	7030	6690	9890
MIN	8320	11100	46800	22200	10700	12700	7980	8170	6130	5420	5470	6360
AC-FT	641000	2061000	3939000	2907000	1259000	1601000	806500	715600	453900	379200	372600	478800
CFSM	2.15	7.16	13.2	9.77	4.68	5.38	2.80	2.40	1.58	1.27	1.25	1.66
IN.	2.48	7.99	15.26	11.26	4.88	6.21	3.13	2.77	1.76	1.47	1.44	1.86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	MEAN	8794	17380	28740	27550	21190	17280	13860	11330	8462	5314	5580	7094
MAX	11780	40850	64060	47270	50470	43270	26860	19950	18460	7333	7313	8985	
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1993	1969	1971	1972	
MIN	4915	5425	4150	3901	3208	6808	5630	4733	4091	4084	4375	4347	
(WY)	1993	1988	1977	1977	1977	1978	1977	1973	1987	1978	1992	1992	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1969 - 1997
ANNUAL TOTAL	8548090	7872140	
ANNUAL MEAN	23360	21570	14360
HIGHEST ANNUAL MEAN			22550
LOWEST ANNUAL MEAN			5831
HIGHEST DAILY MEAN	117000	Feb 9	117000
LOWEST DAILY MEAN	5050	Jul 12	2570
ANNUAL SEVEN-DAY MINIMUM	5120	Jul 10	2680
ANNUAL RUNOFF (AC-FT)	16960000	15610000	10400000
ANNUAL RUNOFF (CFSM)	4.83	4.46	2.97
ANNUAL RUNOFF (INCHES)	65.70	60.50	40.31
10 PERCENT EXCEEDS	57700	58500	33200
50 PERCENT EXCEEDS	11700	10800	9100
90 PERCENT EXCEEDS	5730	6190	4980

e Estimated

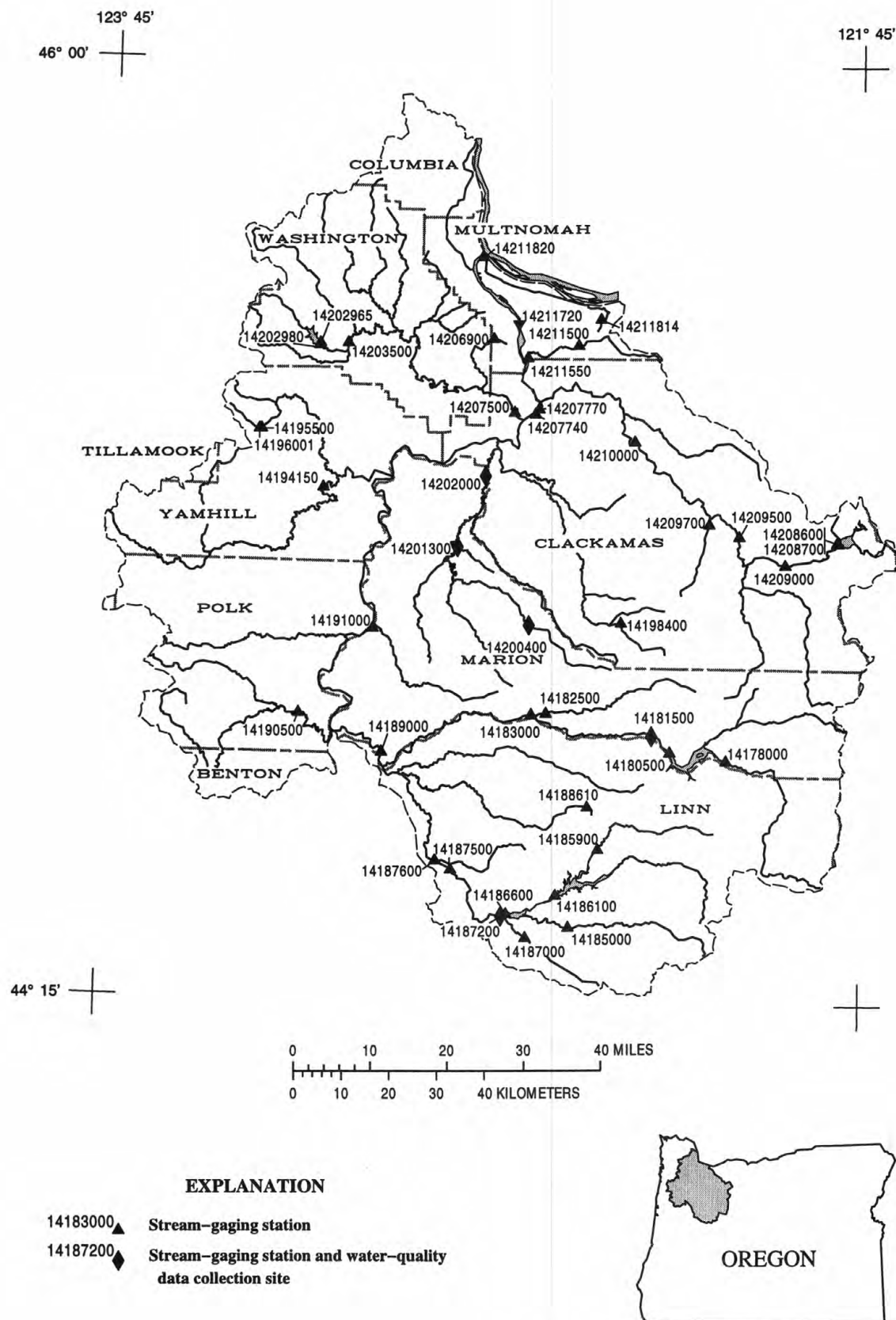


Figure 24. Location of surface-water and water-quality stations in the Willamette River Basin, downstream from the Luckiamute River.

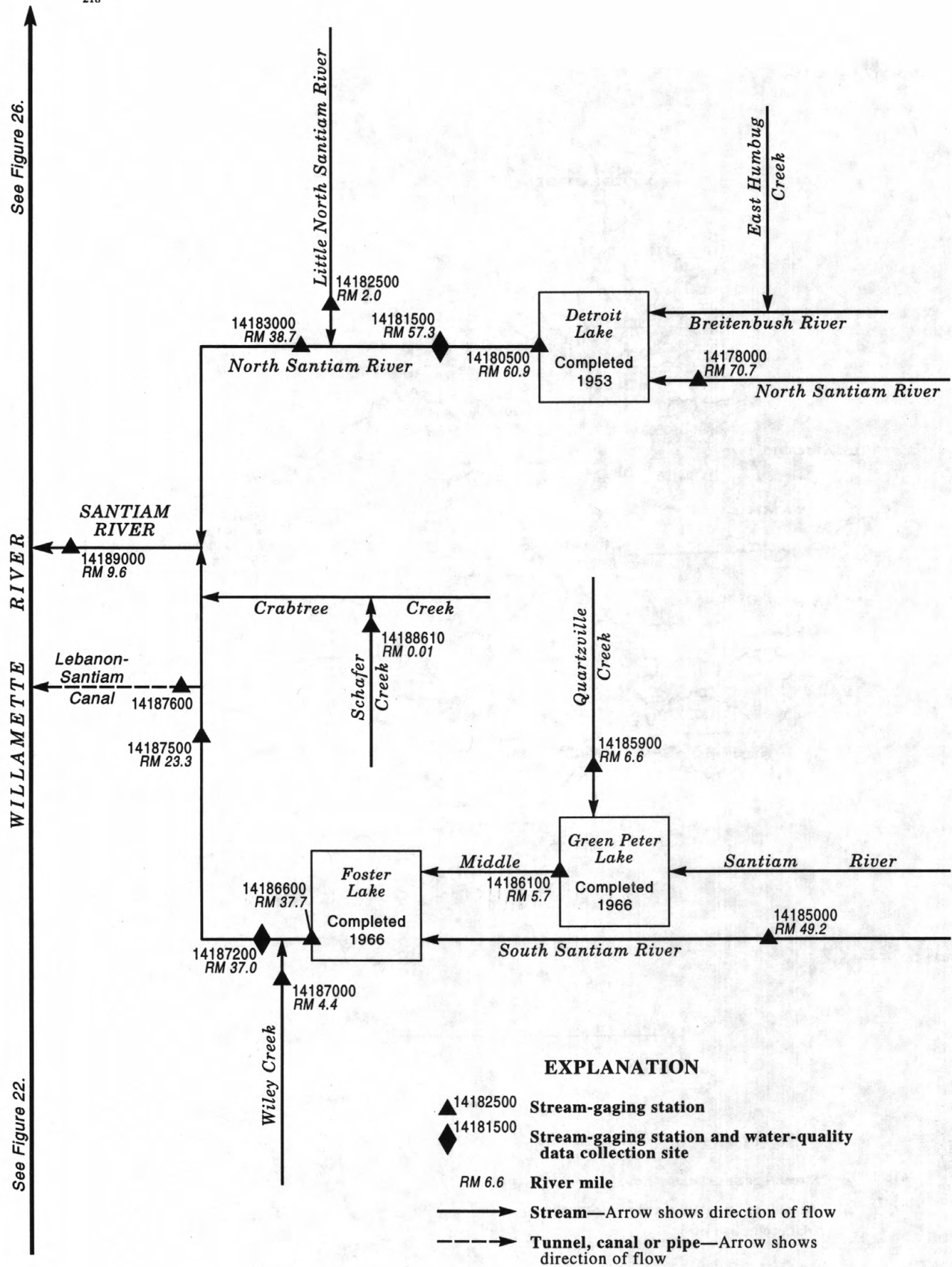


Figure 25. Schematic diagram showing gaging stations and diversions in the Santiam River Basin.

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR

LOCATION.--Lat 44°42'25", long 122°06'00", in SE 1/4 NW 1/4 sec.17, T.10 S., R.6 E., Marion County, Hydrologic Unit 17090005, on right bank 0.5 mi downstream from Boulder Creek, 3.0 mi southeast of Detroit, and at mile 70.7.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--January 1907 to October 1909, October 1928 to current year. Monthly discharge only January 1907, published in WSP 1318. Prior to October 1952, published as "at Detroit."

REVISED RECORDS.--WSP 814: Drainage area at former site. WSP 1248: 1931. WRD OR-85-2: 1982-82(P).

GAGE.--Water-stage recorder. Datum of gage is 1,590.07 ft above sea level. See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Records good except for flows above 3,000 ft³/s, which are fair. Discharges for period March 7 to April 3 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. No regulation or diversion upstream from station. Continuous water-quality records for the period April 1951 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--71 years (water years 1908, 1909, 1929-97), 1,006 ft³/s, 63.25 in/yr, 728,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft³/s Dec. 22, 1964, slope-area measurement of peak flow, gage height, 13.76 ft, temporary backwater from debris; minimum discharge, 250 ft³/s Sept. 13, 1909.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1900	*11,200	*8.76	Jan. 31	2200	8,700	7.95
Dec. 4	2030	6,500	7.13	Mar. 11	0200	4,010	5.98
Dec. 26	1630	8,300	7.81	Mar. 17	0100	4,510	6.24
Jan. 1	0430	10,200	8.44	Apr. 20	0630	4,920	6.44

Minimum discharge, 390 ft³/s Oct. 10-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	404	730	3190	8740	6370	1140	1350	2000	1530	942	606	536
2	399	686	2440	8070	3860	1200	1270	1810	1310	858	601	532
3	400	657	2010	5740	2830	1120	1220	1790	1350	815	600	549
4	403	660	3170	3850	2280	1050	1170	1780	1380	808	600	535
5	439	633	4350	2940	1930	1010	1120	1730	1300	809	600	529
6	414	631	3020	2400	1700	1100	1080	1820	1180	784	611	522
7	404	720	2840	2130	1560	1350	1080	1760	1120	762	606	515
8	402	674	3350	1890	1430	1330	1120	1700	1070	752	586	509
9	399	647	2920	1710	1330	1420	1100	1770	1030	873	576	507
10	394	624	3020	1810	1240	2770	1060	1870	1020	848	570	517
11	393	607	2670	1740	1200	3540	1010	2060	1010	777	569	536
12	399	596	2470	1590	1210	2580	984	2230	1050	738	567	533
13	528	807	2330	1460	1130	2070	1030	2210	998	720	568	519
14	521	874	1970	1370	1190	1760	1400	2070	947	707	567	557
15	574	874	1720	1290	1220	1980	1600	2000	944	701	569	660
16	543	863	1560	1230	1200	3520	1700	1860	951	696	563	752
17	481	969	1410	1540	1310	3810	1740	1800	942	689	560	836
18	834	1230	1290	1790	1310	2930	1790	1710	915	678	557	759
19	782	7590	1200	1720	1840	2810	2150	1570	878	671	555	680
20	645	5210	1250	1690	1740	3200	4160	1470	836	667	570	611
21	583	3050	1220	1620	1540	2710	3060	1350	870	672	574	574
22	676	2840	1130	1500	1400	2320	2820	1250	902	668	561	551
23	740	2420	1140	1390	1290	2060	3270	1210	882	652	553	535
24	1410	2880	1360	1300	1210	1870	2840	1200	826	638	656	528
25	1340	3070	3400	1260	1160	1800	2380	1160	800	631	594	522
26	1040	2330	6910	1200	1150	1950	2210	1080	789	625	583	549
27	874	2050	6270	1140	1130	1980	2410	1160	773	621	585	590
28	824	3100	4120	1420	1070	1860	2210	1240	772	622	565	543
29	1080	2440	4730	1330	---	1670	2170	1340	808	626	554	528
30	906	2290	5840	1730	---	1550	2150	1320	915	618	544	520
31	805	---	6040	6300	---	1460	---	1480	---	613	540	---
TOTAL	20036	52752	90340	74890	47830	62920	54654	50800	30098	22281	17910	17134
MEAN	646	1758	2914	2416	1708	2030	1822	1639	1003	719	578	571
MAX	1410	7590	6910	8740	6370	3810	4160	2230	1530	942	656	836
MIN	393	596	1130	1140	1070	1010	984	1080	772	613	540	507
AC-FT	39740	104600	179200	148500	94870	124800	108400	100800	59700	44190	35520	33990
CFSM	2.99	8.14	13.5	11.2	7.91	9.40	8.43	7.59	4.64	3.33	2.67	2.64
IN.	3.45	9.09	15.56	12.90	8.24	10.84	9.41	8.75	5.18	3.84	3.08	2.95

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1997, BY WATER YEAR (WY)

	MEAN	506	988	1382	1315	1308	1194	1360	1416	1087	624	472	436
MAX	1215	2167	3840	2991	3552	2865	2137	2762	2759	1101	663	595	
(WY)	1951	1951	1965	1953	1996	1972	1943	1949	1933	1950	1974	1971	
MIN	312	335	432	383	404	616	610	600	412	363	319	309	
(WY)	1981	1994	1977	1937	1977	1941	1941	1992	1992	1992	1992	1909	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1908 - 1997

ANNUAL TOTAL	533109	541645		
ANNUAL MEAN	1457	1484		
HIGHEST ANNUAL MEAN			1006	
LOWEST ANNUAL MEAN			1506	1974
HIGHEST DAILY MEAN	19100	Feb 7	8740	Jan 1
LOWEST DAILY MEAN	393	Oct 11	393	Oct 11
ANNUAL SEVEN-DAY MINIMUM	401	Oct 6	401	Oct 6
ANNUAL RUNOFF (AC-FT)	1057000		1074000	
ANNUAL RUNOFF (CFSM)	6.74		6.87	
ANNUAL RUNOFF (INCHES)	91.81		93.28	
10 PERCENT EXCEEDS	2810		2860	1810
50 PERCENT EXCEEDS	1050		1140	782
90 PERCENT EXCEEDS	465		547	400

WILLAMETTE RIVER BASIN

14180500 DETROIT LAKE NEAR DETROIT, OR

LOCATION.--Lat 44°43'20", long 122°14'55", in SW 1/4 NW 1/4 sec.7, T.10 S., R.5 E., Marion County, Hydrologic Unit 17090005, in control house near right abutment of Detroit Dam on North Santiam River, 4.9 mi west of Detroit, and at mile 60.9.

DRAINAGE AREA.--437 mi².

PERIOD OF RECORD.--January 1953 to current year. Prior to October 1971, published as Detroit Reservoir near Detroit.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with six 42-ft by 28-ft control gates. Length of dam is 1,580 ft, built by Corps of Engineers. Storage began in January 1953. Total capacity is 455,100 acre-ft and usable capacity is 340,100 acre-ft between elevations 1,425.0 ft, proposed lower limit of operation, and 1,569.0 ft, top of spillway gates. Reservoir used for flood control, power development, irrigation, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 457,900 acre-ft July 13, 1972, elevation, 1,569.79 ft; minimum contents, 115,500 acre-ft Jan. 30, 1969, elevation, 1,425.37 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 442,800 acre-ft July 2, elevation, 1,565.46 ft; minimum contents, 118,200 acre-ft Feb. 13, elevation, 1,427.27 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1539.29	1498.86	1486.76	1544.21	1491.17	1463.95	1541.56	1561.24	1564.30	1565.18	1564.49	1560.59
2	1537.72	1497.44	1482.11	1553.62	1491.96	1465.89	1541.77	1560.99	1563.99	1564.74	1564.41	1560.42
3	1536.13	1495.95	1475.27	1555.72	1489.15	1467.43	1541.93	1560.74	1563.80	1564.33	1564.31	1560.04
4	1534.55	1494.42	1475.67	1552.91	1484.37	1468.71	1541.95	1560.41	1563.60	1564.15	1564.23	1559.63
5	1532.97	1492.84	1486.07	1548.12	1478.63	1469.84	1542.28	1560.06	1563.39	1564.21	1564.14	1559.21
6	1531.33	1491.36	1488.25	1542.32	1472.07	1471.51	1542.85	1560.16	1563.17	1564.28	1564.04	1558.79
7	1529.65	1490.10	1489.14	1535.92	1464.94	1474.70	1543.49	1560.78	1563.16	1564.45	1563.94	1558.37
8	1528.00	1488.69	1496.64	1528.84	1457.01	1477.29	1544.19	1561.29	1563.42	1564.61	1563.82	1557.94
9	1526.34	1487.13	1497.89	1521.12	1448.20	1480.63	1544.84	1561.89	1563.64	1564.95	1563.70	1557.51
10	1524.60	1485.54	1497.17	1513.51	1438.63	1489.24	1545.45	1562.61	1564.01	1565.06	1563.56	1557.05
11	1522.87	1484.03	1495.45	1505.35	1431.86	1497.65	1545.99	1563.50	1564.29	1565.08	1563.43	1556.63
12	1521.18	1482.40	1491.54	1496.25	1428.03	1502.32	1546.43	1564.17	1564.51	1565.04	1563.28	1556.22
13	1519.71	1481.24	1486.85	1487.74	1427.50	1505.50	1547.08	1564.22	1564.49	1564.99	1563.18	1555.81
14	1518.28	1480.62	1480.52	1479.43	1429.06	1507.88	1548.55	1564.08	1564.48	1564.91	1563.03	1555.45
15	1517.08	1479.95	1474.95	1476.57	1431.39	1511.18	1550.21	1563.88	1564.56	1564.93	1562.94	1555.38
16	1515.69	1479.16	1472.28	1474.09	1433.64	1519.02	1551.82	1563.51	1564.66	1564.93	1562.79	1555.40
17	1514.09	1478.62	1470.26	1472.73	1436.24	1525.97	1553.35	1563.56	1564.72	1564.90	1562.60	1555.74
18	1513.78	1478.33	1467.89	1472.30	1438.74	1530.36	1554.87	1563.57	1564.69	1564.89	1562.42	1555.90
19	1512.33	1499.56	1465.05	1471.36	1444.03	1534.40	1556.30	1563.35	1564.60	1564.94	1562.28	1555.78
20	1510.38	1506.45	1462.47	1470.23	1447.87	1537.75	1557.78	1563.34	1564.46	1564.98	1562.21	1554.97
21	1508.17	1505.85	1459.74	1468.82	1450.83	1538.93	1556.56	1563.46	1564.33	1565.03	1562.11	1553.77
22	1506.89	1505.13	1456.56	1467.00	1453.18	1539.31	1556.44	1563.63	1564.22	1565.04	1561.91	1552.55
23	1506.10	1502.70	1455.05	1464.75	1455.12	1539.27	1556.95	1563.77	1564.32	1565.02	1561.75	1551.30
24	1507.06	1502.05	1456.96	1462.13	1456.83	1538.99	1557.68	1563.77	1564.56	1564.98	1561.76	1549.99
25	1506.68	1501.39	1471.00	1459.28	1458.28	1539.20	1558.72	1563.72	1564.74	1564.94	1561.58	1548.63
26	1505.28	1497.54	1491.01	1456.05	1459.68	1539.87	1559.52	1563.58	1564.78	1564.88	1561.48	1547.36
27	1503.99	1493.05	1504.25	1453.44	1461.09	1540.58	1560.46	1563.58	1564.80	1564.83	1561.34	1546.11
28	1502.61	1494.78	1508.63	1455.29	1462.30	1541.11	1560.94	1563.80	1564.86	1564.76	1561.25	1544.75
29	1502.11	1492.43	1514.66	1456.32	---	1541.25	1561.07	1564.08	1564.94	1564.71	1561.09	1543.82
30	1501.26	1488.00	1524.32	1460.03	---	1541.25	1561.23	1564.20	1565.14	1564.64	1560.94	1543.03
31	1500.15	---	1530.79	1480.81	---	1541.35	---	1564.23	---	1564.57	1560.76	---
MAX	1539.29	1506.45	1530.79	1555.72	1491.96	1541.35	1561.23	1564.23	1565.14	1565.18	1564.49	1560.59
MIN	1500.15	1478.33	1455.05	1453.44	1427.50	1463.95	1541.56	1560.06	1563.16	1564.15	1560.76	1543.03
(†)	254900	227700	333700	212600	176500	364200	428200	438500	441700	439700	426600	369300
(‡)	-107800	-27200	+106000	-121100	-36100	+187700	+64000	+10300	+3200	-2000	-13100	-57300

CAL YR 1996 MAX 1565.83 MIN 1455.05 AC-FT† +136300

WTR YR 1997 MAX 1565.18 MIN 1427.50 AC-FT† +6600

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

221

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 sea level (Federal Highway Administration bench mark). See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Detroit Lake (station 14180500) and Big Cliff Reservoir, usable capacity for reregulating purposes, 2,930 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--69 years (water years 1910-19, 1939-97), 2,325 ft³/s, 69.70 in/yr, 1,684,000 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, 15,300 ft³/s Jan. 10, 12, gage height, 9.07 ft; minimum discharge, 758 ft³/s June 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3090	3090	10700	3570	5310	1000	2130	4130	3010	1780	1030	1030
2	3070	3200	11800	5620	7900	998	2140	4080	3010	2420	1030	1030
3	3100	3140	12400	10500	9220	1000	2140	4050	2970	2200	1030	1430
4	3120	3200	7960	14100	9950	1010	2150	4080	2950	1590	1040	1450
5	3160	3150	2780	15100	9980	1000	1540	3820	2800	1280	1040	1450
6	3150	3190	5670	15100	10000	975	1030	3450	2490	1220	1040	1450
7	3090	3320	6270	15100	10000	1010	1020	2280	1960	1100	1030	1420
8	3090	3290	1370	15100	10000	1010	1120	2140	1480	1070	1050	1430
9	3070	3280	6700	15100	9960	1010	1080	2210	1400	1000	1020	1430
10	3170	3140	9320	15100	9960	1020	1090	2260	1050	1360	994	1470
11	3090	3070	9520	15100	7460	1010	1060	2150	1230	1330	1010	1470
12	3150	3120	11500	15100	5250	1010	1070	2830	1460	1310	1020	1430
13	3160	3160	11800	13200	2620	1010	1060	3960	1690	1280	1000	1430
14	3160	3180	12200	12000	1440	997	1120	3960	1620	1310	994	1450
15	3320	3190	9560	5550	1100	1000	1160	3940	1450	1140	1010	1510
16	3290	3220	5950	4910	985	1030	1140	3950	1480	1130	1020	1510
17	3190	3900	5040	5040	994	1080	1140	2980	1460	1120	1020	1560
18	3220	4770	5060	5070	978	1030	1140	2990	1540	1150	1120	1540
19	4160	1500	5070	5030	989	1020	2410	3000	1610	984	1010	1550
20	4220	4970	5170	5020	990	2630	8550	2560	1610	969	976	2540
21	4220	8040	5260	5070	1020	4390	9150	1980	1760	964	1010	3030
22	4050	8060	5300	5070	1020	4290	6350	1790	1800	1060	1040	2930
23	3210	8940	4060	5090	981	4250	6480	1780	1310	1060	1040	2990
24	4240	9010	3130	5110	987	4220	5150	2020	905	1030	1050	2980
25	4890	8990	1390	5160	984	3170	3270	2030	976	1030	1030	2980
26	4760	10300	1100	5210	987	3080	3110	2040	1210	1040	1040	2990
27	3830	10300	1770	4600	989	3050	3120	2030	1190	1050	1090	3020
28	3970	7130	4910	1440	1010	3080	3500	1820	1220	1050	1030	2950
29	3350	9520	6530	1970	---	3070	4170	1990	1250	1030	1020	2300
30	3280	11000	3890	2170	---	3080	4140	2110	1370	1020	1020	2110
31	3160	---	8520	1310	---	2920	---	3010	---	1050	1040	---
TOTAL	108030	157370	201700	252610	123064	60450	83730	87420	51261	38127	31894	57860
MEAN	3485	5246	6506	8149	4395	1950	2791	2820	1709	1230	1029	1929
MAX	4890	11000	12400	15100	10000	4390	9150	4130	3010	2420	1120	3030
MIN	3070	1500	1100	1310	978	975	1020	1780	905	964	976	1030
AC-FT	214300	312100	400100	501100	244100	119900	166100	173400	101700	75620	63260	114800
MEAN†	1732	4788	8231	6180	3745	5003	3867	2988	1763	1197	816	966
CFSM†	3.82	10.6	18.2	13.6	8.27	11.0	8.54	6.60	3.89	2.64	1.80	2.13
IN.†	4.41	11.80	20.95	15.73	8.61	12.74	9.53	7.61	4.34	3.05	2.08	2.38
AC-FT†	106500	284900	506100	380000	208000	307600	230100	183700	104900	73620	50160	57500

CAL YR 1996 TOTAL 1206280 MEAN 3296 MAX 15000 MIN 972 AC-FT 2393000 MEAN† 3484 CFSM† 7.69 IN.† 104.72 AC-FT† 2529300
WTR YR 1997 TOTAL 1253516 MEAN 3434 MAX 15100 MIN 905 AC-FT 2486000 MEAN† 3443 CFSM† 7.60 IN.† 103.20 AC-FT† 2492600

† Adjusted for change in contents, in Detroit Lake.

WILLAMETTE RIVER BASIN

14181500 NORTH SANTIAM RIVER AT NIAGARA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: January 1953 to September 1997 (discontinued).

INSTRUMENTATION.--Temperature recorder since January 1953.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.5°C Aug. 21, 1997; minimum, 1.0°C Jan. 30 to Feb. 4, 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 19.5°C Aug. 21; minimum, 4.0°C many days in January and February.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.5	11.5	12.0	---	---	---	---	---	---	6.0	5.0	5.5
2	12.0	11.5	12.0	---	---	---	---	---	---	5.0	5.0	5.0
3	12.5	12.0	12.5	---	---	---	---	---	---	5.0	5.0	5.0
4	12.5	12.5	12.5	---	---	---	---	---	---	5.0	5.0	5.0
5	13.0	12.5	12.5	---	---	---	---	---	---	5.0	5.0	5.0
6	13.0	12.5	12.5	---	---	---	---	---	---	5.0	5.0	5.0
7	---	---	---	---	---	---	---	---	---	5.0	5.0	5.0
8	---	---	---	---	---	---	---	---	---	5.0	5.0	5.0
9	---	---	---	---	---	---	---	---	---	5.0	5.0	5.0
10	---	---	---	---	---	---	---	---	---	5.0	5.0	5.0
11	---	---	---	---	---	---	---	---	---	5.0	5.0	5.0
12	---	---	---	---	---	---	---	---	---	5.0	4.5	5.0
13	---	---	---	---	---	---	---	---	---	4.5	4.5	4.5
14	---	---	---	---	---	---	---	---	---	4.5	4.5	4.5
15	---	---	---	---	---	---	---	---	---	5.0	4.5	4.5
16	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
17	---	---	---	---	---	---	---	---	---	4.5	4.5	4.5
18	---	---	---	---	---	---	---	---	---	4.5	4.0	4.5
19	---	---	---	---	---	---	---	---	---	4.0	4.0	4.0
20	---	---	---	---	---	---	---	---	---	4.0	4.0	4.0
21	---	---	---	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
22	---	---	---	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
23	---	---	---	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
24	---	---	---	---	---	---	5.0	5.0	5.0	4.0	4.0	4.0
25	---	---	---	---	---	---	5.5	5.0	5.0	4.0	4.0	4.0
26	---	---	---	---	---	---	6.0	5.5	5.5	4.0	4.0	4.0
27	---	---	---	---	---	---	6.0	5.5	6.0	4.0	4.0	4.0
28	---	---	---	---	---	---	5.5	4.5	5.0	4.0	4.0	4.0
29	---	---	---	---	---	---	6.0	4.5	5.0	4.0	4.0	4.0
30	---	---	---	---	---	---	5.5	5.0	5.5	4.5	4.0	4.0
31	---	---	---	---	---	---	6.0	5.0	5.0	5.5	4.5	5.0
MONTH	---	---	---	---	---	---	---	---	---	6.0	4.0	4.5

WILLAMETTE RIVER BASIN

223

14181500 NORTH SANTIAM RIVER AT NIAGARA, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.5	4.5	5.0	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5
2	4.5	4.5	4.5	5.0	4.5	4.5	5.5	5.0	5.0	7.0	6.0	6.5
3	4.5	4.5	4.5	4.5	4.5	4.5	---	---	---	8.0	6.0	7.0
4	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.0	5.5	7.5	6.0	6.5
5	4.5	4.0	4.5	5.0	4.5	4.5	5.0	5.0	5.0	8.5	6.5	7.5
6	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.0	5.0	8.0	6.0	6.5
7	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	6.0	7.0	6.5	7.0
8	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5
9	4.5	4.5	4.5	5.0	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.5
10	4.5	4.0	4.0	5.5	5.0	5.0	5.5	5.0	5.5	7.0	6.5	6.5
11	4.5	4.0	4.0	5.5	5.5	5.5	6.0	5.5	5.5	7.0	6.5	6.5
12	4.0	4.0	4.0	5.5	5.0	5.5	5.5	5.0	5.5	6.5	6.0	6.5
13	4.0	4.0	4.0	5.0	5.0	5.0	6.5	5.5	6.0	7.0	6.0	6.5
14	4.5	4.0	4.5	5.0	5.0	5.0	6.0	5.5	6.0	7.0	6.5	6.5
15	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	6.0	6.5	6.0	6.5
16	4.5	4.5	4.5	5.5	5.0	5.5	6.5	5.5	6.0	6.5	6.5	6.5
17	4.5	4.5	4.5	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.5	6.5
18	5.0	4.5	4.5	5.5	5.5	5.5	6.5	6.0	6.0	7.0	6.5	7.0
19	5.0	4.5	4.5	6.0	5.5	5.5	6.0	5.5	6.0	7.0	6.5	6.5
20	5.0	4.5	5.0	6.0	5.0	5.5	6.0	5.5	6.0	7.0	6.5	7.0
21	4.5	4.5	4.5	5.0	4.5	5.0	7.5	5.5	7.0	7.0	6.5	7.0
22	4.5	4.5	4.5	5.0	5.0	5.0	7.5	7.0	7.0	6.5	6.5	6.5
23	4.5	4.5	4.5	5.0	5.0	5.0	7.0	6.5	6.5	7.0	6.5	7.0
24	5.0	4.5	4.5	5.0	5.0	5.0	6.5	6.0	6.5	7.0	6.5	7.0
25	5.0	4.5	5.0	6.0	5.0	5.5	6.5	6.0	6.0	7.0	6.5	6.5
26	5.0	5.0	5.0	6.0	5.0	5.5	6.5	5.5	6.0	7.0	6.5	7.0
27	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.5	6.5	7.0	6.5	7.0
28	5.0	4.5	5.0	5.0	5.0	5.0	7.0	6.5	6.5	7.0	7.0	7.0
29	---	---	---	5.5	5.0	5.0	7.5	6.0	7.0	7.0	7.0	7.0
30	---	---	---	5.5	5.5	5.5	6.0	5.5	5.5	7.0	7.0	7.0
31	---	---	---	5.5	5.0	5.0	---	---	---	7.5	7.0	7.0
MONTH	5.5	4.0	4.5	6.0	4.5	5.1	---	---	---	8.5	5.5	6.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.5	7.0	7.0	8.5	8.0	8.0	10.5	10.0	10.0	10.5	10.5	10.5
2	7.5	7.0	7.0	8.5	8.0	8.5	10.0	10.0	10.0	11.0	10.5	10.5
3	7.5	7.0	7.0	8.5	8.0	8.0	10.5	10.0	10.0	11.0	10.5	10.5
4	7.5	6.5	7.0	9.0	8.0	8.5	10.5	10.0	10.0	10.5	10.5	10.5
5	7.5	7.0	7.5	8.5	8.0	8.5	10.5	10.0	10.0	10.5	10.5	10.5
6	7.5	7.0	7.5	8.5	8.5	8.5	10.5	10.0	10.0	11.0	10.5	10.5
7	8.0	7.0	7.5	9.0	8.5	8.5	10.5	10.0	10.0	11.0	10.5	10.5
8	8.0	7.5	7.5	9.5	8.5	9.0	10.5	10.0	10.0	11.0	10.5	10.5
9	8.0	7.5	8.0	9.0	8.5	8.5	10.5	10.0	10.5	11.0	10.5	11.0
10	8.0	7.5	8.0	9.0	8.5	9.0	10.5	10.0	10.5	10.5	10.0	10.5
11	8.0	8.0	8.0	9.0	8.5	8.5	10.5	9.5	10.0	11.0	10.5	10.5
12	8.0	7.5	8.0	9.0	9.0	9.0	10.5	10.0	10.5	11.0	10.5	11.0
13	8.0	7.5	7.5	9.5	9.0	9.0	11.0	10.0	10.5	11.0	10.5	11.0
14	8.0	7.5	7.5	9.0	8.5	9.0	10.5	10.0	10.5	11.0	10.5	11.0
15	8.0	7.5	7.5	9.0	8.5	9.0	10.5	10.0	10.0	11.0	10.5	11.0
16	8.0	7.5	7.5	9.5	9.0	9.0	11.0	10.5	10.5	11.0	10.5	10.5
17	8.0	7.5	7.5	9.5	9.0	9.0	10.5	10.5	10.5	11.0	10.5	10.5
18	7.5	7.5	7.5	9.5	9.0	9.0	13.5	10.0	11.5	11.0	11.0	11.0
19	8.0	7.5	7.5	10.0	9.5	9.5	17.0	13.5	15.5	11.0	11.0	11.0
20	8.0	7.5	8.0	10.0	9.5	9.5	18.5	17.0	18.0	11.5	11.0	11.0
21	8.0	7.5	7.5	9.5	9.0	9.5	19.5	18.0	18.5	11.5	10.5	11.0
22	8.0	7.5	7.5	9.5	9.5	9.5	18.5	13.5	17.0	11.5	11.0	11.5
23	8.0	7.5	7.5	9.5	9.5	9.5	13.5	12.0	13.0	11.5	11.0	11.5
24	8.5	7.5	8.0	9.5	9.0	9.5	12.0	11.0	11.5	12.0	11.5	11.5
25	8.5	8.0	8.5	9.5	9.5	9.5	11.5	11.0	11.5	12.0	11.5	12.0
26	8.5	8.5	8.5	10.0	9.5	9.5	11.0	10.5	11.0	12.0	11.5	12.0
27	9.0	8.5	8.5	10.0	9.5	9.5	11.0	10.5	11.0	12.0	11.5	12.0
28	9.0	8.5	8.5	10.0	9.5	9.5	11.0	10.5	11.0	12.5	11.5	12.0
29	8.5	8.0	8.5	10.0	9.5	9.5	11.0	10.5	10.5	12.5	12.0	12.0
30	8.0	8.0	8.0	10.0	9.5	10.0	10.5	10.5	10.5	12.5	12.0	12.0
31	---	---	---	10.5	10.0	10.0	10.5	10.5	10.5	---	---	---
MONTH	9.0	6.5	7.7	10.5	8.0	9.1	19.5	9.5	11.4	12.5	10.0	11.1

WILLAMETTE RIVER BASIN

14182500 LITTLE NORTH SANTIAM RIVER NEAR MEHAMA, OR

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.

DRAINAGE AREA.--112 mi² at cableway 1.2 mi downstream where all discharge measurements are made.

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 as a result of differences 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 sea level. Prior to June 12, 1948, nonrecording gage at about same site and datum.

REMARKS.--Records good. Discharges for period Mar. 4 to May 27 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. No regulation or diversion upstream from station. Records herein are for measuring site. Continuous water-quality records for the period May 1985 to September 1986 have been collected at this location.

AVERAGE DISCHARGE.--66 years (water years 1932-97), 755 ft³/s, 91.60 in/yr, 547,000 acre-ft/yr.

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.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 8,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0730	13,100	11.16	Dec. 26	0830	12,700	11.06
Dec. 4	2100	14,000	11.41	Jan. 31	1300	*16,400	*11.99
Dec. 25	0830	10,700	10.47				

Minimum discharge, 40 ft³/s Sept. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	631	3550	5350	4960	668	543	1280	911	448	75	48
2	47	514	2250	5220	2200	1140	498	1030	e608	401	72	47
3	45	442	1800	3240	1470	875	478	884	e581	303	70	46
4	45	453	4710	1970	1100	739	451	823	597	251	68	45
5	65	453	5040	1410	882	662	420	765	564	217	66	44
6	65	606	2660	1090	741	1050	394	747	485	196	64	44
7	54	1190	2780	1030	652	2530	402	694	419	177	62	43
8	50	792	4530	954	572	1650	628	622	368	163	60	42
9	48	626	2640	833	509	2650	640	621	328	308	59	40
10	46	516	2400	1370	455	5400	558	627	298	466	56	41
11	45	439	2070	1340	426	3740	488	646	277	387	55	46
12	46	395	1960	1020	531	2060	437	669	276	309	54	50
13	139	746	1890	828	508	1420	487	631	261	259	53	48
14	540	1920	1560	705	726	1090	1650	568	236	225	52	69
15	1380	1730	1210	613	893	1530	1710	537	218	198	52	156
16	784	1540	993	547	762	3830	1230	482	203	178	52	593
17	456	2440	832	1680	807	3060	1020	454	193	163	50	1370
18	1790	3490	709	2190	892	1860	902	418	190	152	49	1130
19	1650	9910	619	1470	2150	1920	1240	372	173	139	49	722
20	913	4120	727	1270	1570	2210	3150	343	161	129	52	428
21	703	2340	906	1180	1100	1550	1640	306	173	121	63	302
22	1880	2440	773	989	874	1110	1350	276	254	117	55	233
23	1450	1940	801	846	726	903	1980	269	306	110	50	192
24	3890	2770	2840	726	624	785	1870	284	299	103	67	163
25	3160	2540	8390	663	556	737	1310	296	249	97	70	143
26	1990	1710	10400	612	537	862	1050	256	217	94	60	146
27	1230	1560	5520	552	549	895	1040	291	194	90	65	179
28	1120	3490	2780	1060	500	884	886	379	180	86	59	157
29	1830	2390	3450	996	---	731	1010	466	180	82	57	138
30	1140	2040	4220	2490	---	639	1220	427	175	80	53	127
31	820	---	3520	11400	---	599	---	567	---	77	50	---
TOTAL	27470	56173	88530	55644	28272	49779	30682	17030	9574	6126	1819	6832
MEAN	886	1872	2856	1795	1010	1606	1023	549	319	198	58.7	228
MAX	3890	9910	10400	11400	4960	5400	3150	1280	911	466	75	1370
MIN	45	395	619	547	426	599	394	256	161	77	49	40
AC-FT	54490	111400	175600	110400	56080	98740	60860	33780	18990	12150	3610	13550
CFSM	7.91	16.7	25.5	16.0	9.02	14.3	9.13	4.90	2.85	1.76	.52	2.03
IN.	9.12	18.66	29.40	18.48	9.39	16.53	10.19	5.66	3.18	2.03	.60	2.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1997, BY WATER YEAR (WY)

	396	1150	1446	1330	1212	1029	985	785	454	133	63.9	108
MEAN	396	1150	1446	1330	1212	1029	985	785	454	133	63.9	108
MAX	1594	3121	3680	3615	3533	2645	1712	1439	1684	547	432	490
(WY)	1948	1943	1965	1953	1996	1932	1937	1949	1933	1983	1968	1959
MIN	17.3	25.7	193	218	260	226	268	211	53.5	32.3	19.2	24.3
(WY)	1988	1937	1977	1937	1977	1992	1941	1992	1992	1992	1961	1987

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1932 - 1997

ANNUAL TOTAL	421937	377931	755
ANNUAL MEAN	1153	1035	1146
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			400
HIGHEST DAILY MEAN	31400	Feb 7	11400
LOWEST DAILY MEAN	25	Sep 12	40
ANNUAL SEVEN-DAY MINIMUM	26	Sep 7	43
ANNUAL RUNOFF (AC-FT)	836900	749600	547000
ANNUAL RUNOFF (CFSM)	10.3	9.24	6.74
ANNUAL RUNOFF (INCHES)	140.14	125.53	91.60
10 PERCENT EXCEEDS	2450	2460	1700
50 PERCENT EXCEEDS	606	608	464
90 PERCENT EXCEEDS	45	55	42

e Estimated

LOCATION.--Lat 44°47'20", long 122°37'00", in NW 1/4 sec.18, T.9 S., R.2 E., Marion County, Hydrologic Unit 17090005, on right bank 300 ft downstream from highway bridge at Mehama, 0.5 mi downstream from Little North Santiam River, and at mile 38.71.

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to September 1914, September 1921 to current year.
Monthly discharge only September 1921, published in WSP 1318. Prior to October 1913, published as North Fork
of Santiam River at Mehama.

GAGE.--Water-stage recorder. Datum of gage is 602.49 ft above sea level. Prior to June 15, 1933, nonrecording gage at site 100 ft upstream at same datum.

AVERAGE DISCHARGE.--81 years (water years 1906, 1911-14, 1922-97), 3,369 ft³/s, 2,441,000 acre-ft/yr.
44 years (water years 1954-97), 3,467 ft³/s, 2,512,00 acre-ft/yr, regulated period.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft³/s Dec. 4, gage height, 9.35 ft; minimum discharge, 1,000 ft³/s Aug. 20.

ANNUAL TOTAL	1844560		1856520			
ANNUAL MEAN	5040		5086		3467	
HIGHEST ANNUAL MEAN					5255	1974
LOWEST ANNUAL MEAN					1743	1977
HIGHEST DAILY MEAN	46700	Feb 7	17800	Jan 4	46700	Feb 7 1996
LOWEST DAILY MEAN	1080	Aug 23	1090	Aug 20		
ANNUAL SEVEN-DAY MINIMUM	1090	Aug 19	1130	Aug 10	693	Aug 16 1992
ANNUAL RUNOFF (AC-FT)	3659000		3682000		2512000	
10 PERCENT EXCEEDS	12900		12800		6980	
50 PERCENT EXCEEDS	3000		3390		2440	
90 PERCENT EXCEEDS	1180		1230		1170	

WILLAMETTE RIVER BASIN

14185000 SOUTH SANTIAM RIVER BELOW CASCADIA, OR

LOCATION.--Lat 44°23'31", long 122°29'47", in NW 1/4 SW 1/4 sec.31, T.13 S., R.3 E., Linn County, Hydrologic Unit 17090006, on left bank, 0.2 mi upstream from Mouse Creek, 0.8 mi southwest of Cascadia, and at mile 49.2.

DRAINAGE AREA.--174 mi².

PERIOD OF RECORD.--September 1935 to current year. Monthly discharge only September 1935, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 775 ft above sea level, from topographic map. Prior to Sept. 26, 1989, at site 0.7 mi downstream at datum 759.88 above sea level. Prior to Nov. 1, 1935, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1962 to September 1967 and February 1969 to September 1987 have been collected at this location. Discharge for Nov. 17 to Dec. 12, Feb. 1, 2, Feb. 6 to Apr. 9 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database.

AVERAGE DISCHARGE.--62 years (water years 1936-97), 820 ft³/s, 64.05 in/yr, 594,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,700 ft³/s Feb. 7, 1996, gage height, 18.11 ft, from rating curve extended above 10,000 ft³/s; minimum discharge, 23 ft³/s Dec. 1, 2, 1936, site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0700	*22,500	*15.18	Jan. 1	0330	10,800	10.44
Dec. 4	2200	11,300	10.64	Jan. 31	1900	12,700	11.32
Dec. 8	1100	6,360	8.16	Mar. 11	0200	6,940	8.48
Dec. 26	0600	16,400	12.83	Mar. 16	2400	6,970	8.50
Dec. 29	2200	8,020	9.05				

Minimum discharge, 46 ft³/s Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	576	3610	7950	6490	980	823	1840	556	602	108	71
2	47	488	2550	6030	3240	1660	776	1570	446	427	104	69
3	47	433	2100	4690	2180	1320	744	1450	503	349	102	67
4	49	498	4260	2890	1660	1070	690	1290	583	302	99	66
5	83	508	5860	2050	1320	938	634	1130	600	272	96	64
6	71	517	3430	1580	1100	1130	587	1100	499	251	94	64
7	59	769	3820	1410	1020	1900	627	983	431	233	91	63
8	54	635	5920	1230	907	1770	789	882	386	220	88	61
9	51	552	4310	1080	808	1910	750	834	350	332	86	60
10	49	483	3910	1230	728	4590	671	802	322	330	82	61
11	48	433	3110	1210	693	5320	611	786	304	296	80	78
12	51	407	2760	1040	881	3010	561	765	332	262	79	87
13	207	774	2580	896	815	2140	609	701	324	240	77	75
14	222	1150	2060	815	1030	1660	1290	635	290	224	75	122
15	354	1410	1610	739	1120	2110	1550	587	267	209	74	239
16	319	1350	1320	684	991	5130	1280	535	247	197	73	438
17	197	1790	1120	981	1030	5090	1110	497	232	188	71	556
18	908	5750	964	1080	1110	2860	1070	458	226	185	72	510
19	843	17400	849	991	2060	2410	1180	423	212	174	71	391
20	521	5800	1060	1020	1880	2570	2700	393	201	165	80	264
21	391	3020	1180	1030	1440	2060	1810	362	231	158	89	208
22	671	2800	1070	945	1160	1590	1680	338	285	153	78	175
23	800	2300	1090	858	977	1310	2700	343	276	146	73	155
24	2270	3390	2800	774	846	1130	2640	358	244	140	128	139
25	2400	3040	12100	935	763	1030	1890	394	219	133	104	127
26	1480	2050	13200	1750	767	1090	1490	326	204	129	92	144
27	937	1720	6980	1390	842	1140	1420	337	192	125	99	177
28	874	2670	4120	1750	779	1210	1250	365	193	121	86	142
29	1370	2470	5290	1530	---	1020	1610	389	226	117	82	129
30	944	2160	5860	2460	---	919	1740	357	390	114	77	119
31	723	---	6210	9950	---	868	---	475	---	111	74	---
TOTAL	17088	67343	117103	62968	38637	62935	37282	21705	9771	6905	2684	4921
MEAN	551	2245	3778	2031	1380	2030	1243	700	326	223	86.6	164
MAX	2400	17400	13200	9950	6490	5320	2700	1840	600	602	128	556
MIN	47	407	849	684	693	868	561	326	192	111	71	60
AC-FT	33890	133600	232300	124900	76640	124800	73950	43050	19380	13700	5320	97600
CFSM	3.17	12.9	21.7	11.7	7.93	11.7	7.14	4.02	1.87	1.28	.50	.94
IN.	3.65	14.40	25.04	13.46	8.26	13.46	7.97	4.64	2.09	1.48	.57	1.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1997, BY WATER YEAR (WY)

MEAN	297	1116	1532	1440	1389	1172	1146	923	518	170	81.0	96.9
MAX	1296	2442	4319	3278	3326	2913	2053	1639	1261	466	222	318
(WY)	1951	1943	1965	1953	1996	1972	1937	1960	1937	1983	1968	1959
MIN	31.6	27.6	82.3	107	130	324	356	282	101	54.2	35.9	40.9
(WY)	1988	1937	1977	1977	1977	1941	1941	1987	1992	1940	1992	1987

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1936 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	486370		449342				
ANNUAL MEAN	1329		1231			820	
HIGHEST ANNUAL MEAN						1280	1972
LOWEST ANNUAL MEAN						359	1977
HIGHEST DAILY MEAN	23200	Feb 7	17400	Nov 19	23200		Feb 7 1996
LOWEST DAILY MEAN	41	Sep 12	47	Oct 2	23		Dec 1 1936
ANNUAL SEVEN-DAY MINIMUM	43	Sep 7	55	Oct 6	24		Nov 25 1936
ANNUAL RUNOFF (AC-FT)	964700		891300		594200		
ANNUAL RUNOFF (CFSM)	7.64		7.08		4.71		
ANNUAL RUNOFF (INCHES)	103.98		96.07		64.05		
10 PERCENT EXCEEDS	3030		2800		1820		
50 PERCENT EXCEEDS	682		723		504		
90 PERCENT EXCEEDS	52		80		62		

e Estimated

14185900 QUARTZVILLE CREEK NEAR CASCADIA, OR

LOCATION.--Lat 44°32'25", long 122°26'05", in NW 1/4 sec.10, T.12 S., R.3 E., Linn County, Hydrologic Unit 17090006, on Bureau of Land Management land, on right bank 80 ft downstream from Panther Creek, 10 mi north of Cascadia, and at mile 6.6.

DRAINAGE AREA.--99.2 mi².

PERIOD OF RECORD.--August 1963 to November 1964 (destroyed by flood of December 1964); October 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,050 ft above sea level, from topographic map. Aug. 13, 1963, to Dec. 22, 1964, water-stage recorder on left bank at present datum.

REMARKS.--Records good. 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.--33 years (water years 1964, 1966-97), 658 ft³/s, 90.17 in/yr, 477,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Feb. 7, 1996, gage height, 20.54 ft, from rating curve extended above 8,000 ft³/s on the basis of slope-area measurement of peak flow; minimum discharge, 14 ft³/s Aug. 19-23, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 36,500 ft³/s Dec. 22, 1964, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0800	*10,900	*13.89	Jan. 1	0330	7,230	11.69
Dec. 4	1930	9,760	13.22	Jan. 31	1330	8,960	12.75
Dec. 8	0230	4,710	9.92	Mar. 10	2300	5,470	10.49
Dec. 26	1300	8,960	12.75	Mar. 16	0530	5,050	10.19
Dec. 29	2130	6,480	11.20	Apr. 20	0530	4,800	9.99

Minimum discharge, 29 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	e344	3270	5490	4080	704	501	1030	622	317	68	39
2	35	289	e1860	5050	2030	1020	e470	868	392	257	66	38
3	251	e1290	3320	e1300	727	475	779	419	211	65	36	36
4	35	266	e3890	e1860	956	575	448	726	475	185	63	34
5	51	254	e4190	1240	e744	515	e414	654	450	169	61	33
6	46	284	2260	e916	e614	1110	385	642	379	157	60	33
7	40	447	2870	831	568	2860	408	576	326	146	57	32
8	38	342	4050	743	520	1700	567	516	285	138	55	31
9	36	288	2530	647	470	2200	562	499	256	247	53	29
10	35	247	2860	965	424	4910	491	481	234	245	50	30
11	34	214	2260	923	417	3910	425	474	218	202	49	34
12	37	205	2290	e717	532	e2000	385	463	218	176	48	39
13	212	488	2180	e586	495	e1320	461	418	205	162	46	35
14	249	903	e1500	e507	705	e991	1430	378	190	150	44	82
15	560	999	e1070	e444	812	2040	1470	351	178	139	43	301
16	319	1050	854	410	677	4720	1080	321	168	131	43	456
17	178	1840	e717	1220	712	3750	878	300	160	125	41	1100
18	1120	e5260	610	1570	717	2120	777	279	156	120	41	806
19	832	e9020	e530	1100	1890	1990	1170	256	146	114	41	500
20	492	e3100	738	1030	1430	2150	3500	238	140	109	50	310
21	e368	1760	843	985	1000	e1520	1710	219	157	103	57	234
22	878	2010	690	827	e771	e1080	1410	206	187	99	46	191
23	665	e1520	810	e684	e636	864	2030	207	190	95	42	164
24	2020	2660	2840	582	e540	737	1770	208	175	90	89	145
25	1830	2340	6630	552	485	684	1190	217	158	86	75	131
26	e1040	e1400	7930	605	485	776	945	189	146	83	59	152
27	e646	1310	4980	e595	510	775	933	208	138	81	61	212
28	634	2670	e2780	1710	459	833	774	223	135	77	53	166
29	954	1830	4000	1200	---	677	954	287	168	75	49	145
30	603	1810	4440	2340	---	587	1030	255	202	73	44	131
31	e439	---	4500	7460	---	542	---	443	---	71	41	---
TOTAL	14498	45401	82262	47109	24979	50387	29043	12911	7273	4433	1660	5669
MEAN	468	1513	2654	1520	892	1625	968	416	242	143	53.5	189
MAX	2020	9020	7930	7460	4080	4910	3500	1030	622	317	89	1100
MIN	34	205	530	410	417	515	385	189	135	71	41	29
AC-PT	28760	90050	163200	93440	49550	99940	57610	25610	14430	8790	3290	11240
CFSM	4.71	15.3	26.8	15.3	8.99	16.4	9.76	4.20	2.44	1.44	.54	1.90
IN.	5.44	17.03	30.85	17.67	9.37	18.90	10.89	4.84	2.73	1.66	.62	2.13

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1997, BY WATER YEAR (WY)

	MEAN	253	1025	1280	1268	1107	956	861	599	319	102	58.9	90.2
MAX	753	2224	2897	2450	2441	2018	1600	1114	817	336	240	268	
(WY)	1968	1974	1974	1970	1982	1972	1993	1971	1984	1983	1968	1971	
MIN	20.8	57.6	110	157	208	204	382	182	63.1	36.8	20.9	28.0	
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1964 - 1997
ANNUAL TOTAL	349897	325625	
ANNUAL MEAN	956	892	658
HIGHEST ANNUAL MEAN			1113
LOWEST ANNUAL MEAN			311
HIGHEST DAILY MEAN	16000	Feb 7	16000
LOWEST DAILY MEAN	27	Sep 12	14
ANNUAL SEVEN-DAY MINIMUM	28	Sep 7	14
ANNUAL RUNOFF (AC-PT)	694000	645900	477000
ANNUAL RUNOFF (CFSM)	9.64	8.99	6.64
ANNUAL RUNOFF (INCHES)	131.21	122.11	90.17
10 PERCENT EXCEEDS	2280	2220	1520
50 PERCENT EXCEEDS	452	475	360
90 PERCENT EXCEEDS	38	49	39

e Estimated

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 sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with ogee spillway completed in 1966 by Corps of Engineers; controlled storage began Oct. 6, 1966. Total capacity, 428,100 acre-ft, usable capacity 330,800 acre-ft between elevations 887.0 ft, proposed lower limit of operation, and 1,015.0 ft, top of spillway gates. Reservoir used for flood control, power development, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--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, 412,700 acre-ft July 11-13, elevation, 1,010.78 ft; minimum contents, 160,600 acre-ft Jan. 27, elevation, 922.35 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	978.21	960.42	953.91	998.05	957.21	970.22	990.30	1007.75	1007.96	1010.39	1007.48	998.59
2	977.34	959.34	952.02	1003.70	955.99	972.18	990.54	1008.14	1008.35	1010.57	1007.24	998.29
3	976.44	958.23	948.33	1004.90	951.90	973.64	990.73	1008.77	1008.95	1010.63	1006.97	997.60
4	975.66	957.18	951.90	1001.50	946.96	974.00	990.92	1009.31	1009.55	1010.63	1006.67	996.91
5	974.97	955.98	959.37	996.41	945.52	974.23	991.58	1009.61	1009.79	1010.60	1006.40	996.19
6	974.13	954.93	960.54	990.73	944.39	975.19	992.15	1009.70	1009.88	1010.57	1006.13	995.50
7	973.38	954.00	961.29	984.71	944.23	977.98	992.87	1009.64	1010.06	1010.63	1005.86	994.78
8	972.54	952.95	967.35	980.25	943.85	979.11	993.74	1009.64	1010.21	1010.57	1005.56	994.06
9	971.67	951.78	968.55	973.56	943.27	980.46	994.47	1009.73	1010.33	1010.66	1005.29	993.34
10	970.77	950.49	969.75	967.00	942.62	985.48	995.03	1009.76	1010.30	1010.75	1005.02	992.62
11	969.87	949.14	969.04	960.05	943.63	989.15	995.45	1009.82	1010.30	1010.78	1004.72	991.93
12	969.03	947.82	965.96	952.39	944.91	988.25	995.78	1009.82	1010.30	1010.78	1004.39	991.18
13	968.70	947.79	962.63	946.34	946.06	983.43	996.23	1009.76	1010.18	1010.75	1004.09	990.52
14	968.19	948.42	958.18	943.14	947.58	979.56	997.85	1009.64	1010.24	1010.72	1003.79	989.86
15	968.52	948.84	952.96	940.78	949.21	979.88	999.59	1009.49	1010.24	1010.69	1003.49	989.53
16	968.73	949.56	947.83	938.62	950.57	984.78	1000.85	1009.73	1010.27	1010.60	1003.19	989.29
17	968.82	951.15	942.64	937.38	952.04	988.18	1001.69	1010.12	1010.24	1010.51	1002.89	989.56
18	969.45	955.08	939.90	936.38	953.54	988.25	1002.44	1010.54	1010.21	1010.42	1002.59	989.65
19	968.73	971.85	937.52	934.76	956.86	987.98	1003.58	1010.42	1010.18	1010.24	1002.23	989.41
20	967.53	977.88	935.68	933.17	959.45	987.94	1004.57	1010.42	1010.12	1010.09	1001.93	988.96
21	966.12	977.73	933.84	931.41	961.30	987.17	1004.39	1010.42	1010.03	1009.94	1001.60	988.39
22	965.64	975.18	931.58	930.40	962.76	987.83	1004.60	1009.43	1010.03	1009.79	1001.26	987.78
23	965.55	971.79	929.62	929.01	963.99	988.17	1004.69	1008.65	1010.03	1009.58	1000.96	987.18
24	966.81	970.29	931.75	927.34	965.01	988.32	1004.33	1008.05	1010.06	1009.37	1000.78	986.52
25	967.26	968.19	947.10	924.78	965.95	988.34	1004.78	1007.42	1010.03	1009.13	1000.51	985.83
26	966.42	964.56	964.95	922.45	966.92	988.77	1005.26	1006.73	1009.94	1008.92	1000.42	985.23
27	965.40	960.57	974.27	922.62	967.91	989.17	1005.65	1006.13	1009.94	1008.68	1000.12	984.84
28	964.35	958.26	977.34	924.88	968.75	989.65	1005.89	1006.10	1009.94	1008.44	999.85	984.21
29	963.96	954.78	979.44	926.37	---	989.84	1006.46	1006.40	1009.91	1008.20	999.55	983.49
30	963.00	951.93	985.98	930.29	---	989.91	1007.12	1006.67	1010.03	1007.96	999.22	982.92
31	961.80	---	990.45	948.14	---	990.01	---	1007.27	---	1007.72	998.92	---
MAX	978.21	977.88	990.45	1004.90	968.75	990.01	1007.12	1010.54	1010.33	1010.78	1007.48	998.59
MIN	961.80	947.79	929.62	922.45	942.62	970.22	990.30	1006.10	1007.96	1007.72	998.92	982.92
(†)	256100	229600	342900	219900	275900	341500	399500	400100	409900	401700	371100	318300
(‡)	-50600	-26500	+113300	-123000	+56000	+65600	+58000	+600	+9800	-8200	-30600	-52300

CAL YR 1996 MAX 1011.95 MIN 925.94 AC-FT‡ +124800
WTR YR 1997 MAX 1010.78 MIN 922.45 AC-FT‡ +12100

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

WILLAMETTE RIVER BASIN

229

14186600 FOSTER LAKE AT FOSTER, OR

LOCATION.--Lat 44°25'00", long 122°40'25", in NW 1/4 NE 1/4 sec.27, T.13 S., R.1 E., Linn County, Hydrologic Unit 17090006, in Foster Dam on South Santiam River, 0.3 mi above Wiley Creek, 0.5 mi north of Foster, and at mile 37.7.

DRAINAGE AREA.--492 mi².

PERIOD OF RECORD.--December 1966 to current year. Prior to October 1971, published as Foster Reservoir at Foster.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by rockfill embankment with an impervious core and ogee spillway completed in 1966 by Corps of Engineers; controlled storage began in November 1966. Total capacity, 60,780 acre-ft and usable capacity 33,210 acre-ft between elevations 609.0 ft, proposed lower limit of operation, and 641.0 ft, top of spillway gates. Lake used for reregulation of water released from Green Peter Lake, flood control, power development, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--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, 57,160 acre-ft Aug. 25, elevation, 638.07 ft; minimum contents, 29,900 acre-ft Nov. 21, elevation, 611.69 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	637.09	620.52	613.03	616.35	616.89	620.15	618.13	614.89	637.32	637.29	636.99	637.04
2	637.29	620.17	613.07	615.13	613.21	622.55	618.10	614.59	637.23	637.24	636.93	637.02
3	637.50	620.01	612.89	613.14	613.22	621.55	617.96	614.68	637.19	637.38	636.95	636.94
4	637.48	619.73	614.67	613.34	614.05	620.91	617.53	614.46	637.24	637.43	637.06	636.89
5	637.40	619.55	613.11	613.15	613.88	619.91	616.83	614.51	637.39	637.46	637.06	637.01
6	637.51	618.91	613.01	613.03	615.23	619.51	616.45	614.55	637.32	637.43	636.99	637.09
7	637.26	618.58	613.53	613.17	615.14	621.81	616.25	614.55	637.31	637.08	637.05	637.18
8	637.25	617.98	613.05	613.11	615.40	624.11	616.35	614.14	637.25	637.14	637.03	637.19
9	637.21	617.02	613.21	613.03	615.54	624.21	616.00	614.23	637.16	637.35	636.99	637.15
10	636.87	616.20	613.07	613.01	615.52	625.00	615.48	614.63	637.39	637.46	636.95	637.16
11	637.32	615.21	612.97	613.05	615.39	626.10	615.05	614.56	637.39	637.49	636.95	637.18
12	637.44	614.23	613.00	613.07	615.95	622.94	614.65	614.57	637.19	637.48	637.03	637.17
13	637.25	613.81	613.01	613.19	616.35	623.59	614.41	614.57	637.37	637.42	637.07	637.12
14	637.71	613.54	613.01	613.15	616.89	623.33	615.35	614.61	637.24	637.33	637.01	637.03
15	637.03	613.84	613.09	613.06	617.25	623.29	614.19	614.59	637.13	637.21	637.00	637.41
16	635.71	614.12	613.03	613.36	617.61	623.02	614.01	614.19	637.05	637.08	636.94	637.63
17	634.36	615.93	613.09	613.15	617.95	622.65	614.22	614.15	636.97	637.01	636.91	636.97
18	634.05	618.38	613.10	613.13	618.01	622.57	614.79	613.92	636.87	636.95	636.89	637.35
19	632.93	633.92	613.03	613.05	619.50	622.24	614.56	615.46	636.75	637.01	637.00	637.34
20	631.61	622.01	613.15	613.09	620.40	622.15	614.25	616.50	636.75	637.10	637.15	637.16
21	630.18	612.67	613.03	613.19	619.60	621.15	614.27	617.64	637.07	637.09	637.30	636.90
22	629.00	613.00	613.09	613.65	619.51	621.29	614.55	621.80	637.26	636.91	637.38	636.97
23	627.12	612.85	613.17	613.91	619.51	621.17	614.95	625.38	637.40	636.95	637.35	637.07
24	625.68	613.48	614.59	613.10	619.47	620.77	614.43	628.18	637.36	636.98	637.52	637.13
25	624.08	613.14	626.39	613.20	619.55	620.47	614.47	631.06	637.28	637.00	637.53	637.21
26	623.48	613.05	636.04	613.19	619.78	620.77	614.49	633.74	637.37	637.03	637.05	637.43
27	622.67	613.14	630.89	612.85	620.15	620.06	614.51	636.38	637.14	637.03	637.09	637.16
28	622.23	613.65	620.67	613.09	619.37	619.73	614.53	637.29	637.07	637.05	637.07	637.18
29	622.54	613.37	618.51	612.67	---	619.38	614.53	637.35	637.01	637.05	637.03	637.37
30	621.60	613.02	613.64	614.55	---	619.05	614.59	637.25	637.27	637.02	637.03	637.21
31	620.97	---	613.90	620.71	---	618.63	---	637.41	---	637.01	637.03	---
MEAN	632.19	616.50	615.39	613.61	617.15	621.74	615.33	620.51	637.19	637.18	637.08	637.16
MAX	637.71	633.92	636.04	620.71	620.40	626.10	618.13	637.41	637.40	637.49	637.53	637.63
MIN	620.97	612.67	612.89	612.67	613.21	618.63	614.01	613.92	636.75	636.91	636.89	636.89
(†)	38510	31080	31880	38260	36960	36260	32500	56360	56200	55880	55910	56120
(‡)	-17450	-7430	+800	+6380	-1300	-700	-3760	+23860	-160	-320	+30	+210

CAL YR 1996 MEAN 625.76 MAX 639.26 MIN 612.03 AC-FT† -2180
WTR YR 1997 MEAN 625.13 MAX 637.71 MIN 612.67 AC-FT† +160

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

14187000 WILEY CREEK NEAR FOSTER, OR

LOCATION.--Lat 44°22'20", long 122°37'20", in NE 1/4 NE 1/4 sec.12, T.14 S., R.1 E., Linn County, Hydrologic Unit 17090006, on right bank 0.5 mi downstream from Little Wiley Creek, 3.5 mi southeast of Foster, and at mile 4.4.

DRAINAGE AREA.--51.8 mi².

PERIOD OF RECORD.--October 1947 to July 1973, July 1988 to current year.

REVISED RECORDS.--WDR OR-90-2: 1989 (M), WDR OR-93-1: 1992.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 720 ft above sea level, from topographic map. Prior to April 6, 1965, water-stage recorder at present site at datum of 718.08 ft above sea level (Corps of Engineers bench mark). Apr. 6, 1965, to July 1973, water-stage recorder at present site at datum 2.00 ft lower than previous datum.

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

AVERAGE DISCHARGE.--34 years (water years 1948-72, 1989-97), 217 ft³/s, 56.84 in/yr, 157,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s Jan. 21, 1972, gage height, 9.28 ft, datum then in use, from rating curve extended above 3,700 ft³/s; maximum gage height, 9.80 ft, Dec. 21, 1964 (backwater from debris), datum then in use; minimum discharge, 2.9 ft³/s August 28-31, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0600	*5,390	*8.79	Jan. 1	0100	2,550	6.10
Dec. 4	2030	2,800	6.36	Jan. 31	1700	2,620	6.17
Dec. 25	2130	3,350	6.94				

Minimum discharge, 7.6 ft³/s Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	96	847	1930	1450	436	174	414	111	87	15	11
2	7.9	81	708	1460	846	844	168	338	82	58	14	11
3	7.9	72	621	1140	590	537	160	321	87	47	14	10
4	8.3	90	1230	778	448	405	150	262	95	40	13	9.8
5	18	83	1590	570	e350	316	132	216	94	36	13	9.5
6	13	81	1080	435	e280	384	124	218	81	33	e12	9.6
7	11	95	1240	366	262	592	139	181	72	31	e12	9.2
8	9.6	84	1930	305	231	570	152	162	64	30	11	8.8
9	9.1	75	1360	258	198	524	139	148	59	65	11	8.6
10	8.6	67	1260	243	173	1390	130	132	54	58	10	9.2
11	8.4	61	1060	220	171	1450	119	121	51	47	9.8	16
12	9.4	63	888	193	209	953	113	111	60	40	9.7	16
13	44	130	891	168	190	699	123	102	54	35	9.4	13
14	36	172	694	154	198	548	206	93	50	32	9.1	26
15	65	219	523	142	188	622	229	87	45	29	8.9	62
16	51	296	399	134	172	1250	188	82	41	27	9.1	78
17	29	566	310	169	164	1250	159	76	39	26	8.9	93
18	174	1990	253	159	166	787	161	70	40	26	9.6	101
19	148	3930	215	147	382	584	181	66	37	24	9.7	72
20	87	1470	276	179	389	581	494	62	35	23	13	46
21	62	834	334	208	301	455	354	60	44	22	16	34
22	83	784	311	200	243	354	336	58	53	22	12	28
23	92	628	360	180	201	284	574	61	46	20	11	24
24	360	803	728	159	171	236	576	65	39	19	29	21
25	411	671	2640	240	152	206	438	86	35	18	17	19
26	270	498	2650	519	157	203	322	62	33	18	16	24
27	158	450	1710	418	175	200	284	62	30	17	17	32
28	158	692	1160	512	168	237	239	66	31	16	14	24
29	235	652	1540	434	---	197	343	66	43	16	13	21
30	157	569	1550	581	---	176	391	59	54	16	12	19
31	119	---	1590	2070	---	173	---	102	---	16	11	---
TOTAL	2858.1	16302	31948	14671	8625	17443	7298	4009	1659	994	390.2	865.7
MEAN	92.2	543	1031	473	308	563	243	129	55.3	32.1	12.6	28.9
MAX	411	3930	2650	2070	1450	1450	576	414	111	87	29	101
MIN	7.9	61	215	134	152	173	113	58	30	16	8.9	8.6
AC-FT	5670	32340	63370	29100	17110	34600	14480	7950	3290	1970	774	1720
CFSM	1.78	10.5	19.9	9.14	5.95	10.9	4.70	2.50	1.07	.62	.24	.56
IN.	2.05	11.71	22.94	10.54	6.19	12.53	5.24	2.88	1.19	.71	.28	.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1997, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
MEAN	83.9	279	414	446	389
MAX	397	620	1107	842	944
(WY)	1951	1951	1965	1953	1961
MIN	8.08	15.7	109	82.1	113
(WY)	1989	1953	1960	1963	1973

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1948 - 1997
ANNUAL TOTAL	122396.4	107063.0	
ANNUAL MEAN	334	293	217
HIGHEST ANNUAL MEAN			318
LOWEST ANNUAL MEAN			104
HIGHEST DAILY MEAN	5610	3930	6410
LOWEST DAILY MEAN	6.7	7.9	2.9
ANNUAL SEVEN-DAY MINIMUM	7.0	9.2	3.0
ANNUAL RUNOFF (AC-FT)	242800	212400	157000
ANNUAL RUNOFF (CFSM)	6.46	5.66	4.18
ANNUAL RUNOFF (INCHES)	87.90	76.89	56.84
10 PERCENT EXCEEDS	832	785	495
50 PERCENT EXCEEDS	149	130	119
90 PERCENT EXCEEDS	8.4	12	12

e Estimated

WILLAMETTE RIVER BASIN

231

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 above sea level, from topographic map.

REMARKS.--Records good. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). No diversion upstream from station.

AVERAGE DISCHARGE.--24 years (water years 1974-97), 2,885 ft³/s, 70.34 in/yr, 2,090,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,700 ft³/s Feb. 7, 1996, gage height, 18.74 ft, from rating curve extended above 16,000 ft³/s; minimum discharge, 410 ft³/s June 3, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,700 ft³/s Nov. 19, gage height, 16.71 ft; minimum discharge, 499 ft³/s May 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	e4100	10900	11800	11400	1380	2420	4150	905	784	732	720
2	1460	e3400	11800	11600	14700	2050	2070	4070	867	749	739	718
3	1450	e3100	12400	14600	13000	2930	2130	3170	762	740	740	1370
4	1440	e3300	11900	16200	11700	3480	2140	2940	798	731	738	1360
5	1450	e3300	11400	16400	6200	3310	1320	2730	1300	725	726	1270
6	1470	e3400	10800	15500	4190	3330	1080	3200	1440	718	723	1270
7	1490	e3600	12700	14900	3650	3510	1070	3030	984	714	726	1280
8	1520	3570	11900	11300	3270	3870	1090	2890	938	713	723	1360
9	1530	3630	12400	14400	3190	5770	1390	2310	924	743	728	1360
10	1480	3520	12200	14600	3140	10300	1530	2160	925	743	719	1360
11	1450	3530	12200	14500	1260	11200	1490	2360	968	738	720	1370
12	1460	3510	15000	14300	1100	13600	1480	2290	1120	730	720	1390
13	1490	2620	14900	11000	1070	15200	1520	2220	1020	721	715	1420
14	1500	3010	13800	6710	1180	12400	1620	2130	870	719	717	1440
15	1550	3680	12800	5130	1380	7240	2720	2100	823	715	720	1420
16	e1600	3740	11200	4630	1210	10700	2160	1460	777	707	718	1730
17	e1600	4200	10000	5590	1260	10800	2120	806	768	721	717	2330
18	e2600	11200	6490	5640	1480	9640	1910	782	799	706	714	1730
19	e4800	16800	5450	5560	2000	8840	2380	769	764	696	713	1810
20	4400	16700	5680	5600	2180	9070	8650	746	746	701	718	1650
21	4320	15200	6080	5740	2390	8590	6650	599	744	701	721	1680
22	4120	14200	5920	4440	1710	4020	5160	748	759	744	718	1470
23	3870	13500	5930	4290	1420	3730	8210	751	753	746	718	1420
24	6370	14900	7410	4650	1250	3580	9250	742	756	742	738	1430
25	8160	14900	13100	5690	1080	3390	5140	771	748	739	728	1420
26	e6600	12900	13000	7070	1040	3090	3820	726	730	731	728	1380
27	e5000	12300	13500	3880	1140	3100	3790	740	726	730	720	1370
28	4710	13800	15400	3650	1590	3280	3500	752	723	727	749	1400
29	4840	14000	16000	3610	---	3020	3980	765	733	738	732	1410
30	4720	12200	11600	3740	---	2990	4090	751	737	738	722	1430
31	4290	---	12300	11000	---	2860	---	805	---	736	722	---
TOTAL	94140	241810	346160	277720	100180	190270	95880	54463	25907	22586	22462	42768
MEAN	3037	8060	11170	8959	3578	6138	3196	1757	864	729	725	1426
MAX	8160	16800	16000	16400	14700	15200	9250	4150	1440	784	749	2330
MIN	1400	2620	5450	3610	1040	1380	1070	599	723	696	713	718
AC-FT	186700	479600	686600	550900	198700	377400	190200	108000	51390	44800	44550	84830
MEAN†	1930	7490	13022	7063	4563	7193	4108	2154	1026	590	227	550
CFSM†	3.46	13.45	23.38	12.68	8.19	12.91	7.38	3.87	1.84	1.06	0.41	0.99
IN.†	4.00	15.01	26.96	14.62	8.53	14.89	8.23	4.46	2.06	1.22	0.47	1.10
AC-FT†	118650	445670	800700	434280	253400	442300	244440	132460	61030	36280	13980	32740

CAL YR 1996 TOTAL 1628730 MEAN 4450 MAX 25700 MIN 658 AC-FT 3231000 MEAN† 4620 CFSM† 8.29 IN.† 113 AC-FT† 3353620
WTR YR 1997 TOTAL 1514346 MEAN 4149 MAX 16800 MIN 599 AC-FT 3004000 MEAN† 4166 CFSM† 7.48 IN.† 102 AC-FT† 3016260

e Estimated

† 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 September 1997 (discontinued).

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, 1993; minimum recorded, 2.5°C Dec. 30, 31, 1978, Feb. 1, 1980, Feb. 7, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.5°C July 20; minimum recorded, 5.0°C Jan. 15, 25.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.0	11.0	11.0	---	---	---	9.0	8.0	8.5	8.5	8.5	8.5
2	11.5	11.0	11.0	---	---	---	8.0	8.0	8.0	8.5	8.0	8.5
3	11.0	11.0	11.0	---	---	---	8.0	7.5	8.0	8.0	7.0	7.5
4	11.5	11.0	11.0	---	---	---	8.5	7.5	8.0	7.0	6.5	6.5
5	11.5	11.0	11.0	---	---	---	8.0	7.5	8.0	6.5	6.5	6.5
6	11.5	11.0	11.0	---	---	---	7.5	7.5	7.5	6.5	6.5	6.5
7	11.0	11.0	11.0	---	---	---	8.0	7.5	7.5	7.0	6.5	6.5
8	11.5	11.0	11.0	10.5	10.0	10.0	8.0	7.5	8.0	7.0	6.5	7.0
9	11.5	11.0	11.0	10.0	9.5	10.0	8.0	7.5	8.0	7.0	7.0	7.0
10	11.5	11.0	11.0	10.0	10.0	10.0	8.0	7.5	8.0	7.5	7.0	7.0
11	12.5	10.5	11.0	10.5	10.0	10.5	7.5	7.5	7.5	7.0	7.0	7.0
12	12.0	10.5	11.0	11.0	10.5	11.0	8.0	7.5	7.5	7.0	6.0	6.5
13	11.5	11.0	11.0	11.0	10.5	10.5	7.5	7.5	7.5	6.0	5.5	6.0
14	11.5	11.0	11.0	10.5	10.0	10.5	7.5	7.0	7.0	5.5	5.5	5.5
15	11.5	10.5	11.0	10.0	10.0	10.0	7.5	7.0	7.0	5.5	5.0	5.5
16	---	---	---	10.0	9.0	9.5	7.5	7.5	7.5	5.5	5.5	5.5
17	---	---	---	9.5	9.0	9.0	7.5	7.0	7.0	6.5	5.5	6.0
18	---	---	---	9.0	8.5	9.0	7.0	6.5	7.0	6.5	6.0	6.5
19	---	---	---	9.5	8.5	9.0	6.5	6.5	6.5	6.5	6.0	6.5
20	---	---	---	8.5	8.0	8.0	7.0	6.5	7.0	6.5	6.0	6.5
21	---	---	---	8.0	8.0	8.0	6.5	6.5	6.5	6.0	6.0	6.0
22	---	---	---	8.5	8.0	8.5	6.5	6.5	6.5	6.0	5.5	6.0
23	---	---	---	8.5	8.0	8.5	6.5	6.5	6.5	6.0	5.5	5.5
24	---	---	---	9.0	8.5	9.0	7.0	6.5	7.0	5.5	5.5	5.5
25	---	---	---	9.0	8.5	8.5	7.5	7.0	7.5	5.5	5.0	5.5
26	---	---	---	8.5	8.5	8.5	8.0	7.5	8.0	5.5	5.5	5.5
27	---	---	---	9.0	8.5	9.0	8.0	7.0	7.5	6.0	5.5	5.5
28	---	---	---	9.0	8.5	9.0	7.0	7.0	7.0	6.5	6.0	6.0
29	---	---	---	8.5	8.5	8.5	8.0	7.0	7.5	6.5	6.0	6.5
30	---	---	---	9.0	8.5	9.0	8.0	7.5	8.0	7.5	6.5	6.5
31	---	---	---	---	---	---	8.5	8.0	8.0	8.0	7.5	7.5
MONTH	---	---	---	---	---	---	9.0	6.5	7.5	8.5	5.0	6.4

WILLAMETTE RIVER BASIN

233

14187200 SOUTH SANTIAM RIGVER NEAR FOSTER, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.5	7.5	7.5	6.5	6.0	6.5	7.5	6.5	6.5	9.0	7.5	8.0
2	7.5	6.5	7.0	6.5	5.5	6.0	7.5	6.0	6.5	9.5	7.5	8.5
3	6.5	6.5	6.5	6.0	5.5	6.0	7.0	6.0	6.5	9.0	8.0	8.5
4	7.0	6.5	6.5	6.5	5.5	6.0	7.5	6.0	7.0	10.0	8.0	9.0
5	6.5	6.0	6.0	6.5	5.5	6.0	8.5	6.0	7.0	10.0	8.5	9.0
6	6.0	5.5	6.0	6.5	6.0	6.5	8.5	6.5	7.5	10.0	8.0	9.0
7	6.0	6.0	6.0	6.5	6.0	6.5	8.0	7.0	7.5	9.5	8.5	9.0
8	6.0	6.0	6.0	6.5	6.0	6.5	8.5	7.0	7.5	10.5	9.0	9.5
9	6.0	6.0	6.0	7.0	6.5	6.5	8.0	6.5	7.0	10.5	8.5	10.0
10	6.5	6.0	6.0	7.0	6.5	6.5	8.0	7.0	7.5	11.0	9.0	10.5
11	6.5	5.5	6.0	7.0	6.5	6.5	9.0	7.0	7.5	11.5	10.5	11.0
12	6.5	6.0	6.5	6.5	6.0	6.0	8.0	7.0	7.5	12.0	10.5	11.0
13	6.5	6.0	6.0	6.5	5.5	6.0	8.0	7.5	7.5	12.0	11.0	11.5
14	7.0	6.5	6.5	6.5	6.0	6.0	8.0	7.5	8.0	12.0	10.5	11.5
15	7.0	6.0	6.5	7.5	6.5	7.0	9.5	7.5	8.5	12.0	11.0	11.5
16	7.5	6.5	7.0	7.0	7.0	7.0	10.0	8.0	8.5	13.0	11.5	12.0
17	7.0	7.0	7.0	7.5	6.5	7.0	10.0	8.0	8.5	13.0	12.0	12.5
18	7.0	6.5	7.0	7.5	6.5	7.0	9.5	8.5	9.0	13.0	12.0	12.5
19	7.5	6.5	7.0	7.5	7.0	7.5	9.5	9.0	9.5	13.0	12.0	12.5
20	7.0	6.5	6.5	7.5	7.0	7.5	9.0	8.0	8.5	12.5	11.0	12.0
21	7.0	6.0	6.5	7.5	6.5	7.0	8.5	7.5	8.0	13.0	10.5	12.0
22	7.0	6.0	6.5	7.5	6.0	7.0	9.0	7.5	8.0	12.5	10.5	11.0
23	6.5	5.5	6.0	7.5	6.5	7.0	8.0	7.5	8.0	11.0	9.5	10.5
24	7.0	5.5	6.0	8.0	7.0	7.5	8.0	7.0	7.5	10.5	9.5	10.0
25	7.0	6.0	6.5	8.5	7.0	7.5	9.5	7.0	8.0	10.5	9.0	9.5
26	7.0	6.5	6.5	8.0	7.0	7.5	9.5	8.0	8.5	10.5	8.5	9.5
27	6.5	6.0	6.0	8.0	7.0	7.5	9.5	8.0	8.5	10.5	9.0	9.5
28	6.5	6.0	6.5	8.0	6.5	7.0	9.0	8.0	8.5	10.0	9.5	9.5
29	---	---	---	8.0	6.5	7.5	9.0	8.0	8.5	11.0	9.5	10.0
30	---	---	---	7.5	6.5	7.0	9.0	7.5	8.5	11.0	9.5	10.0
31	---	---	---	7.0	6.5	6.5	---	---	---	11.0	9.5	10.5
MONTH	7.5	5.5	6.4	8.5	5.5	6.8	10.0	6.0	7.8	13.0	7.5	10.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.5	9.5	10.0	12.5	11.0	12.0	13.0	12.0	12.5	12.0	11.0	11.5
2	11.0	9.0	10.0	13.0	11.0	12.0	13.5	12.0	12.5	12.0	11.0	11.5
3	10.5	9.5	10.0	13.5	11.0	12.0	13.5	12.0	12.5	12.0	11.0	11.5
4	10.5	9.5	10.0	13.5	11.0	12.5	13.0	12.0	12.5	12.5	11.0	11.5
5	11.5	9.5	10.5	13.0	11.5	12.0	13.5	12.0	12.5	12.0	11.5	11.5
6	11.5	10.0	10.5	13.0	11.5	12.5	13.5	12.0	12.5	12.0	11.5	11.5
7	11.0	9.5	10.5	13.5	11.5	12.5	13.0	11.5	12.5	12.0	11.0	11.5
8	11.5	9.5	10.5	13.0	11.5	12.0	13.0	11.5	12.5	11.5	11.0	11.5
9	11.5	9.5	10.5	13.5	12.0	12.5	13.5	12.0	12.5	11.5	11.0	11.0
10	12.0	10.0	11.0	13.0	11.5	12.0	13.5	11.5	12.5	11.5	11.0	11.0
11	11.5	10.0	10.5	13.5	11.5	12.5	13.0	11.5	12.5	11.5	11.0	11.0
12	11.0	10.5	10.5	13.5	11.5	12.5	13.0	11.5	12.5	11.0	10.5	11.0
13	11.0	10.5	10.5	13.0	11.5	12.5	13.0	11.5	12.5	11.5	10.5	11.0
14	12.0	10.0	11.0	13.5	11.5	12.5	12.5	11.5	12.0	11.0	11.0	11.0
15	12.0	10.0	11.0	13.5	11.5	12.5	12.5	11.5	12.0	11.5	10.5	11.0
16	12.0	10.5	11.5	13.5	12.0	12.5	13.0	11.5	12.0	11.5	11.0	11.0
17	12.0	10.5	11.0	13.0	12.0	12.5	12.5	11.5	12.0	11.5	10.5	11.0
18	12.0	10.0	11.0	13.5	12.5	13.0	12.5	11.5	12.0	11.5	10.5	11.0
19	12.0	10.0	11.0	14.0	12.0	13.0	12.5	11.5	12.0	11.5	10.0	10.5
20	12.0	10.0	11.0	14.5	12.5	13.0	12.5	11.5	12.0	11.5	10.0	10.5
21	11.5	10.5	11.0	13.5	12.5	13.0	12.5	11.5	12.0	11.0	10.5	10.5
22	12.0	10.5	11.0	13.5	12.0	13.0	12.5	11.5	12.0	11.0	10.5	10.5
23	11.5	10.5	11.0	14.0	12.0	13.0	12.0	11.0	11.5	11.0	10.5	10.5
24	12.0	10.5	11.5	14.0	12.0	13.0	12.5	11.5	12.0	11.0	10.0	10.5
25	12.5	10.5	11.5	13.5	12.0	13.0	12.0	11.5	12.0	11.0	10.0	10.5
26	12.0	10.5	11.5	13.5	12.0	13.0	12.0	11.0	11.5	11.0	10.0	10.5
27	12.0	10.5	11.5	14.0	12.0	13.0	12.0	11.5	12.0	11.0	10.0	10.5
28	11.5	11.0	11.0	13.5	12.0	13.0	12.5	11.5	11.5	10.5	10.0	10.5
29	12.5	10.5	11.5	13.5	12.0	12.5	12.5	11.5	11.5	10.5	10.0	10.5
30	12.0	11.0	11.5	13.5	12.0	12.5	12.0	11.0	11.5	10.5	10.0	10.0
31	---	---	---	13.5	12.0	12.5	12.0	11.0	11.5	---	---	---
MONTH	12.5	9.0	10.9	14.5	11.0	12.6	13.5	11.0	12.1	12.5	10.0	10.9

WILLAMETTE RIVER BASIN

14187500 SOUTH SANTIAM RIVER AT WATERLOO, OR

LOCATION.--Lat 44°29'55", long 122°49'20", in SW 1/4 NW 1/4 sec.28, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, on left bank 0.1 mi downstream from highway bridge at Waterloo, 2.1 mi upstream from Hamilton Creek, and at mile 23.3.

DRAINAGE AREA.--640 mi².

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to December 1911 (gage heights only January to December 1911), July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as South Fork of Santiam River at Waterloo 1905-07, 1910-11.

REVISED RECORDS.--WSP 1248: 1907, 1924-30, 1932.

GAGE.--Water-stage recorder. Datum of gage is 370.39 ft above sea level. Prior to Dec. 31, 1911, nonrecording gage at site 0.5 mi downstream at datum about 5.0 ft lower. July 1, 1923, to Nov. 12, 1934, nonrecording gage, at present site and datum.

REMARKS.--Records good. Discharges for period Nov. 22 to Dec. 12 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). Some diversion upstream from station. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--75 years (water years 1906, 1924-97), 2,943 ft³/s, 2,132,000 acre-ft/yr (unadjusted).
30 years (water years 1968-97), 3,031 ft³/s, 2,196,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,200 ft³/s Dec. 22, 1964, gage height, 24.50 ft; minimum discharge, 61 ft³/s Oct. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,000 ft³/s Nov. 19, gage height, 11.31 ft; minimum discharge, 535 ft³/s May 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1480	4250	e11400	13500	12400	1860	2800	4410	1010	845	764	755
2	1520	3480	e12000	12800	14700	3120	2380	4330	930	803	765	755
3	1530	3120	e12700	14900	13500	3670	2360	3500	842	779	773	1190
4	1540	3350	e12500	16100	12100	4290	2380	3240	849	771	771	1450
5	1540	3350	e12700	16400	7460	4100	1710	2870	1210	758	764	1390
6	1570	3480	e11900	15300	4890	4170	1270	3340	1530	755	763	1360
7	1570	3690	e13500	14800	4300	4380	1240	3230	1160	753	764	1360
8	1610	3680	e13800	11400	3900	4380	1270	3060	995	747	761	1410
9	1630	3730	e13200	14100	3710	6220	1470	2550	981	786	764	1440
10	1610	3630	e13400	14200	3640	10900	1690	2240	971	814	761	1440
11	1540	3620	e12800	14200	1970	12300	1620	2500	991	788	755	1450
12	1570	3610	15300	14000	1490	13500	1600	2400	1130	780	758	1470
13	1610	2940	15300	11500	1420	15100	1640	2320	1130	764	752	1510
14	1630	3040	14300	7340	1470	13300	1740	2250	945	760	750	1520
15	1670	3820	13300	5570	1720	7230	2750	2180	877	753	759	1540
16	1700	3860	11800	5020	1560	11100	2360	1810	824	747	764	1690
17	1560	4550	10400	5990	1490	11300	2250	868	795	749	764	2440
18	2230	10900	7580	6020	1810	10100	2170	837	825	762	761	2070
19	5030	19300	6080	5920	2380	9150	2230	809	818	735	761	1800
20	4510	17100	6380	5970	2670	9310	7820	779	780	729	770	1810
21	4410	15200	6790	6160	2800	9110	7090	620	767	725	772	1780
22	4230	e13800	6600	5030	2180	4870	5300	770	792	771	770	1630
23	4040	e13300	6560	4740	1770	4220	7550	780	795	776	764	1510
24	5880	e14400	7760	4940	1560	4110	9510	774	789	773	810	1520
25	8270	e14800	14500	6070	1350	3850	5680	798	783	773	791	1510
26	6630	e12800	15500	7510	1300	3540	4120	766	768	770	782	1510
27	5060	12300	14400	4790	1440	3490	4110	766	762	764	776	1460
28	4830	13600	16000	4290	1770	3700	3700	784	757	764	789	1480
29	5060	13900	16900	4150	---	3350	4170	822	782	764	781	1490
30	4870	e12400	13300	4370	---	3310	4350	790	770	773	775	1510
31	4480	---	14000	12400	---	3210	---	836	---	772	761	---
TOTAL	96410	245000	372650	289480	112750	206240	100330	58029	27358	23803	23815	45250
MEAN	3110	8167	12020	9338	4027	6653	3344	1872	912	768	768	1508
MAX	8270	19300	16900	16400	14700	15100	9510	4410	1530	845	810	2440
MIN	1480	2940	6080	4150	1300	1860	1240	620	757	725	750	755
AC-FT	191200	486000	739200	574200	223600	409100	199000	115100	54260	47210	47240	89750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1997, BY WATER YEAR (WY)

	MEAN	2157	4865	6562	5612	3913	3328	3019	2349	1600	795	799	1411
MAX	5530	9509	12910	9338	10430	9649	6529	4148	4300	1527	1239	2769	
(WY)	1969	1985	1978	1997	1996	1972	1993	1984	1984	1983	1969	1968	
MIN	852	827	1126	713	597	865	1059	792	616	514	568	849	
(WY)	1988	1988	1977	1977	1977	1992	1968	1987	1992	1972	1974	1979	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1968 - 1997
ANNUAL TOTAL	1685558	1601115	
ANNUAL MEAN	4605	4387	3031
HIGHEST ANNUAL MEAN			4666
LOWEST ANNUAL MEAN			1407
HIGHEST DAILY MEAN	26000	19300	26000
LOWEST DAILY MEAN	676	620	Feb 9 1996
ANNUAL SEVEN-DAY MINIMUM	679	743	Jul 15
ANNUAL RUNOFF (AC-FT)	3343000	3176000	452
10 PERCENT EXCEEDS	12800	13300	2196000
50 PERCENT EXCEEDS	2150	2230	7040
90 PERCENT EXCEEDS	737	764	1820
			721

e Estimated

235

LOCATION.--Lat 44°30'54", long 122°51'49", in SW 1/4 NW 1/4 sec.19, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, near right bank, on downstream side of bridge on Headgate Road, 2.2 mi east of Lebanon.

GAGE.--Water-stage recorder. Elevation of gage is 370 ft above sea level, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 191 ft³/s Mar. 8, 1994; minimum daily discharge, 25 ft³/s Jan. 18, 1994.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	87	44	47	52	55	80	86	116	129	127	123
2	112	83	47	46	62	46	76	85	112	127	128	123
3	113	81	43	59	62	61	76	81	112	126	128	127
4	111	83	42	66	63	62	76	79	119	125	128	125
5	109	83	42	66	65	61	68	84	127	123	127	124
6	109	83	41	64	78	62	61	96	124	123	126	122
7	110	84	42	64	76	62	65	94	115	125	126	124
8	110	84	40	70	74	62	71	92	111	129	126	125
9	111	85	39	91	73	67	78	90	111	135	127	125
10	107	84	42	91	72	55	84	89	110	136	126	126
11	101	84	41	91	61	56	83	93	111	134	126	127
12	102	84	43	90	60	65	82	98	114	133	126	127
13	103	80	43	85	62	67	83	105	113	132	125	129
14	103	81	57	81	62	59	84	104	109	130	125	130
15	104	71	66	81	65	48	82	102	105	129	126	127
16	104	56	75	78	63	52	76	94	109	129	128	106
17	101	58	85	70	62	52	83	68	119	129	128	98
18	87	58	78	52	66	51	85	67	123	129	128	85
19	95	56	63	51	81	50	79	66	127	126	128	96
20	93	57	51	55	87	60	90	65	125	126	127	102
21	87	52	65	68	88	72	83	60	125	126	125	101
22	79	48	65	75	81	67	78	98	126	133	124	99
23	78	57	50	78	75	65	86	109	127	130	124	98
24	81	58	42	68	75	64	89	111	126	129	129	98
25	85	58	47	62	75	69	84	115	125	129	126	98
26	82	56	48	65	75	75	85	109	123	128	126	98
27	77	50	47	59	80	74	84	86	123	128	125	97
28	76	42	48	58	74	76	82	59	123	128	126	97
29	79	42	48	57	---	74	85	90	125	128	125	97
30	90	41	46	48	---	73	86	99	124	128	124	96
31	88	---	47	43	---	77	---	105	---	128	123	---
TOTAL	2996	2026	1577	2079	1969	1939	2404	2779	3559	3990	3913	3352
MEAN	96.6	67.5	50.9	67.1	70.3	62.5	80.1	89.6	119	129	126	112
MAX	113	87	85	91	88	77	90	115	127	136	129	130
MIN	76	41	39	43	52	46	61	59	105	123	123	85
AC-FT	5940	4020	3130	4120	3910	3850	4770	5510	7060	7910	7760	6650
CAL YR 1996	TOTAL 32692	MEAN 89.3	MAX 137	MIN 39	AC-FT 64840							
YR 1997	TOTAL 32583	MEAN 89.3	MAX 136	MIN 39	AC-FT 64630							

WILLAMETTE RIVER BASIN

14188610 SCHAFFER CREEK NEAR LACOMB, OR

LOCATION.--Lat 44°37'11", long 122°27'53", in NE 1/4 SE 1/4 sec.8, T.11 S., R.3 E., Linn County, Hydrologic Unit 17090006, on right bank, 40 ft upstream from Crabtree Creek, and 8.0 mi east of LaComb.

DRAINAGE AREA.--1.03 mi².

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

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

REMARKS.--Records fair.

AVERAGE DISCHARGE.--4 years (water years 1994-97), 8.79 ft³/s, 115.92 in/yr, 6,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 400 ft³/s Feb. 7, 1996, gage height, 7.93 ft, from rating curve extended above 110 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 0.06 ft³/s Sept. 6, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0245	*100	*5.94	No other peak greater than base discharge.			
Minimum discharge, 0.13 ft ³ /s Sept. 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	2.5	32	50	38	3.3	4.4	14	15	3.3	.49	.21
2	.68	2.2	16	37	e15	4.2	3.9	11	9.3	3.1	.46	.20
3	.67	1.8	9.7	24	e9.5	3.1	3.6	11	9.5	2.8	.43	.20
4	.87	1.9	33	14	e7.0	2.5	3.3	10	9.3	2.5	.41	.19
5	1.5	1.8	36	8.4	e5.0	2.3	3.1	8.8	8.5	2.2	.38	.19
6	1.1	3.5	17	6.0	e3.8	6.2	2.9	9.1	6.8	2.0	.36	.15
7	.94	5.3	22	6.8	e3.3	23	4.3	7.7	5.4	1.9	.33	.15
8	.89	3.8	38	6.2	e2.8	13	7.5	7.0	4.4	1.8	.31	.14
9	.83	3.0	22	5.7	e2.3	19	7.0	7.1	3.7	4.1	.30	.13
10	.75	2.6	24	18	e2.1	49	5.9	7.0	3.1	4.1	.28	.15
11	.70	1.8	17	15	e2.3	32	5.0	7.8	2.8	3.5	.26	.23
12	.79	1.6	17	9.6	2.8	14	4.4	7.2	2.8	3.1	.25	.20
13	3.6	3.9	17	6.7	2.5	8.1	8.2	5.7	2.5	2.7	.24	.22
14	8.2	12	11	5.2	8.2	5.8	33	4.9	2.3	2.4	.22	.81
15	17	11	7.6	4.0	9.9	15	26	4.4	2.1	2.1	.22	2.7
16	9.9	9.4	5.8	3.7	8.0	52	17	3.8	1.9	1.9	.21	4.1
17	6.4	16	4.6	9.4	8.9	36	13	3.5	1.8	1.8	.20	12
18	19	25	4.0	13	7.6	18	12	3.0	1.7	1.6	.20	12
19	14	76	3.6	12	17	20	17	2.6	1.6	1.5	.19	7.5
20	9.5	30	8.1	12	11	28	40	2.3	1.4	1.3	.29	4.6
21	7.9	20	9.6	10	7.0	16	20	2.0	1.8	1.2	.26	3.3
22	27	22	7.2	7.3	4.7	10	19	1.8	2.5	1.1	.23	2.6
23	17	14	5.8	5.5	3.6	8.0	25	1.9	3.5	.98	.21	2.1
24	44	30	35	4.6	2.9	7.0	20	2.0	3.2	.90	.49	1.8
25	27	24	74	5.0	2.6	8.1	13	2.6	2.8	.83	.32	1.5
26	14	13	68	4.0	2.8	12	11	2.1	2.4	.76	.32	2.5
27	8.1	17	43	3.9	2.9	11	13	3.3	2.2	.71	.29	3.9
28	14	26	24	9.7	2.6	10	9.6	3.9	2.1	.66	.29	3.0
29	16	16	45	9.8	---	7.7	15	6.5	2.5	.60	.27	2.5
30	7.9	21	43	36	---	6.2	15	5.3	2.5	.56	.24	2.1
31	3.8	---	49	71	---	5.2	---	13	---	.53	.22	---
TOTAL	284.72	418.1	749.0	433.5	196.1	455.7	382.1	182.3	121.4	58.53	9.17	71.37
MEAN	9.18	13.9	24.2	14.0	7.00	14.7	12.7	5.88	4.05	1.89	.30	2.38
MAX	44	76	74	71	38	52	40	14	15	4.1	.49	12
MIN	.67	1.6	3.6	3.7	2.1	2.3	2.9	1.8	1.4	.53	.19	.13
AC-FT	565	829	1490	860	389	904	758	362	241	116	.18	142
CFSM	8.92	13.5	23.5	13.6	6.80	14.3	12.4	5.71	3.93	1.83	.29	2.31
IN.	10.28	15.10	27.05	15.66	7.08	16.46	13.80	6.58	4.38	2.11	.33	2.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

	MEAN	6.10	14.2	18.9	15.3	15.6	11.0	12.0	6.50	3.78	.97	.28	1.40
MAX	9.18	28.8	24.2	20.5	23.7	14.7	14.7	8.18	6.21	1.89	.41	2.38	
(WY)	1997	1996	1997	1995	1996	1997	1996	1995	1994	1997	1995	1997	
MIN	.33	.97	12.9	10.7	7.00	7.25	8.65	3.84	1.41	.49	.16	.23	
(WY)	1994	1994	1994	1996	1997	1996	1995	1994	1996	1994	1994	1994	

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1994 - 1997
ANNUAL TOTAL	3509.54	3361.99	
ANNUAL MEAN	9.59	9.21	8.79
HIGHEST ANNUAL MEAN			10.5
LOWEST ANNUAL MEAN			6.22
HIGHEST DAILY MEAN	152	76	152
LOWEST DAILY MEAN	.08	.13	.08
ANNUAL SEVEN-DAY MINIMUM	.11	.16	.11
ANNUAL RUNOFF (AC-FT)	6960	6670	6370
ANNUAL RUNOFF (CFSM)	9.31	8.94	8.53
ANNUAL RUNOFF (INCHES)	126.75	121.42	115.92
10 PERCENT EXCEEDS	23	24	22
50 PERCENT EXCEEDS	3.8	4.4	3.2
90 PERCENT EXCEEDS	.33	.33	.24

e Estimated

14189000 SANTIAM RIVER AT JEFFERSON, OR

LOCATION.--Lat 44°42'55", long 123°00'40", in SE 1/4 sec.11, T.10 S., R.3 W., Marion County, Hydrologic Unit 17090005, on right bank 350 ft upstream from Southern Pacific railroad bridge at Jefferson, 2.1 mi downstream from confluence of North and South Santiam Rivers, and at mile 9.62.

DRAINAGE AREA.--1,790 mi², approximately.

PERIOD OF RECORD.--October 1905 to June 1906 (gage heights and discharge measurements only), October 1907 to September 1916, October 1939 to current year. Gage-height records collected at same site since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 904: Drainage area. WSP 1094: 1908, 1910, 1912, 1943. WSP 1248: 1911, 1915-16(M). WSP 1935: 1909, WDR OR-93-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 199.63 ft above sea level. Prior to Sept. 22, 1940, nonrecording gages at sites within 350 ft downstream at datum 3.00 ft higher.

REMARKS.--Records good. Flow regulated since 1953 by Detroit Lake (station 14180500), since 1966 by Green Peter Lake (station 14186100) and by Foster Lake (station 14186600). Salem Canal diverts from North Santiam River at Stayton for irrigation and power; most of this water reaches Willamette River by way of Mill Creek at Salem. Stayton Canal diverts from North Santiam River at Stayton for irrigation of lands near town of West Stayton; some return flow reaches North Santiam River upstream from station. Albany power canal diverts from South Santiam River at Lebanon; return flow reaches Willamette River at Albany. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location. Periodic suspended sediment data are available for the period October 1991 to September 1993.

AVERAGE DISCHARGE.--67 years (water years 1908-16, 1940-97), 7,778 ft³/s, 5,635,000 acre-ft/yr (unadjusted). 31 years (water years 1967-97), 7,764 ft³/s, 5,625,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 197,000 ft³/s Dec. 22, 1964, gage height, 24.22 ft; minimum discharge observed, 260 ft³/s Aug. 15-22, Aug. 24 to Sept. 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 25.0 ft was reached in December 1861, and 23.4 ft in February 1890 (information from Corps of Engineers). On Nov. 21, 1921, the stage reached 19.5 ft at gage on railroad bridge 350 ft downstream, corresponding gage height at present site and datum, 24.4 ft, from curve of relation, discharge, 202,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 89,600 ft³/s Nov. 19, gage height, 19.63 ft; minimum discharge, 1,370 ft³/s July 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4180	9070	33600	42300	46300	6210	7760	12300	6030	2630	1600	1620
2	4280	8350	31700	40800	e38000	12600	6770	11700	5250	3210	1580	1630
3	4300	7510	32800	38200	e33000	11100	6470	10800	4980	3380	1610	1950
4	4350	7680	33100	39500	e31000	10800	6390	10200	5150	2630	1610	2650
5	4430	7660	40700	38700	23900	9570	5600	9370	5220	2280	1600	2610
6	4460	7600	34200	35900	18900	10200	4380	9060	5250	2040	1570	2580
7	4430	8690	34000	34400	17800	13500	3920	8280	4490	1920	1570	2580
8	4380	8420	40800	31100	17100	12800	4330	7330	3630	1820	1550	2620
9	4410	8150	33200	31700	16200	13400	4510	6630	3180	1880	1560	2650
10	4410	7970	35100	32700	15800	29600	4610	6110	2860	2380	1540	2700
11	4360	7580	32600	33400	13900	33300	4410	6140	2670	2420	1520	2740
12	4450	7550	35600	32300	9920	25400	4220	6060	2960	2260	1510	2760
13	4640	7780	37300	29900	8290	24600	4200	7320	3210	2120	1490	2820
14	5160	8750	35200	22600	6390	22300	5840	7320	3020	2040	1460	2880
15	6180	10800	31200	16200	6450	14800	8320	7120	2780	1920	1460	3160
16	6130	10600	24800	12400	5780	22500	7130	6940	2600	1770	1480	3940
17	5430	14000	19600	14600	5390	25800	6380	5300	2500	1710	1510	5490
18	6500	24400	16800	17800	5780	20100	6050	4600	2540	1710	1530	5720
19	11500	65800	13700	15700	8380	17700	6260	4520	2500	1640	1570	4810
20	10400	54800	14400	15400	9410	19200	19600	4190	2490	1500	1510	4650
21	9760	36600	15600	15800	8120	20300	23200	3580	2550	1460	1600	5080
22	10200	32900	15400	14500	7120	15100	16500	3150	2830	1510	1570	4930
23	10200	30100	15000	13300	5950	12400	19300	3120	2730	1620	1560	4600
24	12900	32300	16200	12900	5290	11700	22600	3200	2370	1610	1690	4680
25	19400	34800	39000	13900	4820	10500	15400	3390	1990	1570	1770	4550
26	16700	30400	57300	16000	4720	9680	11400	3270	2060	1570	1680	4640
27	12200	28900	43400	13800	5290	9610	11100	3210	2070	1580	1720	4750
28	11000	32500	35700	10900	5420	9910	10300	3370	2030	1580	1720	4660
29	13100	32700	38900	10200	---	9230	11400	3520	2140	1570	1690	4280
30	11100	31000	42200	12400	---	8780	12000	3640	2110	1550	1650	3880
31	9940	---	42500	39400	---	8700	---	4210	---	1580	1610	---
TOTAL	244880	615360	971600	748700	384420	481390	280350	188950	96190	60460	49090	108610
MEAN	7899	20510	31340	24150	13730	15530	9345	6095	3206	1950	1584	3620
MAX	19400	65800	57300	42300	46300	33300	23200	12300	6030	3380	1770	5720
MIN	4180	7510	13700	10200	4720	6210	3920	3120	1990	1460	1460	1620
AC-FT	485700	1221000	1927000	1485000	762500	954800	556100	374800	190800	119900	97370	215400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1997, BY WATER YEAR (WY)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	5083	12010	16150	14590	11260	8960	7703	6537	4348	1900	1651	3152																			
MAX	11890	26850	31700	24520	32350	25700	16150	11270	11150	4825	2883	5325																			
(WY)	1969	1974	1978	1974	1996	1972	1993	1984	1984	1983	1968	1968																			
MIN	2490	2882	2420	2178	1897	3245	3874	2115	1287	958	1004	1553																			
(WY)	1988	1988	1977	1977	1977	1992	1968	1973	1992	1992	1994	1967																			

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1967 - 1997
ANNUAL TOTAL	4497560	4230000	
ANNUAL MEAN	12290	11590	7764
HIGHEST ANNUAL MEAN			12310
LOWEST ANNUAL MEAN			3512
HIGHEST DAILY MEAN	115000	Feb 7	115000
LOWEST DAILY MEAN	1230	Aug 24	764
ANNUAL SEVEN-DAY MINIMUM	1250	Aug 24	794
ANNUAL RUNOFF (AC-FT)	8921000		5625000
10 PERCENT EXCEEDS	32800		17300
50 PERCENT EXCEEDS	6390		4950
90 PERCENT EXCEEDS	1490		1550

e Estimated

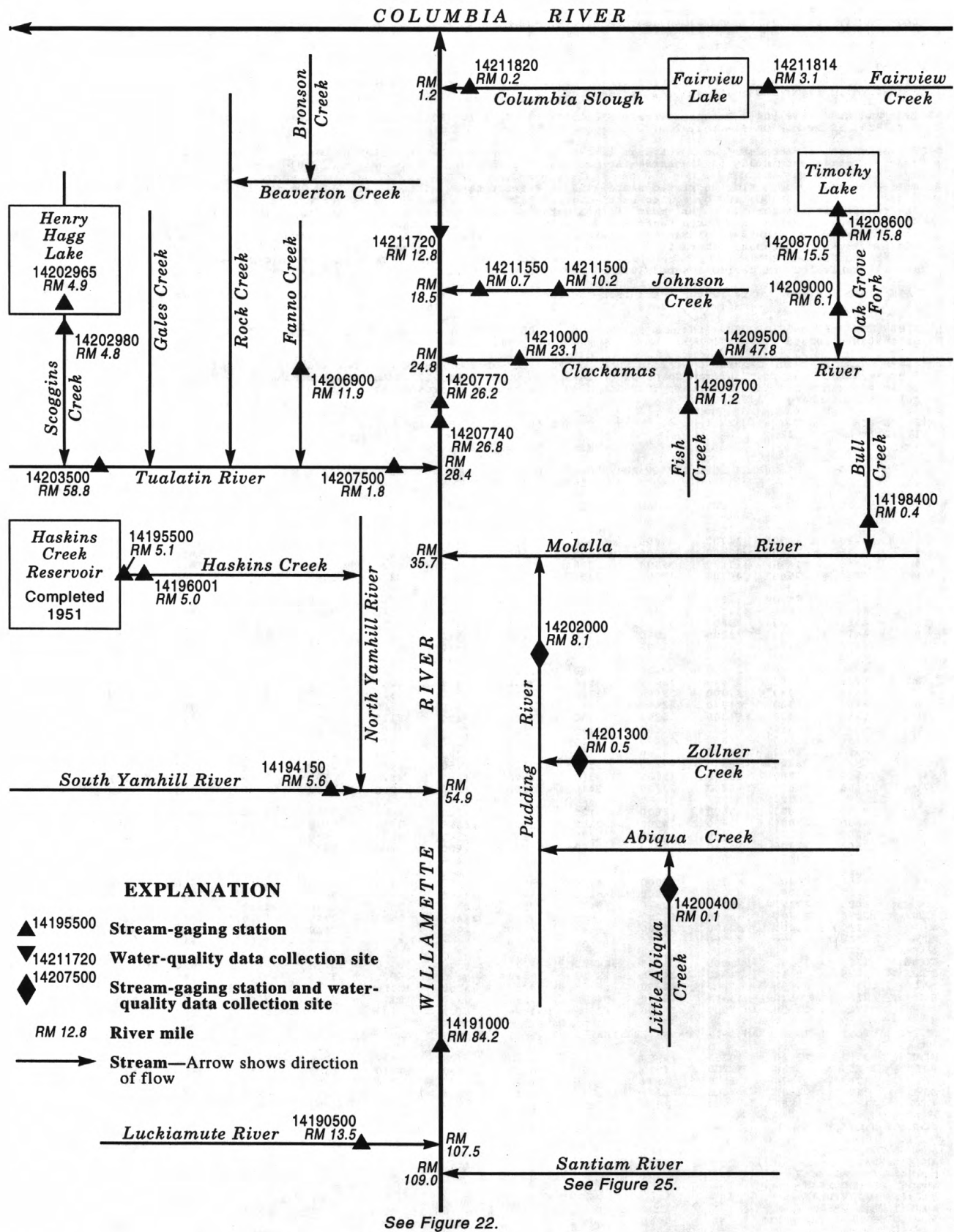


Figure 26. Schematic diagram showing gaging stations in the Willamette River Basin, from the Luckiamute River downstream to the mouth.

14190500 LUCKIAMUTE RIVER NEAR SUVER, OR

LOCATION.--Lat 44°47'00", long 123°14'00", in SW 1/4 SW 1/4 sec.18, T.9 S., R.4 W., Polk County, Hydrologic Unit 17090003, on right bank 10 ft upstream from highway bridge at Helmick State Park, 3.0 mi northwest of Suver, 4.7 mi downstream from Little Luckiamute River, and at mile 13.5.

DRAINAGE AREA.--240 mi².

PERIOD OF RECORD.--August 1905 to October 1911, July 1940 to current year.

REVISED RECORDS.--WSP 1044: Drainage area. WSP 1094: 1945-46. WSP 1248: 1905-11.

GAGE.--Water-stage recorder. Datum of gage is 171.92 ft above sea level. Aug. 18, 1905, to Oct. 31, 1911, nonrecording gage at present site at different datum, Aug. 20 to Oct. 15, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records 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.--63 years (water years 1906-11, 1941-97), 891 ft³/s, 50.44 in/yr, 645,500 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)
Nov. 20	0130	12,300	29.53	Dec. 27	0030	*12,700	*29.69
Dec. 5	1530	7,740	27.40	Dec. 30	0430	11,000	29.05
Dec. 8	2030	8,650	28.00	Feb. 1	0600	8,100	27.64

Minimum discharge, 32 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	324	2850	9100	7540	869	779	855	584	165	68	61
2	54	294	2780	8020	5220	2100	721	805	441	160	62	52
3	53	273	3440	6950	3340	2150	681	755	384	154	61	48
4	51	272	3220	5150	2390	1940	645	751	405	147	61	41
5	63	289	6770	3720	1910	1680	609	723	359	143	55	41
6	82	272	6400	2790	1610	2020	580	669	332	137	52	39
7	70	360	5400	2290	1420	3000	558	631	306	134	52	41
8	63	343	7620	1930	1260	2950	557	587	293	125	49	42
9	58	316	7360	1670	1120	2530	552	547	275	131	48	34
10	56	296	5090	1520	1010	2870	515	513	258	149	50	35
11	55	279	4150	1360	932	3590	487	480	248	140	48	37
12	60	272	4020	1220	1050	3320	463	449	256	130	42	37
13	73	325	4150	1100	967	2800	455	422	263	125	41	39
14	126	429	3970	998	942	2290	626	399	242	121	39	53
15	213	501	3110	919	983	2130	982	382	228	107	37	87
16	221	560	2410	865	929	2490	854	363	219	104	36	240
17	163	872	1940	1450	897	2720	763	346	205	98	39	537
18	244	1140	1620	4210	917	2430	676	332	205	97	42	542
19	555	5100	1400	3810	1420	2310	688	317	201	97	38	427
20	435	9390	1290	2640	1820	2190	1930	301	188	100	41	285
21	311	4740	1570	2290	1620	1870	1820	292	184	98	59	218
22	308	3280	1970	2120	1390	1610	1400	283	233	88	56	182
23	398	2260	1990	1830	1210	1410	1620	288	264	86	42	159
24	543	2310	2850	1620	1070	1250	1570	294	242	82	45	143
25	911	2510	5760	1450	965	1120	1360	308	212	78	72	131
26	900	2020	9930	1310	893	1010	1180	282	197	78	70	135
27	607	1730	10600	1170	830	961	1040	266	189	80	82	180
28	463	2700	7060	1620	763	996	944	272	181	79	84	175
29	510	2750	6620	1420	---	888	943	379	183	69	87	148
30	426	2220	9610	1590	---	816	868	324	176	66	83	140
31	366	---	8280	4700	---	786	---	373	---	68	68	---
TOTAL	8493	48427	145230	82832	46418	61096	26866	13988	7953	3436	1709	4329
MEAN	274	1614	4685	2672	1658	1971	896	451	265	111	55.1	144
MAX	911	9390	10600	9100	7540	3590	1930	855	584	165	87	542
MIN	51	272	1290	865	763	786	455	266	176	66	36	34
AC-FT	16850	96050	288100	164300	92070	121200	53290	27750	15770	6820	3390	8590
CFSM	1.14	6.73	19.5	11.1	6.91	8.21	3.73	1.88	1.10	.46	.23	.60
IN.	1.32	7.51	22.51	12.84	7.19	9.47	4.16	2.17	1.23	.53	.26	.67

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1997, BY WATER YEAR (WY)

MEAN	177	1077	2089	2247	2061	1430	867	424	203	80.8	42.9	54.4
MAX	1241	4574	5112	4727	4769	3002	1847	1026	512	184	85.0	191
(WY)	1948	1910	1965	1956	1949	1961	1955	1963	1984	1906	1906	1959
MIN	20.2	49.4	106	151	253	391	312	190	74.3	30.0	9.45	17.0
(WY)	1953	1994	1977	1977	1977	1941	1977	1966	1992	1967	1967	1967

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1906 - 1997

ANNUAL TOTAL	551033	450777	891
ANNUAL MEAN	1506	1235	1464
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			230
HIGHEST DAILY MEAN	22000	Feb 7	25200
LOWEST DAILY MEAN	28	Sep 11	Dec 23
ANNUAL SEVEN-DAY MINIMUM	34	Sep 7	1964
ANNUAL RUNOFF (AC-FT)	1093000	894100	645500
ANNUAL RUNOFF (CFSM)	6.27	5.15	3.71
ANNUAL RUNOFF (INCHES)	85.41	69.87	50.44
10 PERCENT EXCEEDS	3920	3150	2350
50 PERCENT EXCEEDS	534	501	349
90 PERCENT EXCEEDS	53	56	36

WILLAMETTE RIVER BASIN

14191000 WILLAMETTE RIVER AT SALEM, OR

LOCATION.--Lat 44°56'40", long 123°02'30", in SE 1/4 SW 1/4 sec. 22, T.7 S., R.3 W., Marion County, Hydrologic Unit 17090007, on right bank 300 ft upstream from Center Street Bridge in Salem and at mile 84.16.

DRAINAGE AREA.--7,280 mi², approximately.

PERIOD OF RECORD.--October 1909 to December 1916, January 1923 to current year. Monthly discharge only January 1923 to September 1927, published in WSP 1318. Gage-height records collected at about the same site since 1892 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1318: 1915(M).

GAGE.--Water-stage recorder. Datum of gage is 106.14 ft above sea level. Oct. 1, 1909, to Dec. 31, 1916, nonrecording gage at site 0.5 mi upstream at datum 8.00 ft higher. Jan. 1, 1923, to Nov. 26, 1934, nonrecording gage at Center Street Bridge at datum 8.00 ft higher. Nov. 27, 1934, to Sept. 30, 1962, water-stage recorder at present site at datum 8.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by 12 reservoirs upstream from station (see elsewhere in this report). Many small diversions for irrigation upstream from station; part of flow of Salem Canal, which diverts water from North Santiam River, returns to Willamette River downstream from station, through Mill Creek at Salem.

AVERAGE DISCHARGE.--81 years (water years 1910-16, 1924-97), 23,490 ft³/s, 43.82 in/yr, 17,020,000 acre-ft/yr. 29 years (water years 1969-97) 23,910 ft³/s, 44.62 in/yr, 17,320,000 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, 170,000 ft³/s Jan. 2, gage height, 29.45 ft; minimum discharge, 8,510 ft³/s Aug. 12, 13, gage height, 5.93 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13200	22200	91100	160000	100000	21000	24000	34200	17500	10800	8610	9430
2	13400	20500	93300	167000	110000	34300	22000	34100	18000	11800	8590	9390
3	13500	19500	96900	158000	105000	47800	20300	32600	17000	12000	8670	9450
4	13500	20000	98200	142000	91700	46600	19400	30300	16700	11400	8770	10800
5	13700	20100	107000	129000	79000	39100	18600	28500	17100	10800	8680	10800
6	13900	19900	114000	118000	63400	36100	17100	26300	17300	10400	8690	10800
7	13800	20500	122000	108000	51000	38700	16100	23800	16400	10200	8680	10900
8	13700	20900	132000	100000	44500	40900	16200	22400	14800	9980	8660	10900
9	13500	20700	137000	91400	39000	38400	16700	21000	13700	9970	8610	10800
10	13400	20400	130000	88200	35800	49300	16600	19400	13100	10400	8630	11100
11	13200	19700	121000	85600	33700	69200	15900	18700	12600	10900	8600	11500
12	13200	19400	113000	83000	28300	75700	15300	18400	12700	10700	8550	11600
13	13600	19500	114000	80200	26500	75300	15000	19100	12900	10400	8670	11700
14	14100	20700	114000	73100	23500	67400	15500	19600	12700	10200	8820	11900
15	15000	24600	111000	63900	23100	54600	18400	19200	12300	9990	8820	12400
16	15500	27300	101000	56300	22300	53900	18900	18800	12000	9710	8860	13100
17	14800	31400	87800	54300	21200	65400	17700	17700	11700	9570	8990	14800
18	14800	41200	78000	66900	20700	69100	17000	16500	11500	9520	9140	16800
19	19900	81300	70700	63400	22200	61100	16900	16700	11400	9630	9210	16300
20	22700	131000	67200	53000	28800	55900	25800	16400	11200	9500	9290	15300
21	21000	152000	67400	50800	30200	54700	41800	15600	11000	9440	9560	14900
22	20300	147000	69800	48700	26700	47600	39300	14700	11300	9290	9590	14800
23	20800	125000	68700	43100	23500	38500	41200	14200	11600	9340	9480	14200
24	20900	108000	67700	40100	21300	34500	49500	13900	11300	9310	9500	14100
25	30600	104000	82300	39000	19900	32000	46700	14100	10700	9230	9790	14000
26	36500	101000	113000	43800	19000	28900	38100	14100	10500	9160	9770	14000
27	32500	93500	146000	52200	19000	27600	34600	13800	10400	9120	9690	14100
28	27100	92000	149000	52200	19700	27400	31800	13800	10300	9140	9770	14200
29	27100	93400	137000	48100	---	26800	30700	13800	10300	8850	9640	13900
30	26300	92200	139000	45500	---	25300	32900	14500	10500	8630	9510	13300
31	24700	---	148000	69100	---	24700	---	15200	---	8570	9430	---
TOTAL	580200	1728900	3287100	2473900	1149000	1407800	750000	611400	390500	307950	281270	381270
MEAN	18720	57630	106000	79800	41040	45410	25000	19720	13020	9934	9073	12710
MAX	36500	152000	149000	167000	110000	75700	49500	34200	18000	12000	9790	16800
MIN	13200	19400	67200	39000	19000	21000	15000	13800	10300	8570	8550	9390
AC-FT	1151000	3429000	6520000	4907000	2279000	2792000	1488000	1213000	774600	610800	557900	756200
CFSM	2.57	7.92	14.6	11.0	5.64	6.24	3.43	2.71	1.79	1.36	1.25	1.75
IN.	2.96	8.83	16.80	12.64	5.87	7.19	3.83	3.12	2.00	1.57	1.44	1.95

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	MEAN	13920	30720	49480	46620	36160	29270	23640	18910	13550	7582	7340	10200
MAX	24390	70400	106000	79800	90630	73670	46440	31280	30910	12410	9540	13340	
(WY)	1969	1974	1997	1997	1996	1972	1993	1993	1984	1983	1971	1978	
MIN	7935	8444	6780	6377	5313	11270	10260	7701	5657	5737	5734	6155	
(WY)	1988	1988	1977	1977	1977	1992	1977	1973	1992	1992	1992	1992	

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1969 - 1997
ANNUAL TOTAL	14143020	13349290	
ANNUAL MEAN	38640	36570	23910
HIGHEST ANNUAL MEAN			37960
LOWEST ANNUAL MEAN			9792
HIGHEST DAILY MEAN	226000	Feb 9	167000
LOWEST DAILY MEAN	7080	Jul 16	8550
ANNUAL SEVEN-DAY MINIMUM	7170	Jul 11	8630
ANNUAL RUNOFF (AC-FT)	28050000	26480000	17320000
ANNUAL RUNOFF (CFSM)	5.31	5.02	3.28
ANNUAL RUNOFF (INCHES)	72.27	68.21	44.62
10 PERCENT EXCEEDS	97900	98900	55600
50 PERCENT EXCEEDS	20000	19600	15000
90 PERCENT EXCEEDS	7330	9490	6800

WILLAMETTE RIVER BASIN

241

14194150 SOUTH YAMHILL RIVER AT MCMINNVILLE, OR

LOCATION.--Lat 45°12'21", long 123°10'53", in SE 1/4 sec. 21, T.4 S., R.4 W., Yamhill County, Hydrologic Unit 17090008, on left bank 0.3 mi downstream from Cozine Creek, at Highway 18 McMinnville Spur bridge, in McMinnville, and at mile 5.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--3 years (water years 1995-97), 2,503 ft³/s, 64.41 in/yr, 1,813,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,100 ft³/s Feb. 9, 1996, gage height, 59.33; minimum discharge, 12 ft³/s Oct. 12, 1994, but may have been lower during period of no gage height Oct. 5-12, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	2345	16,000	48.03	Dec. 27	1700	18,200	50.45
Dec. 9	1100	15,100	46.85	Dec. 30	1500	*24,400	*55.18

Minimum discharge, 31 ft³/s Aug. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	819	5960	22600	11100	1750	1640	1690	1210	294	69	88
2	40	724	6290	20800	11400	4280	1530	1660	1050	283	66	74
3	41	653	7370	17200	8950	5510	1410	1550	879	272	69	65
4	44	607	7580	14200	6030	5250	1320	1500	861	244	68	61
5	43	663	9930	11000	4330	4300	1220	1430	811	220	60	58
6	45	637	12500	7750	3390	4190	1130	1320	719	205	58	57
7	64	735	12700	5730	2780	5370	1060	1250	652	195	55	56
8	53	800	13400	4700	2420	6010	1020	1140	590	189	48	54
9	46	718	14800	3950	2140	5380	1060	1050	548	195	43	51
10	44	668	13000	3450	1920	5970	982	962	510	245	46	52
11	41	620	11400	3130	1760	6510	902	899	479	251	47	51
12	43	592	10400	2790	1960	6600	847	844	470	248	44	49
13	59	677	9890	2490	2180	6010	816	784	506	213	36	51
14	123	1020	9530	2220	2020	4960	1010	743	496	181	37	64
15	368	1250	8120	1940	2090	4270	1510	695	433	161	37	89
16	688	1240	6220	1710	1980	4640	1490	653	401	149	37	214
17	483	1470	4780	1890	1890	5230	1320	611	371	136	40	729
18	413	2050	3750	5540	1920	5130	1170	568	346	129	41	1580
19	1120	5260	3040	7520	2440	5390	1140	530	348	122	34	1100
20	1190	13100	2630	6070	3670	5750	2590	500	320	116	40	727
21	835	14500	2930	5080	3410	5030	3820	478	309	111	47	512
22	666	11400	4210	4600	2910	4130	2860	464	355	103	65	393
23	940	8260	4520	3890	2520	3340	2760	465	538	102	67	316
24	1110	6550	6370	3430	2210	2760	2950	494	565	98	64	269
25	2380	6550	10000	2980	1990	2340	2660	515	440	96	63	236
26	2340	5620	13900	2650	1840	2050	2280	479	382	90	93	218
27	1610	4750	17400	2350	1720	1870	2000	452	351	86	88	280
28	1210	5520	16500	2630	1620	1930	1790	479	327	85	144	378
29	1250	6890	14600	2910	---	1910	1800	738	319	78	115	303
30	1190	6160	22200	3000	---	1670	1710	736	317	74	118	266
31	955	---	21100	7330	---	1570	---	718	---	71	110	---
TOTAL	19476	110503	307020	187530	94590	131100	49797	26397	15903	5042	1949	8441
MEAN	628	3683	9904	6049	3378	4229	1660	852	530	163	62.9	281
MAX	2380	14500	22200	22600	11400	6600	3820	1690	1210	294	144	1580
MIN	40	592	2630	1710	1620	1570	816	452	309	71	34	49
AC-FT	38630	219200	609000	372000	187600	260000	98770	52360	31540	10000	3870	16740
CFSM	1.19	6.98	18.8	11.5	6.40	8.01	3.14	1.61	1.00	.31	.12	.53
IN.	1.37	7.79	21.63	13.21	6.66	9.24	3.51	1.86	1.12	.36	.14	.59

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1997, BY WATER YEAR (WY)

	1995	1996	1997	1995	1996	1997	1995	1996	1997
MEAN	410	3123	7526	5763	5957	3231	2404	1062	432
MAX	628	3683	9904	6141	9541	4229	3832	1669	530
(WY)	1997	1997	1997	1996	1996	1997	1996	1997	1997
MIN	278	2814	5895	5099	3378	1966	1660	666	257
(WY)	1995	1995	1995	1995	1997	1996	1997	1995	1995

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1995 - 1997

ANNUAL TOTAL	1154007	957748	2503
ANNUAL MEAN	3153	2624	2796
HIGHEST ANNUAL MEAN			2088
LOWEST ANNUAL MEAN			2088
HIGHEST DAILY MEAN	40300	22600	40300
LOWEST DAILY MEAN	16	34	12
ANNUAL SEVEN-DAY MINIMUM	17	37	16
ANNUAL RUNOFF (AC-FT)	2289000	1900000	1813000
ANNUAL RUNOFF (CFSM)	5.97	4.97	4.74
ANNUAL RUNOFF (INCHES)	81.31	67.48	64.41
10 PERCENT EXCEEDS	8700	6720	6940
50 PERCENT EXCEEDS	1130	1050	1070
90 PERCENT EXCEEDS	32	59	40

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 sea level (levels by city of McMinnville). Prior to February 1981, at datum 20.0 ft lower.

REMARKS.--Reservoir is formed by earthfill dam equipped with five siphon spillways which act as overflow weirs until priming occurs, approximately 815.0 ft elevation. Capacity of reservoir (based on May 1992 resurvey, new capacity table put into use Oct. 1, 1991), 721 acre-ft between elevations 741.5 ft, invert of outlet tunnel, and 815.0 ft, crest of siphon spillways. Dead storage negligible. Rated capacity of three siphons is 700 ft³/s each and remaining two siphons 350 ft³/s each. Water is used for municipal supply of city of McMinnville.

COOPERATION.--Elevation and capacity table furnished by city of McMinnville Water and Light department. Elevations based on once-daily staff gage readings.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 748 acre-ft Nov. 17, 1954, elevation, 815.65 ft, present datum; no contents at times during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 721 acre-ft Oct. 24 to May 31, June 1-16, 23-26, elevation, 815.0 ft; minimum observed contents, 445 acre-ft Oct. 1-4, elevation, 801.3 ft.

MONTHEND ELEVATIONS AND CONTENTS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	801.0	440	-
Oct. 31.....	815.0	721	+281
Nov. 30.....	815.0	721	0
Dec. 31.....	815.0	721	0
CAL YR 1996.....	-	-	0
Jan. 31.....	815.0	721	0
Feb. 28.....	815.0	721	0
Mar. 31.....	815.0	721	0
Apr. 30.....	815.0	721	0
May 31.....	815.0	721	0
June 30.....	814.6	709	-12
July 31.....	811.1	630	-79
Aug. 31.....	812.3	656	+26
Sept.30.....	814.3	702	+46
WTR YR 1997.....	-	-	+262

WILLAMETTE RIVER BASIN

243

14196001 HASKINS CREEK BELOW RESERVOIR, NEAR MCMINNVILLE, OR

LOCATION.--Lat 45°18'39", long 123°21'06", in SE 1/4 NW 1/4 sec.18, T.3 S., R.5 W., Yamhill County, Hydrologic Unit 17090008, on right bank 800 ft downstream from Haskins Creek Reservoir, 11 mi northwest of McMinnville, and at mile 5.0.

DRAINAGE AREA.--6.90 mi².

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1738: Drainage area. Maximum discharge for water year 1957, published in WSP 1518, has been found to be unreliable and should not be used.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 707 ft above sea level, topographic survey of 1955. Prior to Aug. 5, 1952, water-stage recorder at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. All records given herein include flow in pipeline which diverts 600 ft upstream from station for municipal supply of McMinnville. Flow regulated by Haskins Creek Reservoir (station 14195500). Water from McGuire Lake (station 14302800) on the Nestucca River is diverted through a tunnel to Haskins Creek Reservoir to augment summer flows.

COOPERATION.--Meter readings for diversion and elevations of Haskins Creek Reservoir furnished by city of McMinnville.

AVERAGE DISCHARGE.--46 years (water years 1952-97), 30.9 ft³/s, 60.81 in/yr, 22,400 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Feb. 8, 1996, gage height, 6.01 ft, from floodmark, from rating curve extended above 60 ft³/s on basis of slope-area measurement of peak flow; maximum daily discharge, 615 ft³/s Feb. 8, 1996; minimum daily, 0.10 ft³/s Oct. 27, 28, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 594 ft³/s Dec. 31, gage height, 4.94 ft; minimum daily, 7.1 ft³/s Oct. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	11	83	332	123	65	33	29	19	12	15	9.1
2	10	9.8	77	249	87	71	32	28	16	12	15	9.4
3	11	10	69	203	77	66	30	26	17	12	15	11
4	11	12	133	141	65	60	29	26	16	12	15	12
5	10	11	148	111	54	60	27	24	14	14	15	12
6	10	13	116	91	46	78	26	23	14	13	17	12
7	10	14	158	84	44	106	25	22	13	13	17	12
8	11	12	165	70	50	94	25	21	12	13	18	12
9	12	12	120	65	33	120	24	20	11	11	16	13
10	11	11	122	60	37	104	22	19	12	10	16	12
11	9.4	11	117	51	39	98	21	18	12	10	16	12
12	8.3	12	103	48	38	84	20	17	14	10	17	12
13	8.7	15	103	38	37	83	24	17	11	10	17	9.6
14	7.3	15	96	42	38	74	31	16	11	15	17	9.3
15	7.1	14	78	33	36	78	29	15	11	16	17	8.9
16	8.2	21	67	40	37	88	27	15	11	15	15	9.7
17	11	28	54	60	37	90	24	14	11	14	16	22
18	12	34	51	86	44	102	23	13	10	14	15	20
19	8.9	87	44	58	71	120	35	13	11	13	16	12
20	8.8	74	52	63	70	100	45	13	10	14	15	9.4
21	9.9	47	40	57	60	87	41	14	10	15	13	8.8
22	9.7	46	48	51	49	64	42	13	9.7	15	12	8.0
23	11	38	57	50	51	57	42	14	12	15	13	8.4
24	29	66	145	41	37	50	35	13	10	14	13	8.3
25	33	64	220	46	35	43	35	12	9.7	15	12	8.4
26	22	57	208	37	37	42	35	12	9.7	16	10	8.5
27	15	74	185	41	35	44	32	12	9.8	15	10	8.4
28	16	91	131	45	33	33	32	18	9.5	15	10	9.0
29	16	71	315	35	---	35	32	16	9.9	15	9.2	8.5
30	13	67	310	74	---	36	31	14	11	16	9.2	8.5
31	12	---	336	147	---	35	---	24	---	15	9.5	---
TOTAL	382.3	1047.8	3951	2549	1400	2267	909	551	357.3	419	440.9	324.2
MEAN	12.3	34.9	127	82.2	50.0	73.1	30.3	17.8	11.9	13.5	14.2	10.8
MAX	33	91	336	332	123	120	45	29	19	16	18	22
MIN	7.1	9.8	40	33	33	33	20	12	9.5	10	9.2	8.0
AC-FT	758	2080	7840	5060	2780	4500	1800	1090	709	831	875	643
MEAN†	12.9	35.0	127	82.3	50.1	73.2	30.2	17.7	11.7	7.99	7.20	8.65
CFSM†	1.87	5.07	18.5	11.9	7.25	10.6	4.38	2.57	1.70	1.16	1.04	1.25
IN.†	2.15	5.65	21.31	13.75	7.56	12.23	4.89	2.96	1.89	1.33	1.20	1.40
AC-FT†	792	2080	7840	5060	2780	4500	1800	1090	697	491	443	515

CAL YR 1996 TOTAL 17092.4 MEAN 46.7 MAX 615 MIN 7.1 AC-FT 33900 MEAN† 45.1 CFSM† 6.54 IN.† 89.04 AC-FT† 32760
WTR YR 1997 TOTAL 14598.5 MEAN 40.0 MAX 336 MIN 7.1 AC-FT 28960 MEAN† 38.8 CFSM† 5.62 IN.† 76.33 AC-FT† 28082

† Adjusted for change in contents in Haskins Creek Reservoir and diversion from McGuire Lake.

WILLAMETTE RIVER BASIN

14198400 BULL CREEK NEAR WILHOIT, OR

LOCATION.--Lat 44°57'42", long 122°22'59", in NW 1/4 SE 1/4 sec.13, T.7 S., R.3 E., Clackamas County, Hydrologic Unit 17090009, on left bank 0.5 mi upstream from mouth, and 11 mi southeast of Wilhoit and at mile 0.43.

DRAINAGE AREA.--0.66 mi² (revised).

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion.

AVERAGE DISCHARGE.--4 years (water years 1994-97), 2.20 ft³/s, 45.38 in/yr, 1,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 250 ft³/s Feb. 7, 1996, gage height, 7.55 ft, from rating curve extended above 70 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.02 ft³/s Sept. 25-28, 1994, Sept. 21-24, 1995, Sept. 28-30, 1996, Oct. 1-4, 7-12, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 18 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1330	*89	*6.79	Dec. 30	0330	50	6.21
Dec. 4	2215	76	6.63	Jan. 1	0215	50	6.19
Dec. 8	1200	36	5.83	Jan. 31	1830	50	6.19
Dec. 26	0730	38	5.87	Mar. 11	0130	50	6.20

Minimum discharge, 0.02 ft³/s Oct. 1-4, 7-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.88	6.7	34	29	4.0	.84	1.6	.85	.47	.12	.08
2	.02	.73	6.1	26	11	9.1	.75	1.6	.69	.33	.12	.07
3	.02	.64	4.9	15	6.2	6.0	.71	1.6	.83	.29	.12	.07
4	.03	.75	25	6.9	4.3	4.0	.65	1.4	.86	.26	.12	.07
5	.04	.67	38	4.1	3.0	3.1	.59	1.3	.85	.24	.11	.07
6	.03	.68	12	2.6	2.3	4.2	.56	1.3	.77	.23	.11	.07
7	.02	.68	15	1.8	1.8	8.9	.60	1.2	.68	.22	.11	.06
8	.02	.65	30	1.5	1.5	9.0	.66	1.1	.60	.23	.10	.06
9	.02	.62	13	1.3	1.4	7.8	.65	.97	.52	.39	.10	.05
10	.02	.59	9.1	2.2	1.2	35	.68	.88	.47	.31	.10	.06
11	.02	.55	7.6	3.4	1.2	26	.67	.80	.45	.27	.09	.11
12	.03	.62	5.4	2.6	1.2	11	.64	.72	.44	.25	.09	.09
13	.13	.97	5.9	1.7	1.2	5.9	.66	.66	.40	.23	.09	.10
14	.09	1.8	4.8	1.3	1.4	4.1	.83	.61	.37	.22	.08	.19
15	.12	2.4	3.2	.93	1.5	5.6	.97	.56	.33	.21	.08	.67
16	.09	2.8	2.0	.72	1.5	14	1.0	.52	.31	.20	.08	.46
17	.07	4.1	1.6	1.3	1.5	12	.88	.49	.30	.20	.08	1.0
18	1.3	8.7	1.3	2.6	1.5	7.5	.91	.46	.29	.20	.09	.91
19	1.2	62	1.1	2.2	2.9	4.6	1.2	.43	.27	.18	.09	.72
20	.93	20	1.0	1.7	4.1	3.8	7.9	.42	.25	.18	.12	.43
21	.77	8.3	1.1	1.5	3.5	3.0	5.2	.41	.34	.17	.10	.30
22	.84	7.1	1.0	1.3	2.6	2.3	3.9	.39	.34	.18	.08	.24
23	.79	4.4	1.3	1.0	1.9	1.7	4.5	.43	.33	.17	.07	.21
24	1.8	3.6	3.8	.82	1.5	1.3	5.4	.43	.29	.16	.18	.20
25	2.2	4.2	25	.73	1.4	1.1	4.2	.42	.26	.16	.10	.18
26	2.0	2.9	34	.61	1.3	1.0	3.1	.37	.25	.15	.15	.26
27	1.3	2.8	21	.62	1.3	.97	2.4	.37	.23	.15	.12	.22
28	1.3	13	11	.98	1.2	1.8	1.8	.40	.25	.13	.10	.18
29	1.8	12	29	.94	---	1.1	1.7	.41	.25	.13	.10	.17
30	1.5	6.3	30	3.1	---	1.1	1.6	.37	.33	.13	.08	.18
31	1.1	---	22	31	---	.94	---	.78	---	.13	.08	---
TOTAL	19.62	175.43	372.9	156.45	94.4	201.31	56.15	23.40	13.40	6.77	3.16	7.48
MEAN	.63	5.85	12.0	5.05	3.37	6.49	1.87	.75	.45	.22	.10	.25
MAX	2.2	62	38	34	29	35	7.9	1.6	.86	.47	.18	1.0
MIN	.02	.55	1.0	.61	1.2	.94	.56	.37	.23	.13	.07	.05
AC-FT	.39	348	740	310	187	399	111	46	27	13	6.3	.15
CFSM	.96	8.86	18.2	7.65	5.11	9.84	2.84	1.14	.68	.33	.15	.38
IN.	1.11	9.89	21.02	8.82	5.32	11.35	3.16	1.32	.76	.38	.18	.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

MEAN	.56	3.78	5.92	4.00	4.96	3.19	2.02	1.21	.55	.22	.084	.12
MAX	1.00	5.85	12.0	5.63	10.8	6.49	3.11	2.08	.72	.24	.10	.25
(WY)	1996	1997	1997	1996	1996	1997	1996	1996	1995	1995	1997	1997
MIN	.087	.13	.91	1.25	1.27	1.14	.95	.32	.44	.20	.052	.055
(WY)	1994	1994	1994	1994	1994	1994	1994	1994	1996	1994	1994	1996

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1994 - 1997

ANNUAL TOTAL	1322.92	1130.47	
ANNUAL MEAN	3.61	3.10	
HIGHEST ANNUAL MEAN			2.20
LOWEST ANNUAL MEAN			3.10
HIGHEST DAILY MEAN	100	Feb 7	100
LOWEST DAILY MEAN	.02	Sep 29	.02
ANNUAL SEVEN-DAY MINIMUM	.02	Sep 27	.02
ANNUAL RUNOFF (AC-FT)	2620		1600
ANNUAL RUNOFF (CFSM)	5.48	4.69	3.34
ANNUAL RUNOFF (INCHES)	74.56	63.72	45.38
10 PERCENT EXCEEDS	8.4	7.7	5.0
50 PERCENT EXCEEDS	1.0	.80	.68
90 PERCENT EXCEEDS	.06	.09	.06

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR

LOCATION.--Lat 44°57'21", long 122°37'38", in SW 1/4 SE 1/4 sec.13, T.7 S., R.1 E, Marion County, Hydrologic Unit 17090009, on left bank, 4 mi south of Scotts Mills, and 0.1 mi upstream from mouth.

DRAINAGE AREA.--9.81 mi².

WATER-DISCHARGE RECORDS

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

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

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

AVERAGE DISCHARGE.--4 years (water years 1994-97), 39.9 ft³/s, 55.27 in/yr, 28,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft³/s Feb. 7, 1996, gage height, 6.19 ft from rating curve extended above 340 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 6.57 ft Feb. 7, 1996; minimum discharge, 1.9 ft³/s Oct. 2-4, 1993.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1430	*376	*4.23	Jan. 2	0030	258	3.86
Dec. 26	0730	252	3.84				

Minimum discharge, 2.9 ft³/s Oct. 1-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	24	127	214	191	67	41	54	31	9.8	4.8	3.8
2	3.0	22	130	202	164	90	38	51	20	7.8	4.7	3.9
3	2.9	22	127	171	125	85	36	50	27	7.2	4.6	3.9
4	3.5	26	157	143	100	78	33	45	25	6.9	4.4	3.9
5	5.4	22	181	118	82	76	31	41	24	6.5	4.3	3.9
6	3.7	25	194	99	70	94	30	42	20	6.4	4.2	3.9
7	3.4	24	202	87	63	120	34	37	19	6.2	4.1	3.8
8	3.2	22	206	75	56	109	37	33	17	6.7	4.0	3.7
9	3.2	21	183	66	50	124	32	31	16	18	4.0	3.6
10	3.2	20	170	67	46	195	29	28	14	11	3.9	3.8
11	3.3	19	151	58	45	182	28	26	15	9.3	3.8	4.3
12	4.4	21	137	53	47	155	26	23	16	8.4	3.8	4.5
13	12	35	133	49	41	131	30	22	14	7.9	3.8	4.5
14	11	46	113	46	39	111	44	20	13	7.4	3.7	7.2
15	13	46	101	43	37	118	45	19	12	6.8	3.7	20
16	9.8	55	91	41	36	127	45	18	11	6.6	3.8	15
17	6.9	91	82	66	37	120	41	16	11	6.5	3.6	19
18	59	131	74	81	38	108	44	15	11	6.5	3.7	20
19	45	228	67	68	55	101	50	14	9.5	6.2	3.8	11
20	22	199	70	72	49	107	67	14	9.0	6.0	4.4	7.5
21	15	175	77	69	46	90	59	13	12	6.0	4.6	6.4
22	28	143	72	66	43	82	61	13	13	6.0	3.9	5.8
23	21	115	81	62	41	72	72	15	12	5.7	3.7	5.4
24	61	128	114	58	38	64	68	16	10	5.6	6.0	5.2
25	57	116	189	57	36	58	61	18	9.4	5.2	4.6	5.0
26	41	100	207	54	38	58	58	13	8.6	5.2	4.3	9.1
27	30	104	200	53	41	54	55	13	8.3	5.1	4.9	8.8
28	41	149	182	63	38	55	49	14	8.0	5.0	4.5	6.5
29	46	130	188	54	---	48	52	15	8.2	4.9	4.3	6.0
30	35	123	183	96	---	45	56	13	8.5	4.9	4.0	6.1
31	28	---	184	172	---	44	---	28	---	4.8	3.9	---
TOTAL	623.9	2382	4373	2623	1692	2968	1352	770	432.5	216.5	129.8	215.5
MEAN	20.1	79.4	141	84.6	60.4	95.7	45.1	24.8	14.4	6.98	4.19	7.18
MAX	61	228	207	214	191	195	72	54	31	18	6.0	20
MIN	2.9	19	67	41	36	44	26	13	8.0	4.8	3.6	3.6
AC-FT	1240	4720	8670	5200	3360	5890	2680	1530	858	429	257	427
CFSM	2.05	8.09	14.4	8.63	6.16	9.76	4.59	2.53	1.47	.71	.43	.73
IN.	2.37	9.03	16.58	9.95	6.42	11.25	5.13	2.92	1.64	.82	.49	.82

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

	1994	1995	1996	1997
MEAN	16.6	64.7	84.0	72.0
MAX	25.3	89.1	141	89.8
(WY)	1995	1996	1997	1996
MIN	3.06	5.09	27.4	50.5
(WY)	1994	1994	1994	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1994 - 1997

ANNUAL TOTAL	19779.5	17778.2	
ANNUAL MEAN	54.0	48.7	
HIGHEST ANNUAL MEAN			39.9
LOWEST ANNUAL MEAN			50.5
HIGHEST DAILY MEAN	850	228	850
LOWEST DAILY MEAN	2.9	2.9	1.9
ANNUAL SEVEN-DAY MINIMUM	3.0	3.5	2.1
ANNUAL RUNOFF (AC-FT)	39230	35260	28910
ANNUAL RUNOFF (CFSM)	5.51	4.97	4.07
ANNUAL RUNOFF (INCHES)	75.00	67.42	55.27
10 PERCENT EXCEEDS	134	129	104
50 PERCENT EXCEEDS	29	30	21
90 PERCENT EXCEEDS	3.4	4.1	3.2

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to Sept. 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 63 microsiemens Sept. 29, 30, 1993; minimum recorded, 8 microsiemens Feb. 5-7, 1996.

WATER TEMPERATURE: Maximum, 19.0°C July 23, 1994, minimum, 0.0°C Nov. 24-26, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 49 microsiemens Aug. 17, 26; minimum recorded, 15 microsiemens Jan. 31.

WATER TEMPERATURE: Maximum, 17.5°C Aug. 6, 14; minimum, 2.5°C Jan. 13-15.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	42	40	41	30	26	27	31	30	31	23	18	20
2	42	41	41	30	29	30	32	31	31	23	18	19
3	41	40	41	31	30	30	33	32	32	22	19	21
4	---	---	---	30	28	29	33	26	31	---	21	---
5	41	35	38	30	27	29	30	26	29	---	---	---
6	41	39	40	30	29	30	30	28	29	23	22	23
7	41	40	40	31	29	30	30	23	28	23	23	23
8	42	41	41	31	31	31	30	17	21	24	23	23
9	43	41	42	31	31	31	25	22	24	24	24	24
10	43	41	42	32	30	31	26	22	24	24	23	23
11	42	40	41	32	30	31	29	26	28	24	23	24
12	41	38	40	32	30	31	30	29	30	25	24	24
13	38	33	35	31	25	28	30	29	30	25	24	24
14	36	31	35	27	25	26	30	30	30	25	24	24
15	35	31	34	26	25	26	31	30	30	25	24	25
16	35	33	34	26	25	25	31	30	31	25	24	25
17	36	33	35	28	23	24	31	30	31	24	19	22
18	33	21	27	25	22	23	31	30	31	25	20	22
19	31	28	29	26	19	22	31	31	31	23	23	23
20	30	26	28	25	19	22	31	31	31	23	22	22
21	30	25	29	32	24	28	31	30	31	23	22	22
22	30	23	26	32	29	31	31	31	31	24	22	23
23	28	24	26	33	32	33	31	30	31	23	23	23
24	27	24	26	34	32	33	31	28	30	24	22	23
25	27	25	26	35	33	34	28	18	21	22	22	22
26	30	27	28	36	35	35	21	18	19	23	22	22
27	31	23	27	36	34	36	23	19	21	23	19	22
28	27	18	25	36	26	31	22	21	22	22	19	21
29	25	22	24	29	29	29	22	19	21	23	22	22
30	29	22	24	30	29	30	22	19	21	23	18	20
31	26	23	25	---	---	---	22	17	20	18	15	17
MONTH	---	---	---	36	19	29	33	17	27	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	18	16	17	27	22	25	27	26	26	24	23	23
2	24	17	23	25	23	24	27	26	27	24	23	24
3	25	24	25	25	24	25	28	26	27	25	23	24
4	26	25	25	25	25	25	28	26	27	25	24	24
5	30	25	28	26	24	25	29	27	28	26	24	25
6	33	26	30	24	23	24	29	28	29	25	24	24
7	30	29	30	23	22	23	29	25	28	25	24	25
8	31	30	30	24	23	23	26	24	25	26	25	25
9	32	30	31	24	20	22	27	25	26	26	25	26
10	32	27	29	22	20	21	27	26	27	29	26	27
11	32	29	31	23	22	22	28	27	27	29	26	27
12	31	29	30	23	22	23	29	26	27	29	27	28
13	31	30	31	24	23	24	29	25	27	31	28	29
14	31	30	30	25	24	24	25	24	24	31	30	30
15	32	28	30	25	23	24	25	25	25	31	30	30
16	29	28	28	24	23	23	26	24	25	31	30	31
17	29	27	28	24	23	24	26	25	25	31	30	31
18	28	26	27	25	24	24	26	24	25	32	31	31
19	26	24	25	25	24	24	26	23	25	32	31	32
20	26	25	26	25	23	24	24	---	---	33	31	32
21	26	26	26	26	25	25	24	24	24	33	31	32
22	26	26	26	26	25	26	24	23	24	33	32	32
23	27	26	26	27	26	26	24	22	23	33	31	32
24	28	26	27	27	26	26	24	23	23	32	30	31
25	28	27	27	29	27	27	25	23	24	31	29	30
26	28	26	27	29	26	27	25	24	24	32	31	31
27	27	26	26	27	25	26	25	23	24	33	31	32
28	28	26	27	27	25	26	25	23	24	33	31	32
29	---	---	---	29	27	28	25	23	23	32	31	31
30	---	---	---	28	26	28	24	22	23	33	32	33
31	---	---	---	28	26	27	---	---	---	33	26	30
MONTH	33	16	27	29	20	25	29	---	---	33	23	29

WILLAMETTE RIVER BASIN

247

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	30	26	28	36	33	34	---	41	---	46	45	45
2	31	30	30	36	35	36	---	41	---	46	45	46
3	31	27	29	38	36	37	43	42	43	46	45	46
4	29	28	29	39	37	38	---	43	---	47	46	46
5	30	29	29	40	37	39	---	43	---	47	45	46
6	30	29	30	39	37	39	---	43	---	47	45	46
7	31	30	30	40	39	39	---	43	---	47	46	46
8	31	30	31	40	39	40	---	43	---	47	46	47
9	32	31	31	40	35	37	---	43	---	48	46	47
10	32	31	32	40	38	38	48	44	44	48	46	47
11	32	30	31	41	39	40	45	44	44	47	45	46
12	32	30	31	43	40	41	45	44	45	46	44	45
13	32	31	32	43	41	43	46	44	45	46	45	46
14	33	32	32	45	43	43	45	45	45	46	42	44
15	34	32	33	45	44	45	46	44	45	44	38	41
16	34	33	33	46	45	45	45	44	45	41	38	40
17	35	33	33	46	45	45	49	44	45	41	38	39
18	35	33	34	46	44	45	45	44	45	42	38	40
19	36	34	35	45	41	43	48	44	45	45	41	43
20	36	33	35	42	40	41	47	45	46	---	---	---
21	36	31	34	41	40	40	45	44	44	41	40	40
22	32	31	32	41	39	40	46	45	45	43	41	42
23	32	31	32	41	39	40	46	45	45	44	43	43
24	34	32	33	41	40	40	46	41	44	46	44	45
25	35	33	34	41	40	40	46	44	45	47	44	45
26	35	33	35	43	40	41	49	44	45	46	40	43
27	36	34	35	---	40	---	---	42	---	44	41	43
28	36	35	36	---	40	---	---	43	---	45	43	44
29	36	34	35	---	40	---	---	44	---	45	44	45
30	37	34	36	---	40	---	45	44	45	46	44	45
31	---	---	---	---	41	---	---	45	---	---	---	---
MONTH	37	26	32	---	33	---	---	41	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.5	9.0	10.0	7.5	6.0	7.0	8.5	6.5	7.5	9.0	8.5	8.5
2	12.0	9.5	10.5	8.0	6.5	7.0	7.0	6.5	7.0	8.5	4.0	8.5
3	13.0	11.0	11.5	8.0	7.0	7.5	7.0	6.5	6.5	8.0	6.0	7.0
4	13.0	11.5	12.0	8.0	7.0	7.5	8.5	6.5	7.5	7.0	---	---
5	13.0	12.0	12.5	7.5	6.5	7.0	7.5	6.5	7.5	7.0	---	---
6	13.5	11.5	12.5	8.0	7.0	7.5	7.0	7.0	7.0	7.0	6.0	6.5
7	13.0	11.0	12.0	8.5	6.5	7.5	8.0	7.0	7.5	7.5	6.5	7.0
8	13.5	11.5	12.0	8.5	7.5	8.0	8.0	7.5	8.0	7.5	6.5	7.0
9	14.0	11.5	12.5	7.5	6.5	7.0	8.5	7.5	8.0	8.0	7.0	7.5
10	13.0	12.0	12.5	8.0	6.5	7.0	8.5	7.5	8.0	8.5	7.0	8.0
11	13.0	11.5	12.0	9.0	8.0	8.5	8.0	7.0	7.5	7.5	6.5	7.0
12	12.0	11.0	11.5	10.0	8.5	9.0	8.0	7.5	7.5	6.5	3.5	4.5
13	11.5	11.0	11.5	9.5	8.5	9.0	7.5	6.5	7.5	3.5	2.5	3.0
14	11.0	10.0	10.5	8.5	8.0	8.5	6.5	6.0	6.5	3.5	2.5	3.0
15	10.5	9.0	9.5	8.0	7.5	8.0	7.0	6.0	6.5	3.5	2.5	3.0
16	9.0	8.0	8.5	8.0	7.5	7.5	7.5	6.0	7.0	5.0	3.5	4.0
17	8.5	7.0	8.0	8.0	7.5	7.5	6.0	5.0	5.5	7.0	5.0	6.5
18	9.0	8.0	8.5	8.0	7.0	7.5	5.5	5.0	5.0	8.0	7.0	7.5
19	8.5	7.5	8.0	9.0	7.0	8.0	6.5	5.0	5.5	8.0	7.0	7.5
20	8.5	7.0	7.5	8.0	7.0	7.5	7.0	6.5	6.5	7.5	6.5	7.5
21	8.5	6.5	7.5	8.0	7.0	7.5	6.5	5.5	6.0	7.0	5.5	6.5
22	9.5	8.5	9.0	8.0	7.0	7.5	6.5	5.5	6.0	6.5	5.0	5.5
23	9.5	8.0	8.5	8.0	6.5	7.0	6.5	6.0	6.0	6.0	5.0	5.5
24	9.5	8.5	9.5	9.0	8.0	8.5	7.5	6.5	7.0	6.0	5.0	5.5
25	9.0	8.0	8.5	8.5	7.0	8.0	8.0	7.5	7.5	5.5	5.0	5.0
26	8.5	7.0	8.0	8.0	6.5	7.0	8.5	7.0	8.0	5.0	4.0	5.0
27	8.0	6.5	7.5	9.5	8.0	8.5	8.0	6.5	7.0	5.5	4.0	4.5
28	8.5	7.0	8.0	9.0	8.0	8.0	7.0	6.5	6.5	8.0	5.5	7.0
29	8.5	7.0	8.0	8.0	8.0	8.0	8.5	6.5	8.0	8.0	6.5	7.0
30	8.5	7.0	7.5	9.0	8.0	8.5	8.5	8.0	8.5	8.5	7.5	8.0
31	7.5	6.0	7.0	---	---	---	9.5	8.0	8.5	8.5	8.0	8.0
MONTH	14.0	6.0	9.8	10.0	6.0	7.8	9.5	5.0	7.0	9.0	---	---

WILLAMETTE RIVER BASIN

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.5	7.5	6.0	5.5	5.5	8.0	5.5	6.5	9.5	7.0	8.0
2	7.5	6.5	7.0	6.0	5.0	5.5	8.5	5.0	6.5	10.5	6.5	8.5
3	7.5	6.0	6.5	5.5	5.0	5.0	8.0	6.0	7.0	10.5	8.5	9.0
4	8.0	6.0	7.0	6.5	5.0	5.5	8.5	5.0	6.5	11.5	8.5	9.5
5	6.5	5.0	5.5	6.5	5.0	6.0	9.0	4.5	6.5	12.0	9.0	10.5
6	6.5	5.0	5.5	7.0	6.0	6.5	9.0	5.0	7.0	11.0	9.0	10.0
7	6.0	5.5	6.0	7.0	6.0	6.5	8.5	7.5	8.0	12.0	7.0	9.5
8	6.5	5.0	5.5	7.5	5.0	6.5	8.0	6.5	7.5	13.0	8.5	10.5
9	6.5	5.0	6.0	7.5	7.0	7.0	7.0	5.0	6.5	13.0	9.0	11.0
10	6.5	5.0	5.5	7.0	6.5	7.0	8.0	6.0	7.0	13.5	9.5	11.5
11	6.5	4.5	5.5	7.5	5.5	6.5	9.5	5.0	7.0	15.0	10.5	12.5
12	6.5	5.5	6.0	6.5	5.5	6.0	8.5	5.0	7.0	14.5	11.5	13.0
13	7.0	5.5	6.0	7.0	5.5	6.0	8.0	7.5	7.5	14.5	11.0	12.5
14	8.5	7.0	7.5	8.0	5.5	6.5	8.5	7.5	8.0	14.0	11.5	13.0
15	8.0	6.0	7.0	8.5	7.0	7.5	12.5	7.5	9.5	14.0	12.5	13.0
16	8.5	6.0	7.5	8.5	7.5	8.0	11.0	8.5	9.5	14.5	11.0	12.5
17	8.0	7.0	7.5	8.5	7.0	8.0	11.5	7.5	9.0	14.5	11.0	13.0
18	8.0	6.5	7.0	9.0	7.5	8.0	9.5	8.0	8.5	14.0	10.5	12.0
19	7.5	6.0	7.0	9.5	8.5	9.0	10.0	9.0	9.5	13.5	10.5	12.0
20	7.5	5.5	6.5	9.5	7.0	8.5	10.5	8.5	9.5	12.5	9.5	11.0
21	6.5	5.0	5.5	9.0	6.0	7.0	9.5	6.5	8.0	12.5	9.5	11.0
22	6.5	4.0	5.0	9.5	5.5	7.5	10.0	8.5	9.0	11.5	9.0	10.5
23	6.5	3.5	5.0	9.5	7.0	8.5	9.5	8.0	8.5	11.5	10.0	10.5
24	7.0	4.0	5.5	10.0	6.5	8.0	9.5	7.5	8.0	10.5	9.0	10.0
25	7.0	5.0	6.0	11.0	7.0	9.0	12.0	7.0	9.0	10.5	9.5	10.0
26	7.0	6.0	6.5	9.5	7.0	8.5	12.0	8.5	10.0	12.0	8.5	10.5
27	6.0	4.5	5.0	8.5	6.5	7.5	10.0	8.5	9.0	12.5	11.5	12.0
28	6.5	4.0	5.5	8.5	6.5	7.0	9.5	8.0	8.5	12.5	12.0	12.5
29	---	---	---	9.5	5.5	7.5	9.5	8.0	9.0	14.5	12.5	13.0
30	---	---	---	8.0	6.5	7.0	9.0	7.5	8.5	14.5	12.5	13.5
31	---	---	---	7.0	6.0	6.5	---	---	---	13.5	12.0	13.0
MONTH	8.5	3.5	6.2	11.0	5.0	7.1	12.5	4.5	8.1	15.0	6.5	11.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	12.5	11.0	11.5	13.0	11.5	12.0	16.0	12.5	14.0	15.0	13.5	14.5
2	13.0	10.0	11.5	13.5	10.5	12.0	16.0	12.5	14.0	15.5	13.0	14.5
3	12.5	11.5	12.0	14.0	10.5	12.5	16.5	13.0	14.5	15.5	13.0	14.5
4	12.5	10.5	11.5	15.5	12.5	14.0	16.5	13.5	15.0	16.0	13.0	14.5
5	12.5	10.0	11.0	16.0	13.5	14.5	17.0	13.5	15.0	14.5	13.0	14.0
6	12.5	9.5	11.0	15.0	13.5	14.0	17.5	14.5	15.5	14.5	12.0	13.0
7	12.5	11.0	11.5	15.0	12.0	13.5	16.5	13.5	15.0	14.5	11.5	13.0
8	13.0	10.5	11.5	14.5	13.0	14.0	16.0	12.5	14.0	15.5	12.0	13.5
9	13.5	10.0	11.5	14.0	12.5	13.5	16.5	12.0	14.0	15.5	13.0	14.0
10	14.0	11.0	12.5	13.0	12.0	12.5	16.5	12.5	14.5	15.0	14.0	14.5
11	13.0	11.5	12.0	13.5	12.0	13.0	16.5	13.0	14.5	15.0	14.0	14.5
12	12.5	11.0	12.0	14.5	11.5	13.0	17.0	13.0	15.0	15.0	13.0	14.0
13	12.5	11.0	12.0	14.5	11.5	13.0	17.0	14.0	15.5	13.5	11.5	12.5
14	13.5	11.0	12.5	15.5	12.5	14.0	17.5	14.0	15.5	14.0	12.5	13.0
15	14.5	12.0	13.0	15.5	13.0	14.0	15.5	13.5	14.5	13.5	12.5	12.5
16	14.5	12.5	13.5	15.5	12.5	14.0	16.5	12.5	14.5	13.0	12.0	12.5
17	14.5	13.0	13.5	14.5	13.0	14.0	16.5	14.0	15.0	13.0	12.0	12.5
18	14.0	12.5	13.0	15.5	12.5	14.0	15.5	14.5	15.0	13.0	12.0	12.5
19	13.5	11.0	12.0	15.5	12.0	14.0	16.5	12.5	14.5	12.5	10.0	11.5
20	13.5	10.5	12.0	16.5	13.5	15.0	15.0	14.0	14.5	12.5	10.5	11.5
21	12.5	11.0	12.0	15.0	13.5	14.0	16.0	13.5	14.5	13.0	10.5	11.5
22	12.0	10.5	11.0	15.0	12.5	13.5	16.0	13.0	14.5	13.5	11.0	12.5
23	12.0	10.5	11.0	15.5	12.0	13.5	16.0	13.0	14.5	14.0	11.0	12.5
24	12.5	10.0	11.5	15.5	12.0	14.0	15.5	14.0	14.5	14.5	12.0	13.0
25	13.5	11.0	12.0	15.5	12.0	13.5	16.0	14.0	15.0	14.5	12.5	13.5
26	13.5	11.0	12.0	15.0	11.5	13.5	15.0	14.0	14.5	13.5	12.5	13.0
27	13.0	11.0	12.0	16.0	12.0	14.0	15.0	13.0	14.0	13.5	12.0	12.5
28	12.5	11.0	12.0	16.0	13.0	14.5	15.0	13.5	14.5	13.0	11.0	12.0
29	13.0	11.0	12.0	16.0	13.0	14.5	15.0	13.0	14.0	13.5	11.0	12.0
30	13.0	11.5	12.0	16.0	13.0	14.5	15.5	12.5	14.0	13.0	11.5	12.5
31	---	---	---	15.5	12.5	14.0	15.5	12.5	14.0	---	---	---
MONTH	14.5	9.5	11.9	16.5	10.5	13.7	17.5	12.0	14.6	16.0	10.0	13.1

WILLAMETTE RIVER BASIN

249

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR

LOCATION.--Lat 45°06'02", long 122°49'14", in SW 1/4 SW 1/4 sec. 28, T.5 S., R.1 W., Marion County, Hydrologic Unit 17090009, on left bank downstream corner of Monitor-McKee Road bridge, 2.3 mi north-northwest of Mount Angel and at mile 0.4.

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORD.--WDR OR-96-1: 1994 (M).

GAGE.--Water-stage recorder. Elevation of gage is 120 ft above sea level, from topographic map.

REMARKS.--Records poor. Flows subject to backwater from the Pudding River (14202000). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1994-97), 32.2 ft³/s, 29.14 in/yr, 23,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,890 ft³/s Nov. 19, 1996, gage height 16.93; maximum gage height, 21.33 ft, Feb. 8, 1996, from floodmark (backwater from Pudding River); minimum discharge, 0.02 ft³/s Sept. 22, 1994.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1600	*1,890	16.93	Dec. 8	unknown	unknown	unknown
Nov. 20	0600	(a)	*18.94				

Minimum discharge, 0.46 ft³/s Aug. 19, 20.
a Backwater from Pudding River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	16	e90	e330	e340	49	14	13	29	2.9	1.1	1.1
2	1.7	13	e110	e280	e200	195	13	12	12	3.0	1.1	1.6
3	2.3	11	e100	e140	e110	e150	13	13	17	2.7	1.1	1.5
4	1.9	11	e150	e80	e70	e120	12	12	19	2.3	1.0	.89
5	e3.0	11	e220	e58	e40	e110	12	9.4	14	2.1	.88	.55
6	1.4	11	e260	e40	e32	118	11	7.5	11	1.8	.82	.98
7	1.0	13	e370	e32	e30	154	10	8.4	8.3	1.5	1.0	1.2
8	.88	12	e400	e26	e25	e150	11	9.1	6.7	1.7	1.2	1.2
9	1.2	12	e310	e22	e22	e200	9.4	7.8	5.8	4.6	.99	1.2
10	.94	11	e220	e30	e19	e300	8.4	7.3	5.1	3.2	.88	1.7
11	1.3	10	e190	e20	16	e240	7.5	7.1	5.2	2.5	.76	1.9
12	1.5	9.7	e180	e18	25	e180	7.4	6.3	5.3	2.7	.81	1.2
13	5.5	13	e200	e16	22	e110	7.2	5.3	4.6	2.0	.69	1.4
14	4.9	44	e140	e15	20	e80	9.2	5.2	4.7	2.0	.69	3.0
15	8.1	65	e100	14	18	e90	8.5	3.9	4.0	1.8	.66	4.1
16	3.9	41	e70	13	17	e100	7.9	3.8	3.4	1.4	.82	6.4
17	9.5	89	e65	120	16	e80	8.7	2.7	2.2	1.1	.78	6.8
18	33	190	e58	e250	15	e65	9.6	2.4	3.4	1.1	.88	7.2
19	46	1510	e50	e80	39	e50	12	2.3	2.6	1.0	.68	4.9
20	45	e500	e90	e90	38	e60	33	1.5	2.3	.92	.80	2.9
21	22	e120	127	e70	26	e40	24	2.2	2.0	.78	.76	2.6
22	33	e90	125	e50	21	e30	23	1.8	2.0	.75	.70	2.8
23	35	e80	108	e40	18	e25	94	2.2	4.5	.73	.89	2.8
24	69	e150	e170	e32	15	e22	92	2.8	4.0	.65	1.7	2.6
25	88	e80	e300	e28	15	e20	57	2.3	3.5	.65	1.2	2.4
26	60	e75	e320	e22	15	e18	21	3.3	3.7	.65	1.0	3.7
27	22	e70	e300	20	18	17	18	2.6	3.1	.65	.97	3.1
28	26	e190	e270	88	18	17	16	3.1	3.2	.98	1.2	1.7
29	108	e110	e270	60	---	15	15	3.7	3.1	1.2	1.0	1.3
30	54	e80	e220	140	---	15	15	3.8	3.2	1.0	.93	1.4
31	23	---	e210	e200	---	15	---	29	---	1.1	.89	---
TOTAL	714.62	3637.7	5793	2424	1260	2835	599.8	196.8	197.9	51.46	28.88	76.12
MEAN	23.1	121	187	78.2	45.0	91.5	20.0	6.35	6.60	1.66	.93	2.54
MAX	108	1510	400	330	340	300	94	29	29	4.6	1.7	7.2
MIN	.88	9.7	50	13	15	15	7.2	1.5	2.0	.65	.66	.55
AC-FT	1420	7220	11490	4810	2500	5620	1190	390	393	102	57	151
CFSM	1.54	8.08	12.5	5.21	3.00	6.10	1.33	.42	.44	.11	.06	.17
IN.	1.77	9.02	14.37	6.01	3.12	7.03	1.49	.49	.49	.13	.07	.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

	1994	1995	1996	1997
MEAN	12.8	70.1	91.5	73.9
MAX	23.1	121	187	103
(WY)	1997	1997	1997	1996
MIN	1.67	1.89	35.6	51.4
(WY)	1994	1994	1994	1997

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1994 - 1997

	19075.79	17815.28	32.2	1997
ANNUAL TOTAL	52.1	48.8	48.8	1994
ANNUAL MEAN			14.9	1994
HIGHEST ANNUAL MEAN				1997
LOWEST ANNUAL MEAN				1994
HIGHEST DAILY MEAN	1510	1510	1510	Nov 19 1996
LOWEST DAILY MEAN	.44	.55	.04	Sep 5 1994
ANNUAL SEVEN-DAY MINIMUM	.48	.69	.08	Aug 24 1994
ANNUAL RUNOFF (AC-FT)	37840	35340	23300	
ANNUAL RUNOFF (CFSM)	3.47	3.25	2.14	
ANNUAL RUNOFF (INCHES)	47.31	44.18	29.14	
10 PERCENT EXCEEDS	130	150	90	
50 PERCENT EXCEEDS	12	12	7.2	
90 PERCENT EXCEEDS	.69	1.0	.52	

e Estimated

WILLAMETTE RIVER BASIN

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to September 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 611 microsiemens Oct. 6, 1995, but may have been greater during periods of missing record; minimum recorded, 77 microsiemens Feb. 6, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.5°C July 21-23, 1994, July 26, 1996, but may have been higher during periods of missing record during the 1996 water year; minimum, 0.5°C Nov. 25, 26, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 609 microsiemens Sept. 17, but may have been greater during periods of missing record; minimum recorded, 83 microsiemens Jan. 31, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 6; minimum, 2.5°C Jan. 15.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	385	365	376	---	---	---	---	---	---
2	---	---	---	376	353	364	---	---	---	---	---	---
3	---	---	---	353	347	351	---	---	---	---	---	---
4	---	---	---	352	338	347	---	---	---	---	---	---
5	---	---	---	350	342	346	---	---	---	---	---	---
6	499	477	481	343	329	339	---	---	---	---	---	---
7	479	455	468	355	338	348	---	---	---	---	---	---
8	457	431	445	352	348	350	---	---	---	---	---	---
9	432	422	427	362	351	356	---	---	---	---	---	---
10	434	421	429	365	360	363	---	---	---	---	---	---
11	433	420	424	363	352	357	---	---	---	---	---	---
12	434	370	425	353	340	348	---	---	---	253	248	250
13	473	349	398	348	325	335	---	---	---	253	250	251
14	476	407	449	354	320	338	---	---	---	311	250	278
15	474	415	454	349	312	332	---	---	---	290	261	272
16	463	429	437	348	327	343	---	---	---	263	260	261
17	511	416	443	334	312	324	---	---	---	260	113	211
18	511	392	423	336	246	311	---	---	---	182	97	136
19	410	370	386	---	---	---	---	---	---	208	181	195
20	444	402	426	---	---	---	---	---	---	214	188	203
21	435	420	430	---	---	---	---	---	---	210	190	199
22	436	391	416	---	---	---	---	---	---	217	209	212
23	431	391	413	---	---	---	---	---	---	230	217	226
24	405	382	394	---	---	---	---	---	---	227	209	218
25	412	375	394	---	---	---	---	---	---	243	227	237
26	406	393	401	---	---	---	---	---	---	246	242	244
27	410	404	407	---	---	---	---	---	---	247	228	243
28	410	353	389	---	---	---	---	---	---	229	180	195
29	376	323	345	---	---	---	---	---	---	234	202	221
30	450	376	406	---	---	---	---	---	---	238	115	198
31	457	378	406	---	---	---	---	---	---	147	83	99
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	171	135	159	---	---	---	---	---	---	264	245	251
2	---	---	---	---	---	---	---	---	---	272	261	268
3	---	---	---	---	---	---	---	---	---	297	269	277
4	---	---	---	---	---	---	274	263	266	297	262	280
5	---	---	---	---	---	---	284	272	278	283	261	269
6	162	146	153	---	---	---	291	274	283	284	257	277
7	146	131	139	---	---	---	278	269	274	305	279	291
8	132	121	125	---	---	---	278	271	275	293	279	287
9	---	---	---	---	---	---	282	269	277	298	286	291
10	---	---	---	---	---	---	270	259	263	300	286	292
11	---	---	---	---	---	---	267	257	261	309	290	297
12	---	---	---	---	---	---	284	266	276	315	300	307
13	---	---	---	---	---	---	287	274	279	315	306	311
14	---	---	---	---	---	---	286	269	277	331	305	315
15	---	---	---	---	---	---	270	261	263	326	318	321
16	---	---	---	---	---	---	263	254	260	325	312	318
17	---	---	---	---	---	---	283	255	271	326	318	322
18	---	---	---	---	---	---	308	283	301	324	314	318
19	---	---	---	237	215	226	315	241	296	324	301	316
20	---	---	---	244	237	242	334	195	263	316	304	311
21	---	---	---	243	238	241	295	253	262	322	304	312
22	---	---	---	242	236	238	388	223	313	324	304	313
23	---	---	---	237	233	235	240	212	227	317	295	310
24	---	---	---	234	231	233	313	238	263	319	297	307
25	---	---	---	235	231	233	309	251	263	316	300	306
26	---	---	---	262	234	243	267	238	249	316	305	310
27	---	---	---	302	262	295	263	211	244	318	311	315
28	---	---	---	290	267	275	255	248	252	313	287	305
29	---	---	---	269	267	267	253	244	247	303	280	294
30	---	---	---	269	266	268	255	243	247	333	300	315
31	---	---	---	---	232	---	---	---	---	333	229	298
MONTH	---	---	---	---	---	---	---	---	---	333	229	300

WILLAMETTE RIVER BASIN

251

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	308	274	288	375	366	370	374	361	366	371	356	361
2	320	290	307	386	364	377	376	360	368	374	365	369
3	312	272	291	381	373	377	379	368	372	401	369	379
4	325	283	311	396	374	382	377	366	372	401	388	394
5	309	290	304	394	373	382	375	363	370	391	372	381
6	313	264	305	385	373	378	364	353	357	376	363	368
7	329	311	321	376	369	372	371	354	363	391	376	385
8	346	313	327	372	358	363	371	353	362	414	373	389
9	345	320	333	410	272	338	373	356	363	440	414	425
10	361	332	345	451	387	422	379	369	376	456	410	441
11	354	329	340	388	362	376	387	369	377	497	449	470
12	342	317	332	430	363	405	400	386	393	521	496	507
13	357	335	347	468	405	438	389	365	375	550	518	534
14	362	342	350	430	395	412	388	371	377	518	412	458
15	386	357	370	459	403	431	388	365	380	489	432	468
16	365	343	348	424	385	396	370	358	364	554	419	517
17	346	338	342	433	407	424	395	361	373	609	488	541
18	359	331	346	427	404	418	404	395	400	598	478	524
19	346	329	336	404	368	382	---	---	---	526	471	497
20	358	332	342	370	353	359	410	356	384	497	469	480
21	340	322	331	369	355	362	435	339	382	516	495	505
22	327	282	318	359	345	350	439	426	435	527	504	515
23	329	280	306	359	343	349	426	379	399	525	496	508
24	359	329	344	362	342	353	380	249	337	505	476	492
25	387	359	375	351	337	343	346	310	330	500	482	491
26	417	372	401	351	332	343	338	324	333	486	408	434
27	417	371	388	343	328	334	369	307	337	476	420	455
28	396	375	384	345	339	342	379	316	360	433	418	424
29	407	345	383	347	336	342	371	320	352	448	420	435
30	383	367	373	361	345	355	370	345	357	458	447	451
31	---	---	---	361	352	356	361	349	356	---	---	---
MONTH	417	264	340	468	272	375	---	---	---	609	356	453

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	10.0	9.0	9.5	10.0	9.0	9.5	---	---	---
2	---	---	---	9.5	8.5	9.0	9.0	7.5	8.5	10.0	9.5	9.5
3	---	---	---	10.5	9.0	9.5	8.5	7.0	8.0	9.5	8.0	9.0
4	---	---	---	10.0	9.5	9.5	9.0	8.0	8.5	8.0	7.5	7.5
5	---	---	---	9.5	8.5	9.0	8.5	8.0	8.0	7.5	7.5	7.5
6	15.0	14.0	14.5	10.0	9.0	9.5	8.0	7.5	8.0	7.5	7.0	7.5
7	15.0	13.5	14.0	9.5	8.5	9.0	8.5	8.0	8.5	8.0	7.0	7.5
8	15.5	14.0	14.5	10.0	9.0	9.5	8.5	8.5	8.5	8.0	7.5	8.0
9	15.5	14.5	15.0	9.5	8.5	9.0	8.5	8.0	8.0	8.5	8.0	8.0
10	15.0	14.5	15.0	9.0	9.0	9.0	9.0	8.5	8.5	9.0	8.5	9.0
11	15.0	14.5	15.0	10.0	9.0	9.5	8.5	8.0	8.0	8.5	8.5	8.5
12	14.5	13.5	14.0	11.5	10.0	10.5	9.0	8.0	8.5	8.5	5.0	6.5
13	14.0	13.5	14.0	11.5	11.0	11.0	9.0	8.5	8.5	5.0	3.5	4.0
14	13.5	12.5	13.0	11.0	11.0	11.0	8.5	7.5	8.0	3.5	3.0	3.0
15	13.0	12.5	12.5	11.0	10.5	10.5	8.0	7.5	7.5	3.0	2.5	3.0
16	12.5	10.5	11.0	10.5	10.0	10.5	8.0	7.5	8.0	4.0	3.0	3.5
17	11.0	9.0	10.0	10.5	10.0	10.0	7.5	6.5	6.5	4.5	4.0	4.0
18	11.5	11.0	11.0	10.0	8.0	9.5	6.5	5.5	6.0	6.5	4.5	5.5
19	11.0	9.5	10.5	8.0	5.5	6.0	6.0	5.0	5.5	7.5	6.5	7.0
20	10.5	9.5	10.0	7.0	5.5	6.5	7.0	6.0	6.5	8.0	7.5	7.5
21	10.5	9.5	10.0	8.0	7.0	7.0	7.0	7.0	7.0	8.0	7.0	7.5
22	12.0	10.5	11.5	8.5	8.0	8.0	7.0	6.5	6.5	7.5	7.0	7.0
23	12.0	11.5	11.5	8.0	7.0	7.5	7.5	7.0	7.0	7.0	6.5	6.5
24	12.5	12.0	12.0	8.5	8.0	8.0	8.5	7.5	8.0	6.5	6.0	6.5
25	12.0	11.5	12.0	9.5	8.5	9.0	9.0	7.5	8.5	6.5	6.0	6.0
26	12.0	11.0	11.5	9.5	9.5	9.5	7.5	6.0	6.5	6.0	5.0	5.5
27	11.0	10.0	10.5	10.5	9.5	9.5	7.5	6.5	7.5	5.0	4.5	5.0
28	11.0	10.0	10.5	10.5	9.0	9.5	7.0	6.0	6.5	6.5	5.0	5.5
29	11.5	10.5	11.0	9.5	9.0	9.5	8.5	5.5	6.5	7.5	6.5	7.0
30	11.0	10.0	11.0	10.0	9.5	9.5	9.0	8.5	9.0	9.0	7.5	8.5
31	11.0	9.5	10.5	---	---	---	---	---	---	9.0	8.5	8.5
MONTH	---	---	---	11.5	5.5	9.1	---	---	---	---	---	---

WILLAMETTE RIVER BASIN

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	9.0	8.0	8.5	7.5	7.0	7.5	10.5	8.0	9.5	13.0	11.0	12.0
2	8.5	7.5	8.0	7.5	6.5	7.0	10.5	8.0	9.5	13.0	10.5	12.0
3	8.0	7.0	7.5	7.5	6.5	7.0	11.0	9.0	10.0	13.5	12.0	12.5
4	8.0	7.0	7.5	8.0	6.5	7.0	11.5	8.0	9.5	14.5	12.0	13.5
5	8.0	6.5	7.0	7.5	7.0	7.5	12.0	8.0	10.0	15.5	13.0	14.5
6	6.5	5.5	6.0	8.5	7.5	8.0	12.0	8.5	10.5	16.0	14.0	15.0
7	6.5	6.0	6.0	9.5	8.5	8.5	12.0	10.5	11.0	15.5	13.0	14.5
8	6.5	6.0	6.0	9.0	7.5	8.5	12.0	10.5	11.0	17.0	13.5	15.5
9	6.5	5.5	6.0	9.5	8.5	8.5	11.0	9.0	10.0	17.5	14.5	16.0
10	6.5	5.5	6.0	9.0	8.0	8.5	11.5	9.5	10.0	18.5	15.0	17.0
11	6.5	5.5	5.5	9.0	7.5	8.0	12.0	8.5	10.5	19.5	16.0	18.0
12	7.0	6.0	6.5	8.5	6.5	7.5	11.5	9.0	10.0	20.0	17.5	18.5
13	7.5	6.5	7.0	8.5	7.5	8.0	11.0	10.5	11.0	20.0	16.5	18.5
14	9.0	7.5	8.0	9.0	7.5	8.5	12.0	10.5	11.0	20.0	17.0	18.5
15	8.5	8.0	8.5	10.0	8.5	9.0	15.0	11.0	13.0	19.5	18.0	18.5
16	8.5	8.0	8.0	10.5	9.5	9.5	15.5	13.0	14.0	20.0	16.5	18.5
17	9.0	8.0	8.5	10.0	9.0	9.5	15.5	12.5	14.0	19.5	17.0	18.5
18	9.0	8.0	8.5	10.0	9.0	9.5	14.0	12.5	13.0	19.5	16.5	18.0
19	8.5	8.0	8.5	10.5	10.0	10.5	13.0	12.5	13.0	18.5	15.5	17.0
20	8.5	7.5	8.0	11.0	10.0	10.5	13.0	12.0	12.5	17.5	15.5	16.0
21	8.5	7.0	8.0	11.0	8.5	10.0	13.0	11.0	12.0	16.5	14.5	15.0
22	8.0	6.5	7.5	10.5	9.0	9.5	12.0	11.5	12.0	16.5	14.5	15.5
23	8.0	6.0	7.0	11.5	9.5	10.5	12.5	11.0	11.5	15.5	14.5	15.0
24	8.5	6.5	7.5	12.0	9.5	11.0	12.5	11.0	12.0	15.0	13.5	14.0
25	8.5	7.5	7.5	12.5	10.0	11.5	14.0	10.5	12.0	15.0	14.0	14.5
26	8.5	8.0	8.5	12.5	11.0	12.0	14.5	12.0	13.5	16.5	13.5	14.5
27	8.0	7.5	7.5	11.0	9.5	10.5	14.5	12.5	13.5	17.0	15.5	16.0
28	8.0	6.5	7.5	10.5	9.0	10.0	13.0	12.5	12.5	17.5	16.5	17.0
29	---	---	---	11.0	8.5	10.0	13.0	11.5	12.5	18.5	16.5	17.5
30	---	---	---	10.5	9.5	10.0	13.0	12.0	12.5	19.0	17.5	18.0
31	---	---	---	10.0	8.5	9.0	---	---	---	19.0	17.0	18.0
MONTH	9.0	5.5	7.4	12.5	6.5	9.1	15.5	8.0	11.6	20.0	10.5	16.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	17.5	16.0	16.5	17.5	16.5	17.0	20.0	17.5	18.5	19.0	17.0	18.0
2	17.5	15.0	16.5	18.5	15.5	17.0	20.0	18.0	19.0	19.5	17.0	18.0
3	17.5	16.0	17.0	19.5	16.0	17.5	21.0	18.0	19.0	19.5	17.5	18.5
4	17.0	16.0	16.5	21.0	18.5	19.5	21.0	18.5	19.5	20.5	18.0	19.0
5	17.5	15.0	16.0	20.5	19.5	20.0	22.0	18.5	20.0	19.0	17.0	18.0
6	17.5	15.0	16.5	20.5	19.0	19.5	22.5	19.0	20.5	18.0	16.0	17.0
7	17.5	16.5	17.0	20.0	18.0	19.0	22.0	18.5	20.0	18.0	15.0	16.0
8	18.0	15.5	16.5	19.5	18.5	19.0	21.0	18.0	19.0	18.0	15.0	16.5
9	18.5	15.5	17.0	18.5	17.5	18.0	21.0	17.0	19.0	18.0	16.5	17.0
10	19.5	16.5	18.0	18.0	16.5	17.0	21.0	17.5	19.0	18.5	17.5	18.0
11	18.5	17.0	17.5	17.5	16.5	17.0	21.5	17.5	19.5	18.5	17.5	18.0
12	17.5	15.5	16.5	18.5	16.0	17.0	21.5	18.0	19.5	17.5	16.5	17.0
13	17.5	15.5	16.5	18.5	17.0	18.0	21.5	18.0	19.5	16.5	15.0	15.5
14	18.0	15.5	17.0	19.5	18.0	18.5	22.0	18.5	20.0	17.0	15.0	16.0
15	20.0	16.5	18.0	19.5	18.5	19.0	20.5	18.5	19.0	17.0	15.0	16.0
16	20.5	17.5	19.0	20.0	17.5	19.0	20.5	17.0	18.5	15.5	15.0	15.0
17	20.0	18.0	18.5	19.0	18.0	18.5	20.5	18.0	19.0	16.0	15.0	15.5
18	18.5	17.0	18.0	20.0	17.5	18.5	19.5	18.0	19.0	16.5	15.0	15.5
19	18.5	16.0	17.5	20.5	18.0	19.0	20.5	17.0	18.5	16.0	14.5	15.0
20	18.5	16.0	17.0	21.0	18.5	20.0	18.0	17.5	18.0	16.0	14.0	15.0
21	18.0	16.5	17.0	20.0	18.0	19.0	20.0	17.0	18.0	15.5	14.5	15.0
22	16.5	15.0	15.5	19.5	17.5	18.5	20.5	17.0	18.5	16.0	15.0	15.5
23	16.0	14.5	15.0	20.0	17.0	18.5	20.0	17.0	18.5	16.5	15.0	15.5
24	17.5	14.5	15.5	21.0	17.5	19.0	18.5	17.5	18.0	17.0	15.5	16.5
25	18.0	15.5	16.5	20.5	17.5	19.0	19.5	17.5	18.5	17.0	16.0	16.5
26	17.5	15.5	17.0	20.5	17.5	18.5	19.0	18.0	18.5	17.0	16.0	16.5
27	18.0	15.5	16.5	21.0	17.5	19.0	18.0	17.0	17.5	16.0	15.0	15.5
28	18.0	16.0	17.0	21.0	18.0	19.0	18.0	17.0	17.5	15.5	15.0	15.0
29	18.0	15.5	16.5	20.0	18.5	19.5	19.0	17.0	18.0	16.0	15.0	15.5
30	17.5	16.5	17.0	20.5	18.0	19.0	19.5	16.5	18.0	15.5	15.0	15.5
31	---	---	---	20.0	18.0	19.0	19.5	16.5	18.0	---	---	---
MONTH	20.5	14.5	16.9	21.0	15.5	18.6	22.5	16.5	18.8	20.5	14.0	16.4

14202000 PUDDING RIVER AT AURORA, OR

LOCATION.--Lat 45°14'00", long 122°44'56", in SW 1/4 SE 1/4 sec.12, T.4 S., R.1 W., Clackamas County, Hydrologic Unit 17090009, upstream side of bridge on U.S. Highway 99E at Aurora, 0.9 mi upstream from Mill Creek and at mile 8.11.

DRAINAGE AREA.--479 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1928 to September 1964, October 1993 to current year.

REVISED RECORDS.--WDR OR-95-1: 1994(M). WDR OR-96-1: 1938(M), 1949(M).

GAGE.--Water-stage recorder except July 1 to Sept. 30, wire-weight gage read once daily. Datum of gage is 72.23 ft above sea level. Prior to Sept. 30, 1961 staff or wire-weight gage at same site at datum 5.00 ft higher. All gage heights given herein are at present datum.

REMARKS.--Records fair except for discharges below 400 ft³/s, which are poor. Many diversions for irrigation upstream from station. Additional data for period July to September 1993 available in files of the Portland Field Office.

AVERAGE DISCHARGE.--40 years (water years 1929-64, 1994-97), 1,248 ft³/s, 35.40 in/yr, 904,100 acre-ft/yr.

EXTREMES FOR PERIOD RECORD.--Maximum discharge, 43,700 ft³/s Feb. 8, 1996, gage height, 30.72 ft, from rating curve extended above 23,000 ft³/s; minimum daily discharge, 3.5 ft³/s Aug. 6, 20, 28, 1994, but may have been lower during period of missing record.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 7, 1923 reached a stage of 30.0 ft, present datum, from floodmarks, discharge, 37,000 ft³/s (revised), from rating curve extended above 23,000 ft³/s. Flood of Dec. 23, 1964 reached a stage of 29.57 ft, discharge, 34,000 ft³/s (revised), from rating curve extended above 23,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,800 ft³/s Nov. 20, gage height, 27.17 ft; minimum daily discharge, 30 ft³/s Aug. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	1140	4640	12400	7900	1310	1360	1490	855	263	72	84
2	80	946	4570	14200	9510	2500	1270	1450	1020	272	65	82
3	80	823	4630	13700	7700	3520	1170	1370	848	265	61	75
4	86	735	4590	9840	6060	3470	1090	1320	842	243	e65	72
5	84	733	5290	7630	5080	3130	1030	1220	852	225	e100	66
6	93	731	6780	6240	4260	2940	963	1120	826	211	e95	62
7	107	691	7000	5400	e3500	3010	911	1090	729	203	e80	62
8	102	750	8750	4740	e3010	3360	912	1010	647	193	e50	61
9	97	715	9770	4100	2650	3450	1040	919	588	195	e40	61
10	87	665	8400	3580	2330	4090	1010	850	532	245	e35	59
11	86	622	7460	3300	2060	5510	e950	790	493	300	40	61
12	91	589	6780	e2900	1920	6150	876	736	477	e270	39	70
13	104	576	6230	e2600	1840	6010	834	685	476	e240	35	80
14	150	784	5840	2350	1640	5360	876	642	456	e220	30	86
15	217	1190	5330	2070	1500	4850	1200	598	429	196	33	113
16	302	1390	4800	1810	1420	4700	1340	570	406	178	32	207
17	319	1570	4210	1740	1350	5010	1250	534	378	169	36	393
18	308	2280	e3600	3800	1300	5080	1170	499	342	164	40	e550
19	733	5180	e3170	4710	1480	4920	1190	464	320	158	48	e650
20	1180	16600	2850	4120	2040	5150	1750	433	304	150	57	e600
21	986	11800	2790	3910	2050	5300	2390	412	290	144	55	447
22	758	8410	2870	3660	1820	4790	2190	398	295	133	64	331
23	864	6780	2790	3320	1610	4100	2330	394	358	123	72	268
24	1070	5880	3200	2990	1430	3460	2690	409	398	e115	73	228
25	1550	5600	4200	2690	1300	2960	2610	430	368	e110	78	e200
26	1830	5200	5800	2410	1230	2550	2270	454	322	e100	88	e180
27	1610	4760	11200	2140	1230	2230	1940	431	296	97	93	184
28	1290	4610	11000	2150	1290	1950	1740	413	275	90	108	185
29	1380	4950	9650	2450	---	1750	1540	441	263	94	109	204
30	1670	4910	10200	2440	---	1550	1490	477	265	94	99	207
31	1410	---	10400	4540	---	1420	---	515	---	78	88	---
TOTAL	18804	101610	188790	143930	80510	115580	43382	22564	14950	5538	1980	5928
MEAN	607	3387	6090	4643	2875	3728	1446	728	498	179	63.9	198
MAX	1830	16600	11200	14200	9510	6150	2690	1490	1020	300	109	650
MIN	80	576	2790	1740	1230	1310	834	394	263	78	30	59
AC-PT	37300	201500	374500	285500	159700	229300	86050	44760	29650	10980	3930	11760
CFSM	1.27	7.07	12.7	9.69	6.00	7.78	3.02	1.52	1.04	.37	.13	.41
IN.	1.46	7.89	14.66	11.18	6.25	8.98	3.37	1.75	1.16	.43	.15	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1997, BY WATER YEAR (WY)

	MEAN	345	1456	2482	2764	2747	2111	1548	880	420	152	70.3	91.8
MAX	1774	4643	6090	5722	6948	4235	3355	2192	1101	364	120	213	
(WY)	1948	1951	1997	1956	1996	1961	1963	1963	1933	1952	1943	1941	
MIN	63.8	78.9	436	766	832	599	456	242	158	59.1	11.3	32.8	
(WY)	1953	1937	1945	1937	1941	1941	1941	1939	1940	1994	1994	1994	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1929 - 1997

ANNUAL TOTAL	821975	743566	1248
ANNUAL MEAN	2246	2037	2037
HIGHEST ANNUAL MEAN			695
LOWEST ANNUAL MEAN			1941
HIGHEST DAILY MEAN	36100	Feb 8	36100
LOWEST DAILY MEAN	20	Aug 21	3.5
ANNUAL SEVEN-DAY MINIMUM	21	Aug 16	6.4
ANNUAL RUNOFF (AC-PT)	1630000	1475000	904100
ANNUAL RUNOFF (CFSM)	4.69	4.25	2.61
ANNUAL RUNOFF (INCHES)	63.84	57.75	35.40
10 PERCENT EXCEEDS	5250	5340	3470
50 PERCENT EXCEEDS	1080	946	625
90 PERCENT EXCEEDS	51	80	66

e Estimated

14202000 PUDDING RIVER AT AURORA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1993 to September 1997 (discontinued).

WATER TEMPERATURE: August 1993 to September 1997 (discontinued).

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 270 microsiemens Sept. 5, 6, 1994; minimum, 31 microsiemens Feb. 8, 1996.

WATER TEMPERATURE: Maximum, 28.0°C July 22, 23, 1994; minimum, 0.5°C Nov. 26, 27, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 243 microsiemens Aug. 20; minimum, 42 microsiemens Feb. 2.

WATER TEMPERATURE: Maximum, 26.5°C Aug. 6, 14; minimum, 2.5°C Jan. 15, 16.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	180	171	177	95	88	90	78	74	76	53	50	52
2	189	176	185	91	86	89	74	67	69	51	49	50
3	197	184	192	89	86	87	80	71	77	49	46	47
4	199	192	195	89	86	88	82	78	79	49	47	48
5	202	192	197	91	85	89	82	67	77	53	49	51
6	205	196	201	89	85	87	67	65	66	59	53	56
7	207	197	202	96	86	94	66	64	65	64	59	62
8	206	197	201	97	83	92	67	65	66	68	64	66
9	205	192	198	89	83	87	67	59	64	73	68	70
10	195	184	191	93	87	91	59	57	58	76	73	74
11	192	183	189	96	92	94	64	58	61	76	75	76
12	195	188	192	96	92	94	70	64	67	82	76	79
13	197	191	195	99	94	97	73	70	71	85	82	84
14	210	194	201	100	89	97	75	73	74	89	85	87
15	208	174	190	105	89	98	75	73	74	92	89	91
16	199	160	180	104	94	98	81	75	78	99	92	95
17	163	135	154	94	91	93	84	81	83	109	99	103
18	141	129	131	92	78	85	88	84	86	109	71	89
19	151	103	133	93	78	85	90	87	88	71	67	69
20	103	71	77	81	58	65	94	90	93	77	70	73
21	98	90	96	58	56	57	95	93	94	81	77	79
22	97	95	96	62	58	59	94	92	93	78	77	78
23	100	79	96	65	62	64	95	93	94	80	78	79
24	89	70	77	75	64	69	98	95	96	83	80	82
25	98	77	87	78	75	77	96	68	85	88	83	85
26	89	77	84	76	73	74	68	58	61	90	88	89
27	84	81	82	84	75	79	62	50	55	91	88	89
28	84	82	83	89	84	87	50	46	48	96	90	94
29	109	84	96	87	70	78	51	46	48	94	84	88
30	111	95	102	74	70	71	54	51	53	89	85	86
31	98	92	96	---	---	---	52	51	52	88	60	75
MONTH	210	70	148	105	56	84	98	46	73	109	46	76

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	60	48	52	98	94	96	88	86	88	---	---	---
2	48	42	46	101	86	95	89	86	87	---	---	---
3	45	43	43	86	71	75	91	88	89	---	---	---
4	51	45	48	77	73	76	93	90	91	---	---	---
5	60	51	56	78	75	77	95	92	93	---	---	---
6	67	60	64	81	78	80	102	93	97	82	77	79
7	74	67	71	80	65	75	97	95	96	83	81	82
8	79	74	76	65	47	52	100	96	98	84	79	81
9	84	79	81	57	48	51	97	83	90	87	84	85
10	87	83	85	61	51	57	85	83	84	90	86	88
11	94	87	90	54	51	52	89	85	87	93	88	91
12	102	94	98	53	50	52	92	89	90	94	91	92
13	102	95	98	53	51	52	93	91	92	97	92	95
14	97	95	96	54	52	53	94	91	93	99	96	97
15	97	92	95	64	54	59	92	65	81	101	97	99
16	93	92	93	66	60	63	65	57	61	101	99	100
17	94	93	94	60	53	55	66	62	64	103	100	102
18	94	91	92	57	53	55	72	65	68	107	101	104
19	94	90	92	69	57	63	75	72	74	108	104	105
20	91	74	85	73	68	70	82	72	76	109	103	107
21	79	74	77	72	67	69	76	64	69	111	107	109
22	84	79	81	76	68	73	72	58	67	112	108	110
23	86	84	85	80	76	79	85	72	77	114	110	112
24	88	86	87	85	80	83	86	74	80	115	111	113
25	90	87	89	92	85	88	78	69	73	114	110	112
26	95	90	93	95	92	93	---	---	---	110	105	107
27	96	93	94	96	93	95	---	---	---	108	104	106
28	97	93	95	96	92	94	---	---	---	111	107	109
29	---	---	---	93	83	87	---	---	---	115	107	111
30	---	---	---	89	84	87	---	---	---	112	106	109
31	---	---	---	89	88	88	---	---	---	109	103	106
MONTH	102	42	81	101	47	72	---	---	---	---	---	---

WILLAMETTE RIVER BASIN

255

14202000 PUDDING RIVER AT AURORA, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	130	109	122	131	125	128	179	172	175	165	156	163
2	133	93	113	131	118	124	182	173	178	169	156	164
3	101	94	98	125	119	122	189	175	183	176	163	170
4	127	101	105	127	120	123	198	187	192	184	170	176
5	107	96	101	129	124	127	204	194	199	192	180	185
6	101	96	98	133	128	131	204	194	198	196	192	194
7	97	95	96	134	130	132	196	179	192	202	195	199
8	97	94	96	135	126	131	180	170	175	209	200	205
9	99	96	98	137	128	134	171	164	168	214	205	210
10	101	96	99	148	134	139	172	164	167	210	201	206
11	104	100	102	135	121	128	180	170	175	210	201	205
12	107	103	105	121	106	112	187	178	181	216	210	213
13	111	105	108	115	108	112	199	186	193	213	207	211
14	112	106	108	125	115	120	206	197	202	209	203	206
15	112	107	109	129	124	127	205	196	202	208	200	205
16	114	109	111	135	128	132	216	205	210	209	175	196
17	114	110	112	138	130	135	222	215	219	177	116	147
18	118	111	114	143	134	139	230	219	226	116	86	93
19	128	115	120	147	139	142	238	230	235	91	71	79
20	129	125	127	148	141	145	243	237	240	84	73	78
21	128	122	125	151	145	148	239	226	234	91	78	86
22	130	124	126	149	143	147	228	208	217	97	89	93
23	128	120	124	153	145	148	226	212	220	104	95	99
24	120	114	115	155	152	154	228	216	223	110	102	105
25	115	111	112	160	155	158	217	207	212	117	110	112
26	119	114	116	166	157	162	210	197	203	122	117	119
27	124	116	120	169	162	166	198	181	192	128	122	125
28	127	121	124	173	164	169	185	179	182	131	122	128
29	130	123	127	171	163	167	184	167	175	129	120	125
30	132	125	129	176	164	171	171	160	166	124	113	118
31	---	---	---	179	167	172	167	157	162	---	---	---
MONTH	133	93	112	179	106	140	243	157	197	216	71	154

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	15.5	16.5	8.5	8.0	8.5	9.0	8.5	8.5	9.5	9.0	9.5
2	16.5	15.0	16.0	8.0	7.5	8.0	8.5	7.5	8.0	9.5	9.5	9.5
3	17.0	15.5	16.0	8.5	7.5	8.0	7.5	7.0	7.0	9.5	8.5	9.0
4	17.0	16.5	17.0	9.0	8.0	8.5	7.0	7.0	7.0	8.5	7.5	8.0
5	17.0	16.5	16.5	9.0	8.0	8.5	7.5	7.0	7.0	7.5	7.0	7.5
6	16.5	15.5	16.0	9.0	8.5	8.5	7.5	7.0	7.0	7.0	6.5	7.0
7	16.5	15.0	16.0	8.5	8.0	8.5	7.5	7.0	7.0	7.0	6.5	7.0
8	17.5	15.5	16.5	9.0	8.5	8.5	8.0	7.5	7.5	7.5	7.0	7.0
9	17.5	16.0	16.5	8.5	8.0	8.5	8.0	7.5	7.5	7.5	7.0	7.5
10	17.0	16.5	16.5	9.0	8.5	8.5	8.0	7.5	8.0	8.0	7.5	8.0
11	17.0	16.5	16.5	8.5	8.5	8.5	8.0	7.5	7.5	8.5	8.0	8.0
12	16.5	15.5	16.0	9.5	8.5	9.0	7.5	7.5	7.5	8.0	6.5	7.5
13	15.5	14.5	15.0	10.0	9.5	9.5	7.5	7.5	7.5	6.5	4.5	5.5
14	14.5	13.5	14.0	10.5	10.0	10.0	7.5	7.0	7.5	4.5	3.5	4.0
15	13.5	13.0	13.5	10.5	9.5	10.0	7.0	6.5	7.0	3.5	2.5	3.0
16	13.0	12.0	12.5	9.5	9.0	9.5	6.5	6.5	6.5	3.0	2.5	3.0
17	12.0	11.0	11.0	9.0	8.5	9.0	6.5	6.0	6.5	4.0	3.0	3.5
18	11.0	10.5	11.0	9.0	8.0	8.5	6.0	5.5	5.5	5.5	4.0	4.5
19	10.5	9.5	10.0	8.0	6.0	7.0	5.5	5.0	5.0	6.5	5.5	6.0
20	9.5	9.0	9.0	7.0	6.0	6.5	5.5	5.0	5.0	7.0	6.5	6.5
21	9.0	9.0	9.0	7.0	7.0	7.0	6.0	5.5	6.0	7.5	7.0	7.5
22	9.5	9.0	9.0	7.0	7.0	7.0	6.0	5.5	6.0	7.5	7.0	7.0
23	9.5	9.5	9.5	7.0	6.5	6.5	6.0	5.5	5.5	7.0	6.0	6.5
24	10.0	9.5	10.0	7.0	6.5	7.0	7.0	6.0	6.5	6.5	6.0	6.0
25	10.0	9.5	10.0	8.0	7.0	7.5	7.5	7.0	7.5	6.0	5.5	5.5
26	10.0	9.5	9.5	8.0	7.5	8.0	7.5	6.5	7.0	5.5	5.0	5.0
27	9.5	8.5	9.0	8.0	8.0	8.0	7.0	6.5	7.0	5.0	4.5	4.5
28	8.5	8.0	8.5	9.0	8.0	8.5	7.0	6.0	6.5	5.0	4.5	4.5
29	9.0	8.0	8.5	9.0	8.5	8.5	7.0	6.0	6.5	6.5	5.0	5.5
30	9.0	9.0	9.0	9.0	8.5	8.5	8.0	7.0	7.5	7.5	6.0	7.0
31	9.0	8.5	8.5	---	---	---	9.0	8.0	8.5	8.5	7.5	8.0
MONTH	17.5	8.0	12.7	10.5	6.0	8.3	9.0	5.0	6.9	9.5	2.5	6.4

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.5	8.5	8.5	7.0	7.0	7.0	9.5	8.5	9.0	12.0	11.0	11.5
2	8.5	8.0	8.0	7.0	7.0	7.0	9.5	8.5	8.5	11.5	11.0	11.5
3	8.0	7.5	7.5	7.0	6.5	6.5	10.0	8.5	9.0	12.0	11.0	11.5
4	7.5	7.5	7.5	6.5	6.0	6.0	10.0	9.0	9.0	12.5	11.0	12.0
5	7.5	7.0	7.0	6.5	6.0	6.5	10.5	9.0	9.5	13.5	12.0	13.0
6	7.0	6.5	6.5	7.0	6.5	6.5	10.5	9.0	9.5	14.5	13.0	13.5
7	6.5	6.0	6.0	8.0	7.0	7.5	10.5	9.5	10.0	15.0	13.5	14.0
8	6.5	6.0	6.0	8.0	7.5	7.5	11.5	9.5	10.5	15.5	14.0	14.5
9	6.0	5.5	6.0	8.0	7.0	7.5	10.5	9.5	10.0	16.5	14.0	15.0
10	6.0	5.5	6.0	8.0	7.5	8.0	10.5	9.5	9.5	17.5	15.0	16.0
11	6.0	5.5	6.0	8.0	7.0	7.5	10.5	9.0	9.5	18.0	16.0	17.0
12	6.0	6.0	6.0	8.0	7.0	7.5	10.5	9.5	10.0	19.0	16.5	18.0
13	7.0	6.0	6.5	8.0	7.0	7.5	10.5	9.5	10.0	19.5	17.5	18.5
14	7.5	7.0	7.0	8.0	7.0	7.5	10.0	9.5	10.0	20.0	18.0	19.0
15	8.5	7.5	8.0	8.5	7.5	8.0	11.5	10.0	10.5	20.0	18.5	19.0
16	8.5	8.0	8.0	9.0	8.5	9.0	12.0	10.5	11.5	20.0	18.5	19.0
17	8.5	8.0	8.0	9.0	8.5	9.0	13.0	11.5	12.5	20.5	18.5	19.5
18	8.5	8.0	8.5	9.0	8.5	9.0	12.5	11.5	12.5	20.5	18.5	19.5
19	8.5	8.0	8.5	9.5	9.0	9.5	12.0	11.5	11.5	20.5	18.5	19.0
20	8.5	7.5	8.0	10.5	9.5	10.0	12.0	11.5	11.5	19.0	18.0	18.5
21	7.5	7.5	7.5	10.5	9.5	10.0	11.5	10.5	11.0	18.5	16.5	17.5
22	7.5	7.0	7.0	10.5	9.5	10.0	11.0	10.5	10.5	18.0	16.5	17.5
23	7.0	6.5	7.0	10.5	9.5	10.0	11.5	10.5	11.0	17.5	16.5	17.0
24	7.0	6.5	7.0	11.5	10.5	10.5	11.5	11.0	11.0	16.5	15.5	16.0
25	7.0	6.5	7.0	11.5	10.5	11.0	11.5	10.5	11.0	16.0	15.5	15.5
26	7.5	7.0	7.5	12.0	11.5	12.0	12.0	11.5	11.5	17.0	15.0	16.0
27	8.0	7.0	7.5	11.5	10.5	11.5	13.0	12.0	12.5	17.5	16.0	16.5
28	7.5	7.0	7.0	10.5	9.5	10.0	13.0	12.0	12.5	17.5	16.5	17.0
29	---	---	---	9.5	9.0	9.5	12.0	12.0	12.0	19.0	17.5	18.0
30	---	---	---	9.5	9.0	9.5	12.0	11.5	12.0	19.5	18.5	19.0
31	---	---	---	9.5	9.0	9.0	---	---	---	19.5	18.5	18.5
MONTH	8.5	5.5	7.2	12.0	6.0	8.6	13.0	8.5	10.6	20.5	11.0	16.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	18.5	17.5	17.5	20.5	18.5	19.5	24.5	22.5	23.5	23.0	21.0	22.0
2	17.5	16.5	17.0	20.5	18.0	19.5	24.5	22.5	23.5	23.0	21.0	22.0
3	18.0	16.5	17.0	21.5	18.5	20.0	25.0	23.0	24.0	23.0	21.5	22.0
4	17.5	16.5	17.0	23.0	20.0	21.5	25.5	23.5	24.5	23.0	21.5	22.5
5	17.5	16.0	16.5	23.5	21.5	22.5	26.0	24.0	25.0	22.5	21.5	22.0
6	18.0	16.0	17.0	24.0	22.0	23.0	26.5	24.5	25.5	21.5	20.5	21.0
7	18.0	16.5	17.0	24.0	21.5	22.5	25.5	24.0	25.0	21.5	20.0	20.5
8	18.0	16.0	17.0	23.0	22.0	22.5	25.0	23.5	24.5	21.5	20.0	20.5
9	19.0	16.5	17.5	22.0	21.0	21.5	25.5	23.0	24.0	21.5	20.5	21.0
10	19.5	17.5	18.5	21.0	19.5	20.0	25.0	23.0	24.0	21.5	20.5	21.0
11	19.0	18.5	18.5	20.5	19.0	19.5	25.5	23.0	24.0	21.5	20.5	21.0
12	18.5	17.5	18.0	20.5	18.5	19.5	26.0	23.0	24.5	20.5	20.0	20.0
13	18.5	17.5	17.5	21.5	18.5	20.0	26.0	24.0	24.5	20.0	18.5	19.0
14	19.0	17.5	18.0	22.5	20.0	21.0	26.5	24.0	25.0	19.0	18.0	18.5
15	20.0	17.5	18.5	22.5	21.0	21.5	25.5	23.5	24.0	18.5	17.5	18.0
16	21.5	18.5	20.0	23.0	21.0	22.0	25.0	22.5	23.5	17.5	16.5	17.0
17	21.0	20.0	20.0	23.0	21.5	22.0	24.5	23.0	24.0	16.5	15.5	16.5
18	21.0	19.5	20.0	23.0	21.0	22.0	24.0	23.0	23.0	16.5	15.5	16.0
19	20.5	19.0	20.0	23.5	21.5	22.5	23.5	21.5	22.5	16.5	15.0	16.0
20	21.0	18.5	20.0	24.5	22.5	23.5	23.0	21.5	22.5	16.5	15.0	15.5
21	20.5	19.5	19.5	24.5	23.0	23.5	23.0	21.0	22.0	16.5	15.0	15.5
22	19.5	18.0	18.5	23.0	21.5	22.5	23.0	21.5	22.5	17.5	15.5	16.0
23	18.0	17.0	17.5	24.0	21.0	22.5	23.0	22.0	22.5	18.0	16.0	16.5
24	18.5	16.5	17.5	24.0	21.5	23.0	23.0	22.0	22.5	18.0	16.5	17.5
25	19.0	17.5	18.0	24.0	21.5	23.0	23.0	22.0	22.5	18.5	17.0	18.0
26	20.0	17.5	18.5	24.0	22.0	23.0	23.0	21.5	22.0	18.0	17.5	17.5
27	20.5	18.0	19.0	24.5	22.0	23.0	21.5	20.5	21.0	18.0	16.5	17.0
28	20.0	18.5	19.5	24.5	22.5	24.0	21.5	20.5	21.0	18.0	16.0	17.0
29	20.5	18.0	19.0	24.5	23.0	24.0	22.0	20.0	21.0	18.0	16.5	17.0
30	20.5	18.5	19.5	24.5	23.0	23.5	22.5	20.5	21.5	17.5	16.5	16.5
31	---	---	---	24.5	22.5	23.5	22.5	20.5	21.5	---	---	---
MONTH	21.5	16.0	18.3	24.5	18.0	22.0	26.5	20.0	23.3	23.0	15.0	18.7
YEAR	26.5	2.5	13.3									

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 September 1997 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is sea level.

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.--Daily elevations at 0800 and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 53,770 acre-ft May 26, 27, 1997, elevation, 303.62 ft; minimum contents observed since first filling, 808 acre-ft Oct. 31, 1975, elevation, 237.21 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 53,770 acre-ft May 26, 27, elevation, 303.62 ft; minimum contents observed, 23,410 acre-ft Nov. 15, elevation, 272.65 ft.

MONTH-END ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	275.87	26,150	-
Oct. 31.....	273.27	23,930	-2,220
Nov. 30.....	280.23	30,020	+6,090
Dec. 31.....	300.34	50,110	+20,090
CAL YR 1996.....	-	-	+14,610
Jan. 31.....	286.79	36,170	-13,940
Feb. 28.....	295.12	44,520	+8,350
Mar. 31.....	300.20	49,960	+5,440
Apr. 30.....	303.43	53,560	+3,600
May 31.....	303.39	53,510	-50
June 30.....	303.45	53,580	+70
July 31.....	297.46	46,890	-6,690
Aug. 31.....	284.50	33,980	-12,910
Sept.30.....	273.92	24,480	-9,500
WTR YR 1997.....	-	-	-1,670

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 sea level.

REMARKS.--No estimated daily discharges. Records fair. 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.--22 years (water years 1976-97), 110 ft³/s, 79,510 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,210 ft³/s Apr. 23, 1996, gage height, 16.88 ft; minimum discharge, 0.72 ft³/s Nov. 4, 5, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,000 ft³/s Jan. 2, gage height, 16.21 ft; minimum discharge, 0.72 ft³/s Nov. 4, 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	48	9.9	1030	63	17	47	94	59	35	172	222
2	89	48	14	1800	61	17	9.2	127	99	54	206	222
3	91	48	14	1940	135	16	9.2	135	146	104	205	223
4	91	33	19	1850	299	16	9.2	135	139	124	205	224
5	91	25	5.6	1740	373	16	9.3	84	116	123	204	223
6	91	49	17	1780	371	191	9.3	48	70	122	204	222
7	91	49	39	1640	265	375	9.4	48	49	115	203	222
8	91	49	44	1450	204	394	9.5	63	49	115	203	221
9	91	48	34	1210	203	398	9.8	71	21	105	202	221
10	91	48	36	1170	83	382	9.9	71	7.1	88	201	221
11	91	48	43	933	18	392	10	72	18	95	201	223
12	91	49	83	566	77	477	10	74	33	103	200	224
13	91	49	127	432	109	541	10	75	44	102	209	224
14	82	49	181	374	109	405	10	77	46	115	215	224
15	75	31	388	358	109	296	10	79	46	132	214	206
16	76	20	728	357	109	296	10	80	47	133	214	177
17	63	20	1020	323	108	348	10	82	47	134	213	167
18	57	23	1230	81	79	386	45	84	36	143	213	155
19	57	20	1300	77	7.2	279	67	62	29	152	212	145
20	57	6.7	1290	76	10	15	67	30	29	152	212	144
21	57	8.5	1120	237	18	140	190	13	30	140	211	144
22	58	8.8	874	366	18	222	228	14	75	129	211	128
23	58	8.6	628	365	18	221	185	37	88	126	210	119
24	59	12	307	363	18	221	101	53	35	144	210	121
25	59	11	22	361	17	220	45	52	12	160	209	121
26	58	9.6	28	360	16	220	34	56	7.7	160	209	110
27	58	10	33	266	15	220	35	106	39	160	208	100
28	58	11	31	90	16	184	51	151	60	159	216	100
29	58	9.6	57	22	---	161	90	187	60	151	225	100
30	58	9.8	126	27	---	161	83	102	47	140	224	113
31	53	---	516	64	---	132	---	60	---	140	223	---
TOTAL	2274	859.6	10364.5	21708	2928.2	7359	1422.8	2422	1583.8	3855	6464	5266
MEAN	73.4	28.7	334	700	105	237	47.4	78.1	52.8	124	209	176
MAX	91	49	1300	1940	373	541	228	187	146	160	225	224
MIN	53	6.7	5.6	22	7.2	15	9.2	13	7.1	35	172	100
AC-FT	4510	1710	20560	43060	5810	14600	2820	4800	3140	7650	12820	10450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1997, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	93.9	68.4	152	167	111	120	86.2	59.4	57.4	122	150	126	126	126	126	126	126	126	126	126	126	126
MAX	155	233	571	700	639	326	272	122	121	201	216	206	206	206	206	206	206	206	206	206	206	206
(WY)	1980	1985	1996	1997	1996	1983	1996	1996	1992	1994	1996	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	26.2	16.7	10.9	9.85	9.50	10.8	12.0	19.9	14.3	52.3	83.4	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9	72.9
(WY)	1978	1988	1991	1992	1977	1977	1985	1977	1977	1993	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1976 - 1997

ANNUAL TOTAL	70909.6	66506.9	110
ANNUAL MEAN	194	182	212
HIGHEST ANNUAL MEAN			1996
LOWEST ANNUAL MEAN			40.4
HIGHEST DAILY MEAN	1640	Feb 9	1940
LOWEST DAILY MEAN	5.6	Dec 5	5.3
ANNUAL SEVEN-DAY MINIMUM	9.3	Nov 20	5.8
ANNUAL RUNOFF (AC-FT)	140600	131900	79510
10 PERCENT EXCEEDS	506	365	216
50 PERCENT EXCEEDS	96	91	76
90 PERCENT EXCEEDS	15	14	13

WILLAMETTE RIVER BASIN

259

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 right bank 5 ft upstream from highway bridge, 1.0 mi south of Dilley, 1.2 mi downstream from Scoggins Creek, and at mile 58.8.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to December 1939 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 sea level. 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.--No estimated daily discharges. Records good. 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.--58 years (water years 1940-97), 388 ft³/s, 281,100 acre-ft/yr.
22 years (water years 1976-97), 346 ft³/s, 250,800 acre-ft/yr, regulated period.

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, 4,050 ft³/s Dec. 30, gage height, 18.02 ft; minimum discharge, 77 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	138	864	3530	1540	412	411	314	233	89	210	286
2	84	132	903	3010	1160	735	310	349	212	93	269	284
3	87	126	968	2890	953	781	279	362	277	130	270	282
4	91	131	933	2470	916	716	260	356	311	166	268	281
5	102	105	1710	2190	931	647	236	314	259	162	265	279
6	98	138	1650	2000	879	678	221	231	199	161	264	277
7	95	180	1620	1930	822	996	208	217	147	153	263	275
8	95	148	2070	1740	723	1130	203	211	138	143	262	274
9	95	135	1770	1540	671	1150	191	209	122	159	262	269
10	96	127	1460	1400	581	1290	181	199	98	126	262	276
11	101	121	1430	1330	420	1250	171	192	96	127	260	281
12	104	130	1310	1100	460	1200	164	187	112	138	260	284
13	109	158	1380	915	515	1210	169	183	125	136	263	284
14	116	166	1330	818	517	1100	217	170	116	141	273	296
15	161	149	1230	771	529	959	261	159	111	161	274	302
16	114	136	1300	747	512	982	228	154	108	169	262	313
17	98	151	1370	799	490	1040	201	149	105	159	257	428
18	166	259	1400	976	479	1060	197	146	101	168	257	374
19	196	511	1410	957	504	1260	234	136	87	186	258	301
20	130	837	1390	839	657	1100	389	110	84	191	261	248
21	104	772	1450	850	676	918	496	96	88	183	273	222
22	135	732	1480	1020	617	887	559	94	122	168	268	200
23	142	675	1290	993	545	813	564	100	204	160	266	173
24	231	748	1440	948	463	752	493	116	124	170	272	174
25	301	884	1960	898	417	709	374	116	95	198	273	173
26	260	820	1980	855	390	676	308	113	84	199	272	182
27	197	753	2200	803	363	652	279	147	90	202	286	199
28	176	938	1750	729	331	634	272	218	110	200	281	186
29	187	1000	2420	608	---	572	322	339	111	193	301	171
30	165	834	3360	621	---	530	333	246	105	175	293	174
31	151	---	3010	1350	---	494	---	211	---	191	288	---
TOTAL	4267	12134	49838	41627	18061	27333	8731	6144	4174	4997	8293	7748
MEAN	138	404	1608	1343	645	882	291	198	139	161	268	258
MAX	301	1000	3360	3530	1540	1290	564	362	311	202	301	428
MIN	80	105	864	608	331	412	164	94	84	89	210	171
AC-FT	8460	24070	98850	82570	35820	54220	17320	12190	8280	9910	16450	15370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1997, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	140	307	718	721	671	526	353	171	112	138	161	149										
MAX	230	882	2062	1518	1805	1086	974	424	183	195	268	258										
(WY)	1983	1985	1996	1995	1996	1983	1991	1996	1984	1985	1997	1997										
MIN	71.8	47.2	41.1	31.8	62.0	165	99.8	80.8	65.9	91.0	93.0	82.6										
(WY)	1978	1988	1977	1977	1977	1992	1977	1977	1979	1977	1977	1985										

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1976 - 1997

ANNUAL TOTAL	227551	193347	
ANNUAL MEAN	622	530	346
HIGHEST ANNUAL MEAN			675
LOWEST ANNUAL MEAN			104
HIGHEST DAILY MEAN	8620	Feb 8	8620
LOWEST DAILY MEAN	70	Jul 1	22
ANNUAL SEVEN-DAY MINIMUM	80	Sep 21	23
ANNUAL RUNOFF (AC-FT)	451300	383500	250800
10 PERCENT EXCEEDS	1450	1320	852
50 PERCENT EXCEEDS	284	272	174
90 PERCENT EXCEEDS	106	111	82

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5. NEAR SCHOLLS. OR

LOCATION.--Lat 45°21'24", long 122°41'02", in NW 1/4 NE 1/4 sec.14, T.2 S., R.1 E., Washington County, Hydrologic Unit 17090010, on left bank, mounted to a wooden dock, 1.5 mi southeast of Scholls, and at mile 24.5.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1997 to October 1997.

pH: May 1997 to October 1997.

WATER TEMPERATURE: May 1997 to October 1997.

DISSOLVED OXYGEN: May 1997 to October 1997.

INSTRUMENTATION.--Water-quality monitor and electronic data logger with sixty-minute interval. Water-quality probes are suspended from a float approximately 30 ft from left bank.

EXTREMES FOR PERIOD MAY TO OCTOBER. --

SPECIFIC CONDUCTANCE: Maximum recorded, 255 microsiemens July 28; minimum recorded, 113 microsiemens June 8.

pH: Maximum recorded, 7.4 units Aug. 1-4; minimum recorded, 6.9 units Aug. 7, 8, 14, 15.

WATER TEMPERATURE: Maximum recorded, 22.0°C Aug. 4; minimum recorded, 14.5°C May 26.

DISSOLVED OXYGEN: Maximum recorded, 9.4 mg/L Aug. 2, minimum recorded, 7.3 mg/L May 30.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, MAY TO OCTOBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		MAY			JUNE			JULY			AUGUST	
1	---	---	---	153	120	135	193	161	180	234	206	226
2	---	---	---	---	---	---	189	160	179	239	210	230
3	---	---	---	---	---	---	202	179	194	253	222	237
4	---	---	---	---	---	---	203	173	191	251	221	239
5	---	---	---	---	---	---	215	186	203	221	172	191
6	---	---	---	---	---	---	217	178	198	186	156	174
7	---	---	---	124	115	121	195	169	180	195	167	183
8	---	---	---	132	113	123	194	161	182	194	170	186
9	---	---	---	137	119	128	192	166	182	202	165	184
10	---	---	---	142	126	135	219	178	200	207	180	196
11	---	---	---	149	129	140	221	170	201	216	186	203
12	---	---	---	---	---	---	196	170	188	217	175	195
13	---	---	---	---	---	---	208	175	194	205	171	190
14	---	---	---	170	153	164	212	183	199	200	178	191
15	---	---	---	163	140	152	217	178	197	215	193	205
16	---	---	---	168	146	156	217	191	207	222	189	207
17	---	---	---	172	155	166	231	198	214	216	188	206
18	---	---	---	177	162	172	229	197	215	219	185	206
19	---	---	---	183	158	175	221	193	209	219	173	195
20	---	---	---	182	162	177	220	186	207	206	175	194
21	---	---	---	194	168	188	228	195	213	211	179	199
22	---	---	---	205	173	192	228	185	206	231	180	209
23	---	---	---	208	169	187	213	182	199	200	162	189
24	185	159	176	189	152	168	224	187	206	182	155	173
25	191	163	179	153	135	146	223	182	200	186	152	172
26	184	150	165	158	141	149	209	190	202	192	150	176
27	171	144	158	168	156	164	241	194	229	174	144	158
28	172	149	163	187	156	177	255	204	231	183	146	168
29	172	148	165	201	170	189	235	197	216	166	135	155
30	169	129	140	209	174	191	225	183	203	168	138	155
31	129	115	122	---	---	---	210	202	207	160	128	145
MONTH	---	---	---	---	---	---	255	160	201	253	128	190

[illegible]

WILLAMETTE RIVER BASIN

261

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, MAY TO OCTOBER 1997

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER	
1	---	---	7.1	7.1	7.2	7.1	7.4	7.2	7.0	7.0	7.0	7.0
2	---	---	---	---	7.3	7.1	7.4	7.3	7.0	7.0	7.0	7.0
3	---	---	---	---	7.3	7.2	7.4	7.3	7.0	7.0	7.0	6.9
4	---	---	---	---	7.2	7.0	7.4	7.3	7.1	7.0	6.9	6.9
5	---	---	---	---	7.2	7.0	7.3	7.1	7.1	7.0	7.0	6.9
6	---	---	---	---	7.2	7.1	7.1	7.0	7.1	7.1	6.9	6.8
7	---	---	7.1	7.0	7.2	7.2	7.1	6.9	---	---	6.9	6.8
8	---	---	7.1	7.1	7.2	7.2	7.1	6.9	---	---	6.9	6.9
9	---	---	7.1	7.1	7.2	7.2	7.1	7.0	---	---	7.0	6.9
10	---	---	7.1	7.1	7.2	7.1	7.1	7.0	---	---	7.0	6.9
11	---	---	7.1	7.1	7.2	7.1	7.1	7.0	---	---	6.9	6.8
12	---	---	---	---	7.2	7.1	7.1	7.0	---	---	6.8	6.8
13	---	---	---	---	7.1	7.1	7.1	7.0	---	---	6.8	6.8
14	---	---	7.1	7.1	7.1	7.1	7.1	6.9	---	---	6.8	6.8
15	---	---	7.1	7.1	7.1	7.1	7.1	6.9	---	---	6.8	6.8
16	---	---	7.1	7.1	7.2	7.1	7.1	7.1	---	---	6.8	6.8
17	---	---	7.1	7.0	7.1	7.1	7.2	7.1	---	---	6.9	6.8
18	---	---	7.1	7.1	7.2	7.1	7.2	7.1	---	---	6.9	6.9
19	---	---	7.1	7.1	7.2	7.1	7.2	7.1	---	---	6.9	6.9
20	---	---	7.1	7.1	7.1	7.0	7.2	7.1	7.0	7.0	7.0	6.9
21	---	---	7.1	7.1	7.1	7.0	7.2	7.1	7.0	7.0	7.0	7.0
22	---	---	7.2	7.1	7.2	7.1	7.2	7.1	7.1	7.0	7.0	6.9
23	---	---	7.3	7.2	7.2	7.1	7.1	7.0	7.1	7.1	7.0	6.9
24	7.2	7.2	7.3	7.2	7.2	7.1	7.1	7.0	7.1	7.1	7.0	7.0
25	7.2	7.2	7.2	7.2	7.2	7.1	7.1	7.0	7.1	7.1	7.0	7.0
26	7.2	7.2	7.2	7.2	7.2	7.1	7.1	7.0	7.1	7.1	7.0	7.0
27	7.3	7.2	7.2	7.1	7.2	7.1	7.0	7.0	7.2	7.1	7.1	7.0
28	7.3	7.2	7.1	7.1	7.2	7.2	7.0	7.0	7.1	7.1	7.1	7.1
29	7.2	7.2	7.1	7.1	7.3	7.1	7.0	7.0	7.1	7.1	7.1	7.1
30	7.2	7.1	7.2	7.1	7.3	7.2	7.0	7.0	7.1	7.0	7.1	6.9
31	7.1	7.1	---	---	7.3	7.2	7.0	7.0	---	---	---	---
MONTH	---	---	---	---	7.3	7.0	7.4	6.9	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, MAY TO OCTOBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		MAY			JUNE			JULY			AUGUST	
1	---	---	---	16.5	15.5	16.0	18.0	17.0	17.5	21.0	20.5	20.5
2	---	---	---	---	---	---	17.5	17.0	17.5	21.5	20.5	21.0
3	---	---	---	---	---	---	19.0	17.5	18.0	21.5	20.5	21.0
4	---	---	---	---	---	---	20.0	18.0	19.0	22.0	21.0	21.5
5	---	---	---	---	---	---	21.0	19.5	20.0	21.5	20.5	21.0
6	---	---	---	---	---	---	21.0	20.0	20.5	21.0	20.0	20.5
7	---	---	---	15.5	15.5	15.5	21.0	20.0	20.5	21.0	19.5	20.5
8	---	---	---	15.5	15.0	15.5	20.5	19.5	20.0	20.5	19.5	20.0
9	---	---	---	16.5	15.5	16.0	19.5	19.0	19.5	20.5	19.5	20.0
10	---	---	---	17.0	16.0	16.5	19.0	18.5	18.5	20.5	19.5	20.0
11	---	---	---	17.0	16.5	17.0	18.5	18.0	18.5	20.5	19.5	20.0
12	---	---	---	---	---	---	18.0	17.0	17.5	20.5	19.5	20.0
13	---	---	---	---	---	---	19.0	17.5	18.0	20.5	19.5	20.0
14	---	---	---	17.5	17.0	17.5	20.0	18.5	19.0	21.0	20.0	20.5
15	---	---	---	18.0	17.5	17.5	20.5	19.0	19.5	21.0	20.0	20.5
16	---	---	---	18.5	18.0	18.0	20.5	19.0	20.0	20.5	19.5	20.0
17	---	---	---	19.0	18.5	18.5	20.5	19.5	20.0	20.5	19.5	20.0
18	---	---	---	19.0	18.5	18.5	20.5	19.5	20.0	20.0	19.5	19.5
19	---	---	---	19.0	18.5	18.5	21.0	19.5	20.0	19.5	18.5	19.0
20	---	---	---	18.5	18.0	18.5	21.5	20.0	20.5	19.0	18.5	18.5
21	---	---	---	18.5	18.0	18.0	21.0	20.0	20.5	18.5	17.5	18.0
22	---	---	---	18.0	16.5	17.5	21.0	20.0	20.5	18.5	17.0	18.0
23	---	---	---	16.5	16.0	16.5	21.0	19.5	20.0	18.0	17.0	17.5
24	16.0	15.5	15.5	16.5	15.5	16.0	21.0	19.5	20.0	18.0	17.0	17.5
25	16.0	15.0	15.5	16.0	15.5	16.0	20.5	19.5	20.0	18.0	17.5	17.5
26	15.5	14.5	15.0	16.0	15.5	16.0	20.5	19.5	20.0	17.5	17.0	17.5
27	16.0	15.5	15.5	17.0	16.0	16.5	21.0	20.0	20.5	17.0	16.5	16.5
28	16.5	16.0	16.5	17.5	16.5	17.0	21.5	20.5	21.0	16.5	16.5	16.5
29	17.5	16.5	16.5	18.0	17.0	17.5	21.0	20.0	20.5	16.5	16.0	16.5
30	17.5	16.5	17.0	18.0	17.5	17.5	21.0	20.0	20.5	17.0	16.5	17.0
31	16.5	16.0	16.0	---	---	---	21.0	20.0	20.5	17.0	16.5	16.5
MONTH	---	---	---	---	---	---	21.5	17.0	19.6	22.0	16.0	19.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER	
1	17.0	16.5	17.0	16.5	16.0	16.0	---	---	---	---	---	---
2	17.0	16.5	17.0	16.0	15.5	16.0	---	---	---	---	---	---
3	17.5	17.0	17.0	16.0	15.5	15.5	---	---	---	---	---	---
4	17.5	17.0	17.0	15.5	15.0	15.0	---	---	---	---	---	---
5	17.5	17.0	17.0	15.0	14.5	15.0	---	---	---	---	---	---
6	17.0	16.5	17.0	14.5	13.5	14.0	---	---	---	---	---	---
7	---	---	---	13.5	13.0	13.0	---	---	---	---	---	---
8	---	---	---	13.0	12.5	12.5	---	---	---	---	---	---
9	---	---	---	12.5	12.0	12.5	---	---	---	---	---	---
10	---	---	---	12.0	11.5	12.0	---	---	---	---	---	---
11	---	---	---	11.5	11.0	11.5	---	---	---	---	---	---
12	---	---	---	11.5	11.0	11.5	---	---	---	---	---	---
13	---	---	---	11.5	11.0	11.5	---	---	---	---	---	---
14	---	---	---	12.0	11.5	11.5	---	---	---	---	---	---
15	---	---	---	12.5	12.0	12.0	---	---	---	---	---	---
16	---	---	---	13.0	12.5	12.5	---	---	---	---	---	---
17	---	---	---	13.0	12.5	13.0	---	---	---	---	---	---
18	---	---	---	13.0	12.5	13.0	---	---	---	---	---	---
19	---	---	---	13.0	12.5	12.5	---	---	---	---	---	---
20	15.5	15.0	15.5	12.5	12.0	12.0	---	---	---	---	---	---
21	16.0	15.0	15.5	12.0	11.5	11.5	---	---	---	---	---	---
22	16.0	15.5	15.5	11.5	11.0	11.5	---	---	---	---	---	---
23	16.5	16.0	16.0	11.5	11.0	11.0	---	---	---	---	---	---
24	17.0	16.5	16.5	11.0	10.5	10.5	---	---	---	---	---	---
25	17.5	16.5	17.0	10.5	10.0	10.5	---	---	---	---	---	---
26	17.5	17.0	17.5	10.5	10.0	10.0	---	---	---	---	---	---
27	17.0	17.0	17.0	10.0	10.0	10.0	---	---	---	---	---	---
28	17.0	17.0	17.0	10.0	10.0	10.0	---	---	---	---	---	---
29	17.0	16.5	16.5	10.5	10.0	10.5	---	---	---	---	---	---
30	16.5	16.5	16.5	12.0	10.5	11.5	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

OXYGEN DISSOLVED (MG/L), MAY TO OCTOBER 1997

[illegible]

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, and at mile 11.9.

DRAINAGE AREA.--2.37 mi².

PERIOD OF RECORD.--Annual maximums, 1975-77. October 1990 to current year.

REVISED RECORDS.--WDR OR-92-1: 1991, 1991(m).

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--7 years (water years 1991-97), 3.42 ft³/s, 19.60 in/yr, 2,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 733 ft³/s Feb. 8, 1996, gage height, 13.2 ft, from floodmark, from rating curve extended above 200 ft³/s; minimum discharge, 0.07 ft³/s many days in October 1991 and September 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 10	0815	346	12.05	Dec. 31	2230	362	12.02
Nov. 19	1000	*502	*12.58	Jan. 17	1545	203	11.29
Dec. 2	1130	175	11.22	Mar. 1	1500	236	11.46
Dec. 29	0315	207	11.35				

Minimum daily discharge, 0.20 ft³/s many days in October, August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.30	.76	3.2	45	9.7	e38	e1.8	e1.5	e3.2	e.55	e.25	e.20
2	e.20	.70	23	29	e3.2	15	e1.5	e1.5	e.90	e.40	e.25	e.25
3	e.20	5.1	3.5	15	e2.8	10	e1.4	e1.6	e16	e.35	e.25	e.50
4	e7.0	1.8	39	6.4	e2.6	5.1	e1.3	e1.0	e3.0	e.35	e.25	e.30
5	e.60	.90	24	5.4	e2.5	e7.8	e1.2	e.90	e1.2	e.30	e.25	e.20
6	e.40	4.3	14	e3.8	e2.3	5.9	e1.2	e1.1	e.90	e.30	e.25	e.20
7	e.30	1.1	40	e3.4	e2.7	6.4	e1.5	e.90	e.80	e.30	e.20	e.25
8	e.30	.80	33	e2.7	e1.8	e4.0	e4.2	e.85	e.75	e7.0	e.20	e.20
9	e.20	e1.2	6.0	e3.1	e1.6	e19	e2.1	e.80	e.70	e1.1	e.20	e.20
10	e.20	e.80	21	e4.0	e1.4	25	e1.6	e.75	e.70	e9.5	e.20	e.40
11	e.30	e.70	13	e2.4	e3.8	13	e1.4	e.70	e2.2	e1.5	e.20	e.60
12	e2.0	3.1	12	e2.1	e2.4	8.4	e1.3	e.65	e.90	e.40	e.20	e.25
13	4.7	4.5	9.8	e1.9	e1.7	e4.0	e1.5	e.65	e.60	e.40	e.20	e4.2
14	4.9	2.5	4.2	e1.8	e1.5	e5.7	e4.0	e.60	e.55	e.35	e.20	e3.0
15	3.6	1.5	3.4	e1.7	e1.7	15	e2.5	e.60	e.55	e.35	e.20	e2.1
16	e.90	3.9	2.9	e4.0	e1.3	16	e2.8	e.60	e.50	e.35	e.20	e3.3
17	e2.5	7.1	2.4	68	e1.2	e8.0	e1.6	e.55	e.70	e.30	e.20	e4.0
18	14	38	2.3	22	e4.7	e13	e1.3	e.55	e.45	e.30	e.20	e5.0
19	3.0	202	2.4	6.7	e3.8	26	e7.5	e.55	e.40	e.30	e.20	.39
20	1.4	e8.5	2.5	26	e2.4	14	e11	e.50	e.40	e.30	e10	.33
21	2.5	e32	8.4	11	e1.9	e4.8	e2.3	e.50	e.50	e.30	e.40	.30
22	8.6	e20	4.7	5.5	e1.7	e3.8	e15	e.50	e7.5	e.30	e.30	.32
23	12	e5.0	10	4.5	e1.5	e3.2	e4.0	e3.0	e.65	e.30	e.25	.24
24	10	40	28	e3.4	e1.4	e2.8	e1.9	e2.2	e.50	e.25	e13	.24
25	4.5	4.3	10	e2.8	e1.6	e2.5	e1.6	e.80	e.40	e.25	e.40	2.2
26	1.8	3.0	52	e2.4	e1.5	e2.3	e2.5	e.65	e.35	e.25	e2.3	3.4
27	1.4	e22	26	e2.9	e5.4	e3.6	e1.3	e.35	e.25	e.25	e.40	.63
28	18	5.8	15	e6.0	e1.6	e3.8	e2.6	e2.1	e.30	e.25	e1.2	.31
29	1.7	3.4	83	e3.0	---	e2.2	e2.1	e1.1	e.35	e.25	e.40	.28
30	1.0	4.9	45	e11	---	e2.8	e2.1	e.75	e12	e.25	e.25	1.2
31	.90	---	79	45	---	e2.4	---	e20	---	e.25	e.30	---
TOTAL	109.40	429.66	622.7	351.9	71.7	293.5	90.4	49.75	58.30	27.60	33.30	34.99
MEAN	3.53	14.3	20.1	11.4	2.56	9.47	3.01	1.60	1.94	.89	1.07	1.17
MAX	18	202	83	68	9.7	38	15	20	16	9.5	13	5.0
MIN	.20	.70	2.3	1.7	1.2	2.2	1.2	.50	.30	.25	.20	.20
AC-FT	217	852	1240	698	142	582	179	99	116	55	66	69
CFSM	1.49	6.04	8.48	4.79	1.08	3.99	1.27	.68	.82	.38	.45	.49
IN.	1.72	6.74	9.77	5.52	1.13	4.61	1.42	.78	.92	.43	.52	.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1997, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997
MEAN	1.96	5.42	7.36	6.36	6.89	4.42	3.65
MAX	4.11	14.3	20.1	11.4	16.6	9.47	5.20
(WY)	1995	1997	1997	1997	1996	1997	1997
MIN	.60	1.06	3.29	3.02	1.54	1.73	2.10
(WY)	1992	1994	1991	1994	1993	1994	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1991 - 1997

ANNUAL TOTAL	2438.80	2173.20	
ANNUAL MEAN	6.66	5.95	
HIGHEST ANNUAL MEAN			3.42
LOWEST ANNUAL MEAN			5.95
HIGHEST DAILY MEAN	202	202	202
LOWEST DAILY MEAN	.20	.20	.07
ANNUAL SEVEN-DAY MINIMUM	.20	.20	.07
ANNUAL RUNOFF (AC-FT)	4840	4310	2480
ANNUAL RUNOFF (CFSM)	2.81	2.51	1.44
ANNUAL RUNOFF (INCHES)	38.28	34.11	19.60
10 PERCENT EXCEEDS	19	15	7.8
50 PERCENT EXCEEDS	2.2	1.8	1.3
90 PERCENT EXCEEDS	.21	.25	.20

e Estimated

DURHAM, OREGON

PERIOD OF DAILY RECORD.--May 1991 to November 1995 (May through November only beginning May 1994).

INSTRUMENTATION.--A quantum sensor interfaced with a micrologger. The quantum sensor measures photosynthetically active radiation (PAR) on a flat surface in the 400 to 700 nanometer (nm) waveband. The unit of measurement is microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$).

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-1993." Daily record data for period May 1994 to November 1994 and May 1995 to November 1995 published in USGS Open-File Report 96-316, "Water-Temperature, Specific Conductance, and Meteorological Data for the Tualatin River Basin, Oregon, 1994-1995".

EXTREMES FOR CURRENT YEAR.--Maximum hourly PAR value recorded for period October 1996 to November 1997, 1,880 microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$) June 25 at 1400 hrs; maximum recorded mean daily PAR value, 667 microeinsteins per meter square per second ($\mu\text{E}/\text{m}^2/\text{second}$) June 24, 1997.

[illegible]

LIGHT INCIDENT. 400-700NM. FOR PERIOD OCTOBER 1996 TO NOVEMBER 1997

[illegible]

WILLAMETTE RIVER BASIN

267

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR

WATER-QUALITY RECORDS

LOCATION.--45°21'24", long 122°41'02", in SE 1/4 NE 1/4 sec.33 T.2 S., R. 1 E., Clackamas County, Hydrologic Unit 17090010, on left bank, mounted to the fish ladder at the Lake Oswego Dam, and at mile 3.4.

DRAINAGE AREA.--706 mi², at gage 1.6 mi downstream.

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1993 to current year.

pH: May 1993 to current year.

WATER TEMPERATURE: October 1993 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

AIR TEMPERATURE: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since May 1991. Electronic data logger with 60 minute recording interval.

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-93".

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 365 microsiemens July 7, 1995; minimum recorded, 70 microsiemens Dec. 19, 1995.

pH: Maximum recorded, 9.5 units June 24, 1995; minimum recorded, 6.2 units Oct. 18, 19, 1993, Feb. 28, 1994.

WATER TEMPERATURE: Maximum recorded, 27.0°C July 22, 1994; minimum recorded, 0.5°C Jan. 15, 1993.

DISSOLVED OXYGEN: Maximum recorded, 21.8 mg/L June 23, 1992; minimum recorded, 3.2 mg/L Nov. 19, 1992.

AIR TEMPERATURE: Maximum recorded, 40.8°C July 17, 1995; minimum recorded, -7.6°C Feb. 2, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 301 microsiemens Oct. 13; minimum recorded, 71 microsiemens Feb. 4.

pH: Maximum, 8.7 units Aug. 11; minimum recorded, 6.5 units Dec. 12-18.

WATER TEMPERATURE: Maximum, 23.5°C Aug. 2, 5-8, 11; minimum recorded, 4.5°C Jan. 29.

DISSOLVED OXYGEN: Maximum, 15.7 mg/L Aug. 11; minimum recorded, 4.6 mg/L Aug. 22.

AIR TEMPERATURE: Maximum, 38.2°C Aug. 12; minimum recorded, -1.5°C Dec. 19, but may have been lower during period of missing record.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	271	262	266	190	157	178	100	95	97	---	---	---
2	272	263	268	187	176	183	104	97	101	---	---	---
3	272	268	269	188	170	180	103	99	101	---	---	---
4	273	269	271	201	175	187	102	94	99	---	---	---
5	285	273	278	201	182	191	94	90	92	---	---	---
6	285	257	276	195	186	192	96	93	94	---	---	---
7	275	257	267	215	195	203	96	87	91	---	---	---
8	275	263	270	224	210	217	88	83	85	---	---	---
9	270	268	269	228	213	221	86	81	85	---	---	---
10	277	264	269	227	215	221	85	81	84	---	---	---
11	290	276	281	223	209	217	85	84	85	---	---	---
12	296	288	291	223	214	220	85	80	83	---	---	---
13	301	290	296	222	205	216	82	80	81	---	---	---
14	292	244	274	205	183	189	82	81	81	---	---	---
15	244	219	229	199	184	191	83	82	82	---	---	---
16	235	207	224	202	184	197	83	82	82	---	---	---
17	245	226	236	192	171	182	82	81	82	---	---	---
18	248	230	243	177	156	170	84	82	83	---	---	---
19	230	195	207	158	86	111	---	---	---	---	---	---
20	220	188	208	116	99	107	---	---	---	---	---	---
21	199	184	194	99	81	89	---	---	---	---	---	---
22	216	192	208	100	88	97	---	---	---	88	86	87
23	209	180	188	109	96	106	---	---	---	88	86	87
24	187	157	177	108	98	104	---	---	---	87	85	86
25	177	157	169	110	101	105	---	---	---	87	83	85
26	194	177	185	109	103	107	---	---	---	86	82	84
27	185	167	179	103	98	100	---	---	---	86	82	84
28	171	154	165	103	97	99	---	---	---	88	85	86
29	159	136	145	105	102	104	---	---	---	93	86	90
30	153	141	150	107	98	102	---	---	---	92	89	91
31	166	144	160	---	---	---	---	---	---	90	84	87
MONTH	301	136	229	228	81	160	---	---	---	---	---	---

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	92	84	88	119	111	116	119	109	113	141	132	136
2	84	81	82	111	100	104	125	114	119	141	128	137
3	81	73	76	113	96	105	128	118	121	139	130	136
4	74	71	73	96	88	90	130	119	124	140	128	136
5	76	72	74	91	89	90	136	123	128	137	127	134
6	77	75	76	90	85	87	137	127	133	139	130	135
7	80	77	78	94	87	91	140	129	136	141	131	136
8	84	80	82	95	93	94	144	132	139	140	132	135
9	87	83	84	94	87	90	145	136	140	144	137	141
10	89	85	87	88	83	85	145	137	140	156	136	148
11	97	89	92	88	84	86	152	142	147	148	135	142
12	101	96	98	85	81	83	151	142	147	149	137	144
13	110	101	105	83	81	82	151	143	147	153	137	148
14	113	108	111	84	81	82	156	145	152	163	140	155
15	113	107	110	85	82	83	159	149	153	167	148	158
16	115	110	112	87	82	84	158	148	152	170	155	164
17	115	110	112	88	85	87	162	151	156	175	161	168
18	115	110	112	89	86	88	158	146	153	168	147	157
19	120	111	115	87	84	85	153	147	150	175	153	166
20	116	109	113	86	84	86	160	141	149	176	164	171
21	121	107	116	88	83	86	147	140	144	176	162	170
22	107	98	101	83	79	81	150	137	144	183	170	177
23	99	96	98	82	79	80	141	118	126	192	182	187
24	101	96	99	85	81	82	121	111	116	196	184	190
25	108	99	104	89	84	86	128	114	121	194	181	187
26	115	105	110	94	89	90	126	114	120	192	180	187
27	120	105	111	97	93	95	127	117	122	196	185	189
28	120	112	116	100	97	99	130	120	126	207	194	198
29	---	---	---	105	99	101	135	130	133	208	190	201
30	---	---	---	108	104	106	138	128	134	190	171	183
31	---	---	---	112	106	109	---	---	---	186	163	177
MONTH	121	71	98	119	79	91	162	109	136	208	127	161
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	167	140	151	200	187	194	254	243	250	204	196	200
2	145	136	140	195	184	190	264	246	256	198	185	192
3	154	141	146	200	195	198	261	247	256	195	187	191
4	142	129	137	203	194	200	279	257	269	195	184	191
5	148	129	135	205	189	197	285	269	279	190	181	187
6	152	136	145	216	201	210	277	259	269	198	181	190
7	146	128	139	210	202	207	259	255	257	196	183	189
8	148	133	142	217	201	206	264	255	259	196	186	191
9	147	136	143	228	215	221	267	263	265	198	193	195
10	149	139	145	229	216	222	274	264	269	196	192	194
11	159	140	153	235	219	229	281	264	275	199	192	195
12	172	147	160	233	202	217	284	267	277	206	194	199
13	171	161	166	214	207	212	271	237	257	207	196	201
14	176	160	169	222	210	218	237	226	233	210	191	201
15	184	167	176	229	222	225	237	224	230	209	183	198
16	191	175	183	243	227	233	248	232	239	203	188	197
17	196	183	190	248	242	245	270	248	257	202	181	189
18	199	183	192	248	240	244	266	255	259	184	166	173
19	200	183	192	241	238	240	263	257	260	171	160	166
20	196	188	192	244	238	242	264	251	259	167	155	162
21	204	194	196	247	241	245	254	234	247	157	143	149
22	213	202	208	250	242	246	249	241	246	152	138	145
23	227	203	216	250	245	248	251	248	250	152	141	148
24	207	181	195	256	247	251	250	230	242	163	152	157
25	218	191	205	260	256	258	242	216	231	165	156	162
26	221	212	217	260	256	257	232	212	222	181	158	171
27	221	202	212	260	256	258	239	216	228	191	172	183
28	215	198	207	264	260	262	241	208	228	189	172	183
29	201	192	198	264	251	261	216	192	200	193	179	187
30	194	184	190	255	241	250	210	197	205	209	192	198
31	---	---	---	252	244	248	207	184	195	---	---	---
MONTH	227	128	175	264	184	230	285	184	247	210	138	183

WILLAMETTE RIVER BASIN

269

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.1	7.0	7.0	7.0	6.7	6.7	---	---	6.8	6.8	7.1	7.1
2	7.1	7.0	7.0	6.9	6.8	6.7	---	---	6.8	6.8	7.1	7.1
3	7.1	7.0	7.0	6.9	6.8	6.7	---	---	6.8	6.8	7.1	7.0
4	7.1	7.0	7.0	7.0	6.8	6.7	---	---	6.9	6.8	7.1	7.1
5	7.0	7.0	7.0	7.0	6.8	6.7	---	---	6.9	6.9	7.1	7.1
6	7.0	7.0	7.0	7.0	6.8	6.7	---	---	6.9	6.9	7.1	7.1
7	7.0	7.0	7.0	7.0	6.8	6.7	---	---	6.9	6.9	7.1	7.1
8	7.0	7.0	7.0	7.0	6.7	6.6	---	---	6.9	6.9	7.1	7.1
9	7.1	7.0	7.0	7.0	6.6	6.6	---	---	6.9	6.9	7.1	7.0
10	7.0	7.0	7.1	7.0	6.6	6.6	---	---	6.9	6.9	7.0	7.0
11	7.1	7.0	7.1	7.0	6.6	6.6	---	---	6.9	6.9	7.0	7.0
12	7.1	7.0	7.1	7.1	6.6	6.5	---	---	7.0	6.9	7.0	6.9
13	7.1	7.0	7.1	7.0	6.6	6.5	---	---	7.0	7.0	7.0	7.0
14	7.0	7.0	7.1	7.0	6.6	6.5	---	---	7.0	7.0	7.0	7.0
15	7.0	6.9	7.1	7.0	6.6	6.5	---	---	7.0	7.0	7.0	7.0
16	7.0	6.9	7.1	7.1	6.6	6.5	---	---	7.0	7.0	7.0	7.0
17	7.0	7.0	7.1	7.1	6.6	6.5	---	---	7.0	7.0	7.0	7.0
18	7.0	7.0	7.1	7.1	6.6	6.6	---	---	7.0	7.0	7.0	6.9
19	7.0	7.0	7.1	6.8	---	---	---	---	7.0	7.0	7.0	6.9
20	7.0	7.0	7.0	6.8	---	---	---	---	7.0	7.0	6.9	6.9
21	7.0	7.0	6.8	6.8	---	---	---	---	7.1	7.0	6.9	6.9
22	7.0	7.0	6.8	6.8	---	---	6.9	6.9	7.0	7.0	6.9	6.9
23	7.0	6.9	6.8	6.8	---	---	6.9	6.9	7.0	7.0	6.9	6.9
24	7.0	6.9	6.8	6.8	---	---	6.9	6.9	7.0	7.0	7.0	6.9
25	7.0	6.9	6.8	6.7	---	---	6.9	6.9	7.0	7.0	7.0	7.0
26	7.0	7.0	6.7	6.7	---	---	6.9	6.9	7.0	7.0	7.0	6.9
27	7.0	7.0	6.7	6.7	---	---	6.9	6.9	7.0	7.0	7.0	6.9
28	7.0	7.0	6.7	6.7	---	---	6.9	6.9	7.1	7.0	6.9	6.9
29	7.0	6.9	6.7	6.7	---	---	6.9	6.9	---	---	6.9	6.9
30	6.9	6.9	6.7	6.7	---	---	6.9	6.9	---	---	6.9	6.9
31	7.0	6.9	---	---	---	---	6.9	6.8	---	---	6.9	6.9
MONTH	7.1	6.9	7.1	6.7	---	---	---	---	7.1	6.8	7.1	6.9
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	6.9	6.9	7.1	7.0	7.1	7.1	7.1	7.0	8.1	7.6	7.1	7.1
2	6.9	6.9	7.1	7.0	7.1	7.1	7.1	7.0	8.2	7.6	7.1	7.0
3	6.9	6.9	7.1	7.0	7.1	7.1	7.3	7.1	8.2	7.6	7.1	7.0
4	6.9	6.9	7.1	7.1	7.1	7.1	7.2	7.0	8.0	7.7	7.0	7.0
5	6.9	6.9	7.1	7.1	7.1	7.1	7.3	7.1	8.1	7.6	7.0	7.0
6	7.0	6.9	7.1	7.1	7.2	7.1	7.4	7.1	8.0	7.5	7.0	7.0
7	7.0	6.9	7.2	7.1	7.2	7.2	7.4	7.1	8.1	7.5	7.1	7.0
8	7.0	6.9	7.2	7.1	7.2	7.2	7.3	7.2	7.8	7.3	7.1	7.0
9	7.0	7.0	7.2	7.1	7.2	7.2	7.2	7.1	8.1	7.3	7.1	7.0
10	7.0	7.0	7.2	7.2	7.2	7.2	7.1	7.1	8.5	7.5	7.1	7.0
11	7.0	7.0	7.2	7.1	7.2	7.2	7.2	7.1	8.7	7.8	7.1	7.0
12	7.0	7.0	7.2	7.1	7.2	7.2	7.3	7.1	8.3	7.3	7.1	7.0
13	7.0	7.0	7.2	7.1	7.2	7.0	7.4	7.1	7.6	7.4	7.1	7.0
14	7.0	7.0	7.2	7.1	7.1	7.0	7.4	7.2	7.7	7.4	7.1	7.0
15	7.0	7.0	7.1	7.1	7.2	7.1	7.4	7.2	7.6	7.4	7.1	7.0
16	7.2	7.0	7.2	7.1	7.2	7.1	7.5	7.2	7.7	7.4	7.1	7.0
17	7.2	7.2	7.2	7.1	7.2	7.1	7.5	7.2	7.6	7.3	7.1	7.0
18	7.2	7.1	7.3	7.1	7.3	7.2	7.5	7.2	7.6	7.3	7.1	7.1
19	7.2	7.1	7.4	7.1	7.2	7.1	7.5	7.2	7.4	7.3	7.1	7.1
20	7.2	7.1	7.4	7.2	7.3	7.1	7.8	7.5	7.3	7.2	7.1	7.0
21	7.2	7.1	7.4	7.2	7.3	7.2	7.9	7.3	7.3	7.2	7.0	7.0
22	7.1	7.0	7.2	7.2	7.4	7.2	7.7	7.2	7.2	7.0	7.0	6.9
23	7.1	7.0	7.2	7.0	7.4	7.2	7.9	7.2	7.1	7.0	6.9	6.9
24	7.0	7.0	7.1	6.8	7.3	7.1	8.0	7.4	7.1	7.0	6.9	6.9
25	7.1	7.0	7.0	6.8	7.3	7.2	8.0	7.5	7.1	7.1	6.9	6.9
26	7.1	7.0	7.0	6.8	7.2	7.1	8.0	7.4	7.1	7.1	6.9	6.9
27	7.0	7.0	7.1	6.9	7.2	7.1	7.9	7.3	7.1	7.1	6.9	6.9
28	7.0	7.0	7.3	6.9	7.1	7.1	7.7	7.4	7.1	7.1	7.0	6.9
29	7.1	7.0	7.2	7.2	7.1	7.0	7.8	7.4	7.1	7.1	7.0	7.0
30	7.1	7.0	7.2	7.2	7.1	7.0	7.9	7.4	7.1	7.1	7.2	7.0
31	---	---	7.2	7.1	---	---	7.9	7.3	7.1	7.1	---	---
MONTH	7.2	6.9	7.4	6.8	7.4	7.0	8.0	7.0	8.7	7.0	7.2	6.9

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	16.0	16.0	10.0	9.5	9.5	9.0	8.5	8.5	---	---	---
2	16.0	15.5	16.0	10.0	9.5	9.5	8.5	8.0	8.0	---	---	---
3	16.0	15.5	16.0	10.0	9.5	9.5	8.0	7.5	8.0	---	---	---
4	16.0	16.0	16.0	10.0	9.5	9.5	7.5	7.0	7.5	---	---	---
5	16.5	16.0	16.0	10.0	9.5	9.5	7.0	7.0	7.0	---	---	---
6	16.5	16.0	16.5	9.5	9.5	9.5	7.0	7.0	7.0	---	---	---
7	16.5	16.0	16.0	9.5	9.5	9.5	7.5	7.0	7.0	---	---	---
8	16.5	16.0	16.0	10.0	9.5	10.0	7.5	7.5	7.5	---	---	---
9	16.5	16.0	16.5	10.0	9.5	10.0	7.5	7.5	7.5	---	---	---
10	17.0	16.5	16.5	10.0	9.5	9.5	8.0	7.5	8.0	---	---	---
11	17.0	17.0	17.0	10.0	9.5	10.0	8.0	7.5	8.0	---	---	---
12	17.0	16.5	17.0	10.5	10.0	10.0	8.0	7.5	8.0	---	---	---
13	16.5	16.5	16.5	11.0	10.5	10.5	8.0	8.0	8.0	---	---	---
14	16.5	15.5	16.0	11.0	10.5	11.0	8.0	7.5	7.5	---	---	---
15	15.5	15.0	15.0	10.5	10.5	10.5	7.5	7.0	7.0	---	---	---
16	15.0	14.0	14.5	10.5	10.5	10.5	7.0	7.0	7.0	---	---	---
17	14.0	13.5	14.0	10.5	10.5	10.5	7.0	6.0	6.5	---	---	---
18	14.0	13.0	13.5	10.5	9.5	10.5	6.0	5.5	6.0	---	---	---
19	13.0	12.0	12.5	9.5	6.0	7.5	5.5	5.0	5.5	---	---	---
20	12.0	11.5	12.0	6.5	5.5	6.0	5.5	5.0	5.0	---	---	---
21	11.5	11.5	11.5	5.5	5.0	5.5	5.5	5.5	5.5	---	---	---
22	11.5	11.5	11.5	6.0	5.5	5.5	6.0	5.5	5.5	7.0	7.0	7.0
23	11.5	11.5	11.5	6.5	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0
24	11.5	11.5	11.5	6.5	6.5	6.5	7.0	6.0	6.5	7.0	6.5	6.5
25	11.5	11.0	11.0	6.5	6.5	6.5	7.0	7.0	7.0	6.5	6.0	6.5
26	11.0	11.0	11.0	7.0	6.5	7.0	7.0	7.0	7.0	6.0	5.5	6.0
27	11.0	10.5	11.0	8.0	7.0	7.5	7.0	7.0	7.0	5.5	5.0	5.0
28	11.0	10.5	10.5	8.5	8.0	8.0	7.0	6.5	6.5	5.0	5.0	5.0
29	10.5	10.5	10.5	8.5	8.0	8.5	6.5	6.0	6.5	5.0	4.5	5.0
30	10.5	10.0	10.0	9.0	8.5	8.5	7.0	6.5	7.0	6.5	5.0	5.5
31	10.0	9.5	10.0	---	---	---	---	---	---	7.5	6.5	7.0
MONTH	17.0	9.5	13.9	11.0	5.0	8.8	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.0	7.5	7.5	8.0	8.0	8.0	10.0	9.5	9.5	13.0	12.5	12.5
2	8.0	8.0	8.0	8.0	7.5	7.5	10.0	9.0	9.5	13.0	12.0	12.5
3	8.0	7.5	7.5	7.5	7.0	7.5	9.5	9.5	9.5	12.5	12.0	12.5
4	7.5	7.5	7.5	7.0	7.0	7.0	10.0	9.5	9.5	13.0	12.5	12.5
5	7.5	7.0	7.0	7.5	7.0	7.0	10.5	9.5	10.0	13.0	12.0	12.5
6	7.0	6.5	6.5	7.5	7.0	7.0	11.0	10.0	10.5	13.0	12.5	13.0
7	6.5	6.0	6.0	8.0	7.5	7.5	11.0	10.5	10.5	13.5	12.5	13.0
8	6.0	5.5	6.0	8.5	7.5	8.0	11.0	10.5	10.5	14.5	13.5	14.0
9	5.5	5.5	5.5	8.5	8.5	8.5	11.0	10.5	10.5	15.0	14.5	14.5
10	5.5	5.5	5.5	8.5	8.5	8.5	10.5	10.5	10.5	16.0	15.0	15.5
11	5.5	5.5	5.5	8.5	8.5	8.5	11.0	10.5	10.5	16.5	16.0	16.0
12	6.0	5.5	5.5	8.5	8.5	8.5	11.0	10.5	11.0	17.0	16.5	17.0
13	6.0	5.5	6.0	8.5	8.0	8.5	11.0	10.5	11.0	17.5	17.0	17.5
14	6.5	6.0	6.5	8.5	8.0	8.5	10.5	10.5	10.5	18.5	17.5	18.0
15	7.5	6.5	7.0	8.5	8.0	8.5	11.5	10.5	11.0	19.0	18.0	18.5
16	8.0	7.5	7.5	9.0	8.5	8.5	12.0	11.5	11.5	19.0	18.5	18.5
17	8.5	8.0	8.0	9.0	9.0	9.0	12.5	11.5	12.0	19.5	19.0	19.0
18	8.5	8.5	8.5	9.5	9.0	9.0	12.5	12.5	12.5	20.0	19.0	19.0
19	8.5	8.5	8.5	10.0	9.5	9.5	13.0	12.5	12.5	20.0	18.5	19.0
20	8.5	8.5	8.5	10.5	10.0	10.0	13.5	13.0	13.0	19.5	18.5	19.0
21	8.5	8.0	8.0	10.5	10.0	10.5	13.0	12.5	12.5	19.0	18.5	18.5
22	8.0	7.5	8.0	11.0	10.5	10.5	12.5	12.0	12.5	18.5	18.0	18.5
23	7.5	7.5	7.5	11.0	11.0	11.0	12.5	12.0	12.5	18.5	18.0	18.0
24	8.0	7.0	7.5	11.0	11.0	11.0	12.5	11.5	12.0	18.0	17.5	17.5
25	7.5	7.5	7.5	11.5	11.0	11.5	12.5	11.0	11.5	17.5	16.5	17.0
26	8.0	7.5	7.5	12.0	11.5	11.5	12.5	12.0	12.5	17.0	16.0	16.5
27	8.0	7.5	8.0	11.5	11.5	11.5	13.0	12.5	12.5	17.5	16.5	17.0
28	8.0	7.5	8.0	11.5	11.0	11.0	12.5	12.5	12.5	17.5	17.0	17.5
29	---	---	---	11.0	10.0	10.5	13.5	12.5	13.0	18.0	17.0	17.5
30	---	---	---	10.0	9.5	10.0	13.5	13.0	13.0	18.0	17.5	17.5
31	---	---	---	10.0	9.5	9.5	---	---	---	18.0	17.5	17.5
MONTH	8.5	5.5	7.2	12.0	7.0	9.1	13.5	9.0	11.4	20.0	12.0	16.4

WILLAMETTE RIVER BASIN

271

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	18.0	17.5	18.0	18.5	18.0	18.5	23.0	22.0	22.5	19.0	18.5	19.0
2	17.5	16.5	17.0	18.5	18.0	18.0	23.5	22.0	22.5	19.0	18.5	19.0
3	17.5	17.0	17.0	20.0	18.0	19.0	23.0	22.0	22.5	19.5	18.5	19.0
4	17.5	17.0	17.0	20.5	19.0	19.5	23.0	22.5	23.0	19.5	19.0	19.0
5	17.0	16.5	16.5	21.0	20.0	20.5	23.5	22.5	23.0	19.0	19.0	19.0
6	17.0	16.0	16.5	21.0	20.5	20.5	23.5	23.0	23.0	19.0	18.5	19.0
7	17.0	16.5	16.5	21.0	20.5	21.0	23.5	23.0	23.0	19.0	18.5	18.5
8	16.5	16.0	16.5	21.0	20.5	21.0	23.5	22.5	23.0	19.0	18.5	18.5
9	17.5	16.5	17.0	21.0	20.5	21.0	23.0	22.5	22.5	19.0	18.5	18.5
10	17.5	17.0	17.5	20.5	20.0	20.5	23.0	22.0	22.5	19.0	18.5	19.0
11	18.0	17.5	17.5	20.5	20.0	20.5	23.5	22.5	22.5	19.0	19.0	19.0
12	18.0	17.5	17.5	20.5	20.0	20.0	23.0	22.5	22.5	19.0	18.5	19.0
13	18.0	17.5	17.5	20.5	20.0	20.5	23.0	22.5	22.5	18.5	18.0	18.5
14	18.0	17.5	17.5	21.0	20.0	20.5	23.0	22.5	23.0	18.0	17.5	18.0
15	19.0	17.5	18.5	21.0	20.5	20.5	23.0	22.5	22.5	18.0	17.5	17.5
16	19.5	18.5	19.0	21.0	20.5	20.5	23.0	22.0	22.5	17.5	17.0	17.5
17	19.5	19.0	19.5	21.0	20.5	20.5	22.5	22.0	22.5	17.0	17.0	17.0
18	19.5	19.0	19.5	21.5	20.5	21.0	22.5	22.0	22.5	17.0	16.5	16.5
19	19.5	19.0	19.0	21.5	20.5	21.0	22.5	21.5	22.0	16.5	16.0	16.5
20	19.5	18.5	19.0	22.0	21.0	21.5	22.0	21.5	21.5	16.5	16.0	16.5
21	19.5	19.0	19.5	22.0	21.5	22.0	22.0	21.0	21.5	16.5	16.5	16.5
22	19.5	19.0	19.5	22.5	21.5	21.5	21.5	21.0	21.0	17.0	16.0	16.5
23	19.0	18.5	19.0	22.0	21.0	21.5	22.0	21.5	21.5	17.0	16.5	16.5
24	19.0	18.0	18.5	22.0	21.5	22.0	21.5	21.0	21.5	17.0	16.5	17.0
25	19.5	18.5	19.0	22.5	21.5	22.0	21.0	20.5	21.0	17.5	17.0	17.0
26	19.0	18.5	18.5	22.5	21.5	22.0	20.5	20.5	20.5	17.5	17.0	17.5
27	18.5	18.0	18.5	22.5	21.5	22.0	20.5	19.5	20.0	17.5	17.0	17.5
28	18.0	18.0	18.0	22.5	22.0	22.0	19.5	19.5	19.5	17.5	17.0	17.0
29	18.5	18.0	18.5	23.0	22.0	22.5	19.5	19.0	19.0	17.5	17.0	17.5
30	18.5	18.0	18.0	23.0	22.0	22.5	19.5	18.5	19.0	17.5	17.5	17.5
31	---	---	---	22.5	22.0	22.0	19.0	18.5	19.0	---	---	---
MONTH	19.5	16.0	18.0	23.0	18.0	20.9	23.5	18.5	21.8	19.5	16.0	17.8

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.5	7.2	7.6	9.2	8.8	9.0	9.3	9.1	9.2	---	---	---
2	8.2	7.6	7.8	8.8	8.6	8.7	9.4	9.3	9.3	---	---	---
3	8.5	7.4	7.9	8.8	8.6	8.7	9.7	9.3	9.5	---	---	---
4	8.3	7.4	7.7	8.9	8.6	8.8	9.9	9.7	9.7	---	---	---
5	7.9	7.4	7.6	8.9	8.7	8.8	10.0	9.7	9.9	---	---	---
6	7.6	6.1	6.9	9.0	8.7	8.9	9.9	9.5	9.7	---	---	---
7	7.1	6.2	6.7	9.1	8.9	9.0	10.2	9.7	9.9	---	---	---
8	7.2	6.7	6.9	9.0	8.7	8.9	9.9	9.7	9.8	---	---	---
9	7.3	6.6	6.9	8.8	8.6	8.7	9.9	9.6	9.7	---	---	---
10	7.3	6.5	6.8	8.8	8.4	8.6	9.9	9.4	9.7	---	---	---
11	7.3	6.7	6.9	8.6	8.3	8.4	9.9	9.7	9.9	---	---	---
12	7.3	6.9	7.0	8.5	8.3	8.4	9.9	9.4	9.6	---	---	---
13	7.0	6.6	6.8	8.4	8.2	8.3	9.9	9.5	9.6	---	---	---
14	6.6	6.0	6.2	8.3	7.7	8.0	10.0	9.7	9.8	---	---	---
15	6.4	6.0	6.2	7.8	7.6	7.7	10.2	9.7	10.0	---	---	---
16	6.8	6.4	6.5	7.8	7.6	7.7	10.3	10.1	10.2	---	---	---
17	6.6	6.5	6.5	7.9	7.7	7.8	---	---	---	---	---	---
18	7.1	6.5	6.8	8.5	7.8	8.0	---	---	---	---	---	---
19	7.7	7.1	7.5	10.3	8.5	9.7	---	---	---	---	---	---
20	7.5	7.3	7.3	10.1	9.8	9.9	---	---	---	---	---	---
21	8.0	7.5	7.8	10.3	9.7	10.0	---	---	---	---	---	---
22	8.1	7.8	8.0	10.0	9.6	9.8	---	---	---	10.0	9.9	9.9
23	8.0	7.7	7.8	9.9	9.7	9.8	---	---	---	10.1	9.9	9.9
24	8.2	7.8	8.0	9.9	9.6	9.8	---	---	---	10.2	10.0	10.1
25	8.5	8.2	8.3	9.9	9.6	9.8	---	---	---	10.3	10.1	10.2
26	8.6	8.3	8.4	9.8	9.6	9.6	---	---	---	10.5	10.3	10.4
27	8.6	8.4	8.4	9.7	9.3	9.5	---	---	---	10.7	10.5	10.6
28	9.0	8.5	8.7	9.3	9.1	9.2	---	---	---	10.9	10.7	10.8
29	9.0	8.8	8.9	9.1	8.9	9.0	---	---	---	10.9	10.8	10.9
30	9.0	8.8	8.9	9.1	8.9	9.0	---	---	---	10.9	10.6	10.8
31	9.2	9.0	9.1	---	---	---	---	---	---	10.6	10.2	10.4
MONTH	9.2	6.0	7.5	10.3	7.6	8.9	---	---	---	---	---	---

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.2	9.6	9.8	10.1	9.9	9.9	9.7	9.4	9.5	9.1	8.7	8.9
2	9.7	9.5	9.6	10.2	10.0	10.1	9.5	9.3	9.4	9.2	8.8	9.0
3	9.8	9.7	9.7	10.3	10.0	10.1	9.6	9.1	9.5	9.3	9.0	9.1
4	9.9	9.7	9.8	10.5	10.3	10.4	9.5	9.1	9.4	9.4	9.0	9.2
5	10.2	9.9	10.1	10.6	10.4	10.5	9.3	9.0	9.1	9.6	9.2	9.4
6	10.4	10.2	10.3	10.7	10.6	10.6	9.1	8.9	9.0	9.5	9.2	9.4
7	10.5	10.3	10.4	10.6	10.3	10.4	8.9	8.8	8.9	9.7	9.3	9.5
8	10.7	10.5	10.6	10.4	10.3	10.3	8.9	8.7	8.8	9.5	9.2	9.3
9	10.8	10.7	10.7	10.3	10.2	10.2	9.0	8.7	8.9	9.4	9.2	9.3
10	10.8	10.7	10.8	10.3	10.1	10.2	9.1	8.8	9.0	9.5	9.1	9.3
11	10.7	10.6	10.7	10.2	10.0	10.2	9.1	8.8	9.0	9.4	9.1	9.2
12	10.6	10.3	10.4	10.2	10.0	10.1	9.4	8.9	9.2	9.2	8.7	8.9
13	10.4	10.3	10.3	10.3	10.1	10.2	9.4	9.1	9.2	8.8	8.4	8.6
14	10.3	10.2	10.3	10.4	10.2	10.3	9.3	9.1	9.2	8.9	8.3	8.5
15	10.3	10.1	10.2	10.3	10.0	10.1	9.2	8.9	9.1	8.6	7.9	8.3
16	10.1	9.9	10.0	10.1	9.9	10.0	9.3	9.1	9.2	9.1	7.8	8.4
17	9.9	9.7	9.8	9.9	9.8	9.9	9.3	9.0	9.1	9.3	8.1	8.5
18	9.9	9.7	9.8	9.8	9.5	9.7	9.2	8.3	8.7	10.2	8.4	9.1
19	9.8	9.7	9.8	10.0	9.6	9.8	8.8	8.6	8.7	10.6	8.6	9.4
20	9.9	9.7	9.8	9.7	9.5	9.6	8.8	7.9	8.4	10.5	8.8	9.5
21	10.2	9.8	10.0	9.7	9.5	9.6	8.9	8.1	8.5	10.1	8.5	9.1
22	10.5	10.2	10.3	9.7	9.6	9.7	8.7	8.2	8.5	9.3	8.0	8.6
23	10.7	10.5	10.6	9.8	9.6	9.7	8.8	8.4	8.6	9.0	7.8	8.3
24	10.7	10.5	10.6	10.1	9.8	9.9	9.3	8.8	9.1	8.4	7.2	7.7
25	10.7	10.4	10.5	10.0	9.8	9.9	9.2	8.6	9.0	7.8	7.1	7.5
26	10.5	10.3	10.4	9.8	9.6	9.7	9.1	8.6	9.0	8.8	7.3	7.9
27	10.3	10.0	10.2	9.6	9.4	9.5	8.9	8.6	8.7	9.1	8.0	8.5
28	10.0	9.9	10.0	9.4	9.2	9.3	9.0	8.7	8.9	8.7	8.1	8.4
29	---	---	---	9.6	9.3	9.4	9.0	8.7	8.9	8.1	7.2	7.6
30	---	---	---	9.8	9.5	9.6	9.0	8.6	8.8	7.5	7.2	7.4
31	---	---	---	9.7	9.5	9.6	---	---	---	7.5	6.8	7.2
MONTH	10.8	9.5	10.2	10.7	9.2	10.0	9.7	7.9	9.0	10.6	6.8	8.7

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	6.8	6.4	6.6	8.5	7.8	8.0	13.0	10.8	11.5	6.2	5.9	6.0
2	7.3	6.7	7.1	8.8	7.5	8.1	13.8	11.3	12.4	6.4	5.9	6.1
3	7.5	6.9	7.2	11.4	8.4	9.5	14.1	11.8	12.8	6.5	6.0	6.3
4	7.3	6.9	7.1	11.3	9.0	9.9	13.6	12.4	13.0	6.3	5.9	6.0
5	7.6	7.3	7.5	11.5	10.2	10.8	14.1	11.8	13.2	6.3	5.9	6.1
6	7.5	7.1	7.3	11.5	9.5	10.2	13.7	11.1	12.5	6.7	6.1	6.3
7	7.7	7.2	7.4	11.3	9.5	10.3	13.5	10.8	11.8	7.1	6.4	6.7
8	7.7	7.5	7.6	11.2	9.6	10.0	12.1	9.8	10.8	7.4	6.6	7.0
9	7.9	7.7	7.7	10.0	8.5	9.1	12.8	9.9	11.3	7.4	6.8	7.1
10	7.9	7.8	7.9	8.8	7.7	8.2	14.6	10.5	12.0	7.2	6.7	6.9
11	8.1	7.8	8.0	9.2	8.0	8.6	15.7	11.6	13.1	6.8	6.5	6.7
12	8.1	7.8	7.9	9.0	7.7	8.2	13.7	8.1	11.8	6.8	6.4	6.6
13	8.1	7.6	7.9	10.6	8.2	9.1	10.9	9.5	10.1	6.7	6.1	6.4
14	8.5	7.6	7.9	10.7	9.1	9.6	11.1	9.6	10.4	6.4	6.1	6.3
15	8.8	7.8	8.2	10.7	9.3	9.8	10.5	9.5	9.9	6.5	6.0	6.3
16	9.4	7.9	8.6	11.1	9.1	10.1	10.2	8.6	9.3	6.9	6.5	6.7
17	9.3	8.3	8.9	11.8	9.3	10.3	9.7	7.8	8.5	7.0	6.5	6.8
18	9.9	8.6	9.1	11.6	9.9	10.8	9.8	7.6	9.2	7.4	6.9	7.1
19	9.5	8.4	8.9	11.8	9.9	10.7	8.1	7.3	7.7	7.5	7.1	7.3
20	10.0	8.3	9.1	13.1	11.7	12.2	7.6	6.6	7.1	7.6	7.3	7.5
21	9.8	8.7	9.3	13.6	11.0	12.5	7.4	6.4	6.8	7.4	7.1	7.3
22	9.9	9.1	9.4	13.2	10.6	11.5	6.4	4.6	5.7	7.1	7.0	7.1
23	9.4	8.2	8.8	13.5	10.4	11.5	6.0	4.8	5.2	7.1	6.8	7.0
24	8.7	7.7	8.1	13.8	11.4	12.6	5.9	5.4	5.6	7.0	6.8	6.9
25	8.3	7.4	7.8	13.6	11.4	12.3	6.1	5.6	5.8	7.0	6.8	6.9
26	8.7	7.4	8.0	13.5	10.9	12.2	6.1	5.2	5.6	7.0	6.7	6.8
27	8.1	7.4	7.7	13.3	10.2	11.5	6.1	5.6	5.9	6.9	6.5	6.7
28	7.9	7.3	7.5	12.5	11.2	11.8	5.6	4.9	5.2	7.1	6.5	6.7
29	8.6	7.4	7.8	12.5	10.8	11.3	5.6	5.2	5.4	7.2	6.7	6.9
30	8.3	7.5	7.9	11.3	9.3	10.2	5.8	5.1	5.4	7.4	6.8	7.1
31	---	---	---	12.2	9.1	10.4	6.3	5.6	5.9	---	---	---
MONTH	10.0	6.4	8.0	13.8	7.5	10.4	15.7	4.6	9.1	7.6	5.9	6.7

WILLAMETTE RIVER BASIN

273

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.5	10.1	14.3	16.2	.5	6.5	8.7	4.1	5.8	---	---	---
2	22.8	8.5	14.3	14.9	1.2	6.2	6.7	3.7	4.8	---	---	---
3	26.2	12.8	17.4	11.3	5.3	8.6	5.8	.2	2.8	---	---	---
4	21.8	15.5	17.3	11.8	2.9	7.2	10.8	1.0	5.1	---	---	---
5	17.3	9.3	12.9	10.2	2.9	7.0	7.5	4.3	5.5	---	---	---
6	24.0	8.0	13.7	10.8	4.8	8.2	6.4	3.4	5.1	---	---	---
7	27.5	10.3	16.0	10.4	4.3	7.3	9.4	4.6	7.1	---	---	---
8	26.8	12.3	17.2	19.0	4.9	10.1	8.0	5.9	6.9	---	---	---
9	30.0	11.5	17.7	12.7	3.7	6.3	9.3	4.4	6.7	---	---	---
10	18.8	13.9	16.0	8.6	4.0	6.1	8.5	4.8	6.8	---	---	---
11	17.7	12.9	14.9	17.3	5.6	10.2	7.0	4.7	5.7	---	---	---
12	15.8	9.1	12.6	15.4	9.5	11.9	8.4	5.6	6.8	---	---	---
13	15.0	9.9	12.2	13.0	8.2	10.1	9.3	2.4	6.3	---	---	---
14	12.7	9.0	10.8	11.1	7.3	8.6	4.7	.6	2.3	---	---	---
15	15.2	5.3	9.5	10.2	6.4	7.9	3.8	.5	2.3	---	---	---
16	12.0	3.6	7.1	8.9	6.7	7.4	6.8	1.8	4.3	---	---	---
17	11.1	2.3	6.9	9.1	6.2	7.2	8.8	1.8	4.2	---	---	---
18	10.4	5.5	8.2	6.4	.5	4.2	7.5	-1.5	2.3	---	---	---
19	11.1	3.8	6.0	3.4	1.0	2.1	---	---	---	---	---	---
20	11.5	2.6	5.9	10.8	1.1	4.4	---	---	---	---	---	---
21	11.2	1.6	6.5	4.5	1.7	3.5	---	---	---	---	---	---
22	12.7	6.8	10.7	5.0	-1.4	2.4	---	---	---	7.8	3.3	4.8
23	11.7	5.6	8.6	4.5	-1.4	2.1	---	---	---	6.2	3.0	4.1
24	13.5	7.5	10.0	7.8	4.1	5.9	---	---	---	9.5	1.5	4.3
25	10.4	3.7	7.7	9.5	4.1	6.8	---	---	---	4.8	1.2	2.9
26	10.8	2.4	5.8	7.6	3.4	5.3	---	---	---	7.8	-1.6	1.6
27	13.9	2.6	6.4	13.4	5.4	9.4	---	---	---	5.2	.6	1.8
28	9.8	4.1	7.4	10.1	3.9	7.2	---	---	---	6.5	1.4	3.2
29	12.3	6.0	8.0	9.0	3.3	6.5	---	---	---	8.4	.9	4.4
30	17.2	4.8	8.8	12.1	6.8	9.3	---	---	---	11.2	5.7	9.3
31	17.3	2.8	7.8	---	---	---	---	---	---	10.7	7.1	8.6
MONTH	30.0	1.6	10.9	19.0	-1.4	6.9	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	9.6	5.3	7.7	7.6	4.5	6.1	13.3	2.4	6.9	15.6	5.1	8.9
2	12.0	3.2	5.7	5.6	2.8	4.4	17.0	.0	6.9	21.5	4.0	11.0
3	11.3	2.1	6.5	6.6	2.5	3.9	13.6	3.2	7.8	16.2	9.4	11.8
4	12.3	3.9	7.4	7.5	2.8	4.8	15.7	-.6	6.5	19.7	9.6	14.0
5	12.3	-1.0	4.6	6.9	2.2	4.9	18.3	.0	8.6	20.9	11.0	15.3
6	9.9	-1.4	3.4	10.5	6.8	8.4	18.3	.8	9.9	18.9	8.5	13.3
7	3.8	1.5	2.5	10.1	4.8	8.0	13.3	7.8	9.5	24.3	4.8	13.8
8	8.6	-.2	2.7	13.2	.4	6.5	15.2	3.9	9.0	29.3	8.9	17.0
9	6.9	.0	3.6	10.5	7.4	8.8	10.5	1.6	5.9	27.6	8.5	16.4
10	11.0	-.8	3.6	7.4	5.1	6.0	12.9	4.7	7.8	29.0	10.2	17.7
11	6.6	-.8	3.3	9.0	2.8	5.8	16.2	2.9	9.2	33.5	13.3	22.1
12	11.5	4.4	6.5	7.3	2.8	4.5	17.5	2.2	9.5	29.7	13.5	20.2
13	9.4	4.2	6.8	10.1	2.2	4.8	10.9	8.4	9.4	32.1	10.2	18.8
14	14.3	8.6	10.5	13.0	2.3	6.6	12.7	9.3	10.5	30.6	13.3	19.8
15	14.7	2.9	7.9	12.7	4.8	9.0	23.0	9.0	14.2	27.5	15.1	19.3
16	15.3	4.2	8.5	11.3	8.0	9.3	20.9	9.0	14.2	29.5	11.6	19.3
17	14.2	7.0	9.1	13.6	6.6	9.7	20.4	4.6	11.2	28.2	11.1	18.2
18	10.9	6.5	8.1	12.1	7.8	10.2	12.9	7.8	10.5	29.5	9.0	18.4
19	8.5	4.7	6.8	13.7	10.8	11.8	14.5	10.8	12.8	29.8	9.4	17.6
20	11.6	2.6	6.2	16.3	3.8	10.1	17.6	8.1	12.1	22.5	8.0	13.8
21	13.0	1.3	5.7	18.1	1.4	8.5	17.2	4.4	10.1	24.3	8.0	14.4
22	15.1	.0	5.8	18.0	3.5	9.8	16.3	9.6	12.2	22.7	8.1	14.2
23	16.0	.4	6.8	16.9	7.6	11.5	14.7	7.1	10.4	16.3	9.9	12.6
24	17.5	2.3	8.0	20.8	3.4	10.6	14.5	6.7	9.9	20.5	9.1	12.1
25	11.6	2.4	6.7	22.4	4.4	12.3	24.6	5.1	12.9	17.3	9.9	12.9
26	8.9	4.4	6.9	15.2	5.0	10.3	24.4	8.6	14.8	25.1	8.3	15.8
27	7.8	.5	4.2	12.5	2.2	7.4	15.0	6.6	10.6	23.5	15.1	18.3
28	9.1	-.3	4.6	12.7	3.7	7.5	12.4	8.4	10.3	20.1	15.8	17.7
29	---	---	---	16.8	1.0	8.5	15.8	8.6	11.4	26.4	16.1	19.6
30	---	---	---	14.4	4.5	7.8	15.4	7.5	10.3	23.9	17.3	19.9
31	---	---	---	13.0	3.7	6.3	---	---	---	18.3	13.5	16.6
MONTH	17.5	-1.4	6.1	22.4	.4	7.9	24.6	-.6	10.2	33.5	4.0	16.2

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	18.9	12.1	15.1	21.4	12.4	16.1	32.6	11.7	20.1	27.4	14.9	20.3
2	28.4	9.9	17.0	26.0	9.2	16.8	31.1	12.2	20.1	29.8	14.4	20.2
3	19.8	13.2	15.5	31.9	11.2	20.1	33.7	14.2	22.0	28.8	15.0	19.8
4	19.6	12.3	14.6	35.4	14.4	23.1	34.1	14.6	22.2	29.6	14.0	19.4
5	24.0	10.6	15.2	27.8	16.3	20.5	33.5	15.1	22.3	23.7	13.3	17.7
6	26.1	8.5	15.9	25.3	15.8	19.9	34.4	17.9	24.0	26.4	10.0	16.4
7	21.4	11.9	16.0	27.7	12.5	19.4	29.7	13.1	20.4	31.2	9.4	17.4
8	23.8	8.4	15.3	21.9	15.8	18.3	29.4	11.5	18.8	34.5	12.6	21.5
9	30.7	8.8	17.7	21.2	14.2	17.5	35.2	13.8	22.1	31.4	14.7	21.6
10	28.9	11.6	18.7	20.4	12.8	15.6	34.2	14.8	22.9	24.0	16.3	19.6
11	18.5	12.7	15.4	24.2	13.8	17.2	34.5	14.0	22.0	18.6	13.5	16.6
12	24.1	12.0	15.6	25.6	10.8	17.2	38.2	14.1	23.1	22.0	12.5	16.1
13	24.2	10.5	16.2	27.0	12.1	19.0	31.2	15.7	22.7	18.7	11.1	14.7
14	26.6	10.9	17.2	30.4	14.5	20.4	37.2	15.9	23.5	22.9	14.1	17.1
15	27.6	13.1	19.1	26.4	14.4	19.2	27.1	15.1	19.3	15.1	12.8	14.0
16	27.3	13.6	19.8	28.2	11.5	18.5	35.0	13.7	22.2	17.3	13.1	14.9
17	21.8	15.9	18.3	23.5	13.7	18.3	29.4	16.8	21.2	17.8	12.2	14.4
18	23.9	14.1	17.3	25.8	11.9	18.3	22.8	16.2	19.6	19.7	10.3	14.2
19	22.3	8.9	15.1	34.0	11.8	20.5	34.4	12.0	20.4	25.0	8.6	15.5
20	27.9	7.8	16.4	34.4	15.0	22.5	19.0	16.8	17.3	29.0	11.1	17.6
21	18.9	12.2	14.6	22.2	13.3	17.6	32.3	15.3	20.6	31.6	9.1	17.2
22	16.8	11.1	13.7	27.4	13.5	19.0	31.0	13.9	20.8	32.2	10.9	17.9
23	19.7	12.3	15.3	29.9	11.7	19.3	29.4	14.4	20.3	31.8	11.4	19.0
24	26.1	8.9	16.1	29.9	10.8	18.8	24.6	15.0	18.6	33.0	13.9	20.1
25	24.8	10.7	16.8	28.8	10.6	18.0	27.6	15.8	20.1	28.9	12.8	18.1
26	22.7	12.1	16.4	28.8	9.8	18.3	21.0	14.3	17.7	17.9	12.1	14.5
27	23.6	10.3	16.2	32.6	12.5	20.8	26.4	12.8	17.9	22.8	11.2	15.2
28	21.3	11.2	15.4	31.8	14.0	20.9	22.7	15.7	18.3	27.0	9.2	15.6
29	24.7	11.3	17.0	28.7	12.9	19.3	27.1	14.3	19.3	24.8	13.5	17.3
30	20.3	12.6	15.5	28.7	13.3	19.2	29.6	13.0	18.9	18.2	14.5	16.4
31	---	---	---	29.5	12.1	19.4	30.4	12.1	19.1	---	---	---
MONTH	30.7	7.8	16.3	35.4	9.2	19.0	38.2	11.5	20.6	34.5	8.6	17.3

14207500 TUALATIN RIVER AT WEST LINN, OR

LOCATION.--Lat 45°21'03", long 122°40'30", in SW 1/4 sec.34, T.2 S., R.1 E., Clackamas County, Hydrologic Unit 17090010, on left bank 300 ft upstream from bridge on State Highway 212, 0.4 mi west of West Linn city limits, and at mile 1.8.

DRAINAGE AREA.--706 mi².

PERIOD OF RECORD.--July 1928 to current year. Prior to October 1960, published as "near Willamette."

REVISED RECORDS.--WSP 1014: 1943. WSP 1184: 1947. WSP 1248: 1941. WSP 1935: Drainage area. WDR OR-75-1: 1974(M). WDR OR-77-1: 1971-73, 1975, 1976(M).

GAGE.--Water-stage recorder. Datum of gage is 85.61 ft above sea level (levels by Corps of Engineers). Prior to June 12, 1941, nonrecording gage at datum 1.02 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge records good. Water level data for Dec. 2-4 provided by National Weather Service. October 1951 to September 1970, records published for this station included the daily flow in Oswego Canal, which diverts at point 5.0 mi upstream from station for development of power between outlet of Lake Oswego and Willamette River. Adjustment for diversion to Lake Oswego are published for the 1971-95 water years. Some regulation in low-water season by flashboards on crest of diversion dam for Oswego Canal and regulation by Henry Hagg Lake since January 1975. Several diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--22 years (water years 1976-97), 1,404 ft³/s, 1,017,000 acre-ft/yr, river only, not adjusted for diversion to Oswego Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s Feb. 10, 1996, gage height, 18.32 ft, does not include an estimated 3,600 ft³/s flowing in Oswego Canal; minimum daily discharge, 0.20 ft³/s July 30 to Aug. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,600 ft³/s Jan. 2, gage height, 16.31 ft; minimum discharge, 124 ft³/s Aug. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	209	593	4000	19400	5710	2170	2050	1290	1110	393	167	391
2	209	511	4150	20400	5610	3390	1850	1230	1130	355	170	372
3	202	470	4430	19900	5760	3940	1630	1210	1170	317	180	341
4	218	471	4810	18000	5930	3880	1460	1210	1230	279	218	327
5	274	437	5600	15400	5910	3820	1350	1180	1360	274	235	311
6	288	427	5990	12700	5660	3910	1260	1140	1300	286	226	299
7	277	426	6440	10600	5300	3970	1180	1050	1110	291	209	290
8	249	440	7420	9230	4860	3930	1160	963	921	302	175	286
9	226	465	7760	8170	4410	4190	1130	901	789	342	153	291
10	215	436	8600	7370	3950	4680	1090	853	699	320	134	279
11	209	406	9260	6690	3490	5050	1010	804	620	380	161	290
12	218	408	9230	6070	3120	5270	954	762	588	316	263	307
13	310	556	9060	5480	2720	5430	910	721	566	274	258	321
14	359	698	8530	4940	2440	5440	940	682	568	255	184	375
15	436	775	7980	4380	2240	5590	1000	644	532	241	166	389
16	474	823	7430	3820	2100	5610	1050	603	476	227	186	445
17	476	884	6890	3880	2010	5570	1020	567	438	227	193	580
18	596	985	6340	5040	1930	5420	959	540	408	235	197	855
19	665	3650	5790	4860	2070	5740	984	509	389	231	217	956
20	744	5130	5330	5020	2240	5990	1300	478	364	221	249	797
21	663	4780	5020	5100	2400	5820	1430	441	341	222	251	612
22	590	4730	4810	5060	2450	5730	1560	405	361	228	264	482
23	551	4360	4810	4990	2420	5550	1760	423	480	224	274	405
24	776	4810	5180	4890	2320	5250	1760	491	556	233	306	349
25	896	4670	5440	4760	2140	4850	1670	507	541	203	334	308
26	1010	4360	6190	4590	1980	4390	1500	498	448	181	349	354
27	980	4200	6880	4380	1900	3940	1460	483	379	191	385	387
28	899	4250	7150	4340	1800	3510	1380	492	327	200	462	401
29	956	4080	9260	4110	---	3090	1310	646	305	206	465	420
30	848	3990	12000	4240	---	2700	1330	837	333	200	428	389
31	723	---	16300	5400	---	2340	---	1060	---	182	416	---
TOTAL	15746	63221	218080	243210	94870	140160	39447	23620	19839	8036	7875	12609
MEAN	508	2107	7035	7845	3388	4521	1315	762	661	259	254	420
MAX	1010	5130	16300	20400	5930	5990	2050	1290	1360	393	465	956
MIN	202	406	4000	3820	1800	2170	910	405	305	181	134	279
AC-PT	31230	125400	432600	482400	188200	278000	78240	46850	39350	15940	15620	25010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1997, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	254	1073	3079	3300	3423	2575	1627	735	360	173	147	201										
MAX	530	3062	7035	7845	9490	5130	3758	2437	762	283	254	420										
(WY)	1982	1984	1997	1997	1996	1983	1991	1996	1984	1983	1997	1997										
MIN	71.7	130	158	163	180	1043	354	229	147	59.9	79.9	79.1										
(WY)	1988	1988	1977	1977	1977	1992	1977	1977	1992	1977	1986	1987										

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1976 - 1997

ANNUAL TOTAL	1001652	886713	1404
ANNUAL MEAN	2737	2429	2698
HIGHEST ANNUAL MEAN			1996
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	25900	20400	25900
LOWEST DAILY MEAN	178	134	18
ANNUAL SEVEN-DAY MINIMUM	195	185	24
ANNUAL RUNOFF (AC-PT)	1987000	1759000	1017000
10 PERCENT EXCEEDS	6940	5770	4080
50 PERCENT EXCEEDS	1070	940	535
90 PERCENT EXCEEDS	232	228	118

WILLAMETTE RIVER BASIN

14207740 WILLAMETTE RIVER ABOVE FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°20'55", long 122°37'08", in SW 1/4 SW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.2 mi above Willamette Falls, 1.6 mi (revised) downstream from Tualatin River, and at mile 26.8.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--October 1976 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Gage heights for the periods Mar. 30 to Apr. 2, Apr. 10 to Aug. 6 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated by many reservoirs upstream. Gage height elevations possibly affected by Portland General Electric powerplant operations throughout the year and by Army Corps of Engineers locks operation during summer months.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 69.47 ft Feb. 9, 1996; minimum, 52.51 ft July 12, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 66.43 ft Jan. 2; minimum, 53.45 ft July 9, 10, 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55.78	56.70	61.13	65.83	61.50	55.60	56.18	56.76	54.69	53.66	54.67	55.08
2	55.78	56.47	61.13	66.30	62.20	56.84	55.96	56.82	55.06	53.70	54.62	55.06
3	55.80	56.31	61.28	66.22	62.35	58.26	55.63	56.74	55.01	53.72	54.62	55.04
4	55.81	56.26	61.48	65.36	61.91	58.57	55.43	56.55	54.90	53.74	54.70	55.11
5	55.81	56.31	62.13	64.28	61.12	58.13	55.29	56.36	54.85	53.65	54.71	55.27
6	55.84	56.30	62.53	63.33	60.18	57.71	55.11	56.16	54.89	53.55	54.72	55.25
7	55.85	56.32	62.83	62.53	59.04	57.83	54.89	55.91	54.86	53.51	54.72	55.26
8	55.83	56.43	63.50	61.90	58.30	58.16	54.83	55.67	54.65	53.48	54.68	55.30
9	55.81	56.43	63.81	61.38	57.78	58.09	54.89	55.52	54.38	53.47	54.63	55.31
10	55.79	56.38	63.77	60.95	57.37	58.62	54.87	55.30	54.21	53.48	54.60	55.29
11	55.77	56.31	63.49	60.72	57.11	59.82	54.77	55.11	54.10	53.60	54.61	55.35
12	55.76	56.26	63.03	60.49	56.79	60.41	54.65	55.03	54.06	53.63	54.67	55.39
13	55.81	56.28	62.70	60.28	56.46	60.48	54.56	54.99	54.08	53.57	54.82	55.42
14	55.90	56.41	62.54	60.08	56.16	60.20	54.59	55.10	54.09	53.51	54.87	55.48
15	56.01	56.73	62.33	59.62	55.98	59.63	55.02	55.15	54.03	53.46	54.85	55.53
16	56.17	57.05	61.97	58.99	55.90	59.18	55.40	55.08	54.00	53.77	54.86	55.68
17	56.15	57.32	61.37	58.72	55.75	59.63	55.25	54.99	53.86	54.80	54.89	55.91
18	56.09	57.85	60.66	59.59	55.66	59.94	55.05	54.75	53.79	54.99	54.93	56.30
19	56.43	59.94	60.03	60.07	55.84	59.93	55.02	54.64	53.76	55.01	54.95	56.37
20	56.91	62.27	59.60	59.54	56.49	59.67	55.62	54.57	53.72	55.01	54.95	56.15
21	56.82	63.28	59.46	59.03	56.91	59.39	57.22	54.48	53.72	54.99	55.00	55.99
22	56.69	63.82	59.60	58.83	56.66	59.00	57.60	54.32	53.71	55.40	55.08	55.95
23	56.76	63.40	59.72	58.40	56.28	58.25	57.45	54.21	53.82	55.69	55.04	55.89
24	56.81	62.63	59.90	58.01	55.96	57.66	57.91	54.16	53.87	55.68	55.07	55.83
25	57.35	62.06	60.68	57.75	55.70	57.30	58.17	54.15	53.83	55.06	55.12	55.81
26	57.84	61.66	62.06	57.74	55.48	56.96	57.60	54.18	53.66	54.90	55.15	55.81
27	57.70	61.35	63.47	58.15	55.41	56.69	57.10	54.17	53.60	54.88	55.16	55.82
28	57.20	61.22	64.32	58.48	55.44	56.56	56.81	54.14	53.57	54.88	55.17	55.85
29	57.07	61.25	64.55	58.34	---	56.49	56.57	54.23	53.52	54.86	55.18	55.83
30	57.10	61.18	64.82	58.20	---	56.29	56.63	54.31	53.60	54.76	55.13	55.73
31	56.93	---	65.19	59.61	---	56.18	---	54.48	---	54.69	55.10	---
MEAN	56.37	58.74	62.10	60.60	57.56	58.31	55.87	55.10	54.13	54.29	54.88	55.60
MAX	57.84	63.82	65.19	66.30	62.35	60.48	58.17	56.82	55.06	55.69	55.18	56.37
MIN	55.76	56.26	59.46	57.74	55.41	55.60	54.56	54.14	53.52	53.46	54.60	55.04

WILLAMETTE RIVER BASIN

277

14207770 WILLAMETTE RIVER BELOW FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°21'28", long 122°36'35", in NE 1/4 NW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.5 mi below Willamette Falls, 1.4 mi upstream from Clackamas River, and at mile 26.2.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (Oregon State Highway Division bench mark).

REMARKS.--Flow regulated by many reservoirs upstream. Gage out of operation during period October 1993 to January 1994 and July to September 1994. Fragmentary record for this period available in files of the Portland field office.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 46.04 ft Feb. 9, 1996, from high-water mark; minimum, 1.55 ft Sept. 7, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 36.79 ft Jan. 2; minimum recorded, 3.30 ft Sept. 9, but may have been lower during period of missing record.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	8.36	7.03	7.68	21.14	20.54	20.88	35.47	32.24	34.08
2	---	---	---	7.42	6.28	6.81	21.12	20.46	20.78	36.79	35.27	36.22
3	---	---	---	7.13	5.85	6.40	21.29	20.92	21.09	36.61	34.40	35.59
4	---	---	---	7.03	5.33	6.22	23.39	21.01	21.56	34.65	31.64	33.08
5	---	---	---	7.53	5.90	6.66	24.79	23.39	24.30	31.88	28.98	30.31
6	---	---	---	7.87	5.76	6.76	25.21	24.60	24.90	29.06	26.61	27.81
7	---	---	---	8.01	6.16	6.94	25.97	24.64	25.16	26.85	24.96	25.79
8	---	---	---	8.52	6.36	7.25	27.57	25.86	26.76	25.14	23.61	24.29
9	---	---	---	8.58	6.40	7.31	27.57	26.94	27.26	23.68	22.20	22.92
10	---	---	---	8.87	6.54	7.42	27.29	26.31	26.98	22.36	21.96	22.12
11	---	---	---	9.00	6.34	7.39	27.04	26.03	26.55	22.14	21.53	21.85
12	---	---	---	9.28	6.64	7.61	26.06	24.85	25.55	21.56	20.74	21.09
13	---	---	---	9.33	6.65	7.62	25.10	24.38	24.70	20.77	20.18	20.43
14	---	---	---	9.68	6.88	7.91	24.74	23.64	24.10	20.20	19.36	19.72
15	---	---	---	9.89	7.75	8.54	23.80	22.87	23.24	19.41	18.14	18.72
16	8.12	5.53	6.54	10.07	8.27	8.98	23.06	21.88	22.40	18.14	16.62	17.05
17	8.03	5.00	6.17	10.82	8.91	9.68	22.04	20.34	21.18	17.40	16.30	16.77
18	8.53	5.52	6.69	13.45	10.35	11.34	20.43	18.79	19.53	19.62	17.39	18.64
19	8.33	6.32	7.11	23.99	13.45	19.01	18.79	17.27	18.07	19.79	19.07	19.56
20	8.33	7.04	7.55	24.89	23.99	24.31	17.40	16.84	17.13	19.07	17.84	18.41
21	8.20	6.60	7.41	26.40	24.81	25.59	17.38	16.76	17.08	17.87	17.27	17.54
22	8.41	6.37	7.40	26.77	26.11	26.40	17.95	17.20	17.54	17.30	16.44	17.01
23	8.95	6.65	7.69	26.45	24.55	25.50	18.09	17.47	17.73	16.44	15.13	15.77
24	10.31	7.37	8.72	24.76	23.45	24.16	19.20	17.85	18.35	15.13	14.40	14.72
25	11.60	8.61	10.03	23.63	22.41	22.96	23.26	19.20	21.42	14.63	14.09	14.35
26	11.93	10.70	11.18	22.49	21.51	21.95	27.03	23.15	24.94	14.89	14.03	14.41
27	11.09	9.67	10.45	21.52	20.59	20.93	28.84	26.73	27.70	15.77	14.78	15.20
28	10.63	8.51	9.42	21.39	20.60	21.06	29.32	28.47	28.99	16.08	15.54	15.84
29	10.56	8.98	9.57	21.29	20.69	21.00	30.82	28.89	29.57	15.93	15.03	15.40
30	9.95	8.76	9.31	20.92	20.33	20.57	31.16	30.27	30.76	16.58	14.69	15.32
31	9.21	7.88	8.48	---	---	---	32.36	30.33	31.26	24.56	16.58	20.53
MONTH	---	---	---	26.77	5.33	13.73	32.36	16.76	23.47	36.79	14.03	21.31

WILLAMETTE RIVER BASIN

14207770 WILLAMETTE RIVER BELOW FALLS, AT OREGON CITY, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	26.05	24.56	25.59	11.87	10.32	10.89	14.67	13.65	14.19	19.29	18.97	19.11
2	26.19	25.85	26.02	14.68	11.87	13.19	13.75	13.42	13.60	19.69	19.29	19.50
3	25.95	24.56	25.37	16.10	14.68	15.59	13.70	12.36	13.28	19.46	18.68	19.13
4	24.75	23.08	23.96	15.93	14.91	15.42	12.65	12.02	12.44	18.68	17.64	18.25
5	23.08	21.45	22.37	15.02	14.23	14.71	12.50	11.72	12.19	17.64	16.85	17.33
6	21.45	19.37	20.53	14.66	14.07	14.34	12.18	10.98	11.60	16.89	16.38	16.64
7	19.37	17.38	18.32	15.57	14.33	15.00	11.42	10.13	10.76	16.58	16.24	16.42
8	17.38	15.77	16.50	15.91	15.33	15.59	11.34	10.04	10.68	16.53	16.07	16.30
9	15.80	14.98	15.36	15.61	14.88	15.30	11.55	10.43	10.89	16.27	15.87	16.06
10	14.98	14.26	14.63	18.64	15.56	17.09	11.23	10.19	10.63	15.98	15.59	15.82
11	14.47	13.03	13.63	20.63	18.64	19.73	11.03	10.05	10.50	15.59	14.61	15.04
12	13.70	12.74	13.13	21.00	20.47	20.81	10.63	9.71	10.15	15.69	14.69	15.01
13	12.90	11.84	12.35	20.91	20.52	20.71	10.17	8.15	9.13	17.78	15.69	16.90
14	12.33	11.50	11.83	20.53	19.47	20.07	8.74	7.95	8.38	18.26	17.78	18.15
15	11.87	11.23	11.54	19.58	18.08	18.81	9.87	8.74	9.47	18.25	17.73	18.11
16	11.65	11.11	11.38	18.32	18.01	18.14	10.58	9.41	10.19	17.73	17.00	17.32
17	12.11	11.20	11.68	19.55	18.32	19.00	11.03	10.19	10.70	17.44	17.05	17.22
18	11.45	10.60	11.17	20.09	19.55	19.85	11.04	10.39	10.76	18.15	17.44	17.90
19	12.31	10.56	11.53	20.60	20.06	20.41	11.73	10.72	11.41	18.88	18.15	18.59
20	13.47	11.80	12.82	20.67	20.32	20.56	14.13	11.67	13.24	19.09	18.84	18.96
21	14.24	13.12	13.89	20.37	19.57	19.97	16.22	14.13	15.46	19.19	19.02	19.12
22	14.15	13.52	13.85	19.63	18.55	19.25	17.95	16.22	17.24	19.20	18.83	19.01
23	14.12	13.79	13.96	18.59	17.42	17.94	19.62	17.92	18.72	18.85	18.47	18.66
24	13.79	12.37	13.11	17.42	16.43	17.03	21.06	19.62	20.43	18.57	18.37	18.47
25	12.37	11.38	11.84	16.43	14.94	15.80	21.25	20.77	21.07	18.42	17.56	18.06
26	11.57	10.93	11.24	15.27	14.73	14.99	20.77	19.46	20.08	17.56	16.85	17.15
27	11.82	10.93	11.24	15.73	14.67	15.12	19.46	18.32	18.83	16.91	16.53	16.75
28	11.62	10.76	11.12	16.45	14.76	15.83	18.32	17.69	18.07	16.74	16.48	16.60
29	---	---	---	16.78	16.42	16.62	18.24	17.70	17.97	16.83	16.74	16.78
30	---	---	---	16.77	16.27	16.56	18.97	18.24	18.66	16.93	16.44	16.76
31	---	---	---	16.45	14.66	15.66	---	---	---	17.01	16.46	16.72
MONTH	26.19	10.56	15.36	21.00	10.32	17.10	21.25	7.95	13.69	19.69	14.61	17.48

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	17.76	17.01	17.54	11.65	9.82	10.59	8.22	5.71	6.75	8.37	5.18	6.57
2	18.58	17.76	18.29	10.89	9.78	10.24	8.48	5.80	6.88	7.83	4.35	5.94
3	19.73	18.58	19.25	11.13	9.74	10.50	8.27	5.21	6.54	7.69	4.45	5.85
4	20.40	19.72	20.18	11.19	9.93	10.48	8.18	5.19	6.42	7.46	4.17	5.68
5	20.33	20.04	20.21	11.12	9.61	10.25	8.04	5.17	6.35	7.60	4.50	5.78
6	20.04	19.53	19.78	10.63	9.42	10.02	8.33	5.95	7.05	7.45	4.33	5.62
7	19.53	19.17	19.32	10.68	9.54	10.05	8.20	6.45	7.39	7.18	4.20	5.47
8	19.19	18.92	19.08	10.16	8.98	9.62	7.89	6.18	7.10	6.70	3.87	5.04
9	18.93	18.60	18.73	9.57	8.06	8.82	7.84	6.02	6.82	6.68	3.30	4.48
10	18.69	18.38	18.53	9.40	8.50	8.88	7.59	5.86	6.84	7.04	3.79	4.91
11	18.44	18.17	18.28	9.64	8.66	8.96	7.47	4.97	6.07	7.04	4.11	5.16
12	18.80	18.29	18.47	9.73	8.99	9.33	7.40	4.81	5.82	6.95	4.15	5.38
13	19.48	18.80	19.18	9.84	8.07	8.85	7.53	5.57	6.33	7.58	4.62	5.83
14	19.80	19.48	19.69	8.99	7.65	8.11	7.84	5.91	6.67	7.77	4.27	5.92
15	19.87	19.77	19.83	9.19	8.11	8.59	8.44	5.81	6.94	8.30	4.74	6.36
16	20.00	19.85	19.95	9.59	8.56	9.16	8.94	5.81	7.25	8.39	4.99	6.56
17	19.97	19.62	19.80	10.24	8.86	9.69	9.46	6.17	7.42	9.95	5.93	7.88
18	19.67	19.42	19.54	10.56	9.37	9.91	9.58	6.15	7.44	10.38	7.46	8.66
19	19.44	19.20	19.34	10.92	9.51	10.23	9.33	6.10	7.39	9.81	7.37	8.55
20	19.20	18.50	18.91	11.26	9.46	10.19	9.51	6.72	7.82	9.54	7.02	8.07
21	18.50	17.82	18.14	10.80	9.21	9.84	9.25	6.69	7.87	9.14	6.56	7.67
22	17.83	17.30	17.60	10.43	8.73	9.56	9.30	6.84	7.92	8.59	6.68	7.51
23	17.30	16.56	16.94	10.29	8.89	9.56	8.87	6.43	7.71	8.26	5.70	6.64
24	16.60	16.10	16.40	10.13	8.56	9.50	8.33	5.71	6.98	7.86	5.94	6.74
25	16.13	15.37	15.79	9.83	8.28	9.12	8.34	5.78	6.70	8.17	6.43	7.16
26	15.41	13.63	14.28	9.66	7.85	8.65	8.36	5.99	6.72	7.93	5.76	6.82
27	13.86	13.36	13.55	9.39	6.72	7.98	8.02	5.58	6.50	8.13	5.72	6.84
28	13.83	12.90	13.40	8.53	6.97	7.68	8.03	5.31	6.45	7.82	5.57	6.67
29	13.25	12.45	12.85	9.36	7.41	8.27	8.02	5.32	6.44	8.06	5.53	6.71
30	12.92	11.18	12.06	8.92	6.62	7.51	8.24	5.60	6.86	8.00	4.95	6.34
31	---	---	---	8.50	5.89	6.93	8.57	6.22	7.18	---	---	---
MONTH	20.40	11.18	17.83	11.65	5.89	9.26	9.58	4.81	6.92	10.38	3.30	6.43

WILLAMETTE RIVER BASIN

279

14208600 TIMOTHY LAKE NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'35", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, in intake structure 350 ft upstream from dam on Oak Grove Fork, 0.4 mi upstream from Anvil Creek, 14 mi south of Government Camp, and at mile 15.8.

DRAINAGE AREA.--53.8 mi².

PERIOD OF RECORD.--May 1956 to current year. Prior to October 1957, published as Timothy Meadows Reservoir.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway built by Portland General Electric Co. Usable storage began May 28, 1956. Capacity, 65,710 acre-ft at elevation 3,190 ft, normal maximum operating level. Usable capacity increased in 1966 water year to 64,450 acre-ft between elevations 3,125.0 ft, invert of outlet pipe, and 3,192.0 ft, top of radial gates. Storage of 4,060 acre-ft below elevation 3,125.0 ft not normally available for release. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Elevations and capacity table furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 68,800 acre-ft Oct. 3, 1967, elevation, 3,192.2 ft; minimum contents observed, 16,010 acre-ft Feb. 24, 1957, elevation, 3,144.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 68,270 acre-ft June 22, 23, elevation, 3,191.83 ft; minimum contents observed, 49,270 acre-ft Nov. 4, elevation, 3,177.24 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	3,180.64	53,470	-
Oct. 31.....	3,177.78	49,930	-3,540
Nov. 30.....	3,181.50	54,550	+4,620
Dec. 31.....	3,186.32	60,760	+6,210
CAL YR 1996.....	-	-	-4,950
Jan. 31.....	3,187.90	62,860	+2,100
Feb. 28.....	3,186.56	61,080	-1,780
Mar. 31.....	3,183.57	57,180	-3,900
Apr. 30.....	3,185.11	59,170	+1,190
May 31.....	3,191.74	68,140	+8,970
June 30.....	3,191.43	67,710	-430
July 31.....	3,191.31	67,540	-170
Aug. 31.....	3,190.35	66,200	-1,340
Sept.30.....	3,181.72	54,830	-11,370
WTR YR 1997.....	-	-	+1,360

WILLAMETTE RIVER BASIN

14208700 OAK GROVE FORK NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'50", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.1 mi upstream from Anvil Creek, 0.3 mi downstream from Timothy Lake, 14 mi south of Government Camp, and at mile 15.5.

DRAINAGE AREA.--54.4 mi².

PERIOD OF RECORD.--July 1956 to current year.

GAGE.--Water-stage recorder and artificial control. Datum of gage is 3,041.83 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1956 by Timothy Lake (station 14208600). No diversion upstream from station.

AVERAGE DISCHARGE.--41 years (water years 1957-97), 133 ft³/s, 33.20 in/yr, 96,360 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, 494 ft³/s Jan. 1, 2, gage height, 2.76 ft; minimum discharge, 51 ft³/s Nov. 8-10, gage height, 1.51 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	180	58	486	473	232	424	375	254	190	92	256
2	272	260	56	492	471	263	412	297	223	190	86	261
3	272	211	56	479	465	265	367	233	231	190	94	267
4	176	84	100	474	465	264	408	183	234	190	96	275
5	148	78	128	472	463	264	407	175	205	190	99	275
6	148	59	113	470	463	270	398	176	187	190	101	273
7	208	53	139	458	438	296	392	177	187	185	100	278
8	247	52	148	452	404	285	392	156	187	160	93	316
9	248	52	140	451	294	300	392	147	187	195	98	335
10	287	68	128	446	270	320	390	140	185	186	101	341
11	306	106	123	399	268	319	365	110	170	181	95	333
12	305	133	136	358	268	319	292	111	168	180	95	340
13	305	133	141	328	268	317	292	111	168	180	101	346
14	305	133	152	315	268	319	226	139	168	180	107	337
15	202	110	154	313	264	319	157	175	168	157	104	325
16	149	108	158	308	251	319	238	255	162	59	104	317
17	128	118	159	267	246	319	238	258	150	57	103	306
18	140	145	160	262	246	318	244	258	162	57	103	322
19	142	68	165	266	247	330	271	257	148	69	127	335
20	124	56	168	265	247	368	347	198	148	100	240	339
21	109	55	169	263	246	390	397	169	151	100	267	343
22	104	55	173	254	247	414	411	159	154	111	271	344
23	104	55	260	235	246	418	420	159	165	128	274	346
24	79	56	417	219	239	418	410	160	220	128	238	346
25	95	56	349	219	226	418	378	160	195	128	101	349
26	136	72	215	225	226	426	376	160	190	128	95	343
27	144	68	214	186	226	427	377	170	190	127	98	335
28	129	58	184	183	226	428	376	195	190	56	96	344
29	126	56	201	190	---	426	377	206	190	58	144	344
30	131	57	366	244	---	426	376	214	189	82	254	352
31	128	---	466	449	---	425	---	242	---	96	256	---
TOTAL	5669	2795	5596	10428	8661	10622	10550	5925	5526	4228	4233	9623
MEAN	183	93.2	181	336	309	343	352	191	184	136	137	321
MAX	306	260	466	492	473	428	424	375	254	195	274	352
MIN	79	52	56	183	226	232	157	110	148	56	86	256
AC-FT	11240	5540	11100	20680	17180	21070	20930	11750	10960	8390	8400	19090
MEAN†	125	171	281	370	277	279	385	337	177	134	115	130
CFSM†	2.30	3.14	5.17	6.81	5.10	5.13	7.08	6.19	3.25	2.46	2.11	2.39
IN.†	2.65	3.50	5.97	7.85	5.31	5.92	7.90	7.14	3.63	2.83	2.43	2.66
AC-FT†	7700	10160	17310	22780	15400	17170	22920	20720	10530	8220	7060	7720

CAL YR 1996 TOTAL 84206 MEAN 230 MAX 863 MIN 52 AC-FT 167000 MEAN† 223 CFSM† 4.10 IN.† 55.85 AC-FT† 162050
WTR YR 1997 TOTAL 83856 MEAN 230 MAX 492 MIN 52 AC-FT 166300 MEAN† 232 CFSM† 4.26 IN.† 57.79 AC-FT† 167660

† Adjusted for change in contents in Timothy Lake.

281

LOCATION (revised).--Lat 45°04'17", long 121°56'22", SW 1/4 SE 1/4 sec 3, T.6 S., R.7 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on left bank 0.8 mi upstream from Spring Creek, 1.3 mi upstream from Kink Creek, 1.7 mi upstream from Portland General Electric Co. diversion dam, 24 mi southeast of Estacada, and at mile 6.7.

PERIOD OF RECORD.--May 1909 to current year. Monthly discharge only for some periods, published in WSP 1318.

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.

GAGE.--Water-stage recorder. Elevation of gage is 2,100 ft above sea level, from topographic map. May 21, 1909, to Nov. 17, 1911, nonrecording gage and Mar. 26, 1912, to Sept. 30, 1923, water-stage recorder, at various sites 0.7 mi downstream, below Kink Creek, at different datum. Dec. 1923 to Sept. 1996, at site 0.6 mi downstream at different datum.

AVERAGE DISCHARGE.--88 years (water years 1910-97), 498 ft³/s, 360,800 acre-ft/yr (unadjusted).
41 years (water years 1957-97), 483 ft³/s, 349,700 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s Jan. 7, 1923, gage height, 5.45 ft, site and datum then in use, from rating curve extended above 2,300 ft³/s on basis of peak discharge for other stations in Clackamas River basin; minimum discharge, 161 ft³/s Sept. 16, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,620 ft³/s Jan. 2, gage height, 8.52 ft; minimum discharge, 162 ft³/s July 29.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	575	514	922	2370	1860	675	987	1140	744	515	310	499
2	573	631	763	2410	1480	714	965	1070	679	488	299	503
3	578	587	646	2030	1320	691	948	980	685	479	311	510
4	484	405	864	1680	1210	675	962	902	658	475	314	518
5	427	364	1100	1460	1130	668	932	889	608	472	319	520
6	424	382	889	1320	1080	688	941	890	574	469	321	514
7	496	377	872	1300	1030	769	903	889	561	460	320	518
8	555	353	917	1200	973	740	910	870	552	426	308	551
9	556	354	884	1140	838	833	891	849	544	480	314	579
10	592	382	892	1280	789	1030	877	858	536	469	316	586
11	624	427	809	1160	823	969	852	849	508	457	309	583
12	628	454	762	1050	767	914	769	875	502	451	306	585
13	636	498	745	962	740	865	781	881	494	448	316	593
14	639	513	694	889	784	840	805	890	488	446	321	591
15	555	484	657	848	793	916	718	913	484	421	317	602
16	453	463	646	800	879	953	852	975	473	275	316	586
17	436	500	610	826	781	989	872	960	455	270	315	592
18	548	575	600	867	780	970	896	932	465	269	316	593
19	483	977	589	846	867	1020	989	918	444	283	337	588
20	429	868	626	849	802	1150	1360	834	440	331	481	588
21	402	701	618	835	769	1140	1310	755	450	330	508	590
22	455	621	578	795	742	1110	1310	691	458	342	520	589
23	452	526	632	746	720	1080	1350	674	458	366	521	592
24	621	614	933	697	696	1060	1280	640	521	365	512	591
25	576	614	1530	693	697	1060	1200	625	491	364	322	593
26	551	574	1280	665	761	1110	1210	610	480	364	309	595
27	540	656	1310	614	718	1110	1210	621	476	363	308	586
28	557	920	1070	612	648	1090	1210	650	478	261	308	589
29	518	772	1350	601	---	1050	1230	663	480	256	349	589
30	493	773	1740	769	---	1050	1200	654	491	295	502	594
31	475	---	1890	1630	---	1010	---	705	---	313	501	---
TOTAL	16331	16879	28418	33944	25477	28939	30720	25652	15677	12003	11126	17107
MEAN	527	563	917	1095	910	934	1024	827	523	387	359	570
MAX	639	977	1890	2410	1860	1150	1360	1140	744	515	521	602
MIN	402	353	578	601	648	668	718	610	440	256	299	499
AC-FT	32390	33480	56370	67330	50530	57400	60930	50880	31100	23810	22070	33930

MEAN	389	505	575	587	593	575	574	581	439	329	305	348
MAX	527	798	1047	1095	1433	1377	1024	1104	1126	595	473	619
(WY)	1997	1996	1965	1997	1996	1972	1997	1971	1974	1997	1996	1996
MIN	236	288	265	255	250	327	311	279	248	228	218	215
(WY)	1982	1988	1994	1977	1977	1977	1978	1994	1994	1994	1994	1994

ANNUAL TOTAL	264960		262273					
ANNUAL MEAN	724		719			483		
HIGHEST ANNUAL MEAN						739		1996
LOWEST ANNUAL MEAN						319		1994
HIGHEST DAILY MEAN	3940	Feb 7	2410	Jan 2	3940		Feb 7	1996
LOWEST DAILY MEAN	350	Jun 22	256	Jul 29		208	Aug 30	1979
ANNUAL SEVEN-DAY MINIMUM	374	Nov 4	292	Jul 28		210	Oct 6	1994
ANNUAL RUNOFF (AC-FT)	525500		520200			349700		
10 PERCENT EXCEEDS	1060		1130			689		
50 PERCENT EXCEEDS	630		632			471		
90 PERCENT EXCEEDS	428		354			269		

WILLAMETTE RIVER BASIN

14209500 CLACKAMAS RIVER ABOVE THREE LYNX CREEK, OR

LOCATION.--Lat 45°07'30", long 122°04'20", in NE 1/4 sec.21, T.5 S., R.6 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.1 mi upstream from Three Lynx Creek, 0.25 mi downstream from powerplant, 17 mi southeast of Estacada, and at mile 47.8.

DRAINAGE AREA.--479 mi².

PERIOD OF RECORD.--April 1909 to December 1913, October 1921 to current year. Prior to October 1911 (monthly discharge only), published in WSP 1318.

REVISED RECORDS.--WSP 1148: Drainage area. WSP 1248: 1910(M), 1912, 1948-50(M).

GAGE.--Water-stage recorder. Datum of gage is 1,091.69 ft above sea level (levels by Portland General Electric Co.). Apr. 23, 1909, to Jan. 4, 1914, nonrecording gage at about same site and datum. Nov. 1, 1921, to Dec. 27, 1924, water-stage recorder at present site at datum 0.91 ft higher.

REMARKS.--No estimated daily discharges. Records good. Minor regulation since May 1956 by Timothy Lake (station 14208600).

AVERAGE DISCHARGE.--80 years (water years 1910-13, 1922-97), 1,987 ft³/s, 56.35 in/yr, 1,430,900 acre-ft/yr.
41 years (water years 1957-97), 2,029 ft³/s, 57.56 in/yr, 1,470,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 68,200 ft³/s Dec. 22, 1964, gage height, 21.7 ft, from floodmark, from rating curve extended above 34,100 ft³/s on basis of slope-area measurement at gage height 15.06 ft; minimum recorded discharge, 261 ft³/s Oct. 7, 1987; minimum daily, 410 ft³/s Sept. 4, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1700	19,100	10.88	Dec. 29	2300	20,200	11.24
Nov. 28	0930	8,150	6.60	Jan. 1	0630	*25,400	*12.82
Dec. 4	2230	16,500	10.00	Jan. 31	2030	19,000	10.87
Dec. 25	1100	11,700	8.20	Mar. 17	0400	8,130	6.59
Dec. 26	1900	14,500	9.28	Apr. 20	0830	11,400	8.10

Minimum discharge, 515 ft³/s July 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	918	1520	6840	21400	13300	2370	2970	3900	2690	1490	886	1000
2	913	1500	5070	20100	7660	2850	2780	3510	2270	1380	889	998
3	914	1400	4030	13200	5660	2590	2630	3300	2200	1320	894	1020
4	828	1260	6690	8520	4660	2370	2570	3220	2200	1290	889	1020
5	812	1230	10500	6490	4020	2240	2470	3150	2030	1270	885	1010
6	797	1310	6310	5310	3580	2430	2390	3290	1890	1240	886	1000
7	841	1640	5710	4790	3290	3520	2350	3240	1790	1210	885	1000
8	884	1480	7140	4250	3010	3400	2470	3110	1720	1170	874	1020
9	880	1380	5920	3850	2700	3750	2450	3170	1660	1280	868	1050
10	906	1310	6120	4260	2500	7160	2370	3300	1620	1340	867	1070
11	933	1310	5560	4170	2420	7190	2270	3480	1570	1290	859	1110
12	940	1310	4720	3720	2430	5370	2120	3680	1570	1250	851	1090
13	1100	1650	4590	3320	2270	4240	2160	3740	1520	1230	851	1080
14	1200	1950	3930	3030	2370	3590	2790	3600	1480	1170	853	1130
15	1260	1970	3360	2820	2440	3860	3110	3550	1440	1170	855	1230
16	1180	1900	3020	2620	2370	7110	3350	3420	1400	933	848	1640
17	995	2260	2710	3250	2560	7340	3430	3300	1370	986	844	2170
18	2010	2920	2480	5070	2650	5780	3430	3120	1360	978	843	1920
19	1990	12300	2330	4460	3870	6120	4110	2880	1310	973	882	1680
20	1480	8330	2420	4070	3670	6760	9330	2690	1290	1050	999	1460
21	1240	4850	2390	3800	3140	5690	6400	2460	1320	1010	1030	1350
22	1650	4690	2240	3420	2810	4740	5530	2290	1400	981	1030	1280
23	1760	4000	2270	3100	2570	4190	6180	2230	1370	1010	1030	1240
24	3330	4880	3470	2820	2400	3850	5590	2160	1390	934	1100	1210
25	3280	5250	9930	2650	2280	3710	4720	2100	1320	1050	889	1180
26	2480	4020	11300	2480	2250	4030	4330	1980	1290	1010	861	1190
27	1960	3750	12200	2290	2230	4130	4490	2020	1270	1000	859	1260
28	1800	7460	7740	2530	2110	3950	4200	2170	1270	836	856	1200
29	2210	5590	11500	2500	---	3540	4100	2260	1310	882	890	1180
30	1870	4660	15100	3510	---	3330	4090	2210	1390	893	1010	1160
31	1640	---	14400	13400	---	3160	---	2340	---	917	1010	---
TOTAL	45001	99080	191990	171200	97220	134360	111180	90870	47710	34543	28073	36948
MEAN	1452	3303	6193	5523	3472	4334	3706	2931	1590	1114	906	1232
MAX	3330	12300	15100	21400	13300	7340	9330	3900	2690	1490	1100	2170
MIN	797	1230	2240	2290	2110	2240	2120	1980	1270	836	843	998
AC-FT	89260	196500	380800	339600	192800	266500	220500	180200	94630	68520	55680	73290
CFSM	3.03	6.89	12.9	11.5	7.25	9.05	7.74	6.12	3.32	2.33	1.89	2.57
IN.	3.49	7.69	14.91	13.30	7.55	10.43	8.63	7.06	3.71	2.68	2.18	2.87

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1997, BY WATER YEAR (WY)

MEAN	1014	2249	3131	3092	3071	2669	2674	2492	1604	897	736	787
MAX	1761	4239	8271	6139	7671	6559	3807	4701	4136	1565	972	1242
(WY)	1969	1996	1965	1970	1996	1972	1993	1971	1974	1974	1974	1959
MIN	593	666	786	751	734	1353	1417	1057	674	592	534	510
(WY)	1993	1988	1977	1977	1977	1992	1967	1992	1992	1992	1992	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1957 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	1078806		1088175			
ANNUAL MEAN	2948		2981		2029	
HIGHEST ANNUAL MEAN					3128	1974
LOWEST ANNUAL MEAN					1062	1977
HIGHEST DAILY MEAN	39100	Feb 7	21400	Jan 1	48000	Dec 23 1964
LOWEST DAILY MEAN	722	Aug 29	797	Oct 6	410	Sep 4 1986
ANNUAL SEVEN-DAY MINIMUM	749	Aug 23	849	Aug 12	490	Sep 1 1992
ANNUAL RUNOFF (AC-FT)	2140000		2158000		1470000	
ANNUAL RUNOFF (CFSM)	6.15		6.22		4.24	
ANNUAL RUNOFF (INCHES)	83.78		84.51		57.56	
10 PERCENT EXCEEDS	5580		5700		3720	
50 PERCENT EXCEEDS	2010		2270		1560	
90 PERCENT EXCEEDS	912		916		686	

14209700 FISH CREEK NEAR THREE LYNX, OR

LOCATION.--Lat 45°08'52", long 122°09'07", in NE 1/4 SE 1/4 sec.11, T.5 S., R.5 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank, 0.7 mi upstream from Clackamas River, and at mile 1.15.

DRAINAGE AREA.--45.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 940 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--8 years (water years 1990-97), 223 ft³/s, 66.92 in/yr, 161,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,540 ft³/s Feb. 7, 1996, gage height, 11.83 ft, from rating curve extended above 2,800 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 15.40 ft, backwater from debris flow; minimum discharge, 6.0 ft³/s Sept. 1, 2, 1992.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1430	*4,410	*10.13	Dec. 29	2000	3,400	9.43
Dec. 1	0530	1,510	7.69	Jan. 1	0230	3,770	9.70
Dec. 4	1930	3,470	9.48	Jan. 31	1900	3,760	9.69
Dec. 8	0830	1,540	7.73	Mar. 10	0100	1,780	8.00
Dec. 25	1130	3,620	9.59	Mar. 16	0200	1,800	8.02
Dec. 26	0730	3,560	9.55	Apr. 20	0400	1,730	7.95

Minimum discharge, 14 ft³/s Sept. 7-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	172	1210	2860	2140	250	187	337	150	58	21	16
2	23	143	913	2570	983	404	175	282	114	51	20	16
3	23	128	683	1450	593	288	169	252	115	45	20	16
4	24	136	1410	861	410	224	158	244	110	41	20	15
5	29	133	1510	583	311	192	145	228	105	39	19	15
6	26	230	816	426	250	259	133	253	93	37	19	15
7	24	351	920	390	214	610	132	241	84	35	18	15
8	24	248	1420	339	184	479	156	214	75	34	18	14
9	23	201	909	301	163	754	157	202	68	60	18	14
10	23	166	854	515	147	1530	148	196	62	58	17	14
11	23	142	712	488	141	1190	134	198	58	53	17	17
12	24	137	578	367	158	740	123	198	59	49	17	17
13	55	224	596	287	150	486	143	186	54	45	16	17
14	72	371	470	247	269	364	399	168	51	42	16	23
15	152	363	357	212	266	666	484	155	48	38	16	58
16	117	319	297	191	232	1550	391	139	45	36	16	84
17	81	415	247	398	236	1170	332	127	43	34	16	177
18	533	602	212	723	236	815	306	115	42	33	16	168
19	370	2920	189	537	567	927	453	102	39	31	16	121
20	203	1410	295	444	469	961	1290	93	38	30	17	78
21	145	856	303	386	342	660	738	84	45	29	18	58
22	412	872	258	325	267	451	564	77	52	28	17	46
23	359	710	265	276	217	346	648	78	55	27	16	39
24	1020	787	992	235	185	289	592	78	50	25	22	34
25	e792	734	2940	209	165	264	435	74	45	24	19	31
26	e476	533	3050	184	160	312	350	67	42	24	19	36
27	311	564	1940	168	158	315	339	69	39	23	19	55
28	314	1270	1080	227	142	303	288	74	37	23	19	41
29	448	968	1940	231	---	252	329	82	38	22	18	36
30	314	778	1910	834	---	222	351	76	41	22	17	34
31	229	---	1920	3020	---	202	---	104	---	21	16	---
TOTAL	6692	16883	31196	20284	9755	17475	10249	4793	1897	1117	553	1320
MEAN	216	563	1006	654	348	564	342	155	63.2	36.0	17.8	44.0
MAX	1020	2920	3050	3020	2140	1550	1290	337	150	60	22	177
MIN	23	128	189	168	141	192	123	67	37	21	16	14
AC-FT	13270	33490	61880	40230	19350	34660	20330	9510	3760	2220	1100	2620
CFSM	4.78	12.5	22.3	14.5	7.71	12.5	7.56	3.42	1.40	.80	.39	.97
IN.	5.51	13.89	25.67	16.69	8.03	14.38	8.44	3.94	1.56	.92	.46	1.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1997, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	98.7	379	439	393	386	307	324	176
MAX	216	756	1006	654	817	564	447	274
(WY)	1997	1996	1997	1997	1996	1997	1993	1993
MIN	15.3	26.7	216	187	110	87.0	234	68.0
(WY)	1994	1994	1991	1993	1993	1992	1994	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1990 - 1997
ANNUAL TOTAL	122260	122214	
ANNUAL MEAN	334	335	223
HIGHEST ANNUAL MEAN			335
LOWEST ANNUAL MEAN			133
HIGHEST DAILY MEAN	5970	Feb 7	5970
LOWEST DAILY MEAN	20	Sep 10	6.1
ANNUAL SEVEN-DAY MINIMUM	20	Sep 7	6.4
ANNUAL RUNOFF (AC-FT)	242500	242400	161300
ANNUAL RUNOFF (CFSM)	7.39	7.41	4.93
ANNUAL RUNOFF (INCHES)	100.62	100.58	66.92
10 PERCENT EXCEEDS	789	855	510
50 PERCENT EXCEEDS	165	168	124
90 PERCENT EXCEEDS	23	19	14

e Estimated

WILLAMETTE RIVER BASIN

14210000 CLACKAMAS RIVER AT ESTACADA, OR

LOCATION.--Lat 45°18'00", long 122°21'10", in NE 1/4 sec.19, T.3 S., R.4 E., Clackamas County, Hydrologic Unit 17090011, on left bank 0.2 mi downstream from River Mill Dam, 1.5 mi northwest of Estacada, and at mile 23.1.

DRAINAGE AREA.--671 mi².

PERIOD OF RECORD.--April 1908 to current year. Monthly discharge only April 1908, published in WSP 1318.
Published as "near Cazadero" January 1909 to September 1957.

REVISED RECORDS.--WSP 1248: 1908-9, 1910(M), 1916, 1917(M), 1922(M), 1923. WSP 1288: Drainage area (former site). WSP 1638: 1919(M).

GAGE.--Water-stage recorder. Datum of gage is 286.93 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Oct. 1, 1957. Oct. 1, 1957, to Feb. 16, 1965, water-stage recorder at same site at datum 12.00 ft higher. Feb. 17, 1965 to Sept. 30, 1991, water-stage recorder at same site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. Discharges for Aug. 5-14 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. 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.--89 years (water years 1909-97), 2,753 ft³/s, 55.72 in/yr, 1,994,000 acre-ft/yr, unadjusted.
39 years (water years 1959-97), 2,833 ft³/s, 57.37 in/yr, 2,052,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,900 ft³/s Dec. 22, 1964, gage height, 28.36 ft (present datum); minimum discharge, 50 ft³/s Mar. 10, 1961, from rating curve extended below 260 ft³/s; minimum daily, 285 ft³/s Oct. 4, 5, 1958, caused by filling of North Fork dam forebay.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1630	33,200	22.15	Dec. 30	0030	26,600	20.79
Dec. 4	2330	24,500	20.33	Jan. 1	0730	*34,000	*22.30
Dec. 26	2100	22,600	19.87	Jan. 31	2100	30,000	21.52

Minimum discharge, 596 ft³/s Oct. 5, but may have been lower during period Aug. 5-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	1950	9830	28300	20000	3070	3750	5700	3330	1940	1110	1120
2	1290	2010	7620	27600	10800	4440	3350	4980	2650	1770	1180	1150
3	1220	1920	6280	18000	7920	3900	3240	4520	2540	1570	1190	1120
4	888	1780	9140	11500	6490	3260	3120	4310	2600	1560	1060	1130
5	739	1770	16600	8600	5560	3010	2930	4100	2390	1540	948	1110
6	923	1870	9790	7160	4830	3350	2790	4260	2260	1510	774	1120
7	945	2650	8660	6460	4400	4960	2750	4140	2150	1510	971	1110
8	1040	2230	11800	5840	3860	5250	3040	3920	2070	1340	1110	1110
9	1010	2020	9150	5260	3410	5420	2960	3910	2000	1720	865	1150
10	1050	1910	8380	6170	3140	11400	2870	4050	1950	1650	984	1160
11	988	1800	7750	6300	2930	10900	2780	4080	1900	1600	974	1300
12	1040	1800	6620	5450	3100	8270	2490	4520	1910	1550	986	1240
13	1400	2270	6480	4720	2760	6450	2580	4670	1860	1520	977	1250
14	1550	2910	5520	4260	3260	5150	3760	4400	1790	1420	985	1290
15	1840	3470	4780	3760	3710	5210	4540	4170	1740	1480	968	1440
16	1690	3120	4270	3780	3560	9620	4550	4060	1700	1120	967	1990
17	1330	3560	3660	3820	2820	10100	4580	3890	1660	1200	961	2230
18	3040	5170	3410	6950	3440	7960	4540	3650	1660	1190	981	2230
19	3270	21600	2980	6240	5270	8250	5280	3330	1600	1240	1140	1960
20	2190	13800	3150	5720	5540	9070	11400	3230	1560	1310	1110	1700
21	1800	7930	3280	5370	4620	7720	8580	2660	1600	1260	1150	1520
22	2560	7690	3120	4760	4040	6420	7300	2520	1740	1070	1060	1470
23	2870	6570	3560	4280	3360	5650	8040	2440	1700	1220	1090	1400
24	5520	7220	5620	3840	3060	5080	7600	2430	1700	1130	1280	1360
25	5930	7970	17700	3500	2870	4750	6490	2390	1620	1190	1050	1330
26	4310	6280	18600	3100	2740	5130	5790	2260	1570	1210	994	1370
27	3050	5590	18300	2990	2870	5380	6070	2260	1520	1140	1010	1460
28	2730	10900	11500	3230	2580	5170	5720	2420	1530	1050	994	1370
29	3840	8630	14700	3270	---	4550	5780	2520	1650	947	987	1340
30	3010	6940	20900	4920	---	4220	5800	2440	1670	1140	1150	1330
31	2410	---	19000	20100	---	3920	---	2660	---	1150	1120	---
TOTAL	66493	155330	282150	235250	132940	187030	144470	110890	57620	42247	32126	41860
MEAN	2145	5178	9102	7589	4748	6033	4816	3577	1921	1363	1036	1395
MAX	5930	21600	20900	28300	20000	11400	11400	5700	3330	1940	1280	2230
MIN	739	1770	2980	2990	2580	3010	2490	2260	1520	947	774	1110
AC-FT	131900	308100	559600	466600	263700	371000	286600	220000	114300	83800	63720	83030
CFSM	3.20	7.72	13.6	11.3	7.08	8.99	7.18	5.33	2.86	2.03	1.54	2.08
IN.	3.69	8.61	15.64	13.04	7.37	10.37	8.01	6.15	3.19	2.34	1.78	2.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1997, BY WATER YEAR (WY)

MEAN	1345	3337	4565	4561	4342	3713	3672	3398	2172	1150	882	956
MAX	2712	6494	11170	8821	10650	8921	5296	6396	5143	2018	1208	1602
(WY)	1969	1996	1965	1974	1996	1972	1993	1969	1974	1974	1974	1959
MIN	725	806	1030	1036	977	1850	1867	1456	882	763	659	613
(WY)	1989	1988	1977	1977	1977	1992	1967	1992	1992	1992	1992	1994

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1959 - 1997

ANNUAL TOTAL	1517017		1488406						
ANNUAL MEAN	4145		4078				2833		
HIGHEST ANNUAL MEAN							4407		1974
LOWEST ANNUAL MEAN							1454		1977
HIGHEST DAILY MEAN	57900	Feb 7	28300	Jan 1		57900		Feb 7	1996
LOWEST DAILY MEAN	739	Oct 5	739	Oct 5			285	Oct 4	1958
ANNUAL SEVEN-DAY MINIMUM	841	Aug 24	942	Oct 4			507	Oct 3	1958
ANNUAL RUNOFF (AC-FT)	3009000		2952000			2052000			
ANNUAL RUNOFF (CFSM)	6.18		6.08				4.22		
ANNUAL RUNOFF (INCHES)	84.10		82.52				57.37		
10 PERCENT EXCEEDS	8280		8120				5380		
50 PERCENT EXCEEDS	2790		2930				2190		
90 PERCENT EXCEEDS	1050		1110				790		

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.

PERIOD OF RECORD.--July 1940 to current year.

GAGE.--Water-stage recorder. Datum of gage is 228.47 ft above sea level.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Discharge for period Feb. 8 to Mar. 8 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Since January 1980, on occasional overflow from the Powell Butte Reservoir enters Johnson Creek at Circle Avenue, mile 11.6. Slight diurnal fluctuation at low flow caused by recreational ponds upstream. Small diversions for irrigation upstream from station.

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.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	unknown	*2,550	*a15.30	Dec. 26	1230	940	10.36
Nov. 24	1100	576	8.14	Dec. 29	1330	1,110	11.13
Dec. 4	1800	721	9.13	Jan. 1	0100	1,400	12.17
Dec. 6	0130	664	8.76	Jan. 2	0530	600	8.32
Dec. 8	0130	1,360	12.05	Jan. 18	0030	839	9.84
Dec. 10	1130	514	7.66	Jan. 31	1000	853	9.92
Dec. 24	1200	699	8.99	Mar. 1	1730	664	8.76

Minimum discharge, 1.5 ft³/s Aug. 18.
a From floodmark.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	21	130	789	396	295	33	e80	37	55	2.3	2.9
2	2.5	17	220	508	188	370	26	69	18	18	2.2	2.5
3	2.3	16	161	329	121	316	24	70	51	12	2.2	2.4
4	11	22	348	188	86	201	23	46	35	11	2.1	2.3
5	6.0	18	379	140	64	153	21	38	32	8.2	2.2	2.3
6	2.9	27	453	104	51	159	19	34	23	7.4	1.9	2.3
7	2.3	27	509	86	46	202	21	32	20	5.9	2.0	2.2
8	2.2	20	848	70	39	132	30	28	17	14	2.0	2.0
9	2.1	16	265	64	35	212	21	24	14	28	2.0	1.9
10	1.8	14	373	106	31	394	19	20	13	9.9	2.1	2.8
11	2.4	12	261	79	33	347	17	18	12	7.4	2.1	22
12	11	23	216	64	33	315	16	16	11	6.0	2.1	4.8
13	21	56	215	55	30	239	19	15	10	5.4	2.0	5.4
14	25	81	136	48	38	148	36	14	9.1	5.0	2.2	19
15	29	170	101	41	33	249	37	13	8.7	4.8	2.2	23
16	16	162	80	40	30	221	29	12	e8.2	4.9	2.1	20
17	10	293	64	370	28	202	23	11	7.6	4.7	1.8	52
18	91	373	55	489	32	158	27	9.9	7.1	6.0	1.6	65
19	64	e1800	50	192	91	239	e80	8.7	6.6	5.1	2.0	24
20	26	e380	59	245	74	237	e210	7.8	6.3	4.7	11	12
21	22	e280	78	202	60	141	94	7.5	13	4.3	5.0	8.0
22	54	266	83	155	49	102	88	7.1	11	4.1	2.7	6.6
23	37	149	217	114	43	77	267	11	11	3.8	2.3	5.7
24	105	470	572	87	38	60	143	13	8.9	3.4	29	5.3
25	74	222	375	72	35	49	91	12	6.7	3.0	5.6	6.1
26	42	125	707	58	38	44	75	9.7	6.4	2.8	9.3	24
27	29	158	634	54	71	46	130	14	5.9	2.8	5.1	13
28	71	232	272	79	47	55	89	15	9.2	2.7	5.4	7.3
29	86	171	813	58	---	40	91	13	12	2.6	4.4	5.9
30	41	141	502	278	---	36	e90	9.3	18	2.4	3.7	5.7
31	28	---	656	658	---	36	---	57	---	2.3	3.2	---
TOTAL	920.2	5762	9832	5822	1860	5475	1889	735.0	448.7	257.6	125.8	358.4
MEAN	29.7	192	317	188	66.4	177	63.0	23.7	15.0	8.31	4.06	11.9
MAX	105	1800	848	789	396	394	267	80	51	55	29	65
MIN	1.8	12	50	40	28	36	16	7.1	5.9	2.3	1.6	1.9
AC-FT	1830	11430	19500	11550	3690	10860	3750	1460	890	511	250	711
CFSM	1.12	7.25	12.0	7.09	2.51	6.66	2.38	.89	.56	.31	.15	.45
IN.	1.29	8.09	13.80	8.17	2.61	7.69	2.65	1.03	.63	.36	.18	.55

MEAN	11.0	73.5	128	141	120	86.0	49.9	26.0	11.3	3.18	1.96	3.07
MAX	65.4	239	317	308	320	196	130	90.1	63.5	30.0	8.04	11.9
(WY)	1969	1951	1997	1970	1949	1957	1955	1963	1984	1983	1968	1997
MIN	1.29	1.56	4.34	9.01	16.0	18.1	9.46	3.32	1.46	.64	.44	.55
(WY)	1966	1953	1977	1977	1977	1992	1942	1966	1966	1973	1970	1967

ANNUAL TOTAL	37113.87		33485.7					
ANNUAL MEAN	101		91.7			54.3		
HIGHEST ANNUAL MEAN						91.7		1997
LOWEST ANNUAL MEAN						15.6		1977
HIGHEST DAILY MEAN	1800	Nov 19	1800	Nov 19		2150		Dec 22 1964
LOWEST DAILY MEAN	.70	Sep 12	1.6	Aug 18		.10		Aug 7 1973
ANNUAL SEVEN-DAY MINIMUM	.94	Aug 30	2.0	Aug 13		.11		Aug 5 1973
ANNUAL RUNOFF (AC-FT)	73620		66420			39360		
ANNUAL RUNOFF (CFSM)	3.83		3.46			2.05		
ANNUAL RUNOFF (INCHES)	52.10		47.01			27.85		
10 PERCENT EXCEEDS	265		265			148		
50 PERCENT EXCEEDS	29		29			14		
90 PERCENT EXCEEDS	2.0		2.5			1.1		

e Estimated

WILLAMETTE RIVER BASIN

14211550 JOHNSON CREEK AT MILWAUKIE, OR

LOCATION.--Lat 45°27'11", long 122°38'31", in NE 1/4 SE 1/4 sec.26, T.1 S., R.1 E., Clackamas County, Hydrologic Unit 17090012, on the right bank upstream side of the Milport Road bridge, in the city limits of Milwaukie, and at mile 0.7.

DRAINAGE AREA.--51.8 mi².

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is sea level, from State of Oregon.

REMARKS.--Records fair. Small diversions for irrigation upstream from station. Significant portion of summer flow is from Crystal Springs, through Crystal Springs Creek, which enters 0.5 mi upstream from gage.

AVERAGE DISCHARGE.--8 years (water years 1990-97), 83.2 ft³/s, 21.83 in/yr, 60,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft³/s Feb. 8, 1996, gage height 30.27 ft; maximum gage height, 34.43 ft, Feb. 9, 1996, backwater from Willamette River; minimum discharge, 10 ft³/s July 1, 3-5, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	unknown	*1,940	*a30.30	Dec. 29	1700	1,310	29.16
Nov. 24	1430	814	27.99	Jan. 1	0530	1,400	29.34
Dec. 4	2100	912	28.25	Jan. 2	1730	927	28.29
Dec. 6	0400	848	28.08	Jan. 18	0200	1,010	28.50
Dec. 8	0730	1,500	29.54	Jan. 31	1130	970	28.40
Dec. 24	1330	935	28.31	Mar. 1	2000	761	27.84
Dec. 27	1130	954	28.36				

Minimum discharge, 23 ft³/s Oct. 4.
a From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	47	200	980	503	336	63	128	81	94	29	28
2	25	43	283	849	248	453	56	104	52	52	28	28
3	25	42	247	733	175	394	53	106	96	42	29	27
4	30	49	431	324	138	259	52	85	79	38	29	27
5	39	45	517	203	113	193	49	73	75	36	28	28
6	29	51	625	165	98	208	47	67	54	35	27	28
7	27	56	576	146	92	244	49	61	46	33	28	28
8	27	46	1130	129	81	178	e60	56	43	39	28	28
9	27	41	384	118	74	257	e55	52	40	70	29	26
10	27	39	500	161	69	453	49	50	38	42	29	28
11	27	36	369	136	73	408	47	47	40	38	28	48
12	33	41	311	117	79	376	46	45	39	36	27	37
13	59	81	305	104	70	303	47	43	37	35	28	35
14	55	98	205	95	76	200	65	42	36	34	28	52
15	66	178	160	87	70	297	65	41	35	31	28	47
16	52	174	135	85	67	277	56	40	35	31	28	58
17	42	332	113	421	65	256	52	39	35	32	28	79
18	121	355	98	659	70	208	54	38	33	33	28	100
19	112	e1700	90	261	130	299	95	37	33	32	27	63
20	60	e750	102	319	118	294	251	37	32	31	42	40
21	50	349	122	276	101	189	139	36	37	31	39	34
22	89	372	130	218	88	147	124	36	47	30	31	32
23	69	230	266	169	78	120	308	42	42	30	30	31
24	141	635	762	142	71	102	194	43	38	29	65	29
25	119	341	508	124	67	86	136	43	36	29	39	31
26	75	200	632	107	75	75	113	37	34	29	38	48
27	57	223	798	101	106	73	179	43	33	29	37	44
28	92	316	351	125	86	85	132	46	33	29	32	33
29	136	251	968	104	---	69	134	48	44	28	32	31
30	72	202	649	335	---	64	136	41	44	29	30	31
31	55	---	781	786	---	62	---	114	---	29	29	---
TOTAL	1862	7323	12748	8579	3081	6965	2906	1720	1347	1136	978	1179
MEAN	60.1	244	411	277	110	225	96.9	55.5	44.9	36.6	31.5	39.3
MAX	141	1700	1130	980	503	453	308	128	96	94	65	100
MIN	24	36	90	85	65	62	46	36	32	28	27	26
AC-FT	3690	14530	25290	17020	6110	13820	5760	3410	2670	2250	1940	2340
CFSM	1.16	4.71	7.94	5.34	2.12	4.34	1.87	1.07	.87	.71	.61	.76
IN.	1.34	5.26	9.15	6.16	2.21	5.00	2.09	1.24	.97	.82	.70	.85

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1997, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	36.4	111	162	171	174	105	87.8	54.5	32.1
MAX	60.1	244	411	277	386	225	137	101	47.9
(WY)	1997	1997	1997	1997	1996	1997	1993	1996	1993
MIN	16.8	18.5	68.7	106	34.0	44.1	50.4	22.2	16.7
(WY)	1994	1994	1994	1992	1993	1992	1990	1994	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1989 - 1997

ANNUAL TOTAL	54567	49824	83.2
ANNUAL MEAN	149	137	137
HIGHEST ANNUAL MEAN			54.9
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	1700	Nov 19	1700
LOWEST DAILY MEAN	24	Oct 1	10
ANNUAL SEVEN-DAY MINIMUM	25	Sep 27	11
ANNUAL RUNOFF (AC-FT)	108200	98830	60290
ANNUAL RUNOFF (CFSM)	2.88	2.64	1.61
ANNUAL RUNOFF (INCHES)	39.19	35.78	21.83
10 PERCENT EXCEEDS	350	335	179
50 PERCENT EXCEEDS	61	61	37
90 PERCENT EXCEEDS	26	29	16

e Estimated

WILLAMETTE RIVER BASIN

287

14211720 WILLAMETTE RIVER AT PORTLAND, OR
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 45°31'07", long 122°40'00", in NW 1/4 NE 1/4 sec.3, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090012, in pier at east end of drawspan, on upstream side of Morrison Bridge, in Portland, and at mile 12.8.

DRAINAGE AREA.--11,100 mi², approximately.

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981.

WATER TEMPERATURE: November 1975 to September 1981.

REMARKS.--Water-discharge records used for computation of suspended-sediment loads were obtained by flow routing procedures using upstream records.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT OF SATUR-ATION) (00301)	HARD-NESS, TOTAL (MG/L AS CaCO3) (00900)	CALCIUM, DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg) (00925)
OCT 1996												
22...	1110	E27800	69	7.2	11.0	4.0	10.8	764	97	22	5.8	1.8
NOV												
20...	1000	E148000	54	7.1	7.5	98	13.0	748	110	18	4.6	1.5
22...	1030	E213000	52	6.8	7.5	92	13.5	752	114	17	4.3	1.4
JAN 1997												
09...	1130	E134000	49	7.0	7.0	26	13.8	770	113	16	4.1	1.4
28...	1130	E71000	62	7.2	5.0	21	14.0	770	108	20	5.1	1.7
FEB												
10...	1110	E57100	63	7.1	6.0	14	14.5	748	118	21	5.4	1.9
MAR												
11...	1230	E91200	55	7.3	8.0	28	13.2	764	111	19	4.9	1.6
APR												
10...	1010	E25400	80	7.4	10.0	3.0	11.6	770	102	27	6.6	2.4
22...	1100	E63500	59	7.3	11.0	9.0	11.6	760	106	21	5.4	1.7
MAY												
14...	1130	E27400	63	7.4	16.5	2.3	10.0	760	103	22	5.7	1.9
20...	1340	E22600	62	7.5	17.0	1.4	9.9	760	102	21	5.5	1.9
JUN												
02...	1230	E26400	80	7.2	17.5	3.5	10.4	762	108	24	6.2	2.1
24...	1110	E16000	83	7.5	19.0	4.1	10.1	769	107	27	6.9	2.3
AUG												
19...	1130	E10800	89	7.1	23.0	2.4	8.2	761	96	26	6.7	2.3

DATE	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3) (39086)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 1996												
22...	4.8	31	0.4	0.9	21	26	0	3.2	4.1	<0.1	15	56
NOV												
20...	2.9	25	0.3	1.1	15	18	0	2.7	2.6	<0.1	12	47
22...	2.7	25	0.3	1.2	13	16	0	2.6	2.5	<0.1	12	50
JAN 1997												
09...	2.6	25	0.3	1.1	18	22	0	2.0	2.0	<0.1	14	45
28...	3.6	28	0.4	0.6	21	26	0	3.0	2.7	<0.1	14	46
FEB												
10...	3.7	27	0.3	0.6	21	26	0	2.9	2.6	<0.1	16	50
MAR												
11...	3.5	28	0.4	0.6	21	26	0	2.3	2.5	<0.1	13	44
APR												
10...	4.9	28	0.4	0.7	29	35	0	3.8	3.8	<0.1	16	59
22...	4.1	29	0.4	0.6	26	32	0	2.9	2.9	<0.1	14	67
MAY												
14...	4.6	30	0.4	0.7	23	28	0	3.4	3.2	<0.1	15	59
20...	4.4	30	0.4	0.7	24	29	0	2.8	3.4	<0.1	15	55
JUN												
02...	5.5	32	0.5	0.9	27	33	0	3.8	4.3	<0.1	15	66
24...	6.6	34	0.6	0.8	29	35	0	3.4	5.1	<0.1	16	72
AUG												
19...	7.4	37	0.6	1.1	32	39	0	5.1	6.1	<0.1	14	71

E - Estimated.

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 1996												
22...	50	0.08	0.050	0.020	<0.2	<0.2	0.36	0.04	0.05	0.025	2.0	0.4
NOV												
20...	41	0.06	0.016	0.004	<0.2	<0.2	0.90	0.44	0.04	0.013	2.8	4.9
22...	39	0.07	0.008	0.002	0.2	0.4	0.91	0.18	0.04	0.014	4.0	2.8
JAN 1997												
09...	40	0.06	0.029	0.005	<0.2	<0.2	0.39	0.08	0.01	0.021	1.3	0.9
28...	46	0.06	0.052	0.007	<0.2	0.3	0.54	0.07	0.01	0.027	1.8	0.8
FEB												
10...	49	0.07	0.054	0.008	<0.2	<0.2	0.64	0.05	0.01	0.018	1.2	0.7
MAR												
11...	44	0.06	0.036	0.006	<0.2	0.3	0.56	0.07	<0.01	0.020	1.8	--
APR												
10...	59	0.08	0.062	0.010	<0.2	<0.2	0.67	0.06	0.07	0.039	1.2	1.0
22...	49	0.09	0.042	0.009	<0.2	<0.2	0.33	0.05	0.01	0.025	1.7	1.2
MAY												
14...	50	0.08	0.016	0.007	<0.2	<0.2	0.26	0.02	0.02	0.021	1.1	0.3
20...	48	0.07	<0.002	0.007	<0.2	0.2	0.20	0.05	0.02	0.021	1.2	0.2
JUN												
02...	56	0.09	0.037	0.011	<0.2	<0.2	0.35	0.01	<0.01	0.038	1.5	0.4
24...	60	0.10	0.016	0.011	<0.2	<0.2	0.36	0.04	0.05	0.028	1.4	0.8
AUG												
19...	63	0.10	0.024	0.006	<0.2	<0.2	0.23	0.04	0.02	0.039	1.4	0.6
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC, DIS- SOLVED (UG/L AS AS) (01000)	BARIIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1996												
22...	30	<1	<1	5	<1	E9.6	<1	<1	<1	1	67	<1
NOV												
20...	120	<1	<1	7	<1	E5.9	<1	<1	<1	2	180	<1
22...	140	<1	<1	6	<1	E6.4	<1	<1	<1	1	240	<1
JAN 1997												
09...	40	<1	<1	4	<1	E<4.0	<1	<1	<1	3	49	<1
28...	60	<1	<1	5	<1	E4.9	<1	<1	<1	1	77	<1
FEB												
10...	50	<1	<1	5	<1	E6.0	<1	<1	<1	<1	70	<1
MAR												
11...	30	<1	<1	5	<1	E<4.0	<1	<1	<1	<1	42	<1
APR												
10...	5	<1	<1	6	<1	E8.3	<1	<1	<1	<1	31	<1
22...	7	<1	<1	4	<1	E9.5	<1	<1	<1	<1	20	<1
MAY												
14...	5	<1	<1	4	<1	E6.8	<1	<1	<1	<1	23	<1
20...	6	<1	<1	4	<1	E7.4	<1	1	<1	2	27	<1
JUN												
02...	5	<1	<1	6	<1	E9.6	<1	<1	<1	<1	24	<1
24...	4	<1	<1	6	<1	E9.9	<1	<1	<1	1	29	<1
AUG												
19...	3	<1	<1	6	<1	E13.8	<1	<1	<1	2	22	<1
DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL, DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON, D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE, SURROGT, WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1996												
22...	<4	6	<1	<1	<1	<1	35	<1	<6	2	67	94
NOV												
20...	<4	26	<1	<1	<1	<1	33	<1	<6	1	103	113
22...	<4	35	<1	<1	<1	<1	29	<1	<6	1	103	113
JAN 1997												
09...	<4	9	<1	<1	<1	<1	28	<1	<6	3	94	101
28...	<4	10	<1	<1	<1	<1	34	<1	<6	3	101	117
FEB												
10...	<4	17	<1	<1	<1	<1	38	<1	<6	<1	82	93
MAR												
11...	<4	6	<1	<1	<1	<1	34	<1	<6	1	104	112
APR												
10...	<4	16	<1	<1	<1	<1	42	<1	<6	3	87	112
22...	<4	5	<1	<1	<1	<1	34	<1	<6	<1	113	127
MAY												
14...	<4	9	<1	<1	<1	<1	36	<1	<6	1	102	117
20...	<4	3	<1	1	<1	<1	34	<1	<6	3	115	130
JUN												
02...	<4	3	<1	<1	<1	<1	39	<1	<6	2	103	131
24...	<4	2	<1	<1	<2	<1	42	<1	<6	2	--	--
AUG												
19...	<4	<1	<1	<1	<1	<1	40	<1	<6	3	103	118

E - Estimated.

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	HCH ALPHA D6 SRG, WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS, WATER, DISS, REC (UG/L) (04095)	ALPHA BHC, DIS- SOLVED (UG/L) (34253)	P,P' DDE, DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS, DIS- SOLVED (UG/L) (38933)	LINDANE, DIS- SOLVED (UG/L) (39341)
OCT 1996												
22...	80	<0.007	<0.002	0.021	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
NOV												
20...	109	<0.007	<0.002	0.083	E0.004	E0.006	<0.004	0.005	<0.002	<0.006	0.013	<0.004
22...	109	<0.007	<0.002	0.157	E0.004	E0.009	<0.004	E0.004	<0.002	<0.006	0.013	<0.004
JAN 1997												
09...	89	<0.007	<0.002	0.011	<0.018	E0.009	<0.004	<0.003	<0.002	<0.006	E0.002	<0.004
28...	96	<0.007	<0.002	0.022	<0.018	E0.009	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
FEB												
10...	81	<0.007	<0.002	0.012	<0.018	E0.008	<0.004	<0.003	<0.002	<0.006	E0.002	<0.004
MAR												
11...	76	<0.007	<0.002	0.037	<0.018	E0.006	<0.004	E0.004	<0.002	<0.006	0.006	<0.004
APR												
10...	98	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
22...	104	E0.007	<0.002	0.066	<0.018	E0.010	<0.004	0.007	<0.002	<0.006	<0.004	<0.004
MAY												
14...	97	<0.007	<0.002	0.020	<0.018	E0.006	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
20...	107	<0.007	<0.002	0.012	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	E0.004	<0.004
JUN												
02...	110	<0.007	<0.002	0.020	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
24...	--	--	--	--	--	--	--	--	--	--	--	--
AUG												
19...	103	<0.007	<0.002	E0.004	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

DATE	DI- ELDRIN, DIS- SOLVED (UG/L) (39381)	METO- LACHLOR, WATER, DISSOLV (UG/L) (39415)	MALA- THION, WATER, SOLVED (UG/L) (39532)	PARA- THION, WATER, SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN SENCOR, WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE, WAT FLT 0.7 U (UG/L) (82660)	TRI- FLUR- ALIN, WAT FLT 0.7 U (UG/L) (82661)
OCT 1996											
22...	<0.001	0.021	<0.005	<0.004	E0.003	0.018	<0.002	<0.002	0.006	<0.003	<0.002
NOV											
20...	<0.001	0.074	<0.005	<0.004	<0.002	0.137	E0.003	<0.002	0.055	<0.003	E0.003
22...	<0.001	0.122	<0.005	<0.004	<0.002	0.328	E0.003	<0.002	0.075	<0.003	E0.003
JAN 1997											
09...	<0.001	0.016	<0.005	<0.004	<0.002	0.033	<0.002	<0.002	0.009	<0.003	E0.003
28...	<0.001	0.027	<0.005	<0.004	<0.002	0.092	<0.002	<0.002	0.030	<0.003	<0.002
FEB											
10...	<0.001	0.017	<0.005	<0.004	<0.002	0.041	<0.002	<0.002	0.025	<0.003	<0.002
MAR											
11...	<0.001	0.013	<0.005	<0.004	<0.002	0.042	<0.002	<0.002	0.014	<0.003	<0.002
APR											
10...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	0.009
22...	<0.001	0.012	<0.005	<0.004	0.005	0.092	<0.002	<0.002	0.006	<0.003	<0.002
MAY											
14...	<0.001	0.005	<0.005	<0.004	0.006	0.016	<0.002	<0.002	<0.004	<0.003	<0.002
20...	<0.001	0.006	<0.005	<0.004	E0.004	0.010	<0.002	<0.002	<0.004	<0.003	<0.002
JUN											
02...	<0.001	0.015	<0.005	<0.004	0.009	0.022	<0.002	<0.002	<0.004	<0.003	<0.002
24...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	<0.001	0.006	<0.005	<0.004	0.006	0.007	<0.002	<0.002	<0.004	<0.003	<0.002

DATE	ETHAL- FLUR- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL, WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON, WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION, WAT FLT 0.7 U GF, REC (UG/L) (82667)	BPTC, WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON, WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP, WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN, WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 1996											
22...	<0.004	<0.002	E0.010	<0.002	<0.006	<0.002	<0.004	E0.008	<0.004	0.009	<0.002
NOV											
20...	<0.004	<0.002	E0.031	<0.002	<0.006	<0.002	<0.004	E0.011	<0.004	0.015	<0.002
22...	<0.004	<0.002	E0.031	<0.002	<0.006	0.006	<0.004	E0.006	<0.004	0.029	<0.002
JAN 1997											
09...	<0.004	<0.002	E0.010	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
28...	<0.004	<0.002	E0.019	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
FEB											
10...	<0.004	<0.002	E0.016	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAR											
11...	<0.004	<0.002	E0.017	<0.002	<0.006	<0.002	<0.004	E0.007	<0.004	0.012	<0.002
APR											
10...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
22...	<0.004	<0.002	E0.039	<0.002	<0.006	<0.002	<0.004	E0.015	<0.004	<0.003	<0.002
MAY											
14...	<0.004	<0.002	<0.007	<0.002	<0.006	0.005	<0.004	E0.005	<0.004	<0.003	<0.002
20...	<0.004	<0.002	<0.007	<0.002	<0.006	0.004	<0.004	<0.010	<0.004	<0.003	<0.002
JUN											
02...	<0.004	<0.002	E0.005	<0.002	<0.006	0.013	<0.004	<0.010	<0.004	0.004	<0.002
24...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002

E - Estimated.

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	CARBO- FURAN, WATER FLTRD 0.7 U (UG/L) (82674)	TER- BUFOS, WATER FLTRD 0.7 U (UG/L) (82675)	PRON- AMIDE, WATER FLTRD 0.7 U (UG/L) (82676)	DISUL- FOTON, WATER FLTRD 0.7 U (UG/L) (82677)	TRIAL- LATE, WATER FLTRD 0.7 U (UG/L) (82678)	PRO- PANIL, WATER FLTRD 0.7 U (UG/L) (82679)	CAR- BARYL, WATER FLTRD 0.7 U (UG/L) (82680)	THIO- BENCARB, WATER FLTRD 0.7 U (UG/L) (82681)	DCPA, WATER FLTRD 0.7 U (UG/L) (82682)	PENDI- METH- ALIN, WAT FLT 0.7 U (UG/L) (82683)	NAPROP- AMIDE, WATER FLTRD 0.7 U (UG/L) (82684)
OCT 1996											
22...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.005	<0.002	<0.002	<0.004	0.005
NOV											
20...	E0.015	<0.013	0.019	<0.017	0.006	<0.004	E0.041	<0.002	<0.002	<0.004	0.013
22...	E0.007	<0.013	0.016	<0.017	0.010	<0.004	E0.008	<0.002	<0.002	<0.004	0.008
JAN 1997											
09...	<0.003	<0.013	0.008	<0.017	E0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
28...	<0.003	<0.013	0.022	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB											
10...	<0.003	<0.013	0.019	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAR											
11...	<0.003	<0.013	0.014	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.012
APR											
10...	E0.011	<0.013	<0.003	<0.017	0.047	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
22...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.007
MAY											
14...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.003	<0.002	<0.002	<0.004	<0.003
20...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUN											
02...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.003	<0.002	<0.002	<0.004	<0.003
24...	--	--	--	--	--	--	--	--	--	--	--
AUG											
19...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003

DATE	PRO- PARGITE, WATER FLTRD 0.7 U (UG/L) (82685)	METHYL AZIN- PHOS, WAT FLT 0.7 U (UG/L) (82686)	PER- METHRIN CIS, WAT FLT 0.7 U (UG/L) (82687)	AN- TIMONY, SED. SUSP. (UG/G) (29816)	ARSENIC, SED. SUSP. (UG/G) (29818)	BARIIUM, SED. SUSP. (UG/G) (29820)	BERYL- LIUM, SED. SUSP. (UG/G) (29822)	CADMIUM, SED. SUSP. (UG/G) (29826)	CHRO- MIUM, SED. SUSP. (UG/G) (29829)	COPPER, SED. SUSP. (UG/G) (29832)	LEAD, SED. SUSP. (UG/G) (29836)
OCT 1996											
22...	<0.013	<0.001	<0.005	0.6	9.8	400	1.4	--	70	69	48
NOV											
20...	<0.013	<0.001	<0.005	0.6	6.5	500	1.5	0.1	66	53	15
22...	<0.013	<0.001	<0.005	0.7	9.4	490	1.6	0.2	68	58	16
JAN 1997											
09...	<0.013	<0.001	<0.005	0.8	9.3	510	1.5	0.2	62	56	14
28...	<0.013	<0.001	<0.005	0.9	9.0	500	1.6	0.4	71	57	18
FEB											
10...	<0.013	<0.001	<0.005	1.0	10.2	490	1.5	0.3	74	59	14
MAR											
11...	<0.013	<0.001	<0.005	0.6	7.5	500	1.6	0.1	76	52	17
APR											
10...	<0.013	<0.001	<0.005	0.9	9.7	760	1.4	<0.2	180	48	52
22...	<0.013	<0.001	<0.005	1.1	7.8	470	1.5	0.1	120	62	22
MAY											
14...	<0.013	<0.001	<0.005	1.1	8.2	440	1.4	0.5	150	48	26
20...	<0.013	<0.001	<0.005	2.0	7.5	420	1.2	0.6	83	44	41
JUN											
02...	<0.013	<0.001	<0.005	1.2	8.8	450	1.4	0.3	73	44	33
24...	--	--	--	1.1	7.8	440	1.1	0.3	69	54	33
AUG											
19...	<0.013	<0.001	<0.005	1.6	8.4	93	1.3	0.5	72	14	29

DATE	MAN- GANESE, SED. SUSP. (UG/G) (29839)	MERCURY, SED. SUSP. (UG/G) (29841)	MOLYB- DENUM, SED. SUSP. (UG/G) (29843)	NICKEL, SED. SUSP. (UG/G) (29845)	SELE- NIUM, SED. SUSP. (UG/G) (29847)	SILVER, SED. SUSP. (UG/G) (29850)	VANA- DIUM, SED. SUSP. (UG/G) (29853)	ZINC, SED. SUSP. (UG/G) (29855)	ALUM- INUM, SED, SUS PERCENT (30221)	CARBON, SED. SUSP. PERCENT (30244)	IRON SEDI- MENT, SUSP. PERCENT (30269)
OCT 1996											
22...	1900	0.16	--	44	0.3	<1.0	150	150	9.1	4.4	5.6
NOV											
20...	1300	0.05	<5	42	0.2	<0.5	170	120	9.3	1.7	5.7
22...	1300	0.07	<5	44	0.2	<0.5	180	130	9.6	2.1	6.2
JAN 1997											
09...	1400	0.06	<5	46	0.2	<0.5	160	130	8.8	1.7	5.9
28...	1500	0.04	--	45	0.3	<1.0	150	130	8.9	2.4	5.5
FEB											
10...	1600	0.04	<5	54	0.4	<0.5	170	140	8.7	3.4	6.0
MAR											
11...	1100	0.02	<5	43	0.3	<0.5	180	120	9.3	2.0	5.9
APR											
10...	2600	0.08	14	110	0.4	<1.0	140	150	7.5	5.5	5.7
22...	1400	0.09	<5	54	0.3	0.5	170	130	8.7	3.4	6.3
MAY											
14...	3400	--	13	86	0.4	<1.0	160	140	7.9	--	5.9
20...	3200	--	<5	49	0.4	0.7	150	140	7.0	5.9	5.4
JUN											
02...	3100	--	<5	45	0.4	0.9	160	170	7.3	6.1	5.8
24...	3200	0.14	<10	42	0.5	<1.0	150	160	7.6	5.4	5.5
AUG											
19...	3500	0.14	<5	45	0.4	<0.5	150	38	6.8	5.2	5.2

E - Estimated.

WILLAMETTE RIVER BASIN

291

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	PHOS- PHORUS, SEDI- MENT SUSP. PERCENT (30292)	SULFUR, SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM, SEDI- MENT SUSP. PERCENT (30317)	COBALT, SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM, SEDI- MENT SUSP. (UG/G) (35040)	URANIUM, SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM, SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC, SUS- PENDEDED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1996											
22...	0.18	0.1	0.65	24	210	--	25	4.1	15	E1130	98
NOV											
20...	0.13	<0.1	0.76	24	320	<50	23	1.6	345	E138000	86
22...	0.16	<0.1	0.77	25	290	<50	26	1.9	224	E129000	74
JAN 1997											
09...	0.15	--	0.69	25	320	<50	27	1.8	51	E18500	97
28...	0.14	0.1	0.68	23	250	--	24	2.3	49	E9390	99
FEB											
10...	0.18	0.1	0.69	25	270	<50	28	3.6	18	E2780	99
MAR											
11...	0.12	<0.1	0.79	23	250	<50	29	1.9	73	E18000	99
APR											
10...	0.14	0.2	0.58	25	230	<100	160	--	7	E480	98
22...	0.17	0.2	0.70	24	250	<50	28	3.1	19	E3260	96
MAY											
14...	0.21	--	0.60	27	240	<100	24	--	5	E370	98
20...	0.21	0.2	0.60	26	220	<50	20	5.7	5	E305	97
JUN											
02...	0.26	0.3	0.61	25	200	<50	24	5.8	5	E356	96
24...	0.22	0.1	0.58	29	220	<100	21	--	8	E346	96
AUG											
19...	0.24	0.2	0.60	26	220	<50	25	--	7	E204	99

E - Estimated.

14211814 FAIRVIEW CREEK AT GLISAN STREET, NEAR GRESHAM, OR

LOCATION.--Lat 45°31'40", long 122°26'51", in Land Grant parcel number 58, T.1 N., R.3 E., Multnomah County, Hydrologic Unit 17090012, on right bank at upstream side of culvert on Glisan St., 0.4 mi east of the intersection of 202nd Ave. and Glisan St., 1.7 mi northwest of Gresham City Hall, and at mile 3.05.

DRAINAGE AREA.--4.94 mi².

PERIOD OF RECORD.--May 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 205 ft above sea level, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. No regulation or diversion. High flows affected to an unknown degree by two small ponds just upstream from station.

AVERAGE DISCHARGE.--5 years (water years 1993-97), 5.76 ft³/s, 15.85 in/yr, 4,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft³/s Nov. 19, 1996, gage height, 6.18 ft, but may have been greater during period of missing record Feb. 7, 1996; maximum gage height, 6.34 ft Nov. 1, 1994; minimum discharge, 0.24 ft³/s Sept. 15, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0800	*85	*6.18	Dec. 27	0900	39	5.24
Nov. 24	1630	32	5.06	Dec. 29	1730	49	5.51
Dec. 8	0930	42	5.34	Jan. 1	0330	45	5.41
Dec. 24	1330	34	5.10	Jan. 18	0300	34	5.12

Minimum daily discharge, 1.4 ft³/s Sept. 23, 24, 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	2.1	11	37	e26	15	9.1	8.2	11	9.4	3.1	3.1
2	2.7	1.9	14	30	e17	20	8.6	7.3	7.4	6.9	3.5	3.0
3	3.4	2.0	13	25	e15	e18	8.1	8.3	10	5.5	e3.4	2.9
4	4.6	2.8	16	20	e13	e16	7.3	7.2	e8.5	4.9	e3.2	3.0
5	6.6	2.4	21	18	e12	e13	6.0	5.7	e8.0	4.6	e3.4	3.0
6	3.1	2.5	21	16	e12	e14	5.4	6.1	e7.0	e4.2	3.2	2.9
7	2.3	3.0	22	15	e11	e15	5.5	5.1	e6.0	e3.8	2.8	2.7
8	2.4	e2.6	37	14	e10	e10	6.8	4.4	e6.0	4.5	2.8	2.6
9	1.6	e2.2	20	e14	e9.5	e15	5.8	4.1	e5.5	10	3.2	2.7
10	1.7	e1.9	23	e16	e9.0	e20	5.3	5.2	e5.0	6.0	3.3	2.8
11	1.9	e1.9	22	e13	10	e18	5.0	5.9	5.1	4.7	3.3	3.8
12	3.2	e3.8	20	e9.5	12	e17	4.9	6.1	5.5	4.7	3.1	3.1
13	6.2	e7.0	20	e7.5	11	e14	5.0	5.9	5.1	4.7	3.2	2.3
14	5.7	8.1	16	e6.0	12	e12	6.6	5.7	5.0	4.6	3.4	3.1
15	7.1	8.9	13	e5.0	10	e16	7.7	5.5	4.9	4.4	3.4	2.8
16	4.6	8.0	12	e5.0	9.8	e15	7.2	5.1	4.8	4.3	3.5	3.0
17	2.8	19	11	e24	9.5	e14	7.1	4.8	4.5	4.3	3.5	4.3
18	11	21	10	27	9.5	e12	7.4	4.0	4.5	4.3	3.4	5.2
19	11	71	10	15	15	e15	11	3.6	4.7	4.1	3.4	3.4
20	4.2	30	12	17	12	e15	15	3.6	4.6	4.2	4.2	2.3
21	3.1	17	12	17	10	e13	9.6	4.5	4.5	4.2	4.9	1.8
22	6.7	18	12	17	9.6	e12	8.4	5.2	4.3	4.2	4.0	e1.6
23	4.5	12	17	15	9.1	e11	13	6.1	4.5	4.1	3.5	e1.4
24	11	27	28	14	8.9	e10	10	6.6	4.1	4.0	6.4	e1.4
25	11	18	22	13	8.9	e9.8	8.5	6.6	4.1	4.0	5.2	e1.6
26	5.0	11	30	13	9.4	9.6	7.7	6.0	4.4	4.1	4.8	e3.0
27	3.1	11	33	12	9.2	9.9	11	6.5	4.5	4.1	4.6	e2.2
28	5.2	15	19	e13	6.9	11	9.6	6.8	4.7	4.1	3.9	e1.6
29	10	13	40	e12	---	9.8	9.0	6.7	6.6	3.9	3.7	e1.4
30	3.8	10	34	e20	---	9.0	9.0	5.9	5.7	3.7	3.3	e1.4
31	2.7	---	34	e40	---	9.0	---	9.2	---	3.2	3.2	---
TOTAL	155.2	354.1	625	520.0	317.3	418.1	240.6	181.9	170.5	147.7	113.8	79.4
MEAN	5.01	11.8	20.2	16.8	11.3	13.5	8.02	5.87	5.68	4.76	3.67	2.65
MAX	11	71	40	40	26	20	15	9.2	11	10	6.4	5.2
MIN	1.6	1.9	10	5.0	6.9	9.0	4.9	3.6	4.1	3.2	2.8	1.4
AC-FT	308	702	1240	1030	629	829	477	361	338	293	226	157
CFSM	1.01	2.39	4.08	3.40	2.29	2.73	1.62	1.19	1.15	.96	.74	.54
IN.	1.17	2.67	4.71	3.92	2.39	3.15	1.81	1.37	1.28	1.11	.86	.60

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1997, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997
MEAN	2.90	6.72	9.95	10.0	9.95
MAX	5.01	11.8	20.2	16.8	17.5
(WY)	1997	1997	1997	1996	1997
MIN	1.18	1.42	4.39	5.27	2.54
(WY)	1994	1994	1994	1993	1993

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1993 - 1997

ANNUAL TOTAL	3208.6	3323.6	
ANNUAL MEAN	8.77	9.11	
HIGHEST ANNUAL MEAN			5.76
LOWEST ANNUAL MEAN			9.11
HIGHEST DAILY MEAN	71	71	3.01
LOWEST DAILY MEAN	1.2	1.4	3.01
ANNUAL SEVEN-DAY MINIMUM	1.3	1.8	3.01
ANNUAL RUNOFF (AC-FT)	6360	6590	4170
ANNUAL RUNOFF (CFSM)	1.77	1.84	1.17
ANNUAL RUNOFF (INCHES)	24.16	25.03	15.85
10 PERCENT EXCEEDS	18	18	13
50 PERCENT EXCEEDS	6.6	6.6	3.8
90 PERCENT EXCEEDS	1.7	2.9	.90

e Estimated

WILLAMETTE RIVER BASIN

293

14211820 COLUMBIA SLOUGH AT PORTLAND, OR

LOCATION.--Lat 45°38'21", long 122°45'43", in NE 1/4 SE 1/4 sec.23, T.2 N., R.1 W., Multnomah County, Hydrologic Unit 17090012, on right bank, 0.25 mi upstream from mouth, and 1.25 mi upstream from confluence of Willamette and Columbia Rivers.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Acoustic velocity meter with water-stage and velocity-index recorder. Datum of gage is 1.53 ft above sea level.

REMARKS.--Records fair due to large positive and negative flows, except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,400 ft³/s Dec. 5, 1995, but may have been greater Dec. 2-4, 1995, Feb. 10-14, 1996; maximum gage height, 27.26 ft Feb. 9, 1996; minimum daily discharge, -6,700 ft³/s Feb. 7, 1996, but may have been less Nov. 29 to Dec. 3, 1995, Feb. 8, 9, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,080 ft³/s Jan. 5; maximum gage height, 23.04 ft Jan. 3; minimum daily discharge, -3,080 ft³/s Jan. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	201	184	-3080	-2930	341	556	-107	-461	348	68	152
2	95	144	218	-1520	717	170	312	-157	-685	166	106	128
3	196	200	173	769	1480	219	431	623	-875	50	146	32
4	153	113	223	1720	645	381	272	962	-456	44	95	74
5	268	125	-106	2080	423	151	197	651	174	137	75	22
6	161	110	92	1930	645	138	236	363	202	38	-118	59
7	108	133	408	1430	590	197	285	-100	-45	49	97	126
8	46	56	-26	1220	552	201	153	193	2.0	150	122	150
9	68	65	-81	864	319	373	140	68	-144	172	101	126
10	76	63	-14	266	348	151	135	78	-117	84	148	98
11	-13	32	67	252	425	79	208	508	-176	87	232	164
12	88	42	---	614	200	187	173	-451	-438	60	162	116
13	82	99	---	232	348	243	408	-2220	-559	220	94	130
14	47	63	e360	112	268	217	219	-355	-293	128	69	60
15	123	134	---	174	257	307	131	265	-109	59	102	48
16	175	131	---	322	244	371	40	350	-145	41	9.4	41
17	78	87	---	617	149	103	102	-417	25	-28	27	e45
18	161	137	e230	423	267	133	65	-692	16	12	53	49
19	241	344	e340	302	117	-165	70	-552	-28	-40	3.8	86
20	235	387	103	376	63	-963	-88	-233	348	102	71	71
21	119	326	163	255	31	432	-140	-177	369	8.9	124	82
22	156	188	206	373	61	240	-1190	84	296	48	85	136
23	63	321	296	352	155	341	-2960	82	604	-8.5	121	271
24	21	259	286	278	396	407	-1060	-166	168	88	256	76
25	51	295	-94	183	308	590	-21	620	577	124	150	144
26	151	244	13	178	190	243	822	474	951	166	163	149
27	254	237	-880	168	177	190	1150	3.8	296	296	190	104
28	34	199	-986	228	293	-579	445	-165	131	9.7	152	88
29	155	205	416	296	---	-678	-471	-139	126	132	61	100
30	172	163	653	207	---	248	-434	151	274	202	-29	87
31	206	---	-861	-1520	---	959	---	-402	---	190	67	---
TOTAL	3867	5103	---	10101	6738	5227	186	-857.2	28.0	3135.1	3003.2	3014
MEAN	125	170	---	326	241	169	6.20	-27.7	.93	101	96.9	100
MAX	268	387	---	2080	1480	959	1150	962	951	348	256	271
MIN	-13	32	---	-3080	-2930	-963	-2960	-2220	-875	-40	-118	22
AC-FT	7670	10120	---	20040	13360	10370	369	-1700	56	6220	5960	5980

e Estimated

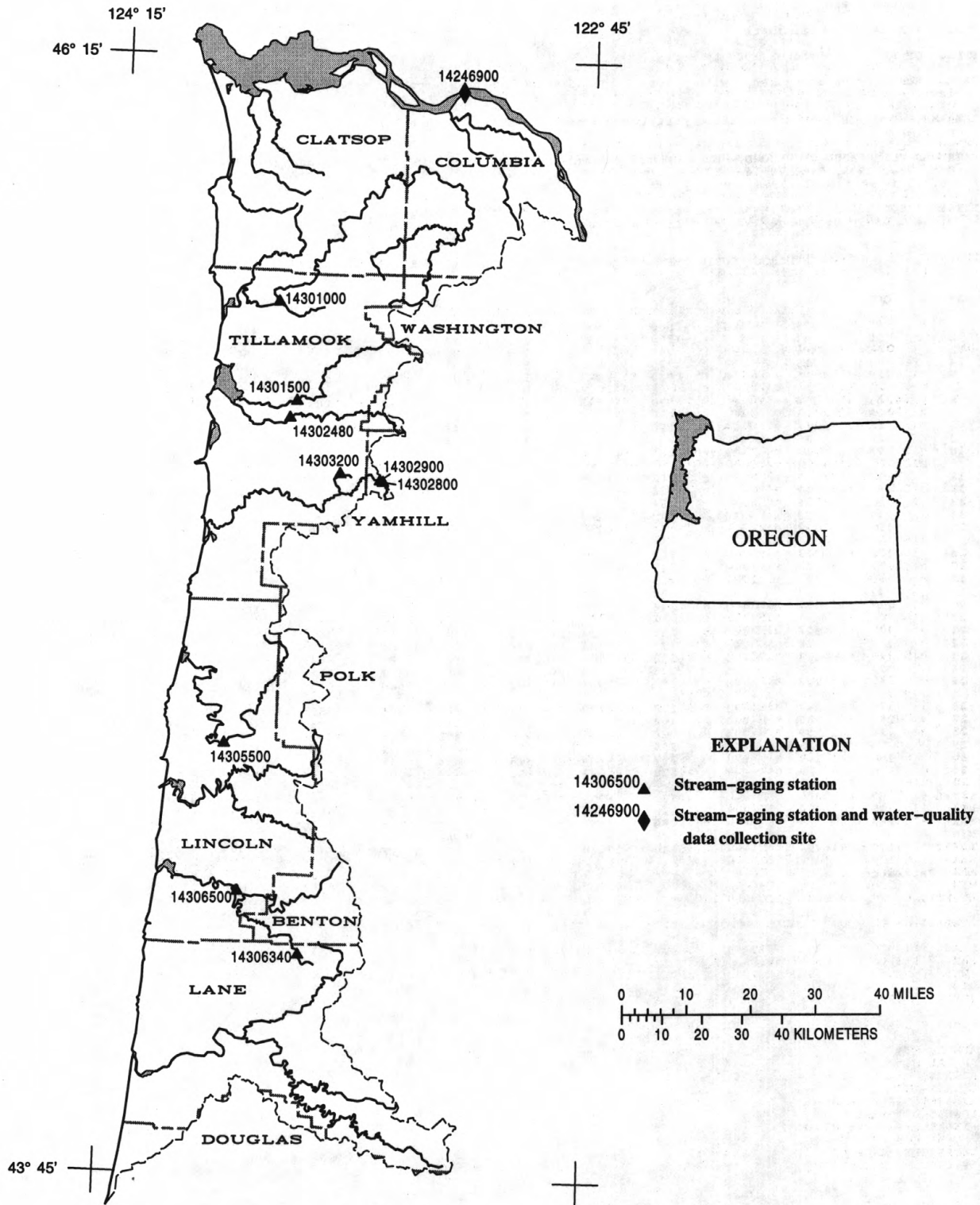


Figure 27. Location of surface-water and water-quality stations in the Oregon Coastal Drainages north of the Siuslaw River Basin and in the lower Columbia River.

COLUMBIA RIVER MAIN STEM

295

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR

LOCATION.--Lat 46°10'55", long 123°10'50", in NE 1/4 sec.16, T.8 N., R.4 W., Columbia County, Hydrologic Unit 17080003, on left bank, 0.7 mi downstream from Crims Island, 3.0 mi northwest of Quincy, and at mile 53.8.

DRAINAGE AREA.--256,900 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1968 to June 1970, June 1991 to current year.

GAGE.--Acoustic velocity meter with water-stage and velocity index recorder. Datum of gage is 0.52 ft above sea level. May 1968 to June 1970 water-stage recorder with auxiliary water-stage recorder 5.6 miles downstream, at datum 10.00 ft lower.

REMARKS.--Records fair. Flow regulated by many reservoirs on Columbia River and in tributary basins. Flows affected by tide which can cause reverse direction during tidal cycle when mean daily flows are less than 250,000 ft³/s. Mean discharge values are based on a 24 hour day, not a tidal cycle.

AVERAGE DISCHARGE.--7 years (water years 1969, 1992-97), 247,800 ft³/s, 179,500,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 864,000 ft³/s Feb. 10, 1996; minimum daily discharge, 73,700 ft³/s Sept. 7, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 693,000 ft³/s Jan. 3; maximum elevation, 11.55 ft Jan. 3; minimum daily discharge, 127,000 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e134000	e174000	e325000	e584000	e500000	e314000	e388000	546000	511000	327000	206000	194000
2	e156000	e168000	e322000	e665000	e481000	e319000	e386000	563000	526000	308000	209000	173000
3	e144000	e151000	e340000	e693000	e492000	e320000	e427000	562000	543000	308000	189000	171000
4	e152000	e135000	e348000	e667000	e463000	e324000	e351000	537000	570000	304000	187000	168000
5	e156000	e174000	e376000	e618000	e471000	e329000	e360000	493000	584000	300000	187000	168000
6	e136000	e167000	e413000	e586000	e456000	e354000	e347000	480000	570000	290000	202000	172000
7	e127000	e164000	e400000	e541000	e435000	e353000	e291000	475000	541000	304000	224000	175000
8	e132000	e178000	e375000	e480000	e414000	e315000	e313000	471000	555000	288000	219000	160000
9	e158000	e164000	e426000	e472000	e343000	e340000	e307000	459000	536000	263000	215000	136000
10	e167000	e168000	e426000	e455000	e381000	e309000	e303000	461000	536000	278000	218000	152000
11	e156000	e157000	e422000	e448000	e362000	e335000	328000	446000	527000	280000	202000	155000
12	e169000	e178000	e428000	e437000	e307000	e374000	318000	420000	533000	296000	190000	164000
13	e160000	e168000	e399000	e426000	e349000	e396000	284000	484000	549000	284000	201000	179000
14	e154000	e166000	e371000	e418000	e337000	e404000	260000	523000	570000	261000	208000	170000
15	e176000	e178000	e341000	e439000	e317000	e408000	280000	527000	570000	270000	218000	e140000
16	e156000	e176000	e335000	e399000	e338000	e391000	300000	512000	577000	288000	221000	e143000
17	e161000	e175000	e352000	e385000	e333000	e356000	322000	497000	569000	295000	225000	e169000
18	e167000	e195000	e338000	e366000	e316000	e403000	323000	522000	557000	300000	211000	e177000
19	e150000	e231000	e320000	e390000	e320000	e415000	347000	535000	554000	301000	205000	e197000
20	e150000	e301000	e298000	e361000	e335000	e453000	363000	546000	543000	294000	212000	e206000
21	e177000	e353000	e321000	e386000	e360000	e460000	397000	564000	513000	280000	216000	e198000
22	e191000	e387000	e312000	e386000	e349000	e435000	437000	557000	513000	268000	225000	e203000
23	e172000	e403000	e311000	e342000	e425000	e455000	487000	534000	489000	267000	227000	e178000
24	e170000	e381000	e304000	e330000	e396000	e456000	545000	544000	474000	275000	204000	e189000
25	e194000	e368000	e326000	e333000	e332000	e401000	564000	536000	457000	265000	199000	213000
26	e197000	e332000	e366000	e343000	e334000	e367000	551000	515000	428000	257000	211000	200000
27	e186000	e307000	e416000	e352000	e336000	e426000	527000	478000	398000	248000	204000	209000
28	e160000	e326000	e451000	e358000	e328000	e428000	508000	483000	400000	234000	207000	196000
29	e191000	e296000	e526000	e357000	---	e487000	508000	490000	382000	262000	193000	190000
30	e191000	e292000	e509000	e355000	---	e472000	513000	489000	361000	241000	208000	174000
31	e184000	---	e477000	e402000	---	e450000	---	484000	---	221000	218000	---
TOTAL	5074000	7013000	11674000	13774000	10610000	12049000	11635000	15733000	15436000	8657000	6454000	5319000
MEAN	163700	233800	376600	444300	378900	388700	387800	507500	514500	279300	208200	177300
MAX	197000	403000	526000	693000	500000	487000	564000	564000	584000	327000	227000	213000
MIN	127000	135000	298000	330000	307000	309000	260000	420000	361000	221000	187000	136000
AC-FT10060000	13910000	23160000	27320000	21040000	23900000	23080000	31210000	30620000	17170000	12800000	10550000	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	MEAN	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	142800	197200	270300	294700	296000	262300	284400	357100	339500	219900	156900	129500																		
MAX	166700	256500	430800	444300	543400	388700	406500	507500	514500	279300	208200	177300																		
(WY)	1969	1996	1996	1997	1996	1997	1996	1997	1997	1997	1997	1997																		
MIN	114500	136100	175400	199100	191100	196700	196200	234800	203900	139500	107100	92400																		
(WY)	1995	1994	1994	1994	1993	1992	1992	1994	1992	1992	1994	1994																		

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1969 - 1997
ANNUAL TOTAL	118134000	123428000	
ANNUAL MEAN	322800	338200	247800
HIGHEST ANNUAL MEAN			338200
LOWEST ANNUAL MEAN			171100
HIGHEST DAILY MEAN	864000	Feb 10	693000
LOWEST DAILY MEAN	111000	Sep 3	127000
ANNUAL SEVEN-DAY MINIMUM	136000	Sep 3	143000
ANNUAL RUNOFF (AC-FT)	234300000		244800000
10 PERCENT EXCEEDS	484000		534000
50 PERCENT EXCEEDS	326000		332000
90 PERCENT EXCEEDS	156000		168000

e Estimated

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1967 to September 1970, October 1990 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1993 to current year.

WATER TEMPERATURE: August 1967 to September 1970. October 1993 to current year.

INSTRUMENTATION.--Temperature recorder August 1967 to September 1970. Temperature and specific conductance recorders from October 1992 to current year.

REMARKS.--Since February, 1994, specific conductance and temperature sensors located on right bank. Prior to that time sensors were located on left bank. It was determined that daily record collected prior to February 1994 is not representative of the cross section due to a seasonal influence from several upstream sloughs. Additional specific conductance and temperature data for the period October 1992 to September 1993 available in the files of the Portland field office.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 188 microsiemens Feb. 5, 1994, but may have been higher during periods of missing record; minimum recorded, 73 microsiemens Feb. 9, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 23.5°C Aug. 21, 22, 1967; minimum, 0.0°C Jan. 31, Feb. 1, 1969.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 185 microsiemens Jan. 13, but may have been higher during periods of missing record; minimum recorded, 86 microsiemens Jan. 3, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 14-17, but may have been higher during period of missing record; minimum, 3.0°C Jan. 28, 29, Feb. 9.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS, TOTAL (MG/L AS CACO3) (00900)	CALCIUM, DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT 1996												
23...	1230	E172000	130	7.6	13.5	1.2	9.7	760	93	51	14	3.9
NOV												
25...	1100	E368000	102	7.5	8.0	29	11.9	775	99	40	11	3.0
JAN 1997												
13...	1250	E426000	183	7.9	5.0	32	13.3	766	104	63	16	5.5
FEB												
19...	1200	E320000	138	8.0	4.5	18	13.5	764	104	59	16	4.6
APR												
08...	1140	E313000	147	7.8	8.0	9.5	12.3	767	103	59	16	4.6
23...	1220	E487000	144	7.9	10.0	9.5	12.7	759	112	61	17	4.6
MAY												
08...	1120	E471000	133	7.8	11.5	12	12.3	770	112	56	16	4.1
13...	1130	E484000	132	7.8	13.0	9.8	11.8	760	112	54	15	4.0
21...	1250	E564000	113	7.8	14.0	12	11.5	760	111	49	14	3.6
29...	1130	E490000	96	7.4	13.5	14	12.4	764	119	44	13	3.1
JUN												
03...	1310	E543000	99	7.7	14.5	12	11.7	756	114	41	12	3.0
11...	1120	E527000	96	7.6	15.0	10	12.0	760	120	41	11	2.9
25...	1200	E457000	103	7.8	16.0	9.1	13.9	763	140	45	13	3.2
JUL												
22...	1200	E268000	123	7.9	19.5	5.5	10.2	764	111	51	14	3.6
AUG												
20...	1230	E212000	125	7.6	21.5	2.7	9.2	759	105	53	15	3.8
DATE		SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY, DIS IT FIELD (MG/L AS CACO3) (39086)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)
OCT 1996												
23...	5.3	18	0.3	1.0	48	58	0	9.3	3.1	0.1	9.4	84
NOV												
25...	5.2	22	0.4	1.1	35	43	0	7.2	3.4	0.1	11.0	73
JAN 1997												
13...	11.0	27	0.6	1.8	60	73	0	15.0	6.7	0.1	17.0	123
FEB												
19...	6.7	19	0.4	1.4	51	63	0	10.0	4.2	0.1	14.0	94
APR												
08...	6.1	18	0.3	1.3	60	73	0	10.7	3.6	0.2	13.7	97
23...	6.3	18	0.4	1.2	58	70	0	10.0	3.6	0.1	14.1	92
MAY												
08...	5.2	17	0.3	1.3	51	62	0	9.7	3.0	0.1	13.5	93
13...	5.0	--	0.3	<0.1	52	63	0	8.8	2.4	0.1	13.2	82
21...	4.4	16	0.3	1.1	46	56	0	7.0	2.1	0.1	13.3	84
29...	3.7	15	0.2	1.0	41	50	0	6.1	1.9	0.1	11.6	61
JUN												
03...	3.5	15	0.2	0.9	40	48	0	6.3	1.8	<0.1	10.7	72
11...	3.6	16	0.2	0.9	39	48	0	5.6	1.7	0.1	10.6	64
25...	4.0	16	0.3	0.8	42	51	0	5.7	2.1	0.1	9.3	76
JUL												
22...	4.2	15	0.3	1.0	50	61	0	7.4	2.4	0.1	7.2	74
AUG												
20...	4.4	15	0.3	0.9	52	64	0	8.0	3.0	0.1	7.8	79

E - Estimated.

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)
OCT 1996												
23...	76	0.11	0.050	0.020	<0.2	<0.2	0.20	0.03	0.02	0.009	1.5	0.3
NOV												
25...	66	0.10	<0.002	0.003	<0.2	0.2	0.50	0.06	<0.01	0.011	2.4	1.7
JAN 1997												
13...	113	0.17	0.032	0.008	<0.2	0.3	0.74	0.15	0.03	0.043	2.2	0.4
FEB												
19...	91	0.13	0.021	0.005	<0.2	0.2	0.66	0.08	<0.01	0.018	1.9	0.7
APR												
08...	94	0.13	0.010	0.001	<0.2	<0.2	0.37	0.03	<0.01	0.019	1.7	--
23...	93	0.13	0.004	0.006	<0.2	<0.2	0.35	0.07	<0.01	0.018	1.9	1.3
MAY												
08...	84	0.13	0.003	0.005	<0.2	<0.2	0.26	0.05	<0.01	0.018	2.1	0.8
13...	--	--	0.003	0.004	<0.2	<0.2	0.20	0.02	<0.01	0.012	2.2	1.3
21...	73	0.11	<0.002	0.010	<0.2	0.2	0.17	0.06	<0.01	0.006	2.3	0.8
29...	65	0.08	0.007	0.004	<0.2	<0.2	0.16	0.08	<0.01	0.009	2.7	0.5
JUN												
03...	62	0.10	<0.002	0.002	<0.2	<0.2	0.17	0.05	0.03	0.015	2.2	0.6
11...	61	0.09	<0.002	0.003	<0.2	<0.2	0.12	0.04	<0.01	0.011	2.7	0.6
25...	64	0.10	<0.002	0.002	<0.2	<0.2	0.12	0.03	0.03	0.010	2.1	0.8
JUL												
22...	71	0.10	<0.002	0.002	<0.2	0.3	0.05	0.05	0.01	0.003	2.0	0.8
AUG												
20...	75	0.11	<0.002	0.003	<0.2	<0.2	0.08	<0.01	<0.01	0.007	1.9	0.6

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC, DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM, DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1996												
23...	6	<1	<1	19	<1	E10.6	<1	<1	<1	<1	13	<1
NOV												
25...	19	<1	<1	12	<1	E9.9	<1	<1	<1	1	33	<1
JAN 1997												
13...	7	<1	1	21	<1	27.2	<1	<1	<1	1	14	<1
FEB												
19...	9	<1	1	21	<1	E13.4	<1	<1	<1	1	13	<1
APR												
08...	5	<1	<1	19	<1	E11.1	<1	<1	<1	1	12	<1
23...	4	<1	1	20	<1	E14.6	<1	2	<1	<1	4	<1
MAY												
08...	4	<1	<1	20	<1	E7.5	<1	<1	<1	1	11	<1
13...	4	<1	<1	19	<1	E10.6	<1	1	<1	1	10	<1
21...	5	<1	1	17	<1	E9.8	<1	2	<1	<1	13	<1
29...	10	<1	<1	16	<1	E7.7	<1	1	<1	2	14	<1
JUN												
03...	8	<1	<1	16	<1	E5.3	<1	<1	<1	1	17	<1
11...	7	<1	1	15	<1	E7.9	<1	<1	<1	2	12	<1
25...	7	<1	1	18	<1	E7.7	<1	<1	<1	2	13	<1
JUL												
22...	4	<1	1	20	<1	E10.7	<1	1	<1	1	6	<1
AUG												
20...	4	<1	1	22	<1	E8.8	<1	<1	<1	1	10	<1

DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON, D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE, SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1996												
23...	<4	1	<1	<1	<1	<1	82	<1	<6	1	70	97
NOV												
25...	<4	5	<1	<1	<1	<1	63	<1	<6	3	78	86
JAN 1997												
13...	<4	3	1	<1	<1	<1	95	1	<6	<1	97	95
FEB												
19...	<4	5	<1	<1	<1	<1	85	<1	<6	<1	97	99
APR												
08...	4	2	<1	<1	<1	<1	86	<1	<6	4	82	107
23...	5	1	<1	<1	<1	<1	87	<1	<6	<1	112	123
MAY												
08...	<4	2	<1	<1	<1	<1	80	<1	<6	1	91	119
13...	<4	1	<1	<1	<1	<1	81	<1	<6	<1	102	107
21...	<4	1	<1	<1	<1	<1	71	<1	<6	1	93	107
29...	<4	1	<1	<1	<1	<1	64	<1	<6	1	51	65
JUN												
03...	<4	1	<1	<1	<1	<1	62	<1	<6	2	99	111
11...	<4	1	<1	<1	<1	<1	61	<1	<6	<1	105	130
25...	<4	1	<1	<1	<2	<1	66	<1	<6	<1	96	114
JUL												
22...	<4	<1	<1	<1	<1	<1	71	<1	<6	<1	99	131
AUG												
20...	<4	<1	<1	<1	<1	<1	75	<1	<6	1	84	107

E - Estimated.

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	HCH, ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	PONOFOS, WATER, DISS, REC (UG/L) (04095)	ALPHA BHC, DIS- SOLVED REC (UG/L) (34253)	P, P' DDE, DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS, DIS- SOLVED (UG/L) (38933)	LINDANE, DIS- SOLVED (UG/L) (39341)
OCT 1996												
23...	87	<0.007	<0.002	E0.003	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
NOV												
25...	74	<0.007	<0.002	0.034	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	E0.002	<0.004
JAN 1997												
13...	87	<0.007	<0.002	0.005	<0.018	E0.005	<0.004	<0.003	<0.002	<0.006	<0.004	E0.003
FEB												
19...	72	<0.007	<0.002	E0.003	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
APR												
08...	99	<0.007	<0.002	E0.004	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
23...	105	<0.007	<0.002	0.008	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
MAY												
08...	89	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
13...	95	<0.007	<0.002	E0.004	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
21...	95	<0.007	<0.002	E0.001	<0.018	E0.001	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
29...	63	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN												
03...	103	<0.007	<0.002	E0.004	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
11...	125	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
25...	114	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL												
22...	95	<0.007	<0.002	<0.005	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
AUG												
20...	97	<0.007	<0.002	<0.005	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

DATE	DI- ELDRIN, DIS- SOLVED (UG/L) (39381)	METO- LACHLOR, WATER, DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE, WAT FLT 0.7 U (UG/L) (82660)	TRI- FLUR- ALIN, WAT FLT 0.7 U (UG/L) (82661)
OCT 1996											
23...	<0.001	E0.003	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	E0.004
NOV											
25...	<0.001	0.023	<0.005	<0.004	<0.002	0.078	<0.002	<0.002	0.013	<0.003	<0.002
JAN 1997											
13...	<0.001	E0.004	<0.005	<0.004	<0.002	0.012	<0.002	<0.002	0.004	<0.003	<0.002
FEB											
19...	<0.001	E0.004	<0.005	<0.004	<0.002	0.009	<0.002	<0.002	0.011	<0.003	<0.004
APR											
08...	<0.001	E0.002	<0.005	<0.004	<0.002	E0.004	<0.002	<0.002	<0.004	<0.003	<0.002
23...	<0.001	E0.003	<0.005	<0.004	<0.002	0.008	<0.002	<0.002	<0.004	<0.003	<0.002
MAY											
08...	<0.001	<0.002	<0.005	<0.004	<0.002	0.006	<0.002	<0.002	0.004	<0.003	<0.002
13...	<0.001	0.012	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002
21...	<0.001	E0.000	<0.005	<0.004	<0.002	E0.001	<0.002	<0.002	<0.004	<0.003	<0.002
29...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
JUN											
03...	<0.001	E0.002	E0.002	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
11...	<0.001	E0.003	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
25...	<0.001	E0.003	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
JUL											
22...	<0.001	0.005	<0.005	<0.004	<0.002	E0.004	<0.002	<0.002	<0.004	<0.003	<0.002
AUG											
20...	<0.001	0.005	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002

DATE	ETHAL- FLUR- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL, WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON, WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION, WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC, WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE, WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON, WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP, WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82673)
OCT 1996											
23...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
NOV											
25...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	E0.004	<0.002
JAN 1997											
13...	<0.004	<0.002	E0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
FEB											
19...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
APR											
08...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
23...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.003	<0.004	<0.01	<0.004	<0.003	<0.002
MAY											
08...	<0.004	<0.002	<0.007	<0.002	<0.006	0.004	<0.004	<0.01	<0.004	<0.003	<0.002
13...	<0.004	<0.002	E0.008	<0.002	<0.006	E0.004	<0.004	<0.01	<0.004	<0.003	<0.002
21...	<0.004	<0.002	<0.007	<0.002	<0.006	0.005	<0.004	<0.01	<0.004	<0.003	<0.002
29...	<0.004	<0.002	<0.007	<0.002	<0.006	0.006	<0.004	<0.01	<0.004	<0.003	<0.002
JUN											
03...	<0.004	<0.002	<0.007	<0.002	<0.006	0.012	<0.004	<0.01	<0.004	<0.003	<0.002
11...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.003	<0.004	<0.01	<0.004	<0.003	<0.002
25...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
JUL											
22...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002
AUG											
20...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.01	<0.004	<0.003	<0.002

E - Estimated.

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	CARBO- FURAN, WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS, WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE, WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON, WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE, WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL, WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL, WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB, WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA, WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN, WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE, WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
OCT 1996											
23...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
NOV											
25...	<0.003	<0.013	0.007	<0.017	E0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JAN 1997											
13...	<0.003	<0.013	<0.003	<0.017	0.008	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB											
19...	<0.003	<0.013	<0.003	<0.017	0.011	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
APR											
08...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
23...	<0.003	<0.013	<0.003	<0.017	E0.004	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
MAY											
08...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
13...	<0.003	<0.013	<0.003	<0.017	E0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
21...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.003	<0.002	E0.001	<0.004	<0.003
29...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.003	<0.002	E0.001	<0.004	<0.003
JUN											
03...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
11...	<0.003	<0.013	<0.003	<0.017	0.006	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
25...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
JUL											
22...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
AUG											
20...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003

DATE	PRO- PARGITE, WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS, WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS, WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN- TIMONY, SED. SUSP. (UG/G) (29816)	ARSENIC, SED. SUSP. (UG/G) (29818)	BARIIUM, SED. SUSP. (UG/G) (29820)	BERYL- LIUM, SED. SUSP. (UG/G) (29822)	CADMIUM, SED. SUSP. (UG/G) (29826)	CHRO- MIUM, SED. SUSP. (UG/G) (29829)	COPPER, SED. SUSP. (UG/G) (29832)	LEAD, SED. SUSP. (UG/G) (29836)
OCT 1996											
23...	<0.013	<0.001	<0.005	1.2	10.4	510	1.4	0.7	56	50	72
NOV											
25...	<0.013	<0.001	<0.005	0.9	10.7	520	1.5	0.3	52	58	18
JAN 1997											
13...	<0.013	<0.001	<0.005	0.9	9.6	620	1.8	0.4	55	50	19
FEB											
19...	<0.013	<0.001	<0.005	1.0	10.3	620	2.0	0.5	63	55	21
APR											
08...	<0.013	<0.001	<0.005	1.1	8.0	580	1.6	0.8	63	45	21
23...	<0.013	<0.001	<0.005	0.7	5.5	580	1.5	0.4	70	35	17
MAY											
08...	<0.013	<0.001	<0.005	0.9	6.4	620	1.6	0.8	59	40	20
13...	<0.013	<0.001	<0.005	0.9	6.6	620	1.6	1.0	60	40	23
21...	<0.013	<0.001	<0.005	1.2	6.1	610	1.5	0.9	52	38	25
29...	<0.013	<0.001	<0.005	1.3	8.5	670	1.6	0.9	62	42	29
JUN											
03...	<0.013	<0.001	<0.005	1.4	6.2	600	1.6	0.9	57	54	27
11...	<0.013	<0.001	<0.005	0.9	6.5	600	1.4	0.7	56	43	26
25...	<0.013	<0.001	<0.005	0.9	7.5	630	1.4	0.8	67	46	29
JUL											
22...	<0.013	<0.001	<0.005	1.2	7.5	590	1.5	0.5	50	49	24
AUG											
20...	<0.013	<0.001	<0.005	1.4	7.7	590	1.5	1.0	53	54	25

DATE	MAN- GANESE, SED. SUSP. (UG/G) (29839)	MERCURY, SED. SUSP. (UG/G) (29841)	MOLYB- DENUM, SED. SUSP. (UG/G) (29843)	NICKEL, SED. SUSP. (UG/G) (29845)	SELE- NIUM, SED. SUSP. (UG/G) (29847)	SILVER, SED. SUSP. (UG/G) (29850)	VANA- DIUM, SED. SUSP. (UG/G) (29853)	ZINC, SED. SUSP. (UG/G) (29855)	ALUM- INUM, SED,SUS PERCENT (30221)	CARBON, SED. SUSP. PERCENT (30244)	IRON SEDI- MENT, SUSP. PERCENT (30269)
OCT 1996											
23...	1600	<0.01	<50	36	0.6	<1.0	110	190	7.9	4.7	4.1
NOV											
25...	1200	0.04	<5	36	0.3	<0.5	140	140	9.2	2.1	5.4
JAN 1997											
13...	1200	0.05	<5	37	0.1	<0.5	130	140	8.3	2.2	5.6
FEB											
19...	1100	0.04	<5	40	0.4	<0.5	120	180	7.7	3.1	5.1
APR											
08...	1300	0.08	<10	38	0.4	<1.0	110	160	7.7	2.7	4.9
23...	920	0.05	<5	40	0.2	<0.5	100	130	7.9	1.4	4.2
MAY											
08...	1100	0.07	<5	36	0.3	<0.5	120	160	8.0	1.6	4.6
13...	1100	0.07	<5	37	0.3	<0.5	120	160	7.9	1.8	4.5
21...	1000	0.07	<5	32	0.3	<0.5	120	170	7.9	1.5	4.4
29...	1000	0.08	<5	38	0.3	<0.5	110	190	7.7	1.7	4.3
JUN											
03...	990	0.07	<5	36	0.3	<0.5	110	170	7.8	1.7	4.2
11...	910	0.06	<5	35	0.2	<0.5	110	170	8.4	1.4	4.1
25...	1000	0.06	<5	41	0.3	<0.5	110	180	8.2	1.6	4.2
JUL											
22...	1100	0.10	<5	29	0.5	<0.5	110	210	7.4	2.5	4.4
AUG											
20...	1300	0.12	<5	33	0.4	<0.5	110	190	7.4	2.8	4.3

E - Estimated.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	PHOS- PHORUS, SEDI- MENT SUSP. PERCENT (30292)	SULFUR, SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM, SEDI- MENT SUSP. PERCENT (30317)	COBALT, SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM, SEDI- MENT SUSP. (UG/G) (35040)	URANIUM, SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM, SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC, SUS- PENDEDED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1996											
23...	0.16	0.4	0.46	17	300	<100	26	4.2	9	E4180	97
NOV											
25...	0.15	0.1	0.65	21	300	<50	29	2.0	52	E51700	84
JAN 1997											
13...	0.15	0.1	0.57	21	290	<50	33	2.2	87	E100000	72
FEB											
19...	0.13	0.2	0.55	18	240	<50	37	3.0	38	E32800	99
APR											
08...	0.12	0.2	0.51	20	300	<100	100	--	32	E27000	56
23...	0.10	0.2	0.50	17	390	<50	25	1.2	69	E90700	48
MAY											
08...	0.10	0.1	0.54	18	340	<50	28	1.7	50	E63600	56
13...	0.10	0.1	0.52	18	330	<50	27	1.7	43	E56200	63
21...	0.11	0.1	0.55	18	350	<50	27	1.5	61	E92900	68
29...	0.12	0.1	0.49	18	320	<50	27	1.8	48	E63500	71
JUN											
03...	0.11	0.1	0.51	17	340	<50	26	1.6	50	E73300	71
11...	0.09	<0.1	0.49	17	370	<50	25	1.3	53	E75400	77
25...	0.10	<0.1	0.49	19	350	<50	25	1.7	42	E51800	59
JUL											
22...	0.14	0.2	0.51	16	300	<50	24	2.5	31	E22400	81
AUG											
20...	0.13	0.1	0.50	17	300	<50	30	2.7	14	E8010	80

E - Estimated.

COLUMBIA RIVER BASIN

301

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUNCY, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	142	139	140	122	117	119	108	97	101	---	---	---
2	142	137	139	122	118	120	108	98	101	91	88	90
3	143	134	138	127	119	124	104	100	102	90	86	88
4	145	134	139	128	119	125	103	99	102	92	87	90
5	143	135	139	130	121	127	106	97	101	100	92	95
6	143	139	141	131	125	130	106	103	104	105	100	103
7	142	137	140	136	125	132	114	103	107	115	104	109
8	143	139	142	141	127	135	108	98	105	124	115	120
9	144	138	142	136	127	132	105	98	102	133	124	129
10	144	137	141	135	124	131	104	99	102	151	131	142
11	144	139	142	137	128	133	106	99	104	171	151	162
12	144	137	140	137	129	133	111	103	106	179	171	176
13	144	138	142	141	126	134	111	107	109	185	---	---
14	144	138	140	139	125	130	110	105	107	---	168	---
15	145	136	141	138	130	135	109	104	105	168	160	165
16	142	132	137	139	130	135	111	106	108	160	145	153
17	144	137	140	138	122	132	115	107	111	145	142	144
18	142	130	135	131	123	128	115	111	113	142	130	136
19	138	131	135	129	120	126	123	113	115	131	127	129
20	139	131	136	121	100	109	125	116	120	130	125	127
21	137	130	134	100	94	97	122	116	119	126	123	124
22	133	129	131	102	96	99	136	122	126	128	125	126
23	132	125	129	102	97	99	136	124	128	133	126	130
24	133	120	128	101	97	100	126	115	120	130	124	127
25	130	123	127	110	99	103	117	106	111	134	125	130
26	129	121	126	110	102	105	114	105	111	138	130	134
27	122	114	118	108	99	103	109	103	107	141	132	137
28	120	112	115	100	95	98	109	102	106	146	137	140
29	117	107	112	101	96	97	113	94	106	148	140	143
30	125	117	120	100	97	98	94	88	90	---	---	---
31	127	116	120	---	---	---	90	---	---	140	132	136
MONTH	145	107	134	141	94	119	136	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	135	124	129	156	149	153	162	151	156	132	126	129
2	126	115	119	151	139	145	157	148	151	127	124	126
3	115	106	110	146	140	143	157	146	150	128	124	126
4	117	107	113	141	134	138	150	144	146	126	125	126
5	120	116	118	138	134	135	146	143	145	127	125	126
6	125	120	122	143	137	141	147	144	146	129	126	127
7	127	123	125	141	135	138	147	145	146	132	127	129
8	127	124	126	138	127	131	148	144	146	133	129	131
9	136	126	130	130	123	128	150	146	148	136	129	132
10	136	132	134	128	121	124	150	147	148	132	129	130
11	137	133	135	127	120	123	155	147	150	134	131	132
12	139	133	135	129	119	123	152	148	149	134	132	133
13	139	134	136	126	122	123	155	149	151	138	133	136
14	138	133	136	135	125	128	151	148	149	136	131	133
15	140	135	137	137	133	135	150	146	147	131	129	131
16	141	134	137	137	130	133	150	143	146	130	124	127
17	140	138	139	134	128	131	150	144	148	126	122	123
18	141	136	138	133	128	131	151	146	149	124	120	122
19	139	131	136	133	127	129	152	147	150	120	118	120
20	135	131	133	136	131	133	153	143	149	120	116	118
21	138	130	133	138	132	136	148	143	146	117	112	115
22	139	135	137	140	133	136	148	142	145	113	107	110
23	146	137	142	146	139	142	155	148	152	107	104	105
24	149	143	147	150	140	146	158	152	155	107	103	104
25	156	149	152	153	149	151	156	154	155	103	100	102
26	159	154	157	155	149	152	158	155	156	102	100	101
27	158	153	155	161	153	158	158	154	156	106	100	103
28	156	154	155	161	157	159	156	146	150	104	101	102
29	---	---	---	161	157	159	146	136	141	106	101	103
30	---	---	---	163	156	159	137	130	133	108	104	106
31	---	---	---	162	157	159	---	---	---	111	103	106
MONTH	159	106	135	163	119	139	162	130	149	138	100	120

COLUMBIA RIVER BASIN

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUNCY, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	105	103	104	112	107	109	124	119	122	---	---	---
2	107	105	106	116	107	110	123	119	122	---	---	---
3	107	102	104	115	110	112	123	118	121	---	---	---
4	107	102	105	113	110	112	123	117	120	---	---	---
5	103	100	101	115	111	112	128	120	124	---	---	---
6	103	99	100	118	112	115	126	120	122	---	---	---
7	100	98	99	118	114	115	126	121	124	---	---	---
8	99	98	99	120	116	117	128	122	125	---	---	---
9	103	98	100	123	115	118	130	125	127	---	---	---
10	102	97	99	121	117	118	128	123	126	---	---	---
11	99	97	97	122	117	120	130	124	127	---	---	---
12	97	95	96	122	118	120	127	124	125	---	---	---
13	97	94	95	121	118	119	131	125	128	---	---	---
14	99	96	98	119	117	118	130	122	126	---	---	---
15	100	97	98	122	117	119	132	123	126	---	---	---
16	100	97	98	124	117	119	132	125	128	---	---	---
17	102	98	100	125	120	122	132	124	128	---	---	---
18	104	100	102	123	118	121	130	124	127	---	---	---
19	104	102	103	121	116	118	130	126	128	---	---	---
20	104	102	103	121	115	117	130	126	128	---	---	---
21	104	102	103	118	115	116	129	126	128	---	---	---
22	104	101	102	117	114	115	134	128	131	---	---	---
23	104	100	102	117	113	115	132	128	130	---	---	---
24	106	103	104	116	113	114	133	128	131	---	---	---
25	105	103	104	121	113	117	133	129	131	---	---	---
26	107	103	105	121	115	118	134	128	130	---	---	---
27	108	104	106	123	116	119	132	127	129	---	---	---
28	110	105	107	123	116	120	133	128	130	---	---	---
29	107	105	106	126	118	122	---	---	---	---	---	---
30	112	107	109	125	118	122	---	---	---	---	---	---
31	---	---	---	130	120	124	---	---	---	---	---	---
MONTH	112	94	102	130	107	117	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.0	16.5	17.0	11.5	11.0	11.5	8.5	8.0	8.5	---	---	---
2	17.0	16.5	17.0	11.5	11.0	11.0	8.0	8.0	8.0	6.5	6.0	6.5
3	17.0	16.5	17.0	11.0	11.0	11.0	8.0	7.5	7.5	6.5	6.0	6.0
4	17.0	16.5	17.0	11.0	10.5	11.0	7.5	7.5	7.5	6.0	5.5	6.0
5	16.5	16.0	16.5	10.5	10.5	10.5	7.5	7.0	7.5	6.0	5.0	5.5
6	16.5	16.0	16.0	10.5	10.5	10.5	7.5	7.0	7.0	5.5	5.0	5.0
7	16.5	16.0	16.5	10.5	10.5	10.5	7.0	7.0	7.0	5.0	5.0	5.0
8	16.5	16.5	16.5	10.5	10.5	10.5	7.5	7.0	7.5	5.0	5.0	5.0
9	17.0	16.5	16.5	11.0	10.5	10.5	7.5	7.0	7.0	5.5	5.0	5.5
10	17.0	16.5	17.0	10.5	10.0	10.5	7.5	7.0	7.0	6.0	5.5	5.5
11	17.0	16.5	17.0	10.5	10.5	10.5	7.5	7.0	7.0	6.0	5.5	6.0
12	16.5	16.0	16.5	11.0	10.5	10.5	7.0	7.0	7.0	6.0	5.5	5.5
13	16.5	16.0	16.0	11.0	10.5	10.5	7.0	7.0	7.0	5.5	---	---
14	16.0	16.0	16.0	11.0	10.5	10.5	7.0	7.0	7.0	---	4.5	---
15	16.0	15.5	16.0	10.5	10.5	10.5	7.0	6.5	7.0	4.5	4.0	4.0
16	16.0	15.5	15.5	10.5	10.5	10.5	7.0	6.5	6.5	4.0	3.5	3.5
17	15.5	15.0	15.0	10.5	10.0	10.0	6.5	6.0	6.5	4.0	3.5	3.5
18	15.0	14.5	14.5	10.0	9.5	10.0	6.0	5.5	6.0	4.0	3.5	4.0
19	14.5	13.5	14.5	9.5	8.5	9.0	5.5	5.5	5.5	4.5	4.0	4.0
20	14.0	13.5	13.5	8.5	8.0	8.5	5.5	5.5	5.5	4.5	4.0	4.5
21	13.5	13.0	13.5	8.0	8.0	8.0	6.0	5.5	5.5	5.0	4.5	4.5
22	13.5	13.0	13.0	8.0	7.5	8.0	6.0	5.5	6.0	5.0	4.5	4.5
23	13.0	12.5	13.0	7.5	7.5	7.5	6.0	5.5	6.0	4.5	4.5	4.5
24	12.5	12.5	12.5	7.5	7.5	7.5	6.0	6.0	6.0	4.5	4.5	4.5
25	12.5	12.5	12.5	8.0	7.5	7.5	6.5	6.0	6.5	4.5	4.0	4.5
26	12.5	12.5	12.5	8.0	7.5	8.0	6.0	6.0	6.0	4.0	3.5	4.0
27	12.5	12.0	12.0	8.5	8.0	8.0	6.0	5.5	5.5	4.0	3.5	3.5
28	12.0	11.5	12.0	8.5	8.5	8.5	5.5	5.0	5.0	3.5	3.0	3.0
29	12.0	11.5	11.5	8.5	8.5	8.5	5.5	5.0	5.0	3.5	3.0	3.0
30	12.0	11.5	11.5	8.5	8.5	8.5	6.0	5.5	6.0	---	3.5	---
31	11.5	11.5	11.5	---	---	---	---	---	---	4.5	4.0	4.0
MONTH	17.0	11.5	14.7	11.5	7.5	9.6	---	---	---	---	---	---

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUNCY, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.5	4.0	4.5	5.0	5.0	5.0	8.0	7.5	7.5	11.0	10.5	10.5
2	4.5	4.5	4.5	5.5	5.0	5.0	8.0	7.5	7.5	11.0	10.5	10.5
3	5.0	4.5	4.5	5.0	5.0	5.0	8.0	7.5	8.0	11.0	10.5	10.5
4	5.0	4.5	4.5	5.5	5.0	5.0	8.0	7.5	8.0	11.0	10.5	10.5
5	4.5	4.0	4.0	5.5	5.0	5.0	8.0	7.5	8.0	11.0	10.5	11.0
6	4.0	3.5	4.0	5.5	5.0	5.0	8.0	7.5	8.0	11.5	11.0	11.0
7	4.0	3.5	3.5	6.0	5.5	5.5	8.0	8.0	8.0	11.5	11.0	11.5
8	3.5	3.5	3.5	6.0	5.5	5.5	8.0	8.0	8.0	12.0	11.5	11.5
9	3.5	3.0	3.5	6.0	5.5	6.0	8.0	8.0	8.0	12.0	11.5	12.0
10	3.5	3.5	3.5	6.0	6.0	6.0	8.5	8.0	8.0	12.5	12.0	12.0
11	3.5	3.5	3.5	6.0	6.0	6.0	8.5	8.5	8.5	13.0	12.0	12.5
12	4.0	3.5	3.5	6.0	5.5	6.0	9.0	8.5	8.5	13.5	13.0	13.0
13	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.5	8.5	13.5	13.0	13.0
14	4.0	3.5	4.0	6.0	5.5	6.0	8.5	8.5	8.5	13.5	13.0	13.0
15	4.5	4.0	4.0	6.0	6.0	6.0	9.0	8.5	9.0	13.5	13.0	13.5
16	4.5	4.0	4.5	6.5	6.0	6.0	10.0	8.5	9.5	14.0	13.0	13.5
17	4.5	4.5	4.5	6.5	6.0	6.5	10.0	9.5	10.0	14.5	14.0	14.0
18	4.5	4.0	4.5	6.5	6.5	6.5	10.0	9.5	10.0	14.5	14.0	14.0
19	5.0	4.5	4.5	7.0	6.5	7.0	10.0	9.5	9.5	14.0	14.0	14.0
20	5.0	4.5	4.5	7.0	7.0	7.0	10.0	9.5	9.5	14.0	13.5	14.0
21	5.0	4.5	4.5	7.5	7.0	7.0	10.0	9.5	10.0	14.0	13.5	14.0
22	5.0	4.5	4.5	7.0	7.0	7.0	9.5	9.5	9.5	14.0	13.5	14.0
23	5.0	4.5	4.5	7.5	7.0	7.0	10.0	9.5	10.0	14.0	13.5	14.0
24	5.0	4.5	5.0	7.5	7.0	7.0	10.5	10.0	10.5	13.5	13.5	13.5
25	5.0	5.0	5.0	7.5	7.0	7.5	11.0	10.5	10.5	13.5	13.0	13.5
26	5.0	5.0	5.0	8.0	7.5	8.0	11.0	10.5	10.5	13.5	13.0	13.5
27	5.0	5.0	5.0	8.0	7.5	7.5	11.0	10.5	11.0	13.5	13.0	13.5
28	5.0	5.0	5.0	7.5	7.5	7.5	11.0	10.5	11.0	13.5	13.5	13.5
29	---	---	---	7.5	7.5	7.5	10.5	10.5	10.5	13.5	13.5	13.5
30	---	---	---	8.0	7.5	7.5	10.5	10.5	10.5	14.0	13.5	14.0
31	---	---	---	8.0	7.5	7.5	---	---	---	14.0	14.0	14.0
MONTH	5.0	3.0	4.3	8.0	5.0	6.4	11.0	7.5	9.1	14.5	10.5	12.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	14.0	14.0	14.0	16.5	16.0	16.5	21.5	20.5	21.0	---	---	---
2	14.0	14.0	14.0	16.5	16.0	16.5	21.5	20.5	21.0	---	---	---
3	14.5	14.0	14.5	17.5	16.5	17.0	21.5	20.5	21.0	---	---	---
4	14.5	14.0	14.0	18.0	17.5	17.5	22.0	21.0	21.5	---	---	---
5	14.5	14.0	14.0	18.0	17.5	18.0	22.0	21.5	21.5	---	---	---
6	14.5	14.5	14.5	18.5	18.0	18.0	21.5	21.5	21.5	---	---	---
7	15.0	14.5	14.5	18.5	18.0	18.0	21.5	21.5	21.5	---	---	---
8	14.5	14.0	14.5	18.5	18.0	18.5	21.5	21.5	21.5	---	---	---
9	15.0	14.5	14.5	18.5	18.0	18.5	21.5	21.5	21.5	---	---	---
10	15.0	14.5	15.0	18.5	18.0	18.0	21.5	21.5	21.5	---	---	---
11	15.0	14.5	15.0	18.5	18.0	18.0	21.5	21.5	21.5	---	---	---
12	15.0	14.5	14.5	18.5	18.0	18.0	22.0	21.5	21.5	---	---	---
13	15.0	14.5	14.5	19.0	18.5	18.5	22.0	21.5	22.0	---	---	---
14	15.0	14.5	14.5	19.0	18.5	19.0	22.5	22.0	22.0	---	---	---
15	15.0	14.5	15.0	19.5	18.5	19.0	22.5	22.0	22.5	---	---	---
16	15.5	15.0	15.0	19.5	18.5	19.0	22.5	22.0	22.5	---	---	---
17	16.0	15.0	15.5	19.5	19.0	19.0	22.5	21.5	22.0	---	---	---
18	16.0	15.5	15.5	19.5	18.5	19.0	22.0	21.5	22.0	---	---	---
19	16.0	15.5	15.5	19.5	18.5	19.0	22.0	21.5	21.5	---	---	---
20	16.0	15.5	15.5	19.5	19.0	19.5	21.5	21.5	21.5	---	---	---
21	16.0	15.5	15.5	20.0	19.5	19.5	21.5	21.5	21.5	---	---	---
22	15.5	15.0	15.5	20.0	19.5	19.5	21.5	21.5	21.5	---	---	---
23	15.5	15.0	15.0	20.0	19.5	19.5	21.5	21.5	21.5	---	---	---
24	15.5	15.0	15.5	20.0	19.5	20.0	21.5	21.0	21.5	---	---	---
25	16.0	15.5	16.0	20.0	19.5	20.0	21.5	21.5	21.5	---	---	---
26	16.0	16.0	16.0	20.0	19.5	20.0	21.5	21.5	21.5	---	---	---
27	16.0	16.0	16.0	20.5	19.5	20.0	21.5	21.0	21.0	---	---	---
28	16.5	16.0	16.0	20.5	20.0	20.0	21.5	21.0	21.0	---	---	---
29	16.5	16.0	16.5	20.5	20.5	20.5	---	---	---	---	---	---
30	16.5	16.0	16.5	21.0	20.5	20.5	---	---	---	---	---	---
31	---	---	---	21.0	20.5	21.0	---	---	---	---	---	---
MONTH	16.5	14.0	15.1	21.0	16.0	18.9	---	---	---	---	---	---

PACIFIC SLOPE BASINS IN OREGON

NEHALEM RIVER BASIN

14301000 NEHALEM RIVER NEAR FOSS, OR

LOCATION.--Lat 45°42'15", long 123°45'15", in NW 1/4 sec.35, T.3 N., R.9 W., Tillamook County, Hydrologic Unit 17100202, on right bank 0.2 mi upstream from Cook Creek, 2.2 mi northeast of Foss, and at mile 13.5.

DRAINAGE AREA.--667 mi².

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 32.60 ft above sea level (State Highway Department bench mark). Prior to Nov. 11, 1939, nonrecording gage.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Several small diversions for irrigation and domestic use upstream from station. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--58 years (water years 1940-97), 2,669 ft³/s, 54.36 in/yr, 1,933,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,300 ft³/s Feb. 8, 1996, gage height, 29.56 ft, based on slope-area measurement of peak flow; minimum discharge, 34 ft³/s Aug. 29-31, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 19,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 31	2330	34,300	19.20	No other peak greater than base discharge.			
Minimum discharge, 98 ft ³ /s Sept. 10.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	136	1940	10100	29500	e13400	4270	2620	2680	1530	545	187	150
2	133	1680	10700	25800	e10000	8260	2510	2660	1460	505	181	137
3	131	1530	10900	20000	e8000	8930	2380	2610	1190	465	175	126
4	151	1590	12300	14600	e6000	7810	2240	2570	1350	427	169	119
5	185	1570	14900	10500	e5250	6600	2080	2440	1480	390	164	120
6	177	e1850	14200	7750	4170	7120	1920	2480	1260	378	159	111
7	163	e2050	13000	6920	3500	10000	1780	2370	1070	364	152	107
8	156	e1650	13100	6150	3000	9050	1690	2140	940	380	147	104
9	152	e1400	12500	5410	2560	9600	1600	1930	830	609	142	101
10	142	e1200	11600	5050	2230	9520	1480	1740	744	697	138	99
11	140	e1100	10800	4390	2070	8210	1380	1580	686	665	132	102
12	141	e1600	9700	3740	2500	7250	1290	1430	709	574	128	107
13	203	e2200	9360	3230	2860	6580	1350	1310	695	504	125	117
14	e1500	e2500	9370	2830	3290	5990	1780	1200	628	450	125	132
15	e2000	e2000	8020	2530	3410	6810	2080	1110	568	411	119	280
16	e1200	e2500	6440	2320	3190	8200	1980	1030	523	387	115	1460
17	e950	e3300	5170	4310	3130	7780	1810	953	502	359	114	5230
18	2530	e4900	4170	6740	3110	9720	1680	884	508	338	112	4240
19	3010	8950	3490	7030	4970	16800	1900	823	480	318	111	2710
20	2410	9850	3380	6430	6130	13800	5990	772	446	301	117	1760
21	1800	7940	3970	6980	6140	9900	5200	735	480	286	129	1230
22	2560	6450	4730	7380	5370	7430	4360	704	739	276	132	928
23	2430	5710	5590	7370	4420	5860	4110	690	999	266	132	757
24	4540	7900	9460	6880	3610	4710	3790	690	868	254	137	639
25	5340	10100	14800	6150	3030	3810	3270	666	720	243	136	568
26	4760	9000	15000	5320	2660	3260	2880	625	627	233	152	798
27	3410	9150	14900	4460	2440	2990	2610	622	574	224	190	1570
28	2910	12900	12800	e5050	2180	3130	2530	641	541	215	195	1390
29	3010	11800	22000	e4700	---	2910	2590	677	585	207	195	1170
30	2650	9680	26600	e5850	---	2610	2590	740	556	200	189	981
31	2260	---	29400	e10300	---	2570	---	1100	---	193	166	---
TOTAL	51280	145990	352450	245670	122620	221480	75470	42602	24288	11664	4565	27343
MEAN	1654	4866	11370	7925	4379	7145	2516	1374	810	376	147	911
MAX	5340	12900	29400	29500	13400	16800	5990	2680	1530	697	195	5230
MIN	131	1100	3380	2320	2070	2570	1290	622	446	193	111	99
AC-FT	101700	289600	699100	487300	243200	439300	149700	84500	48180	23140	9050	54230
CFSM	2.48	7.30	17.0	11.9	6.57	10.7	3.77	2.06	1.21	.56	.22	1.37
IN.	2.86	8.14	19.66	13.70	6.84	12.35	4.21	2.38	1.35	.65	.25	1.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1997, BY WATER YEAR (WY)

	790	3699	6174	6175	5806	4278	2763	1258	610	272	147	218
MEAN	790	3699	6174	6175	5806	4278	2763	1258	610	272	147	218
MAX	2948	9256	11390	12450	12510	8696	6389	3028	1591	747	314	911
(WY)	1948	1974	1956	1971	1996	1956	1996	1948	1968	1983	1968	1997
MIN	69.9	154	599	596	1066	1171	1149	520	250	137	62.5	63.6
(WY)	1953	1994	1977	1977	1967	1992	1941	1989	1992	1967	1967	1967

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1940 - 1997
ANNUAL TOTAL	1511000	1325422	
ANNUAL MEAN	4128	3631	2669
HIGHEST ANNUAL MEAN			4235
LOWEST ANNUAL MEAN			1063
HIGHEST DAILY MEAN	61600	Feb 8	29500
LOWEST DAILY MEAN	106	Sep 12	99
ANNUAL SEVEN-DAY MINIMUM	116	Aug 29	104
ANNUAL RUNOFF (AC-FT)	2997000	2629000	1933000
ANNUAL RUNOFF (CFSM)	6.19	5.44	4.00
ANNUAL RUNOFF (INCHES)	84.27	73.92	54.36
10 PERCENT EXCEEDS	10700	9690	7220
50 PERCENT EXCEEDS	1910	1980	1130
90 PERCENT EXCEEDS	151	145	125

e Estimated

LOCATION.--Lat 45°29'13", long 123°41'11" (revised), in SW 1/4 SE 1/4 sec.8, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.2 mi upstream from Negro Jack Creek, 8.0 mi east of Tillamook, and at mile 11.7 (revised).

PERIOD OF RECORD.--October 1914 to September 1915, August to November 1916, July 1931 to current year. Prior to January 1915 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1398: 1953. WSP 1738: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 71.89 ft above sea level. Dec. 18, 1914, to Nov. 4, 1916, nonrecording gage at site 2.8 mi downstream at different datum. July 30, 1931, to Sept. 30, 1938, nonrecording gage at site 2.82 mi downstream at datum 28.83 ft lower. Oct. 1, 1938, to Oct. 17, 1968, water-stage recorder at site 2.1 mi downstream at datum 29.76 ft lower. Oct. 18, 1968 to Sept. 6, 1973 at site 50 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for domestic use upstream from station.

AVERAGE DISCHARGE.--67 years (water years 1915, 1932-97), 1,177 ft³/s, 99.31 in/yr, 852,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft³/s Jan. 20, 1972, gage height, 16.91 ft, site then in use; maximum gage height, 19.51 ft Feb. 8, 1996, from floodmark; minimum discharge, 32 ft³/s Sept. 5, 1973, but may have been less for short period following a landslide Jan. 31, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1916 reached a stage of 20.8 ft, from floodmark, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 29	2200	*15,400	*13.84	No other peak greater than base discharge.			
Minimum discharge, 81 ft ³ /s Oct. 2-4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	695	4880	10600	7080	2290	944	1190	677	275	111	103
2	81	608	4280	8680	4350	3650	885	1110	559	254	108	99
3	81	571	3650	6770	2910	2900	848	1050	526	236	106	97
4	110	596	5910	4570	2140	2260	798	1020	521	220	104	95
5	144	558	7410	3200	1670	1940	746	968	468	206	101	93
6	114	811	5150	2460	1370	3270	700	996	422	206	99	91
7	101	959	4990	2260	1190	6450	663	938	383	194	95	90
8	94	827	5990	1950	1020	4320	667	867	352	217	92	89
9	90	724	5040	1720	903	5100	626	794	323	393	90	87
10	87	642	4310	1710	806	4340	577	729	299	359	92	86
11	93	584	3890	1510	794	3240	541	670	291	308	101	88
12	98	651	3410	1330	1020	2660	513	616	309	273	100	91
13	184	1050	3840	1160	1040	2220	681	565	298	249	99	89
14	893	1130	3350	1040	1460	1880	1360	522	263	229	98	102
15	1150	1020	2570	937	1580	2990	1620	492	244	213	97	235
16	604	1140	2010	928	1370	4410	1310	456	228	201	97	978
17	451	1470	1600	2650	1290	3710	1130	421	225	190	96	3050
18	1770	1980	1340	4270	1280	4910	1020	392	246	181	95	2440
19	1600	5060	1170	3100	3100	9240	1190	367	215	172	96	1290
20	1090	4370	1270	2580	3050	5820	3880	347	202	164	104	846
21	849	2800	1470	2850	2330	3710	2640	332	249	157	108	632
22	1490	2200	1510	2620	1810	2590	1910	314	573	153	101	497
23	1330	1870	1720	2280	1460	1950	1830	311	676	148	97	407
24	2740	3770	4990	1940	1230	1540	1620	302	512	142	103	344
25	2880	3640	8870	1660	1060	1290	1400	288	428	137	106	311
26	1980	2710	7810	1420	957	1170	1210	273	389	133	122	513
27	1370	3450	8020	1300	890	1120	1100	289	351	129	139	963
28	1210	5770	5050	2040	793	1200	1100	320	321	124	136	702
29	1140	4030	10900	1920	---	1060	1160	325	305	120	164	565
30	958	3650	10900	3780	---	993	1180	312	291	117	129	517
31	811	---	9940	7660	---	988	---	642	---	114	111	---
TOTAL	25677	59336	147240	92895	49953	95211	35849	18218	11146	6214	3297	15590
MEAN	828	1978	4750	2997	1784	3071	1195	588	372	200	106	520
MAX	2880	5770	10900	10600	7080	9240	3880	1190	677	393	164	3050
MIN	81	558	1170	928	793	988	513	273	202	114	90	86
AC-FT	50930	117700	292100	184300	99080	188900	71110	36140	22110	12330	6540	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1997, BY WATER YEAR (WY)

MEAN	560	1870	2663	2501	2219	1777	1197	614	336	169	105	158
MAX	2230	4266	7988	5776	5037	3637	2622	1391	876	514	240	780
(WY)	1948	1996	1934	1953	1996	1991	1933	1933	1983	1968	1959	
MIN	43.5	87.2	378	344	634	406	426	202	131	76.5	44.3	40.1
(WY)	1988	1937	1977	1977	1993	1992	1939	1939	1992	1992	1967	1967

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1915 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	636411		560626					
ANNUAL MEAN	1739		1536			1177		
HIGHEST ANNUAL MEAN						1811		1996
LOWEST ANNUAL MEAN						524		1977
HIGHEST DAILY MEAN	28000	Feb 8	10900	Dec 29	28000		Feb 8	1996
LOWEST DAILY MEAN	73	Sep 12	81	Oct 2		34	Sep 1	1967
ANNUAL SEVEN-DAY MINIMUM	77	Sep 7	89	Sep 7		35	Aug 30	1967
ANNUAL RUNOFF (AC-FT)	1262000		1112000		852500			
ANNUAL RUNOFF (CFSM)	10.8		9.54			7.31		
ANNUAL RUNOFF (INCHES)	147.05		129.54			99.31		
10 PERCENT EXCEEDS	4290		4130		2900			
50 PERCENT EXCEEDS	814		867		566			
90 PERCENT EXCEEDS	90		101		88			

TRASK RIVER BASIN

14302480 TRASK RIVER ABOVE CEDAR CREEK, NEAR TILLAMOOK, OR

LOCATION.--Lat 45°26'47", long 123°42'33", in NW 1/4 SE 1/4 sec.30, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.1 mi upstream from Cedar Creek, 6.8 mi east of Tillamook, and at mile 10.95.

DRAINAGE AREA.--156 mi², at Long Prairie Road bridge, 4.0 mi downstream, where all discharge measurements are made.

PERIOD OF RECORD.--April 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 70 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Water diverted from the J.W. Barney Reservoir (capacity 20,000 acre-ft) on the Middle Fork of the North Fork of the Trask River to the Tualatin River for domestic use and pollution abatement by the city of Hillsboro amounted to 4,226 acre-ft for the 1997 water year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996 reached a stage of 23.2 ft, from floodmark; discharge, 25,800 ft³/s, from slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 25	0230	*10,400	*15.58	Jan. 1	0030	10,200	15.47
Dec. 29	2000	9,910	15.32				

Minimum discharge, 75 ft³/s Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	575	3460	8810	5780	1920	955	1150	573	337	145	115
2	77	518	3920	7230	3940	2720	896	1050	508	315	140	111
3	76	509	3770	5960	2840	2480	860	992	499	296	139	107
4	113	549	5080	4360	2170	2100	812	925	488	279	137	105
5	159	503	6400	3240	1750	1900	757	862	457	266	133	102
6	107	696	4780	2590	1480	2880	724	862	430	269	129	96
7	93	811	4400	2480	1310	5200	700	792	393	258	124	92
8	88	696	4880	2130	1150	3860	722	709	377	270	121	91
9	84	618	4310	1900	1040	4270	689	662	359	415	119	88
10	81	559	3890	1920	948	3830	654	621	343	416	113	89
11	86	517	3600	1680	954	3190	626	581	343	384	110	97
12	92	544	3260	1480	1140	2760	592	549	360	342	109	101
13	163	701	3430	1310	1130	2370	690	524	358	316	107	100
14	520	814	3060	1190	1560	2040	1160	502	322	295	106	127
15	646	784	2500	1080	1560	2410	1320	483	308	279	104	312
16	367	895	2040	1050	1380	2950	1130	461	295	266	108	701
17	293	1280	1680	1580	1350	2830	979	440	293	254	105	1680
18	1100	1890	1440	2590	1320	3140	893	423	310	248	107	1390
19	1070	4880	1270	2110	2640	5020	1020	408	281	226	111	837
20	686	4030	1410	1950	2840	4060	2520	396	268	217	124	579
21	530	2660	1560	2060	2310	3050	2160	386	322	209	137	471
22	890	2120	1610	1920	1850	2310	1730	373	544	204	114	406
23	801	1770	1890	1820	1520	1850	1820	375	553	195	110	361
24	2220	2580	4690	1660	1300	1540	1650	364	454	185	123	323
25	2410	2530	8340	1530	1140	1330	1400	352	410	178	129	307
26	1630	2080	7010	1350	1050	1230	1160	339	390	173	149	459
27	1110	2500	6700	1260	1010	1180	1050	350	367	168	177	631
28	999	4100	4690	1430	916	1240	1040	414	356	161	163	485
29	919	3380	7640	1330	---	1040	1190	422	359	157	187	431
30	759	2970	8180	2880	---	984	1150	412	336	154	139	416
31	654	---	7980	6670	---	990	---	619	---	149	122	---
TOTAL	18901	49059	128870	80550	49378	78674	33049	17798	11656	7881	3941	11210
MEAN	610	1635	4157	2598	1764	2538	1102	574	389	254	127	374
MAX	2410	4880	8340	8810	5780	5200	2520	1150	573	416	187	1680
MIN	76	503	1270	1050	916	984	592	339	268	149	104	88
AC-FT	37490	97310	255600	159800	97940	156000	65550	35300	23120	15630	7820	22240
CFSM	3.91	10.5	26.6	16.7	11.3	16.3	7.06	3.68	2.49	1.63	.81	2.40
IN.	4.51	11.70	30.73	19.21	11.77	18.76	7.88	4.24	2.78	1.88	.94	2.67

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1997, BY WATER YEAR (WY)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
MEAN	610	1635	4157	2598	1764	2538	1567	765	373	210	114	248
MAX	610	1635	4157	2598	1764	2538	2032	956	389	254	127	374
(WY)	1997	1997	1997	1997	1997	1997	1996	1996	1997	1997	1997	1997
MIN	610	1635	4157	2598	1764	2538	1102	574	358	165	101	123
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1996	1996	1996	1996

SUMMARY STATISTICS

FOR 1997 WATER YEAR

WATER YEARS 1996 - 1997

ANNUAL TOTAL	490967											
ANNUAL MEAN	1345									1345		
HIGHEST ANNUAL MEAN										1345		1997
LOWEST ANNUAL MEAN										1345		1997
HIGHEST DAILY MEAN	8810	Jan 1								8830	Apr 23	1996
LOWEST DAILY MEAN	76	Oct 3								76	Sep 12	1996
ANNUAL SEVEN-DAY MINIMUM	90	Oct 6								80	Sep 27	1996
ANNUAL RUNOFF (AC-FT)	973800									974500		
ANNUAL RUNOFF (CFSM)	8.62									8.62		
ANNUAL RUNOFF (INCHES)	117.08									117.15		
10 PERCENT EXCEEDS	3400									2830		
50 PERCENT EXCEEDS	724									531		
90 PERCENT EXCEEDS	117									100		

NESTUCCA RIVER BASIN

307

14302800 MCGUIRE LAKE NEAR FAIRDALE, OR

LOCATION.--Lat 45°18'30", long 123°24'30", in NW 1/4 SE 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, on control tower in reservoir on Nestucca River, 0.3 mi upstream from Walker Creek, and 5.0 mi southwest of Fairdale.

DRAINAGE AREA.--2.85 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level.

REMARKS.--Reservoir is formed by earthfill dam with ungated spillway. Capacity of reservoir is 3,840 acre-ft between elevations 1,810.0 ft and 1,865.5 ft. Dead storage negligible. Under normal operation, reservoir is filled in the spring (April or May) and drained when fall rains start. There is no planned storage during winter months; however, during periods of heavy runoff, inflow may be greater than capacity of outlet tunnel and there may be temporary storage. Water is used during summer months for municipal supply of city of McMinnville.

COOPERATION.--Elevation and capacity table furnished by city of McMinnville Water and Light Department. Elevations based on once-daily staff gage readings.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 3,890 acre-ft Mar. 12 1972, Feb. 19, Mar. 28, 1974, elevation, 1,865.8 ft; no contents most of time during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 3,770 acre-ft Mar. 18 to July 11, elevation, 1,865.0 ft; no contents observed Dec. 17-23, elevation, 1,810.0 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,856.3	2,650	-
Oct. 31.....	1,857.0	2,730	+80
Nov. 30.....	1,816.1	128	-2,602
Dec. 31.....	1,834.3	838	+710
CAL YR 1996.....	-	-	+537
Jan. 31.....	1,836.8	988	+150
Feb. 28.....	1,853.0	2,310	+1,322
Mar. 31.....	1,865.0	3,770	+1,460
Apr. 30.....	1,865.0	3,770	0
May 31.....	1,865.0	3,770	0
June 30.....	1,865.0	3,770	0
July 31.....	1,862.9	3,480	-290
Aug. 31.....	1,858.1	2,860	-620
Sept. 30.....	1,854.2	2,430	-430
WTR YR 1997.....	-	-	-220

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 sea level (levels by city of McMinnville).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1969 by McGuire Lake about 1 mi upstream from gage (station 14302800). During winter months lake is empty except when inflow exceeds capacity of outlet tunnel.

AVERAGE DISCHARGE.--37 years (water years 1961-97), 31.4 ft³/s, 69.00 in/yr, 22,750 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, 394 ft³/s Dec. 29, gage height, 6.03 ft; minimum discharge, 0.97 ft³/s Aug. 17.

REVISIONS.--The adjusted annual discharges for calendar years 1994 and 1995, water years 1995 and 1996 and adjusted monthly flows for October, July, August, and September of the 1995 and 1996 water years have been revised and are given below.

1995 WATER YEAR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN†	11.3	56.5	116.9	88.0	71.5	57.9	37.8	15.1	5.6	1.5	0.4	1.5
CFSM†	1.83	9.14	18.92	14.24	11.57	9.37	6.12	2.44	0.90	0.25	0.06	0.24
IN.†	2.10	10.20	21.82	16.42	12.05	10.80	6.83	2.82	1.01	0.29	0.07	0.27
AC-FT†	693	3360	7190	5410	3970	3560	2250	928	332	94	23	89

CAL YR 1994 TOTAL 9006.08 MEAN 24.7 MAX 322 MIN .81 AC-FT 17860 MEAN† 31.9 CFSM† 5.17 IN.† 70.14 AC-FT† 23111
WTR YR 1995 TOTAL 13137.57 MEAN 36.0 MAX 322 MIN .60 AC-FT 26060 MEAN† 38.6 CFSM† 6.24 IN.† 84.71 AC-FT† 27913

1996 WATER YEAR

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN†	9.82	80.3	106.7	78.7	146.9	36.4	83.0	28.9	8.72	1.15	-0.62	2.69
CFSM†	1.59	12.99	17.26	12.73	23.77	5.89	13.43	4.68	1.41	0.19	-0.10	0.44
IN.†	1.83	14.51	19.91	14.69	25.64	6.80	14.99	5.40	1.58	0.22	-0.12	0.49
AC-FT†	604	4780	6560	4839	8450	2240	4940	1780	519	71	-38	160

CAL YR 1995 TOTAL 15462.27 MEAN 42.4 MAX 258 MIN .60 AC-FT 30670 MEAN† 39.5 CFSM† 6.39 IN.† 86.82 AC-FT† 28610
WTR YR 1996 TOTAL 17035.46 MEAN 46.5 MAX 500 MIN .88 AC-FT 33790 MEAN† 48.1 CFSM† 7.78 IN.† 105.92 AC-FT† 34902

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	90	125	285	78	44	29	31	25	5.3	1.3	8.0
2	1.5	88	114	222	51	50	26	28	19	5.1	1.3	8.0
3	3.2	88	93	194	36	40	24	27	22	4.9	1.3	8.0
4	1.9	89	143	161	28	31	23	27	21	4.3	1.3	7.9
5	2.4	86	193	141	22	29	21	24	17	3.9	1.2	7.7
6	1.9	88	158	129	19	58	20	22	15	3.9	1.2	7.6
7	1.8	86	192	122	17	93	19	20	13	3.6	1.2	7.6
8	1.5	83	216	110	14	63	20	18	12	4.0	1.2	6.2
9	1.5	81	166	102	13	75	18	17	11	5.4	1.2	3.3
10	1.4	78	161	95	11	63	17	15	10	5.2	1.1	3.4
11	1.7	76	150	82	13	56	15	14	9.9	3.2	1.1	3.3
12	1.8	77	140	56	21	45	14	13	12	2.5	1.1	3.5
13	4.5	79	151	32	18	37	21	12	12	2.2	1.1	3.5
14	11	76	130	34	22	31	37	11	9.4	2.0	1.1	5.0
15	7.3	73	109	28	21	40	33	11	8.1	2.0	1.1	10
16	4.4	79	89	21	20	51	30	10	7.4	1.9	1.1	21
17	4.6	88	59	34	20	56	26	9.4	7.6	1.9	1.0	39
18	22	95	42	52	20	90	24	8.7	7.2	1.8	1.1	30
19	16	169	37	40	41	184	36	8.1	6.4	1.7	1.1	22
20	9.3	132	44	36	41	136	76	7.6	6.0	1.7	1.6	18
21	7.4	103	40	34	34	94	59	7.5	8.3	1.7	1.5	17
22	13	93	35	29	27	70	54	7.5	12	1.7	1.2	16
23	11	84	61	26	22	56	65	8.9	11	1.7	1.1	15
24	32	107	173	22	18	46	53	8.5	8.5	1.6	1.3	15
25	31	109	266	19	16	39	44	8.3	7.6	1.6	1.3	15
26	21	95	232	16	14	36	37	7.6	6.6	1.5	2.2	20
27	15	119	215	17	13	37	32	8.2	6.0	1.5	4.2	21
28	15	156	160	22	12	41	34	19	5.6	1.5	8.5	17
29	13	130	313	17	---	33	34	18	5.3	1.4	8.9	16
30	10	119	294	47	---	30	33	14	5.1	1.4	8.4	16
31	53	---	297	98	---	31	---	31	---	1.4	8.1	---
TOTAL	322.6	2916	4598	2323	682	1785	974	472.3	327.0	83.5	70.4	391.0
MEAN	10.4	97.2	148	74.9	24.4	57.6	32.5	15.2	10.9	2.69	2.27	13.0
MAX	53	169	313	285	78	184	76	31	25	5.4	8.9	39
MIN	1.4	73	35	16	11	29	14	7.5	5.1	1.4	1.0	3.3
AC-FT	640	5780	9120	4610	1350	3540	1930	937	649	166	140	776
MEAN†	15.7	53.4	159.9	77.4	48.1	81.3	32.4	15.2	10.9	2.23	-0.36	8.74
CFSM†	2.54	8.64	25.87	12.52	7.78	13.16	5.24	2.46	1.76	0.36	-0.06	1.41
IN.†	2.93	9.65	29.83	14.45	8.10	15.18	5.86	2.84	1.97	0.42	-0.07	1.58
AC-FT†	967	3180	9830	4760	2670	5000	1930	937	649	137	-22	520

CAL YR 1996 TOTAL 17779.16 MEAN 48.6 MAX 500 MIN .88 AC-FT 35260 MEAN† 50.5 CFSM† 8.17 IN.† 111.32 AC-FT† 36680
WTR YR 1997 TOTAL 14944.8 MEAN 40.9 MAX 313 MIN 1.0 AC-FT 29640 MEAN† 42.2 CFSM† 6.83 IN.† 92.74 AC-FT† 30558

† Adjusted for storage and diversion from McGuire Lake.

Note - Negative values shown for adjusted values during summer period are a result of evaporation exceeding inflows to McGuire Lake.

NESTUCCA RIVER BASIN

309

14303200 TUCCA CREEK NEAR BLAINE, OR

LOCATION.--Lat 45°19'28", long 123°32'43", in SE 1/4 NW 1/4 sec.9, T.3 S., R.7 W., Tillamook County, Hydrologic Unit 17100203, on right bank at road bridge, 80 ft upstream from confluence with Elk Creek, and 8 mi northeast of Blaine.

DRAINAGE AREA.--3.09 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--14 years (water years 1984-97), 16.8 ft³/s, 74.08 in/yr, 12,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 680 ft³/s Feb. 6, 1996, gage height, 4.30 ft, from rating curve extended above 190 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.09 ft, Dec. 25, 1996; minimum discharge, 0.46 ft³/s Sept. 30, Oct. 1, 2, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1630	210	3.24	Dec. 29	2230	227	4.34
Dec. 4	unknown	unknown	3.15	Jan. 1	0415	281	4.61
Dec. 25	0115	*400	*5.09				

Minimum discharge, 1.7 ft³/s Sept. 8-10, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	25	110	231	106	27	e12	18	10	6.4	2.8	2.1
2	1.8	23	118	135	69	39	e11	17	9.1	6.0	2.7	2.0
3	1.8	22	115	99	48	41	e10	17	8.4	5.7	2.7	2.0
4	2.9	23	e140	70	37	35	e10	16	9.0	5.4	2.6	2.0
5	2.7	21	151	51	29	32	9.6	15	8.9	5.2	2.5	1.9
6	2.2	26	96	42	24	51	9.1	14	8.6	5.2	2.5	1.8
7	2.2	26	87	37	20	99	8.8	13	8.3	5.0	2.4	1.8
8	2.3	26	107	33	18	74	9.9	12	8.0	5.3	2.3	1.8
9	2.3	25	94	31	16	85	10	11	7.7	6.3	2.3	1.7
10	2.3	24	77	30	15	80	9.2	11	7.4	7.0	2.2	1.7
11	2.9	22	68	27	15	60	8.9	9.5	7.3	5.8	2.2	1.8
12	3.0	23	64	25	16	49	8.7	9.1	7.4	5.2	2.2	1.8
13	6.5	25	63	23	16	42	10	9.3	6.9	4.9	2.1	1.8
14	17	24	59	21	22	36	15	8.9	6.5	4.7	2.1	2.5
15	14	24	51	20	26	40	17	8.7	6.2	4.5	2.1	4.9
16	10	33	42	18	26	49	17	8.4	5.9	4.4	2.1	11
17	9.3	46	34	23	24	52	16	8.1	6.0	4.3	2.0	24
18	20	67	29	30	24	51	15	7.8	5.8	4.1	2.1	23
19	23	164	25	30	41	58	20	7.6	5.5	4.0	2.1	18
20	19	143	26	32	50	57	38	7.4	5.2	3.8	2.5	14
21	17	102	26	33	44	48	39	7.0	6.8	3.7	2.2	11
22	28	80	26	33	36	39	34	6.5	9.6	3.7	2.1	9.1
23	30	70	36	32	28	31	32	6.8	8.8	3.5	2.0	8.2
24	73	90	146	29	22	25	29	6.4	7.9	3.4	3.0	7.4
25	80	99	296	27	19	21	26	6.2	7.6	3.3	2.3	6.9
26	64	87	193	24	17	19	23	6.0	7.4	3.3	3.6	12
27	47	87	155	22	16	17	20	5.9	7.1	3.2	2.8	15
28	42	112	89	22	14	17	20	8.3	7.0	3.1	3.1	13
29	36	110	165	20	---	e14	19	6.5	6.7	3.0	3.4	12
30	31	99	183	41	---	e13	18	5.9	6.5	3.0	2.5	13
31	28	---	184	114	---	e12	---	11	---	2.9	2.2	---
TOTAL	623.0	1748	3055	1405	838	1313	525.2	305.3	223.5	139.3	75.7	229.2
MEAN	20.1	58.3	98.5	45.3	29.9	42.4	17.5	9.85	7.45	4.49	2.44	7.64
MAX	80	164	296	231	106	99	39	18	10	7.0	3.6	24
MIN	1.8	21	25	18	14	12	8.7	5.9	5.2	2.9	2.0	1.7
AC-FT	1240	3470	6060	2790	1660	2600	1040	606	443	276	150	455
CFSM	6.50	18.9	31.9	14.7	9.69	13.7	5.67	3.19	2.41	1.45	.79	2.47
IN.	7.50	21.04	36.78	16.91	10.09	15.81	6.32	3.68	2.69	1.68	.91	2.76

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	5.21	32.1	34.6	32.1	32.4	24.3	18.9	10.1	6.59	3.11	1.78	2.09
MEAN	5.21	32.1	34.6	32.1	32.4	24.3	18.9	10.1	6.59	3.11	1.78	2.09
MAX	20.1	66.1	98.5	48.0	79.3	42.4	41.4	18.7	12.0	4.49	2.44	7.64
(WY)	1997	1996	1997	1990	1996	1997	1996	1984	1990	1997	1997	1997
MIN	.95	1.76	15.9	12.2	10.3	6.59	9.28	4.02	2.40	1.65	1.11	.91
(WY)	1988	1994	1987	1985	1993	1992	1990	1989	1992	1992	1986	1987

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	12072.1	10480.2	16.8
ANNUAL MEAN	33.0	28.7	28.9
HIGHEST ANNUAL MEAN			10.5
LOWEST ANNUAL MEAN			460
HIGHEST DAILY MEAN	460	Feb 8	Feb 8 1996
LOWEST DAILY MEAN	1.5	Aug 26	.55 Oct 1 1987
ANNUAL SEVEN-DAY MINIMUM	1.6	Aug 20	.63 Sep 28 1987
ANNUAL RUNOFF (AC-FT)	23950	20790	12200
ANNUAL RUNOFF (CFSM)	10.7	9.29	5.45
ANNUAL RUNOFF (INCHES)	145.33	126.17	74.08
10 PERCENT EXCEEDS	88	80	38
50 PERCENT EXCEEDS	16	15	8.5
90 PERCENT EXCEEDS	2.0	2.3	1.4

e Estimated

14305500 SILETZ RIVER AT SILETZ, OR

LOCATION.--Lat 44°42'55", long 123°53'10", in NW 1/4 SW 1/4 sec.11, T.10 S., R.10 W., Lincoln County, Hydrologic Unit 17100204, on right bank, 1.8 mi downstream from Baker Creek, 1.5 mi east of Siletz, and at mile 42.6.

DRAINAGE AREA.--202 mi².

PERIOD OF RECORD.--October 1905 to December 1908, January 1910 to November 1911, January 1912 to April 1912, December 1924 to current year. Monthly discharges, January to December 1909, published in WSP 1318.

REVISED RECORDS.--WSP 1935: 1943, 1947-49(M), 1953-58(M).

GAGE.--Water-stage recorder. Datum of gage is 102.32 ft above sea level. Oct. 1, 1905, to Sept 30, 1938, nonrecording gage at various sites within 2.5 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Slight regulation from logponds. Small diversions upstream from station for irrigation. Continuous water-quality records for the period February 1972 to September 1985 have been collected at this location.

AVERAGE DISCHARGE.--76 years (water years 1906-08, 1911, 1926-97), 1,516 ft³/s, 102.00 in/yr, 1,099,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (1906-12, 1924-97).--Maximum discharge, 34,700 ft³/s, Feb. 7, 1996, gage height, 24.49 ft; maximum gage height, 27.32 ft Jan. 28, 1965; minimum discharge, 47 ft³/s Oct. 20, 21, 29, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1921, reached a stage of 31.6 ft, at site 2.5 mi downstream at different datum, from floodmark, discharge, 40,800 ft³/s, from rating curve extended above 17,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1300	*22,700	*18.76	Dec. 29	1800	14,700	14.52
Dec. 4	2000	14,600	14.46	Jan. 1	0200	14,800	14.57
Dec. 25	0630	18,200	16.39	Jan. 31	1200	16,700	15.60
Dec. 26	1400	22,000	18.38				

Minimum discharge, 91 ft³/s Sept. 8-11, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	1040	5020	11400	10200	1860	1140	1600	1210	391	155	129
2	175	939	5560	7910	5720	3010	1060	1480	943	366	151	126
3	173	872	5580	6110	3840	2780	1000	1430	859	343	148	116
4	173	909	7970	4500	2890	2540	941	1400	860	321	145	109
5	242	844	9590	3430	2320	2370	884	1280	761	308	142	106
6	205	946	6210	2740	1940	3930	838	1200	690	299	138	102
7	196	1110	6570	2480	1690	6910	817	1090	634	289	132	100
8	193	992	10400	2080	1460	4840	853	997	584	279	124	95
9	189	910	6830	1860	1290	4840	837	910	541	434	119	91
10	186	843	5400	1970	1160	4960	768	840	504	397	118	91
11	186	785	4720	1750	1090	4970	724	772	484	367	116	93
12	186	874	4540	1580	1290	4370	699	714	522	317	114	94
13	262	1230	4820	1410	1150	3530	869	665	492	292	111	93
14	494	1430	4110	1270	1560	2860	1740	624	435	276	109	121
15	1210	1480	3250	1160	1700	3030	2400	589	405	264	108	428
16	764	1740	2590	1080	1540	4970	1950	551	381	254	107	1140
17	591	2110	2110	2760	1540	4730	1600	523	376	242	105	3540
18	1590	2620	1780	7020	1540	3920	1420	488	401	239	105	2330
19	2010	15500	1530	4310	3130	4200	2260	461	358	230	106	1530
20	1510	8490	1620	3400	3000	4430	7160	440	340	218	108	1030
21	1150	4770	2070	3400	2480	3440	4270	430	445	215	129	786
22	1780	3760	2260	3160	2070	2710	3120	406	637	211	117	640
23	1570	2900	2460	2740	1760	2220	3320	425	786	204	104	547
24	3510	3760	5270	2300	1530	1880	2950	415	626	195	159	478
25	3980	3550	14900	1970	1350	1610	2420	392	548	190	186	437
26	3050	2840	17800	1700	1230	1450	2000	369	508	183	189	564
27	2070	2980	13100	1540	1170	1370	1710	371	466	177	245	616
28	1750	5340	7470	2170	1050	1520	1580	556	440	171	183	492
29	1660	4440	11500	1900	---	1270	1620	686	428	168	216	442
30	1370	4110	10600	4010	---	1180	1600	513	397	163	173	433
31	1190	---	10700	13700	---	1170	---	1040	---	160	142	---
TOTAL	33798	84114	198330	108810	62690	98870	54550	23657	17061	8163	4304	16899
MEAN	1090	2804	6398	3510	2239	3189	1818	763	569	263	139	563
MAX	3980	15500	17800	13700	10200	6910	7160	1600	1210	434	245	3540
MIN	173	785	1530	1080	1050	1170	699	369	340	160	104	91
AC-FT	67040	166800	393400	215800	124300	196100	108200	46920	33840	16190	8540	33520
CFSM	5.40	13.9	31.7	17.4	11.1	15.8	9.00	3.78	2.82	1.30	.69	2.79
IN.	6.22	15.49	36.52	20.04	11.54	18.21	10.05	4.36	3.14	1.50	.79	3.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1997, BY WATER YEAR (WY)

	717	2438	3333	3259	2951	2235	1515	834	496	225	132	202
MEAN	717	2438	3333	3259	2951	2235	1515	834	496	225	132	202
MAX	3412	6207	7828	7664	6055	4560	3560	2579	1602	602	419	1138
(WY)	1927	1907	1934	1953	1949	1932	1937	1933	1906	1910	1968	1959
MIN	50.1	72.4	401	518	752	557	387	233	144	99.7	64.5	58.6
(WY)	1988	1930	1977	1977	1973	1941	1926	1939	1928	1992	1992	1965

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1906 - 1997

ANNUAL TOTAL	795373	711246	1516
ANNUAL MEAN	2173	1949	2337
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	32000	Feb 7	32000
LOWEST DAILY MEAN	112	Sep 13	47
ANNUAL SEVEN-DAY MINIMUM	116	Sep 7	48
ANNUAL RUNOFF (AC-FT)	1578000	1411000	1099000
ANNUAL RUNOFF (CFSM)	10.8	9.65	7.51
ANNUAL RUNOFF (INCHES)	146.47	130.98	102.00
10 PERCENT EXCEEDS	5100	4790	3830
50 PERCENT EXCEEDS	938	1090	756
90 PERCENT EXCEEDS	152	150	105

ALSEA RIVER BASIN

311

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 above sea level, from topographic map.

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

AVERAGE DISCHARGE.--14 years (water years 1984-97), 24.3 ft³/s, 57.94 in/yr, 17,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,360 ft³/s Feb. 7, 1996, gage height, 5.37 ft, from rating curve extended above 900 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.17 ft³/s Sept. 27, 28, Oct. 2, 1987.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0300	*1,090	4.84	Dec. 31	2300	397	3.89
Nov. 19	0300	(a)	*5.14	Jan. 1	2100	361	3.80
Dec. 26	1130	460	4.04	Jan. 31	1730	329	3.71
Dec. 29	1630	470	4.07	Mar. 10	2030	337	3.74
Dec. 30	2230	335	3.73				

Minimum discharge, 1.0 ft³/s Aug. 10-13.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	6.7	e100	319	219	92	17	30	19	3.6	1.3	1.3
2	2.2	6.2	e110	265	128	143	17	29	12	3.5	1.3	1.3
3	2.2	6.2	e130	e165	82	98	14	27	12	3.1	1.3	1.2
4	2.3	8.4	e160	e100	65	75	13	25	12	3.0	1.2	1.2
5	2.6	9.7	e260	e75	52	61	12	22	11	2.9	1.2	1.2
6	2.9	8.9	e130	e55	44	94	10	20	9.4	3.0	1.2	1.2
7	2.9	8.9	e140	e42	41	146	9.8	18	8.3	2.9	1.2	1.2
8	2.5	e8.0	e220	e36	34	104	10	16	7.5	2.7	1.2	1.2
9	2.4	e7.5	e160	e30	30	79	8.9	14	6.8	3.0	1.2	1.2
10	2.2	e6.5	e110	e26	27	182	8.3	13	6.2	3.1	1.2	1.2
11	2.1	e6.5	e100	e24	26	210	7.8	12	6.5	2.8	1.1	1.4
12	3.0	e6.0	e95	e22	31	143	7.2	11	7.8	2.6	1.1	1.4
13	12	e11	e130	e20	30	107	8.9	9.9	7.7	2.4	1.1	1.5
14	7.1	e20	e80	e18	30	79	16	9.1	6.1	2.3	1.1	2.7
15	e6.5	e20	e65	e16	29	74	18	8.2	5.4	2.2	1.1	14
16	e5.5	e28	e50	e15	27	119	16	7.5	4.9	2.1	1.1	8.5
17	e3.9	e40	e45	54	25	113	14	7.3	4.9	2.2	1.2	31
18	e12	e100	e40	96	24	82	12	6.7	4.9	2.2	1.3	15
19	e18	e600	e35	51	66	64	29	6.2	4.4	2.0	1.3	8.0
20	e11	146	e32	42	66	53	122	6.0	4.2	1.9	1.4	5.1
21	e7.0	82	e44	47	50	44	60	5.5	4.8	1.8	1.5	3.8
22	e11	93	e50	43	45	36	52	5.4	4.8	1.8	1.3	3.1
23	14	58	e60	36	39	31	67	5.8	4.9	1.7	1.2	2.8
24	35	e55	e90	31	33	27	56	5.5	4.4	1.7	1.7	2.6
25	e48	e60	188	37	29	23	44	5.3	4.1	1.6	1.5	2.5
26	e44	e48	378	43	28	21	36	5.0	3.8	1.6	2.3	4.8
27	e22	e42	e240	38	27	20	30	5.2	3.6	1.5	2.1	4.9
28	e9.5	e75	e150	61	25	20	28	7.0	3.6	1.5	1.7	3.6
29	e10	e65	e300	48	---	17	29	8.0	3.5	1.5	1.6	3.2
30	8.7	e60	272	66	---	17	29	5.9	3.4	1.5	1.4	3.1
31	7.5	---	286	277	---	17	---	23	---	1.5	1.4	---
TOTAL	322.2	1692.5	4250	2198	1352	2391	801.9	379.5	201.9	71.2	41.8	135.2
MEAN	10.4	56.4	137	70.9	48.3	77.1	26.7	12.2	6.73	2.30	1.35	4.51
MAX	48	600	378	319	219	210	122	30	19	3.6	2.3	31
MIN	2.1	6.0	32	15	24	17	7.2	5.0	3.4	1.5	1.1	1.2
AC-FT	639	3360	8430	4360	2680	4740	1590	753	400	141	83	268
CFSM	1.82	9.90	24.1	12.4	8.47	13.5	4.69	2.15	1.18	.40	.24	.79
IN.	2.10	11.05	27.74	14.34	8.82	15.60	5.23	2.48	1.32	.46	.27	.88

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	4.11	40.9	50.5	52.0	53.6	37.7	26.5	14.1	8.88	2.49	1.29	1.53		
MAX	10.4	115	137	85.9	138	77.1	49.5	27.8	21.3	3.88	1.92	4.51		
(WY)	1997	1985	1997	1995	1996	1997	1993	1984	1985	1984	1996	1997		
MIN	.39	1.41	17.6	16.0	13.4	11.5	10.4	5.99	1.83	1.40	.52	.66		
(WY)	1988	1994	1990	1985	1993	1992	1987	1994	1992	1992	1992	1987		

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	16265.6	13837.2	
ANNUAL MEAN	44.4	37.9	
HIGHEST ANNUAL MEAN			24.3
LOWEST ANNUAL MEAN			40.2
HIGHEST DAILY MEAN	817	600	16.2
LOWEST DAILY MEAN	1.5	1.1	817
ANNUAL SEVEN-DAY MINIMUM	1.6	1.1	.25
ANNUAL RUNOFF (AC-FT)	32260	27450	17610
ANNUAL RUNOFF (CFSM)	7.80	6.65	4.26
ANNUAL RUNOFF (INCHES)	106.15	90.31	57.94
10 PERCENT EXCEEDS	110	100	59
50 PERCENT EXCEEDS	15	12	11
90 PERCENT EXCEEDS	2.0	1.5	1.0

e Estimated

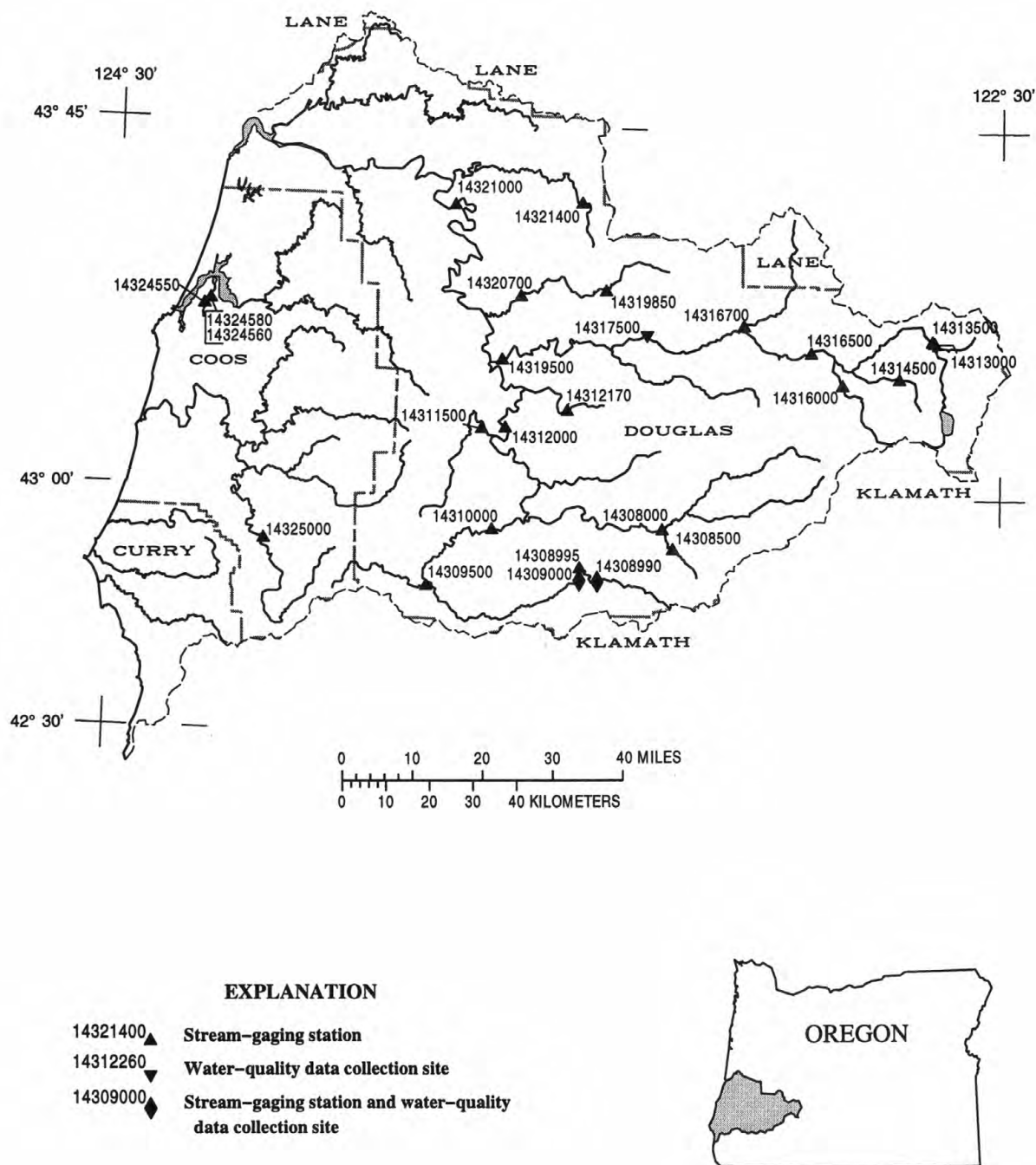


Figure 28. Location of surface-water and water-quality stations in the Umpqua, Coos and Coquille River Basins.

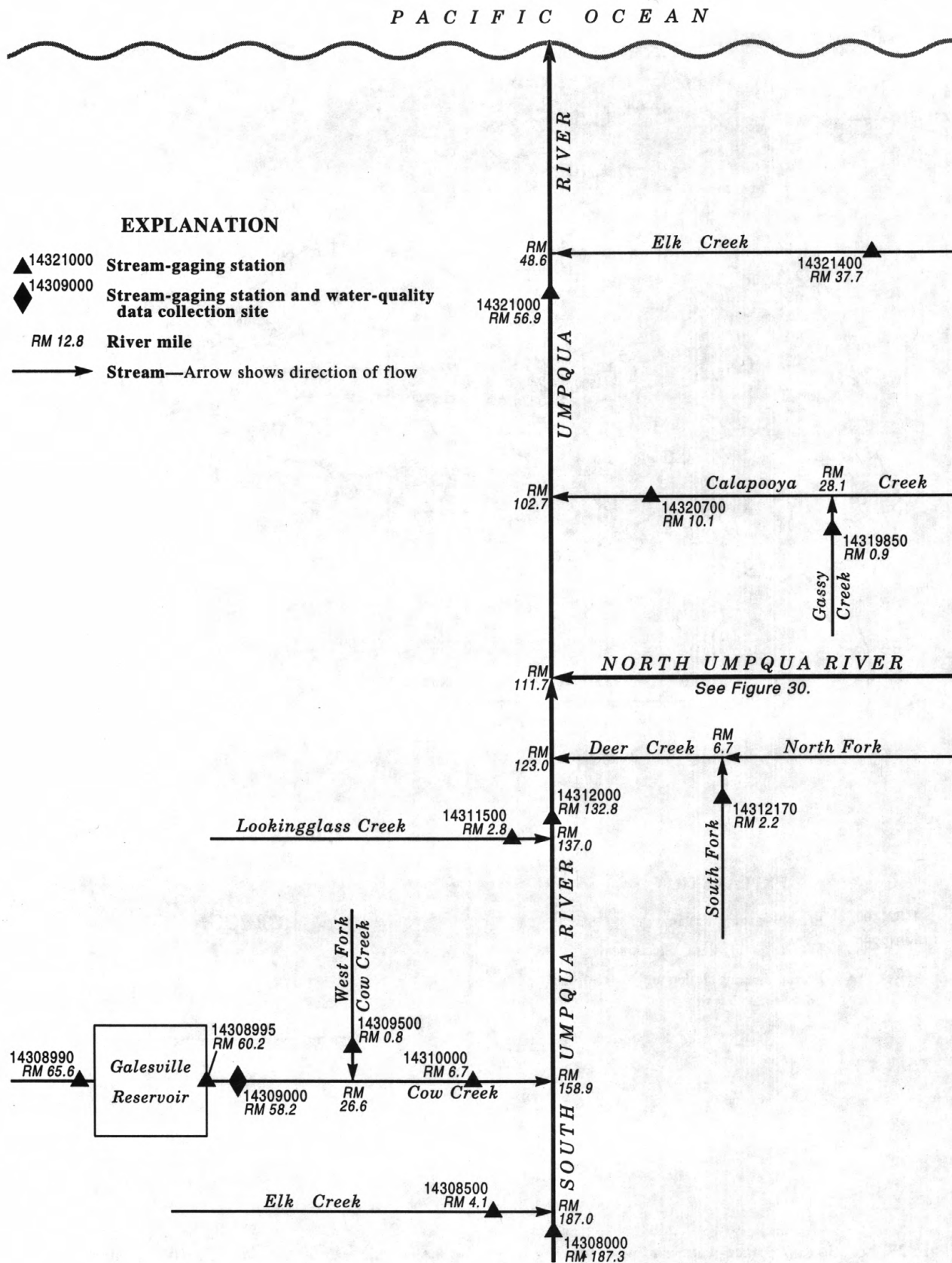


Figure 29. Schematic diagram showing gaging stations in the Umpqua and the South Fork Umpqua River Basins.

UMPQUA RIVER BASIN

315

14308000 SOUTH UMPQUA RIVER AT TILLER, OR

LOCATION.--Lat 42°55'50", long 122°56'50", in NE 1/4 sec.33, T.30 S., R.2 W., Douglas County, Hydrologic Unit 17100302, Umpqua National Forest, on left bank 0.3 mi upstream from bridge on State Highway 227 at Tiller, 0.3 mi upstream from Elk Creek, and at mile 187.31.

DRAINAGE AREA.--449 mi².

PERIOD OF RECORD.--October 1910 to December 1911, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1318. Prior to December 1911, published as South Fork of Umpqua River at Tiller.

REVISED RECORDS.--WSP 1448: 1911(M), 1912, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 991.8 ft above sea level (river-profile survey). Prior to Oct. 1, 1939, nonrecording gage at site 0.2 mi downstream at different datum.

REMARKS.--Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--59 years, (water years 1911, 1940-97), 1,033 ft³/s, 31.27 in/yr, 748,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,200 ft³/s Dec. 22, 1964, gage height, 25.72 ft; minimum discharge observed, 20 ft³/s Sept. 3, 4, 1911.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2200	*46,000	*22.17	Dec. 29	1430	12,700	11.62
Dec. 4	2300	27,500	17.20	Jan. 1	0500	31,700	18.45
Dec. 8	1430	27,100	17.08	Jan. 31	2100	9,520	10.04
Dec. 25	2400	18,200	14.01				

Minimum discharge, 54 ft³/s Oct. 11-13.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	724	6680	23500	6800	1050	797	2910	540	502	92	74
2	61	601	4540	16700	4090	2360	772	2220	469	354	89	71
3	60	531	3360	11800	2890	2170	769	1810	484	286	86	70
4	59	467	7330	6700	2270	1790	757	1500	790	247	84	69
5	58	419	14900	4350	1830	1530	705	1280	756	221	82	66
6	58	369	7480	3110	1530	1410	659	1140	636	205	80	66
7	58	434	7780	2440	1420	1570	664	1030	550	192	78	66
8	57	445	21900	2000	1420	1960	766	940	493	182	75	64
9	56	395	18000	1700	1290	1840	830	903	444	175	73	63
10	55	358	11600	1470	1180	1800	770	888	406	196	73	63
11	54	334	7480	1300	1070	2160	705	886	374	178	71	77
12	54	307	5440	1160	1200	2080	652	886	359	168	69	97
13	59	297	4810	1020	1230	1700	627	839	368	159	68	80
14	96	461	3840	930	1170	1430	756	781	336	153	66	86
15	90	11600	2840	862	1120	1390	823	724	312	146	65	144
16	86	879	2220	809	1050	1570	803	667	293	140	63	325
17	79	858	1840	857	1230	2110	792	621	275	136	63	314
18	171	e15100	1550	834	1320	1880	825	581	260	136	63	400
19	421	e19800	1340	811	1920	1640	1450	534	245	136	62	238
20	276	9000	2110	879	2630	1810	3420	492	232	130	75	177
21	180	4360	2810	995	2070	1870	2930	450	225	123	131	145
22	235	2930	2220	1030	1670	1550	2380	417	226	117	91	126
23	472	2210	1840	958	1380	1340	3840	436	215	112	78	113
24	1430	2500	1970	875	1170	1180	4280	612	205	110	172	103
25	2040	3190	11300	1870	1030	1090	2950	534	197	106	150	95
26	1360	2360	16600	4000	953	1060	2220	451	191	102	101	90
27	913	1810	9760	2900	1030	1020	1940	442	182	101	101	88
28	864	3730	6720	3430	1130	1010	1720	443	180	97	95	88
29	2190	3930	9540	3380	---	885	2070	743	194	95	86	84
30	1400	3020	11500	2560	---	816	2880	607	390	95	81	81
31	961	---	15900	5710	---	804	---	546	---	96	77	---
TOTAL	14014	93419	227200	110940	49093	47875	45552	27313	10827	5196	2640	3623
MEAN	452	3114	7329	3579	1753	1544	1518	881	361	168	85.2	121
MAX	2190	19800	21900	23500	6800	2360	4280	2910	790	502	172	400
MIN	54	297	1340	809	953	804	627	417	180	95	62	63
AC-FT	27800	185300	450700	220000	97380	94960	90350	54180	21480	10310	5240	7190
CFSM	1.01	6.94	16.3	7.97	3.90	3.44	3.38	1.96	.80	.37	.19	.27
IN.	1.16	7.74	18.82	9.19	4.07	3.97	3.77	2.26	.90	.43	.22	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1997, BY WATER YEAR (WY)

	198	1072	2061	2070	2004	1723	1415	1063	519	156	77.7	76.5
MEAN	198	1072	2061	2070	2004	1723	1415	1063	519	156	77.7	76.5
MAX	1791	3977	7480	4513	4911	4776	2756	2093	1643	301	206	364
(WY)	1951	1974	1965	1972	1986	1972	1993	1963	1953	1953	1976	1986
MIN	34.5	48.2	66.6	89.7	95.1	328	433	231	108	49.5	29.9	38.9
(WY)	1988	1940	1977	1977	1977	1992	1968	1992	1992	1940	1940	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1911 - 1997
ANNUAL TOTAL	742491	637692	
ANNUAL MEAN	2029	1747	1033
HIGHEST ANNUAL MEAN			1762
LOWEST ANNUAL MEAN			268
HIGHEST DAILY MEAN	21900	Dec 8	36500
LOWEST DAILY MEAN	50	Sep 12	20
ANNUAL SEVEN-DAY MINIMUM	51	Sep 7	26
ANNUAL RUNOFF (AC-FT)	1473000	1265000	748600
ANNUAL RUNOFF (CFSM)	4.52	3.89	2.30
ANNUAL RUNOFF (INCHES)	61.52	52.83	31.27
10 PERCENT EXCEEDS	4940	3840	2430
50 PERCENT EXCEEDS	913	757	510
90 PERCENT EXCEEDS	63	76	58

e Estimated

UMPQUA RIVER BASIN

14308500 ELK CREEK NEAR DREW, OR

LOCATION.--Lat 42°53'25", long 122°55'00", in SW 1/4 sec.11, T.31 S., R.2 W., Douglas County, Hydrologic Unit 17100302, on right bank 100 ft downstream from Dixon Creek, 0.1 mi upstream from Drew Creek, 1.3 mi northwest of Drew, 3.3 mi southeast of Tiller, and at mile 4.1.

DRAINAGE AREA.--54.4 mi².

PERIOD OF RECORD.--September 1954 to September 1982, October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,279.25 ft above sea level.

REMARKS.--Records good except for estimated discharges, which are fair. No regulation. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--39 years (water years 1955-82, 1987-97), 79.5 ft³/s, 19.87 in/yr, 57,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s Jan. 9, 1995, gage height, 11.09 ft, from rating curve extended above 2,900 ft³/s on basis of slope-area measurement at gage height 10.34 ft; no flow at times several years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 11.8 ft, from floodmarks, probably for flood in January or November 1953, discharge, about 11,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1900	4,810	8.80	Dec. 25	1400	1,140	5.79
Dec. 4	2100	2,980	7.63	Jan. 1	0230	*8,550	*10.87
Dec. 8	1030	5,000	9.02				

Minimum discharge, 0.57 ft³/s Oct. 3-6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.83	11	424	4190	199	e54	39	140	10	24	1.5	1.5
2	.64	8.4	298	2270	183	e100	37	107	8.8	12	1.4	1.4
3	.62	6.9	239	1300	150	e90	34	85	10	8.2	1.3	1.5
4	.62	6.1	852	639	124	e72	32	68	18	6.5	1.3	1.6
5	.62	5.8	1170	393	101	e58	29	56	17	5.3	1.3	1.5
6	.65	5.1	519	270	85	e47	28	48	13	4.8	1.2	1.6
7	.68	5.9	1410	206	109	e54	32	42	11	4.3	1.2	1.5
8	.72	6.0	3810	164	139	e70	38	37	10	3.9	1.1	1.5
9	.74	5.3	2020	133	125	e67	34	33	9.0	4.0	1.1	1.4
10	.71	4.9	1410	110	114	e64	32	29	8.1	4.7	1.0	1.4
11	.75	4.6	862	93	98	e79	29	26	7.2	3.9	1.0	1.5
12	.93	4.1	638	81	112	e67	26	23	7.2	3.4	1.0	1.7
13	1.1	4.8	648	68	104	e55	26	21	7.4	3.2	.96	1.6
14	1.8	7.7	429	61	91	e44	27	18	6.7	2.9	.84	1.9
15	2.0	18	296	56	81	e40	24	16	6.3	2.7	.86	2.5
16	2.1	24	217	51	73	e46	22	14	6.0	2.5	.83	3.3
17	2.1	17	170	49	e85	e80	20	13	5.4	2.5	.84	3.7
18	4.3	1650	136	44	e91	e72	23	11	5.1	2.7	.71	4.3
19	6.6	2070	113	40	e140	e65	38	10	4.7	2.4	.67	3.3
20	5.3	801	169	49	e190	e66	198	9.2	4.6	2.2	1.3	2.7
21	3.8	313	202	66	e160	e74	183	8.6	4.3	1.9	2.5	2.3
22	3.4	202	167	77	e130	e66	164	8.4	4.7	1.9	1.8	2.1
23	4.0	143	139	62	e96	e58	342	16	4.3	1.8	1.6	1.9
24	16	129	131	53	e76	e52	296	27	4.1	1.7	2.9	1.8
25	43	128	651	326	e61	e49	186	21	3.8	1.7	2.6	1.7
26	35	105	855	451	e50	e48	125	14	3.6	1.6	2.1	1.6
27	17	87	770	300	e54	e45	106	15	3.5	1.6	2.1	1.7
28	14	322	605	324	e59	45	98	16	4.0	1.5	1.9	1.7
29	65	297	1910	269	---	37	114	18	5.7	1.5	1.7	1.7
30	31	227	2680	201	---	35	167	12	14	1.8	1.7	1.7
31	17	---	2890	203	---	35	---	11	---	1.7	1.5	---
TOTAL	283.01	6619.6	26830	12599	3080	1834	2549	973.2	227.5	124.8	43.81	59.6
MEAN	9.13	221	865	406	110	59.2	85.0	31.4	7.58	4.03	1.41	1.99
MAX	65	2070	3810	4190	199	100	342	140	18	24	2.9	4.3
MIN	.62	4.1	113	40	50	35	20	8.4	3.5	1.5	.67	1.4
AC-FT	561	13130	53220	24990	6110	3640	5060	1930	451	248	87	118
CFSM	.17	4.06	15.9	7.47	2.02	1.09	1.56	.58	.14	.07	.03	.04
IN.	.19	4.53	18.35	8.62	2.11	1.25	1.74	.67	.16	.09	.03	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1997, BY WATER YEAR (WY)

	7.15	68.8	183	212	158	151	98.7	51.9	18.1	3.97	1.52	1.80
MEAN	7.15	68.8	183	212	158	151	98.7	51.9	18.1	3.97	1.52	1.80
MAX	62.8	449	865	644	382	356	193	164	106	10.8	10.2	18.7
(WY)	1963	1974	1997	1974	1958	1974	1956	1963	1993	1978	1976	1978
MIN	.62	1.89	3.11	4.94	5.05	15.0	20.1	6.94	1.96	.52	.008	.043
(WY)	1988	1994	1977	1977	1977	1992	1990	1987	1987	1994	1992	1992

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1955 - 1997

ANNUAL TOTAL	60901.24	55223.52	
ANNUAL MEAN	166	151	79.5
HIGHEST ANNUAL MEAN			180
LOWEST ANNUAL MEAN			16.0
HIGHEST DAILY MEAN	3810	4190	6670
LOWEST DAILY MEAN	.02	.62	.00
ANNUAL SEVEN-DAY MINIMUM	.09	.65	.00
ANNUAL RUNOFF (AC-FT)	120800	109500	57620
ANNUAL RUNOFF (CFSM)	3.06	2.78	1.46
ANNUAL RUNOFF (INCHES)	41.65	37.76	19.87
10 PERCENT EXCEEDS	387	296	192
50 PERCENT EXCEEDS	42	21	19
90 PERCENT EXCEEDS	.61	1.5	.89

e Estimated

14308990 COW CREEK ABOVE GALESVILLE RESERVOIR, NEAR AZALEA, OR

LOCATION.--Lat 42°49'24", long 123°07'29", in SW 1/4 NW 1/4 sec.1, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, about 600 ft upstream from bridge on Houck Ranch Road (BLM), 1.1 mi downstream from Sugar Creek, 3.2 mi south of Galesville Dam, 6.9 mi northeast of Azalea, and at mile 65.6

DRAINAGE AREA.--64.7 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,900 ft above sea level, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period November 1985 to September 1989 have been collected at this location.

AVERAGE DISCHARGE.--12 years (water years 1986-97), 80.2 ft³/s, 16.85 in/yr, 58,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 6,980 ft³/s Jan. 9, 1995, gage height 12.04 ft, from rating curve extended above 2,450 ft³/s; maximum gage height 12.30 ft Jan. 9, 1995 (from outside highwater mark); minimum discharge, 3.5 ft³/s Dec. 26, 1989, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1927 occurred Jan. 15, 1974. Stage and discharge not known at this site, but was 10,600 ft³/s at site 7.4 mi downstream.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1930	3,010	7.81	Dec. 10	0930	2,120	6.57
Dec. 4	2300	1,940	6.29	Jan. 1	0300	*6,130	*11.25
Dec. 8	1100	4,900	10.01				

Minimum discharge, 10 ft³/s Oct. 10-13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	21	288	3980	328	204	80	105	38	e35	16	13
2	11	19	209	2400	279	460	78	96	35	e33	15	13
3	11	18	183	1350	250	301	75	89	36	e30	15	13
4	11	17	503	803	223	251	71	82	39	e28	14	13
5	11	17	867	567	198	223	68	74	40	e27	14	13
6	11	16	419	e480	174	208	66	72	38	e26	14	14
7	11	16	1230	e395	209	200	66	68	34	e25	13	13
8	11	17	3680	e325	270	216	67	63	34	e24	13	12
9	11	18	2040	e285	226	204	67	59	33	24	13	12
10	11	16	1580	e260	217	195	67	58	32	25	13	13
11	10	16	957	235	198	194	65	56	32	24	13	15
12	10	16	704	210	198	182	63	52	32	23	12	15
13	12	15	763	188	191	164	61	51	33	22	12	14
14	14	18	494	170	180	156	61	47	32	21	12	17
15	13	25	366	158	168	152	61	45	31	21	11	19
16	13	26	285	148	158	161	57	44	30	20	11	21
17	13	24	235	142	165	193	56	43	29	20	12	22
18	24	1040	199	136	158	160	55	42	28	22	12	20
19	31	1290	171	122	223	141	62	41	28	20	12	17
20	23	490	203	129	227	136	177	38	27	19	16	15
21	17	201	228	142	193	128	147	37	27	18	17	15
22	16	140	193	140	173	121	139	36	27	18	14	14
23	16	102	171	125	158	110	213	43	27	18	14	14
24	25	93	173	115	144	104	206	52	26	17	23	13
25	50	96	372	345	135	98	158	51	26	17	16	13
26	53	77	671	487	136	91	130	42	25	17	16	13
27	30	70	767	347	193	89	115	43	e24	16	16	13
28	22	209	620	462	213	92	110	44	e24	16	14	13
29	55	189	2050	393	---	86	109	45	e28	16	14	13
30	33	139	e2500	311	---	81	105	41	e36	17	13	13
31	25	---	e3600	323	---	81	---	39	---	17	13	---
TOTAL	615	4451	26721	15673	5585	5182	2855	1698	931	676	433	438
MEAN	19.8	148	862	506	199	167	95.2	54.8	31.0	21.8	14.0	14.6
MAX	55	1290	3680	3980	328	460	213	105	40	35	23	22
MIN	10	15	171	115	135	81	55	36	24	16	11	12
AC-FT	1220	8830	53000	31090	11080	10280	5660	3370	1850	1340	859	869
CFSM	.31	2.29	13.3	7.81	3.08	2.58	1.47	.85	.48	.34	.22	.23
IN.	.35	2.56	15.36	9.01	3.21	2.98	1.64	.98	.54	.39	.25	.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1997, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	12.0	47.0	156	196	173	154	94.4	65.0	33.9	16.1	9.90	9.84
MAX	19.8	148	862	506	444	315	200	165	81.6	24.3	15.8	18.8
(WY)	1997	1997	1997	1997	1996	1993	1996	1993	1993	1993	1993	1986
MIN	6.41	12.2	18.2	45.2	51.1	34.2	32.5	20.8	12.7	7.03	5.16	5.66
(WY)	1988	1988	1990	1992	1994	1992	1990	1992	1994	1994	1994	1994

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1986 - 1997
ANNUAL TOTAL	71677.3	65258	
ANNUAL MEAN	196	179	80.2
HIGHEST ANNUAL MEAN			179
LOWEST ANNUAL MEAN			26.6
HIGHEST DAILY MEAN	3680	Dec 8	3980
LOWEST DAILY MEAN	9.6	Sep 12	10
ANNUAL SEVEN-DAY MINIMUM	9.9	Sep 6	11
ANNUAL RUNOFF (AC-FT)	142200	129400	58130
ANNUAL RUNOFF (CFSM)	3.03	2.76	1.24
ANNUAL RUNOFF (INCHES)	41.21	37.52	16.85
10 PERCENT EXCEEDS	452	326	191
50 PERCENT EXCEEDS	88	47	30
90 PERCENT EXCEEDS	11	13	7.8

e Estimated

UMPQUA RIVER BASIN

14308995 GALESVILLE RESERVOIR NEAR AZALEA, OR

LOCATION.--Lat 42°50'56", long 123°10'40", in NE 1/4 sec.28, T.31 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on the upstream face of Galesville dam to the right side of the spillway section, 1.2 mi downstream from McGinnis Creek, 5.6 mi northeast of Azalea, and at mile 60.2.

DRAINAGE AREA.--74.3 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Douglas County).

REMARKS.--Reservoir is formed by a roller compacted concrete dam; storage began Oct. 7, 1985. Capacity, 42,220 acre-ft between elevations 1,780.0 ft (bottom of evacuation outlet) and 1,881.5 ft (crest of spillway). Dead storage, 1,800 acre-ft below elevation 1,780.0 ft. Reservoir is used for irrigation, power generation, flood control, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Douglas County Public Works Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 43,230 acre-ft Jan. 2, 3, 1997, elevation, 1,883.62 ft; minimum contents, 7,240 acre-ft Jan. 9, 10, 1991, elevation, 1,805.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 43,230 acre-ft Jan. 2, 3, elevation, 1,883.62 ft; minimum contents, 21,990 acre-ft Jan. 25, elevation, 1,844.84 ft.

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

1,780	1,800	1,820	11,960	1,860	29,480
1,790	3,590	1,830	15,660	1,870	34,970
1,800	5,890	1,840	19,820	1,880	40,930
1,810	8,700	1,850	24,420	1,885	44,130

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1853.67	1848.03	1847.96	1881.35	1846.95	1857.58	1866.88	1870.00	1870.79	1869.43	1866.44	1860.87
2	1853.35	1847.88	1848.11	1883.62	1847.06	1858.57	1866.90	1870.14	1870.74	1869.41	1866.31	1860.63
3	1852.95	1847.73	1848.14	1882.97	1847.36	1859.19	1866.91	1870.26	1870.74	1869.36	1866.19	1860.40
4	1852.58	1847.57	1849.55	1882.43	1847.41	1859.85	1866.91	1870.35	1870.72	1869.29	1866.06	1860.15
5	1852.22	1847.41	1851.97	1881.75	1847.36	1860.39	1866.90	1870.44	1870.71	1869.21	1865.94	1859.89
6	1851.86	1847.26	1851.40	1880.18	1847.26	1860.88	1866.88	1870.51	1870.68	1869.13	1865.81	1859.61
7	1851.50	1847.10	1854.65	1877.80	1847.60	1861.34	1866.89	1870.58	1870.64	1869.04	1865.66	1859.33
8	1851.13	1846.95	1867.80	1875.22	1848.47	1861.84	1866.89	1870.63	1870.60	1868.95	1865.50	1859.06
9	1850.80	1846.79	1873.47	1872.48	1849.16	1862.29	1866.88	1870.68	1870.58	1868.88	1865.36	1858.78
10	1850.49	1846.61	1875.63	1869.44	1849.78	1862.72	1866.90	1870.71	1870.52	1868.79	1865.21	1858.54
11	1850.22	1846.45	1875.07	1866.16	1850.31	1863.15	1866.89	1870.74	1870.47	1868.70	1865.06	1858.28
12	1849.96	1846.30	1873.60	1862.75	1850.84	1863.51	1866.87	1870.75	1870.46	1868.61	1864.92	1858.02
13	1849.84	1846.17	1872.33	1859.24	1851.29	1863.82	1866.87	1870.76	1870.41	1868.51	1864.77	1857.76
14	1849.70	1846.05	1870.12	1855.62	1851.71	1864.11	1866.86	1870.76	1870.36	1868.42	1864.59	1857.50
15	1849.57	1845.93	1867.42	1851.96	1852.07	1864.41	1866.83	1870.75	1870.31	1868.32	1864.37	1857.27
16	1849.45	1845.76	1864.40	1848.46	1852.42	1864.73	1866.81	1870.74	1870.25	1868.22	1864.17	1856.99
17	1849.34	1845.58	1861.16	1846.59	1852.82	1865.13	1866.78	1870.72	1870.18	1868.12	1863.96	1856.76
18	1849.33	1849.54	1857.74	1846.33	1853.16	1865.41	1866.81	1870.70	1870.10	1868.02	1863.77	1856.46
19	1849.33	1854.38	1854.17	1846.04	1853.76	1865.65	1866.83	1870.66	1870.02	1867.93	1863.58	e1856.14
20	1849.25	1855.58	1851.31	1845.80	1854.29	1865.86	1867.21	1870.62	1869.93	1867.82	1863.43	e1855.81
21	1849.16	1854.52	1849.41	1845.69	1854.74	1866.04	1867.51	1870.57	1869.86	1867.71	1863.22	e1855.49
22	1849.06	1853.14	1847.81	1845.47	1855.10	1866.19	1867.77	1870.54	1869.78	1867.60	1863.00	e1855.17
23	1848.97	1851.84	1847.30	1845.19	1855.41	1866.31	1868.29	1870.59	1869.70	1867.48	1862.89	e1854.84
24	1848.98	1850.53	1847.31	1844.87	1855.66	1866.41	1868.72	1870.68	1869.61	1867.37	1862.74	e1854.51
25	1849.06	1849.18	1848.17	1845.57	1855.88	1866.49	1869.00	1870.72	1869.52	1867.25	1862.52	e1854.17
26	1848.90	1848.00	1849.84	1846.81	1856.15	1866.54	1869.21	1870.71	1869.43	1867.13	1862.32	e1853.85
27	1848.65	1847.34	1850.48	1847.44	1856.66	1866.63	1869.37	1870.74	1869.34	1867.01	1862.08	e1853.51
28	1848.47	1847.54	1849.96	1848.41	1857.09	1866.70	1869.54	1870.81	1869.28	1866.90	1861.83	e1853.18
29	1848.41	1847.61	1856.35	1848.65	---	1866.74	1869.70	1870.84	1869.28	1866.79	1861.59	e1852.85
30	1848.31	1847.47	1863.19	1847.78	---	1866.79	1869.86	1870.84	1869.37	1866.67	1861.35	e1852.52
31	1848.18	---	1869.94	1846.99	---	1866.85	---	1870.82	---	1866.56	1861.11	---
MAX	1853.67	1855.58	1875.63	1883.62	1857.09	1866.85	1869.86	1870.84	1870.79	1869.43	1866.44	1860.87
MIN	1848.18	1845.58	1847.30	1844.87	1846.95	1857.58	1866.78	1870.00	1869.28	1866.56	1861.11	1852.52
(†)	23550	23220	34960	22990	27960	33190	34890	35440	34610	33030	30070	25650
(‡)	-2850	-330	+11740	-11970	+4970	+5230	+1700	+550	-830	-1580	-2960	-4420

CAL YR 1996 MAX -- MIN -- AC-FT† +13,860
WTR YR 1997 MAX 1883.62 MIN 1844.87 AC-FT‡ -750

e Estimated

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

‡ Change in contents, in acre-feet.

UMPQUA RIVER BASIN

319

14309000 COW CREEK NEAR AZALEA, OR

LOCATION.--Lat 42°49'30", long 123°10'40", in N-1/2 sec.4, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on right bank 0.8 mi upstream from Whitehorse Creek, 4.5 mi northeast of Azalea, and at mile 58.2.

DRAINAGE AREA.--78.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1926 to September 1928 (no winter records), April 1929 to December 1931, April 1932 to current year.

REVISED RECORDS.--WSP 984: 1933-36. WSP 1154: 1946(M), 1948(M). WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,694.32 ft above sea level (Douglas County Road Department bench mark). Prior to July 19, 1949, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--67 years (water years 1930-31, 1933-97), 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, 2,490 ft³/s Jan. 2, gage height, 9.69 ft; minimum discharge, 38 ft³/s Oct. 15, result of regulation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	54	203	805	315	97	78	65	50	51	50	78
2	101	55	204	1960	248	227	78	58	54	50	53	78
3	100	55	200	1730	178	152	78	56	51	50	49	78
4	100	55	215	950	215	87	78	55	50	49	50	79
5	100	55	346	748	212	85	78	53	50	49	50	84
6	100	55	602	865	212	84	78	52	50	49	52	86
7	100	55	479	1010	143	83	78	51	50	49	54	86
8	100	55	338	1000	80	84	78	51	50	49	55	85
9	95	54	515	984	80	81	76	51	49	50	54	85
10	85	54	1050	1030	78	80	70	51	49	50	54	80
11	74	54	1240	1050	78	78	69	51	49	50	54	85
12	72	55	1210	1030	82	79	69	51	50	50	54	85
13	55	56	1190	1010	85	78	69	51	50	50	54	85
14	47	56	1170	987	78	78	69	51	50	50	62	85
15	41	62	1140	965	77	78	69	51	49	50	69	87
16	40	66	1120	878	77	79	67	51	49	50	69	91
17	40	68	1090	553	79	79	65	51	49	50	68	96
18	41	148	1070	207	78	78	65	51	49	50	67	100
19	41	136	1040	205	81	77	66	53	49	50	65	101
20	40	200	905	206	81	77	69	50	49	50	68	101
21	40	483	679	204	80	77	69	50	49	50	76	98
22	40	503	596	207	79	77	69	50	49	50	75	98
23	40	419	324	206	79	77	72	52	49	50	69	98
24	40	415	193	206	78	77	70	52	49	50	69	98
25	58	410	197	217	77	77	69	51	49	50	74	98
26	88	353	296	226	78	77	68	51	49	50	77	98
27	87	238	588	220	81	77	69	51	49	49	82	98
28	83	201	722	226	81	78	69	53	49	49	83	99
29	76	198	596	303	---	78	69	53	51	50	79	98
30	60	195	490	462	---	78	69	51	52	50	78	98
31	53	---	837	479	---	78	---	51	---	50	78	---
TOTAL	2137	4863	20845	21129	3190	2692	2140	1619	1491	1544	1991	2716
MEAN	68.9	162	672	682	114	86.8	71.3	52.2	49.7	49.8	64.2	90.5
MAX	101	503	1240	1960	315	227	78	65	54	51	83	101
MIN	40	54	193	204	77	77	65	50	49	49	49	78
AC-FT	4240	9650	41350	41910	6330	5340	4240	3210	2960	3060	3950	5390
MEAN†	22.6	157	863	487	204	172	99.8	61.1	35.8	24.1	16.1	16.3
CFSM†	0.29	2.01	11.07	6.24	2.61	2.20	1.28	0.78	0.46	0.31	0.21	0.21
IN.†	0.33	2.24	12.77	7.20	2.72	2.54	1.43	0.90	0.51	0.36	0.24	0.23
AC-FT†	1390	9320	53090	29940	11300	10570	5940	3760	2130	1480	990	970

CAL YR 1996 TOTAL 67450 MEAN 184 MAX 1240 MIN 40 AC-FT 133800 MEAN† 203 CFSM† 2.61 IN.† 35.50 AC-FT† 147660
WTR YR 1997 TOTAL 66357 MEAN 182 MAX 1960 MIN 40 AC-FT 131600 MEAN† 181 CFSM† 2.32 IN.† 31.46 AC-FT† 130850

† Adjusted for change in contents in Galesville Reservoir.

UMPQUA RIVER BASIN

14309000 COW CREEK NEAR AZALEA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

DISSOLVED OXYGEN: November 1985 to current year.

INSTRUMENTATION.--Water-quality monitor since November 1985.

REMARKS.--Location of the water-quality monitor is 1.9 mi upstream from the stream-discharge site 14309000 Cow Creek at Azalea, 1000 ft downstream from Galesville Dam, and at mile 60.1.

EXTREMES FOR PERIOD OF DAILY RECORD.--

DISSOLVED OXYGEN: Maximum recorded, 15.1 mg/L Feb. 7, 1989, Nov. 17, 20, 1996, caused by operation of bypass valve at dam; minimum, 0.9 mg/L July 30, 1988.

EXTREMES FOR CURRENT YEAR.--

DISSOLVED OXYGEN: Maximum recorded, 15.1 mg/L Nov. 17, 20; minimum recorded, 5.7 mg/L Nov. 18, caused by manipulation of release gate at dam.

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.0	6.0	6.4	9.2	8.2	8.5	10.1	9.5	9.7	---	---	---
2	6.7	5.9	6.2	9.1	8.0	8.4	10.1	8.4	9.4	---	---	---
3	6.6	5.8	6.1	8.6	8.1	8.3	10.3	9.5	9.9	---	---	---
4	6.4	5.9	6.1	8.6	8.0	8.2	10.3	9.5	10.0	---	---	---
5	6.7	5.9	6.2	8.7	7.7	8.1	10.3	9.7	9.9	---	---	---
6	6.8	6.0	6.2	8.3	7.7	8.0	10.2	9.5	9.8	---	---	---
7	7.0	5.9	6.3	8.9	8.1	8.3	10.6	10.0	10.3	---	---	---
8	7.1	6.0	6.4	8.4	7.9	8.1	10.4	9.6	10.0	---	---	---
9	7.3	6.1	6.5	8.7	7.9	8.1	10.7	9.7	10.1	---	---	---
10	6.9	6.1	6.4	8.9	7.9	8.3	---	---	---	---	---	---
11	7.0	6.1	6.4	9.0	8.1	8.4	---	---	---	---	---	---
12	6.8	6.2	6.4	8.9	8.0	8.3	---	---	---	---	---	---
13	6.6	6.2	6.3	8.8	7.6	8.1	---	---	---	---	---	---
14	6.8	6.2	6.4	7.7	7.4	7.5	---	---	---	---	---	---
15	6.8	6.3	6.5	7.9	6.9	7.5	---	---	---	---	---	---
16	6.9	6.2	6.5	14.9	6.8	8.7	---	---	---	12.3	11.8	12.1
17	7.0	6.3	6.6	15.1	6.6	8.6	---	---	---	---	---	---
18	6.9	6.5	6.7	8.8	5.7	7.7	---	---	---	---	---	---
19	6.9	6.5	6.6	8.8	8.5	8.7	---	---	---	---	---	---
20	7.2	6.6	6.8	15.1	8.5	9.1	---	---	---	---	---	---
21	7.2	6.6	6.9	11.0	8.6	9.5	---	---	---	---	---	---
22	7.4	6.9	7.1	10.5	10.1	10.2	---	---	---	9.5	8.8	9.2
23	7.5	7.0	7.2	10.3	9.8	10.0	---	---	---	9.5	7.9	8.9
24	7.5	7.1	7.3	10.6	9.9	10.2	---	---	---	10.1	7.9	8.5
25	9.4	7.1	8.1	10.4	9.8	10.1	---	---	---	10.3	8.2	9.7
26	9.8	9.1	9.4	10.4	9.8	10.0	---	---	---	10.3	10.0	10.1
27	10.2	8.9	9.3	10.4	9.8	10.1	---	---	---	10.9	9.9	10.4
28	9.5	8.8	9.1	10.1	9.6	9.8	---	---	---	---	---	---
29	9.5	8.9	9.1	10.0	9.6	9.8	---	---	---	---	---	---
30	9.6	8.5	8.9	10.4	9.7	9.9	---	---	---	11.2	10.9	11.0
31	9.3	8.3	8.7	---	---	---	---	---	---	11.3	10.7	11.1
MONTH	10.2	5.8	7.1	15.1	5.7	8.8	---	---	---	---	---	---

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	11.5	10.8	11.1	10.8	10.4	10.6	10.2	9.6	9.8	9.7	9.0	9.3
2	---	---	---	10.5	10.1	10.4	10.2	9.6	9.9	9.8	9.0	9.3
3	---	---	---	10.4	9.9	10.1	10.2	9.6	9.9	9.6	9.1	9.3
4	---	---	---	10.4	9.7	10.0	10.3	9.7	9.9	9.9	9.0	9.4
5	---	---	---	10.3	9.8	10.0	10.5	9.5	9.8	9.9	9.0	9.4
6	---	---	---	10.3	9.9	10.0	10.1	9.5	9.7	9.7	9.1	9.3
7	---	---	---	10.2	9.9	10.0	10.1	9.6	9.8	10.2	8.9	9.4
8	---	---	---	10.3	9.8	10.0	10.1	9.6	9.9	10.1	9.0	9.5
9	---	---	---	10.2	9.7	10.0	10.1	9.7	9.8	9.7	9.0	9.3
10	---	---	---	10.1	9.8	9.9	10.1	9.6	9.8	10.3	9.2	9.4
11	---	---	---	10.1	9.6	9.9	10.4	9.5	9.8	10.8	9.3	9.8
12	---	---	---	10.1	9.6	9.8	10.2	9.6	9.8	10.6	9.5	10.0
13	---	---	---	10.2	9.5	9.8	9.8	9.5	9.7	10.9	9.4	10.0
14	---	---	---	10.1	9.6	9.8	10.0	9.5	9.7	10.5	9.5	10.0
15	---	---	---	10.2	9.7	9.9	10.4	9.4	9.8	10.5	9.6	10.0
16	---	---	---	10.0	9.8	9.9	10.2	9.5	9.7	10.4	9.4	9.9
17	---	---	---	10.2	9.7	10.0	10.2	9.4	9.7	10.6	9.5	9.9
18	---	---	---	10.5	9.7	10.1	9.8	9.4	9.5	10.3	9.3	9.8
19	---	---	---	10.4	9.8	10.0	9.8	9.4	9.5	9.9	9.1	9.4
20	---	---	---	10.1	9.7	9.9	9.7	9.2	9.5	9.6	9.0	9.2
21	---	---	---	10.4	9.7	10.0	9.8	9.3	9.5	9.5	9.0	9.3
22	10.8	10.4	10.6	10.2	9.6	9.9	9.6	9.1	9.3	9.6	9.1	9.3
23	11.2	10.6	10.8	10.4	9.6	9.9	9.6	9.1	9.3	9.5	9.2	9.4
24	11.4	10.7	11.0	10.4	9.7	10.0	9.8	9.1	9.3	9.4	9.2	9.3
25	11.4	10.8	11.1	10.5	9.7	10.0	10.1	9.1	9.4	9.8	9.2	9.4
26	11.2	10.8	11.0	10.1	9.7	9.9	9.9	9.1	9.4	9.7	9.1	9.4
27	11.0	10.7	10.9	10.1	9.8	9.9	9.5	9.1	9.3	9.9	9.3	9.5
28	11.1	10.6	10.8	10.2	9.7	9.9	9.4	9.1	9.2	9.6	9.3	9.4
29	---	---	---	10.2	9.5	9.8	9.6	9.0	9.3	9.9	9.2	9.5
30	---	---	---	9.9	9.6	9.7	9.6	9.1	9.3	10.1	9.2	9.5
31	---	---	---	9.9	9.5	9.7	---	---	---	9.5	9.0	9.2
MONTH	---	---	---	10.8	9.5	10.0	10.5	9.0	9.6	10.9	8.9	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	9.3	8.8	9.0	---	---	---	8.4	8.0	8.1	---	---	---
2	9.6	8.7	9.0	---	---	---	---	---	---	---	---	---
3	9.0	8.7	8.8	---	---	---	---	---	---	---	---	---
4	9.0	8.6	8.7	---	---	---	---	---	---	---	---	---
5	9.1	8.4	8.6	---	---	---	8.3	7.7	8.0	---	---	---
6	9.2	8.4	8.7	---	---	---	8.3	7.7	7.9	---	---	---
7	8.8	8.3	8.5	---	---	---	8.1	7.6	7.8	---	---	---
8	8.8	8.3	8.5	---	---	---	7.9	7.5	7.7	---	---	---
9	9.3	8.1	8.6	---	---	---	7.9	7.4	7.6	---	---	---
10	9.5	8.5	8.9	8.2	7.9	8.0	7.9	7.3	7.5	---	---	---
11	8.9	8.4	8.6	8.4	8.0	8.2	7.9	7.2	7.4	---	---	---
12	8.6	8.4	8.5	9.5	7.6	8.4	7.8	7.1	7.3	7.6	6.7	7.0
13	8.9	8.3	8.6	---	---	---	7.7	7.0	7.2	7.4	6.6	6.8
14	9.3	8.4	8.7	---	---	---	7.7	6.9	7.2	7.0	6.4	6.7
15	9.5	8.4	8.8	8.9	8.5	8.7	7.5	7.1	7.3	6.8	6.4	6.6
16	9.4	8.4	8.8	9.2	8.5	8.8	7.6	7.0	7.2	6.9	6.4	6.6
17	9.0	8.4	8.6	8.6	8.3	8.5	7.4	7.0	7.2	7.0	6.2	6.6
18	9.1	8.3	8.6	9.7	8.1	8.7	7.5	7.1	7.2	6.9	6.2	6.4
19	9.0	8.3	8.5	9.0	8.0	8.5	7.6	7.1	7.2	7.4	6.2	6.5
20	9.2	8.1	8.5	8.7	8.3	8.4	7.2	7.1	7.2	7.6	6.1	6.6
21	---	---	---	8.6	8.2	8.3	7.5	7.0	7.2	7.8	6.2	6.7
22	---	---	---	8.5	8.1	8.3	7.3	6.9	7.1	7.7	6.2	6.7
23	---	---	---	8.7	8.1	8.3	7.3	6.9	7.1	8.0	6.3	6.8
24	---	---	---	8.5	8.1	8.3	7.2	6.9	7.0	8.0	6.3	6.8
25	---	---	---	8.4	7.9	8.1	7.2	6.9	7.0	7.8	6.3	6.8
26	---	---	---	8.4	7.9	8.1	7.2	6.9	7.0	6.5	5.9	6.2
27	---	---	---	8.5	8.0	8.2	7.2	6.9	7.0	8.7	5.8	6.6
28	---	---	---	8.5	8.0	8.2	7.2	6.9	7.0	8.0	6.4	6.9
29	---	---	---	8.1	8.0	8.1	---	---	---	8.3	6.4	7.0
30	---	---	---	8.3	8.0	8.1	---	---	---	7.2	6.5	6.8
31	---	---	---	8.3	7.9	8.1	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

UMPQUA RIVER BASIN

14309500 WEST FORK COW CREEK NEAR GLENDALE, OR

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.

DRAINAGE AREA.--86.9 mi².

PERIOD OF RECORD.--August 1955 to current year.

REVISED RECORDS.--WSP 1738: 1956, drainage area (former site). WSP 1935: 1956.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,018.48 ft above sea level. Prior to June 8, 1964, at site 0.6 mi upstream at different datum.

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

AVERAGE DISCHARGE.--42 years (water years 1956-97), 259 ft³/s, 40.55 in/yr, 187,900 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, 3.0 ft³/s Aug. 29 to Sept. 1, 1992.

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)
Nov. 18	unknown	*8,560	*a13.20	Dec. 31	unknown	unknown	unknown
Dec. 8	unknown	unknown	unknown				

Minimum discharge, 6.7 ft³/s Sept. 9.
a From outside high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	39	e1500	e5000	e1000	364	162	124	60	33	10	8.7
2	8.4	31	e1400	e4000	e760	681	146	115	50	27	9.8	8.5
3	8.2	26	e1300	e2500	e580	633	135	108	52	24	9.7	8.2
4	8.2	24	e2000	e1700	e500	600	127	95	56	22	9.5	8.1
5	8.2	24	e3000	e1200	e450	565	117	87	52	20	9.4	8.1
6	8.2	21	e2500	e1000	e400	635	109	84	48	19	9.2	7.7
7	8.2	24	e3500	e800	e350	679	103	78	44	18	8.9	7.3
8	8.2	27	e5000	e650	e375	641	99	73	43	17	8.6	7.3
9	8.2	24	e4000	611	e320	535	98	68	40	17	8.4	7.4
10	7.7	22	e3000	523	e275	473	93	64	38	18	8.6	29
11	7.5	20	e2200	e450	e210	487	88	61	36	18	8.3	42
12	7.5	19	1660	e400	e240	435	85	58	38	17	8.3	23
13	10	24	1910	e360	223	374	82	55	40	16	8.3	18
14	13	30	1200	e320	209	345	82	53	36	15	8.0	21
15	11	37	803	e300	194	333	77	51	34	14	7.8	30
16	11	44	591	e250	184	393	74	49	31	14	7.6	75
17	10	50	465	e560	228	598	71	47	30	14	7.8	105
18	37	e2500	383	e500	222	473	69	46	28	14	8.0	79
19	68	e6000	320	e410	450	367	71	44	28	14	8.3	49
20	40	e2500	330	e450	514	296	139	43	27	13	9.3	36
21	24	e1000	493	e500	440	245	144	42	27	12	12	28
22	19	e600	544	e600	337	211	159	42	28	12	10	23
23	18	e500	e585	e500	270	183	299	45	27	12	9.2	20
24	38	e400	629	478	223	162	329	50	26	11	9.7	18
25	252	e350	1500	620	194	147	250	50	25	11	9.8	16
26	192	e325	e2500	e1800	178	136	193	44	24	11	11	16
27	70	e300	e3000	e1000	229	128	159	44	23	11	16	16
28	46	e700	e2700	e1250	275	125	138	50	23	10	12	15
29	174	e1200	e3500	e950	---	112	130	69	27	10	10	14
30	89	e1000	e3750	e650	---	120	129	50	34	10	9.5	14
31	54	---	e4500	e800	---	143	---	58	---	11	9.1	---
TOTAL	1273.4	17861	60763	31132	9830	11619	3957	1947	1075	485	292.1	758.3
MEAN	41.1	595	1960	1004	351	375	132	62.8	35.8	15.6	9.42	25.3
MAX	252	6000	5000	5000	1000	681	329	124	60	33	16	105
MIN	7.5	19	320	250	178	112	69	42	23	10	7.6	7.3
AC-FT	2530	35430	120500	61750	19500	23050	7850	3860	2130	962	579	1500
CFSM	.47	6.85	22.6	11.6	4.04	4.31	1.52	.72	.41	.18	.11	.29
IN.	.55	7.65	26.01	13.33	4.21	4.31	1.69	.83	.46	.21	.13	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1997, BY WATER YEAR (WY)

MEAN	41.1	293	605	664	566	484	275	115	41.3	17.9	10.2	13.1
MAX	254	1470	1960	1496	1660	934	840	476	99.4	29.5	16.0	56.9
(WY)	1963	1974	1997	1970	1958	1983	1982	1963	1993	1983	1983	1986
MIN	5.19	13.7	13.3	24.2	66.0	91.6	56.2	38.3	17.8	8.70	3.85	3.89
(WY)	1988	1994	1977	1977	1977	1992	1990	1987	1992	1994	1992	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1956 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	174140.7		140992.8			
ANNUAL MEAN	476		386		259	
HIGHEST ANNUAL MEAN					499	1974
LOWEST ANNUAL MEAN					60.2	1977
HIGHEST DAILY MEAN	6000	Nov 19	6000	Nov 19	11000	Dec 22 1964
LOWEST DAILY MEAN	7.5	Oct 11	7.3	Sep 7	3.0	Aug 31 1992
ANNUAL SEVEN-DAY MINIMUM	7.9	Oct 6	7.7	Sep 3	3.2	Aug 26 1992
ANNUAL RUNOFF (AC-FT)	345400		279700		187900	
ANNUAL RUNOFF (CFSM)	5.48		4.45		2.98	
ANNUAL RUNOFF (INCHES)	74.55		60.36		40.55	
10 PERCENT EXCEEDS	1370		1000		672	
50 PERCENT EXCEEDS	145		68		67	
90 PERCENT EXCEEDS	10		9.2		8.7	

e Estimated

UMPQUA RIVER BASIN

323

14310000 COW CREEK NEAR RIDDLE, OR

LOCATION.--Lat 42°55'25", long 123°25'40", in NE 1/4 sec.32, T.30 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on left bank 0.4 mi upstream from Council Creek, 3.8 mi southwest of Riddle, and at mile 6.7.

DRAINAGE AREA.--456 mi².

PERIOD OF RECORD.--September 1954 to current year.

REVISED RECORDS.--WSP 1935: 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 682.60 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1955-85), 903 ft³/s, 654,200 acre-ft/yr.
12 years (water years 1986-97), 653 ft³/s, 473,400 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,400 ft³/s Jan. 15, 1974, gage height, 28.17 ft; minimum discharge, 7.4 ft³/s Aug. 17-19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of about 28.5 ft, present site and datum, from slope-area measurement, discharge, 41,100 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 27,400 ft³/s Dec. 8, gage height, 22.52 ft; minimum discharge, 57 ft³/s Aug. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	193	2620	19100	3090	764	491	394	214	173	76	100
2	127	167	2770	13900	2320	4200	452	372	189	167	75	99
3	126	153	2230	9060	1760	3550	431	355	192	143	73	97
4	126	144	3160	5720	1440	2420	419	329	219	131	71	97
5	127	136	9030	3880	1230	1860	404	307	216	123	69	98
6	127	135	6030	2960	1080	1600	389	293	203	116	67	102
7	127	136	7420	2770	1020	1520	381	280	185	114	65	104
8	126	144	23100	2500	892	1430	370	266	179	107	63	103
9	125	139	16200	2280	823	1210	363	254	170	104	62	101
10	122	133	11700	2100	792	1060	354	244	162	107	61	112
11	114	130	9490	2060	741	1040	335	239	155	110	60	177
12	105	126	6860	1960	756	960	326	230	155	106	60	140
13	111	131	7030	1850	779	860	322	219	166	102	60	127
14	118	148	5480	1750	748	803	322	213	163	98	58	132
15	98	163	3940	1670	710	789	310	207	153	95	58	140
16	89	188	3090	1590	680	808	300	201	144	92	61	199
17	83	199	2610	1500	721	1250	292	194	138	91	68	220
18	129	4650	2300	927	697	1100	285	187	135	92	72	271
19	261	11800	2080	753	870	931	299	182	130	94	74	206
20	198	4730	2050	730	1190	807	384	178	127	90	82	175
21	138	2160	2270	846	1060	706	453	174	127	87	88	161
22	114	1900	2430	1050	913	642	493	171	126	87	91	150
23	111	1570	2280	959	805	591	666	179	124	86	92	144
24	131	1300	2320	887	708	544	805	214	121	85	94	140
25	405	1150	3210	1660	640	509	673	212	120	84	99	136
26	552	1030	4910	6050	609	486	561	192	118	83	100	133
27	300	868	5780	3670	659	467	493	189	114	81	112	133
28	230	1360	4770	3200	786	458	444	209	114	79	115	133
29	428	2230	10400	2830	---	429	433	255	120	77	111	132
30	364	1540	11200	2310	---	427	409	219	148	77	107	131
31	248	---	14200	2630	---	470	---	200	---	77	103	---
TOTAL	5589	38853	192960	105152	28519	34691	12659	7358	4627	3158	2447	4193
MEAN	180	1295	6225	3392	1019	1119	422	237	154	102	78.9	140
MAX	552	11800	23100	19100	3090	4200	805	394	219	173	115	271
MIN	83	126	2050	730	609	427	285	171	114	77	58	97
AC-FT	11090	77060	382700	208600	56570	68810	25110	14590	9180	6260	4850	8320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1997, BY WATER YEAR (WY)

	MEAN	97.5	453	1334	1823	1437	1184	720	367	184	101	81.9	91.9
MAX	180	1295	6225	4144	3278	2362	1833	913	380	148	166	152	
(WY)	1997	1997	1997	1995	1995	1995	1993	1996	1993	1996	1993	1986	
MIN	55.4	88.5	210	577	439	282	194	147	81.0	49.3	23.1	46.5	
(WY)	1989	1988	1990	1994	1988	1992	1990	1987	1992	1994	1986	1994	

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1986 - 1997

ANNUAL TOTAL	554632	440206	653
ANNUAL MEAN	1515	1206	1206
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			270
HIGHEST DAILY MEAN	23100	Dec 8	23100
LOWEST DAILY MEAN	83	Oct 17	58
ANNUAL SEVEN-DAY MINIMUM	103	Oct 11	60
ANNUAL RUNOFF (AC-FT)	1100000	873100	473400
10 PERCENT EXCEEDS	4110	2790	1640
50 PERCENT EXCEEDS	576	244	209
90 PERCENT EXCEEDS	115	91	60

UMPQUA RIVER BASIN

14311500 LOOKINGGLASS CREEK AT BROCKWAY, OR

LOCATION.--Lat 43°07'50", long 123°27'50", in SE 1/4 SE 1/4 sec.13, T.28 S., R.7 W., Douglas County, Hydrologic Unit 17100302, on left bank 1.7 mi northwest of Brockway and at mile 2.85.

DRAINAGE AREA.--158 mi².

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 2135: Drainage area (former site).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 540 ft above sea level, from topographic map. Prior to Oct. 5, 1967, water-stage recorder at site 2.3 mi downstream at different datum. Oct. 5, 1967, to Oct. 5, 1976, water-stage recorder, at datum 1.00 ft lower.

REMARKS.--Records good except those below 5 ft³/s and estimated daily discharges, which are fair. Some regulation since January 1980 by Ben Irving Reservoir 17 mi upstream on Berry Creek, capacity, 11,200 acre-ft. Many diversions by pumping for irrigation upstream from station. Discharge not adjusted for storage or release from Ben Irving Reservoir as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--24 years (water years 1956-79), 282 ft³/s, 204,300 acre-ft/yr. 17 years (water years 1981-97), 225 ft³/s, 163,000 acre-ft/yr. Data for the 1980 water year not included due to construction and initial filling of Ben Irving Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s Dec. 26, 1955, gage height, 24.93 ft, site and datum then in use, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 25.28 ft Dec. 23, 1964 (backwater from South Umpqua River, site and datum then in use); no flow at times each year prior to January 1980, and Aug. 6, 7, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,300 ft³/s Dec. 8, gage height, 15.72 ft; minimum discharge, 3.4 ft³/s July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	25	1130	4000	1740	359	106	82	32	16	9.1	e11
2	11	20	1130	2500	1170	2200	93	75	28	13	9.5	e10
3	11	17	1360	2010	826	2330	87	71	29	11	9.4	e10
4	12	15	2260	1460	641	1480	83	64	33	8.8	8.6	e10
5	14	14	3910	1050	483	1030	77	58	31	9.7	e8.4	e11
6	15	13	2910	754	384	787	72	54	26	9.1	e8.2	e10
7	14	13	2510	592	416	655	72	51	22	7.8	e8.0	e9.5
8	14	18	8530	471	345	551	70	47	21	7.4	e8.0	e9.3
9	13	18	5980	381	290	434	68	43	19	6.1	e7.8	e9.0
10	13	16	3630	314	253	358	64	40	18	5.6	e8.0	e35
11	14	14	2800	267	231	336	59	38	16	5.3	e7.8	e45
12	14	13	1840	232	278	307	56	35	17	5.4	e7.8	e42
13	16	13	2320	195	269	266	55	32	19	4.4	e7.8	e40
14	16	14	1720	172	249	237	61	30	17	4.3	e7.7	e42
15	17	21	1180	155	226	227	57	28	16	4.4	e7.5	e70
16	17	29	817	144	206	260	54	25	13	3.7	e7.4	e100
17	16	31	612	153	250	342	51	23	15	7.5	e7.6	e130
18	21	2870	468	137	207	292	48	22	16	16	e7.8	e100
19	39	4000	370	125	468	244	48	20	14	15	e9.0	e70
20	40	1300	429	129	600	206	62	19	14	13	e10	e50
21	28	609	918	261	501	175	66	19	13	13	e12	e45
22	24	462	1060	395	398	155	75	19	14	13	e11	e37
23	23	387	1010	302	322	138	187	21	14	13	e10	e32
24	27	383	951	246	260	123	193	22	12	11	e11	e30
25	69	380	1690	1090	219	111	152	22	9.2	9.2	e12	e28
26	89	314	2420	2310	196	102	123	20	8.6	11	e13	e27
27	53	264	1860	1420	211	97	104	19	8.4	10	e17	e26
28	41	650	1420	1400	195	99	92	33	9.4	9.9	e15	e26
29	55	694	2320	1070	---	88	93	64	9.6	11	e14	e25
30	49	523	2820	821	---	86	90	42	13	11	e13	e24
31	34	---	3370	1590	---	103	---	35	---	9.4	e12	---
TOTAL	830	13140	65745	26146	11834	14178	2518	1173	527.2	295.0	305.4	1113.8
MEAN	26.8	438	2121	843	423	457	83.9	37.8	17.6	9.52	9.85	37.1
MAX	89	4000	8530	4000	1740	2330	193	82	33	16	17	130
MIN	11	13	370	125	195	86	48	19	8.4	3.7	7.4	9.0
AC-FT	1650	26060	130400	51860	23470	28120	4990	2330	1050	585	606	2210

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1997, BY WATER YEAR (WY)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	25.2	212	608	561	575	361	252	73.5	22.9	8.31	7.25	12.1					
MAX	86.3	809	2121	1346	1544	965	826	169	73.1	21.9	13.0	37.1					
(WY)	1987	1985	1997	1996	1983	1983	1982	1996	1993	1983	1983	1997					
MIN	7.74	7.80	33.0	122	133	54.6	38.4	15.1	4.99	3.06	4.10	5.37					
(WY)	1988	1994	1990	1981	1988	1992	1990	1987	1994	1985	1982	1987					

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1981 - 1997

ANNUAL TOTAL	181095.2	137805.4	225
ANNUAL MEAN	495	378	451
HIGHEST ANNUAL MEAN			70.6
LOWEST ANNUAL MEAN			1982
HIGHEST DAILY MEAN	8530	Dec 8	9670
LOWEST DAILY MEAN	4.7	Aug 20	.03
ANNUAL SEVEN-DAY MINIMUM	5.6	Aug 20	.17
ANNUAL RUNOFF (AC-FT)	359200	273300	163000
10 PERCENT EXCEEDS	1680	1150	597
50 PERCENT EXCEEDS	120	48	42
90 PERCENT EXCEEDS	7.2	9.4	5.6

e Estimated

14312000 SOUTH UMPQUA RIVER NEAR BROCKWAY, OR

LOCATION.--Lat 43°08'00", long 123°23'50", in SW 1/4 sec.15, T.28 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on right bank 10 ft upstream from Winston Bridge on State Highway 99, 2.5 mi northeast of Brockway, 4.2 mi downstream from Lookingglass Creek, and at mile 132.8.

DRAINAGE AREA.--1,670 mi².

PERIOD OF RECORD.--December 1905 to June 1912, October 1923 to September 1926, January 1942 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1248: 1946(M), 1948(M), 1951. WSP 1448: Drainage area. WDR OR 72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 462.52 ft above sea level (State Highway Department bench mark). Prior to June 24, 1949, nonrecording gage at several sites within 400 ft of present site at various datums. June 24, 1949, to Oct. 1, 1970, at datum 461.84 ft above sea level (State Highway Department bench mark).

REMARKS.--Records good. Regulation from Ben Irving Reservoir, since January 1980, on Berry Creek during summer months. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--63 years (water years 1907-11, 1924-26, 1943-97), 2,790 ft³/s, 22.70 in/yr, 2,021,000 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)
Nov. 19	0500	60,500	24.63	Dec. 13	1830	20,100	13.69
Dec. 5	1130	40,500	19.26	Jan. 1	1330	64,500	25.48
Dec. 8	2230	*76,300	*28.46				

Minimum discharge, 109 ft³/s Aug. 16.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	1280	11100	54200	16300	e3500	1960	4540	1040	874	178	218
2	221	1010	12300	45800	10700	e9000	1890	3670	975	884	172	205
3	224	863	9840	35600	7830	12900	1800	3060	891	676	166	199
4	223	776	9960	22700	6250	e10000	1770	2620	1010	536	160	196
5	223	709	33800	14400	5190	e7000	1710	2260	1360	452	156	195
6	224	651	24700	10200	4420	5860	1610	2020	1200	407	151	197
7	221	613	19700	8310	4210	5430	1540	1850	1040	373	147	201
8	218	702	e55000	7080	4570	5550	1580	1700	947	347	141	199
9	212	689	60000	6180	4100	5190	1680	1580	870	336	138	194
10	210	629	39500	5520	3750	4640	1680	1520	799	330	140	201
11	206	584	31500	5090	3410	4800	1570	1490	735	345	136	237
12	198	554	21700	4720	3460	4830	1470	1460	705	327	130	297
13	207	529	20100	4300	3570	4140	1400	1410	742	308	127	290
14	231	552	17200	3930	3380	3590	1410	1330	734	287	122	287
15	253	835	11900	3680	3190	3390	1550	1250	661	271	118	305
16	263	1290	8940	3470	3010	3570	1540	1170	586	257	115	372
17	238	1360	7180	3340	3180	4630	1500	1110	534	247	120	677
18	273	10300	6090	2940	e3500	4620	1460	1040	502	257	128	780
19	558	44700	5320	2430	e5000	3930	1700	978	462	261	135	771
20	855	23300	5240	2400	e7000	3640	3150	912	438	257	149	549
21	581	10500	8090	2810	e6500	3720	4750	864	423	242	176	439
22	429	7230	7030	3570	e5000	3270	3940	821	421	225	220	387
23	455	5720	e6000	3250	e4000	2910	4720	825	421	215	229	352
24	749	4840	e7000	2950	e3500	2620	6770	962	399	205	239	328
25	2850	5820	e15000	4790	e3000	2390	5530	1180	380	195	276	313
26	3220	5050	e18000	16400	e2500	2250	4120	1010	365	189	331	300
27	1830	4030	25700	12100	e2700	2200	3440	910	353	187	271	294
28	1350	5720	18000	9970	e3300	2180	3030	957	349	181	263	289
29	2340	9580	24300	10000	---	2060	3050	1180	382	179	264	286
30	2610	6950	34900	7840	---	1910	3490	1380	534	177	245	284
31	1720	---	43500	10000	---	1920	---	1100	---	177	225	---
TOTAL	23616	157366	618590	329970	136520	137640	76810	48159	20258	10204	5568	9842
MEAN	762	5246	19950	10640	4876	4440	2560	1554	675	329	180	328
MAX	3220	44700	60000	54200	16300	12900	6770	4540	1360	884	331	780
MIN	198	529	5240	2400	2500	1910	1400	821	349	177	115	194
AC-FT	46840	312100	1227000	654500	270800	273000	152400	95520	40180	20240	11040	19520
CFSM	.46	3.14	11.9	6.37	2.92	2.66	1.53	.93	.40	.20	.11	.20
IN.	.53	3.51	13.78	7.35	3.04	3.07	1.71	1.07	.45	.23	.12	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1997, BY WATER YEAR (WY)

MEAN	468	2740	5721	6895	6280	4747	3235	1960	888	269	137	152
MAX	6045	13590	19950	16010	15370	10950	7378	6909	3312	576	392	587
(WY)	1951	1974	1997	1956	1958	1974	1963	1963	1953	1953	1993	1986
MIN	103	190	184	262	341	882	589	446	142	52.6	40.2	69.3
(WY)	1988	1953	1977	1977	1977	1992	1926	1926	1926	1926	1973	1967

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1906 - 1997
ANNUAL TOTAL	1874922	1574543	
ANNUAL MEAN	5123	4314	2790
HIGHEST ANNUAL MEAN			5567
LOWEST ANNUAL MEAN			562
HIGHEST DAILY MEAN	60000	Dec 9	90200
LOWEST DAILY MEAN	157	Sep 4	17
ANNUAL SEVEN-DAY MINIMUM	161	Aug 30	18
ANNUAL RUNOFF (AC-FT)	3719000	3123000	2021000
ANNUAL RUNOFF (CFSM)	3.07	2.58	1.67
ANNUAL RUNOFF (INCHES)	41.76	35.07	22.70
10 PERCENT EXCEEDS	14400	10000	6780
50 PERCENT EXCEEDS	2160	1400	1090
90 PERCENT EXCEEDS	200	201	114

e Estimated

UMPQUA RIVER BASIN

14312170 SOUTH FORK DEER CREEK NEAR DIXONVILLE, OR

LOCATION.--Lat 43°10'16", long 123°13'23", in NW 1/4 NW 1/4 sec.6, T.28 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, 900 ft upstream from bridge on Douglas County Road Number 83, 2.6 mi southeast of Dixonville, and 2.2 mi upstream from confluence of north and south forks.

DRAINAGE AREA.--15.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 700 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those below 5 ft³/s, which are fair. No regulation. Minor diversion for irrigation upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--8 years (water years 1990-97), 21.2 ft³/s, 18.95 in/yr, 15,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,910 ft³/s Jan. 20, 1996, gage height, 5.33 ft; maximum gage height, 6.84 ft, from inside highwater mark, occurred Nov. 18, 1996; minimum discharge, 0.25 ft³/s Oct. 19-21, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1900	a*1,720	b*6.84	Dec. 31	2400	741	4.74
Dec. 4	2000	680	4.58	Mar. 1	2130	346	3.56
Dec. 8	0930	1,460	6.33				

Minimum discharge, 0.6 ft³/s, July 14.

a From slope-area computation.

b From inside highwater mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	4.5	111	343	106	105	18	20	5.1	7.3	1.6	1.9
2	1.4	3.3	87	209	71	215	16	18	4.8	5.5	1.7	1.8
3	1.4	2.8	75	158	53	149	15	19	6.4	4.6	1.7	1.8
4	1.5	3.3	229	106	43	93	14	15	10	3.7	1.6	1.8
5	1.6	4.4	302	75	35	67	12	13	14	3.4	1.6	1.8
6	1.7	3.8	206	57	30	54	12	12	8.8	3.1	1.6	1.7
7	1.7	5.3	210	47	49	51	12	11	7.4	2.9	1.6	1.6
8	1.7	4.7	954	40	81	58	12	9.9	6.7	2.8	1.6	1.6
9	1.7	4.5	538	34	62	49	11	9.2	5.9	3.3	1.6	1.5
10	1.6	4.2	299	30	48	44	11	8.7	5.0	3.2	1.7	2.0
11	1.7	4.0	202	27	42	46	10	8.3	4.9	3.0	1.6	2.4
12	1.8	4.1	138	25	41	41	9.6	7.8	5.6	2.7	1.6	2.1
13	3.6	7.5	169	22	36	36	9.5	7.3	5.8	2.6	1.5	2.0
14	2.8	9.6	125	20	32	32	9.4	6.8	5.0	2.4	1.5	3.4
15	2.8	14	95	18	28	31	8.8	6.0	4.6	2.5	1.5	3.2
16	2.7	12	73	17	26	39	8.5	5.8	4.2	2.4	1.5	4.0
17	2.4	14	60	17	29	49	8.1	5.6	4.1	2.6	1.6	6.7
18	7.3	731	50	15	25	39	8.4	5.3	3.9	2.6	1.9	4.0
19	8.1	350	43	15	45	33	8.7	5.2	3.7	2.2	1.6	2.8
20	5.0	120	50	23	45	33	9.6	5.0	3.6	2.0	3.7	2.3
21	2.8	56	73	43	38	27	9.7	4.8	3.6	2.1	2.5	2.0
22	3.2	40	67	44	32	24	12	4.8	3.6	2.2	1.9	1.9
23	3.1	29	59	33	27	21	39	5.7	3.5	2.0	2.1	1.9
24	7.6	38	53	28	23	19	42	6.2	3.5	1.9	4.9	2.0
25	27	39	120	101	21	17	30	5.7	3.3	1.9	2.4	2.2
26	13	27	190	136	22	16	22	5.1	3.3	1.9	2.4	2.5
27	6.0	21	141	84	56	15	24	5.3	3.2	1.8	2.2	3.0
28	5.9	52	110	75	60	17	21	6.8	3.5	1.8	2.0	2.8
29	15	46	207	60	---	14	21	8.5	3.9	2.0	2.0	2.8
30	7.9	36	242	55	---	14	22	5.9	8.9	2.1	1.9	2.8
31	5.6	---	273	117	---	16	---	5.4	---	1.7	1.9	---
TOTAL	151.0	1691.0	5551	2074	1206	1464	466.3	263.1	159.8	86.2	60.5	74.3
MEAN	4.87	56.4	179	66.9	43.1	47.2	15.5	8.49	5.33	2.78	1.95	2.48
MAX	27	731	954	343	106	215	42	20	14	7.3	4.9	6.7
MIN	1.4	2.8	43	15	21	14	8.1	4.8	3.2	1.7	1.5	1.5
AC-FT	300	3350	11010	4110	2390	2900	925	522	317	171	120	147
CFSM	.32	3.70	11.8	4.39	2.83	3.10	1.02	.56	.35	.18	.13	.16
IN.	.37	4.13	13.56	5.07	2.95	3.58	1.14	.64	.39	.21	.15	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1997, BY WATER YEAR (WY)

	MEAN	2.49	18.9	55.4	53.8	34.3	29.6	26.7	19.3	8.59	2.73	1.74	1.49
MAX	4.87	56.4	179	127	69.7	54.5	64.9	49.3	32.2	5.00	3.92	2.48	
(WY)	1997	1997	1997	1996	1996	1991	1993	1996	1993	1993	1993	1997	
MIN	1.25	1.87	2.98	14.5	14.8	6.25	6.74	3.48	2.40	1.12	.70	.81	
(WY)	1994	1994	1990	1992	1992	1992	1990	1992	1994	1994	1992	1994	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1990 - 1997

ANNUAL TOTAL	17182.2	13247.2	
ANNUAL MEAN	46.9	36.3	
HIGHEST ANNUAL MEAN			21.2
LOWEST ANNUAL MEAN			36.3
HIGHEST DAILY MEAN	954	954	7.93
LOWEST DAILY MEAN	1.3	1.4	.25
ANNUAL SEVEN-DAY MINIMUM	1.4	1.5	.35
ANNUAL RUNOFF (AC-FT)	34080	26280	15390
ANNUAL RUNOFF (CFSM)	3.08	2.38	1.39
ANNUAL RUNOFF (INCHES)	41.97	32.36	18.95
10 PERCENT EXCEEDS	122	85	51
50 PERCENT EXCEEDS	14	8.5	6.7
90 PERCENT EXCEEDS	1.6	1.8	1.2

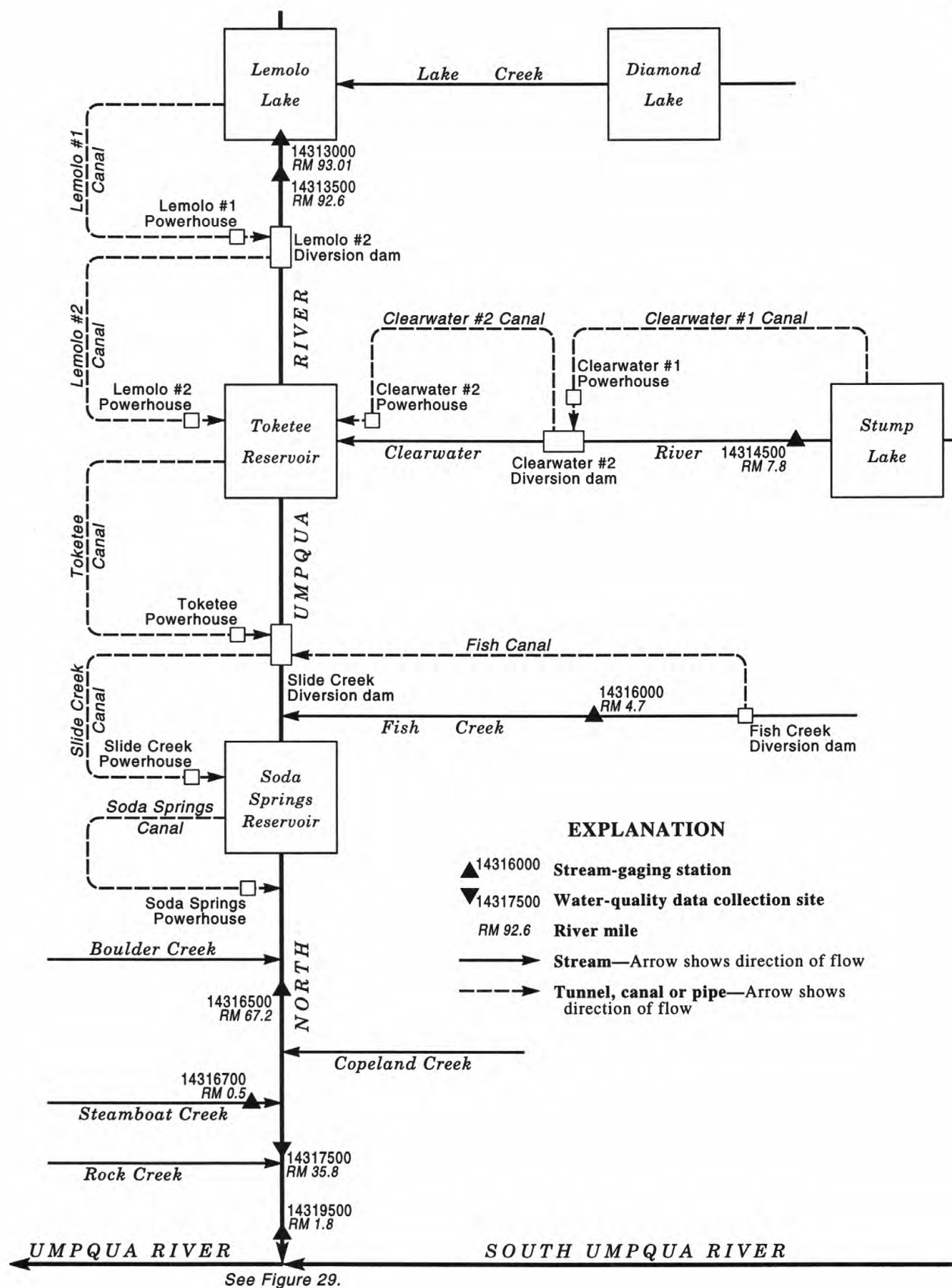


Figure 30. Schematic diagram showing gaging stations and diversions in the North Umpqua River Basin.

UMPQUA RIVER BASIN

14313000 LEMOLO LAKE NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'10", long 122°11'20", in SE 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, at Lemolo No. 1 diversion dam on North Umpqua River, 0.8 mi downstream from Lake Creek, 13.0 mi east of town of Toketee Falls, and at mile 93.01.

DRAINAGE AREA.--170 mi².

PERIOD OF RECORD.--July 1954 to current year. Prior to October 1960, published as Lemolo Reservoir near Toketee Falls.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Pacific Power).

REMARKS.--Lake is formed by Lemolo No 1 diversion dam. Storage began July 15, 1954. Usable capacity for normal operation, 12,520 acre-ft between elevations 4,097.0 ft and 4,148.5 ft. Dead storage below 4,097.0 ft, 1,040 acre-ft. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Gage readings furnished by Pacific Power.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 14,000 acre-ft Dec. 24, 1964, elevation, 4,149.5 ft; minimum observed, 11 acre-ft Mar. 5, 1955, elevation, 4,055.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 13,350 acre-ft Aug. 23, elevation, 4,148.00 ft; minimum observed, 9,230 acre-ft Jan. 29, elevation, 4,137.05 ft.

MONTHEND ELEVATION AND CONTENTS AT 0900, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,143.30	11,460	--
Oct. 31.....	4,143.50	11,540	+80
Nov. 30.....	4,142.10	11,010	-530
Dec. 31.....	4,141.40	10,750	-260
CAL YR 1996.....	--	--	+580
Jan. 31.....	4,138.40	9,690	-1,060
Feb. 28.....	4,139.50	10,060	+370
Mar. 31.....	4,141.80	10,900	+840
Apr. 30.....	4,145.60	12,360	+1,460
May 31.....	4,146.70	12,810	+450
June 30.....	4,147.50	13,140	+330
July 31.....	4,147.20	13,010	-130
Aug. 31.....	4,146.90	12,890	-120
Sept. 30.....	4,141.60	10,820	-2,070
WTR YR 1997.....	--	--	-640

14313500 NORTH UMPQUA RIVER BELOW LEMOLO LAKE, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'20", long 122°11'40", in NW 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 0.4 mi downstream from Lemolo Lake, 13 mi east of town of Toketee Falls, and at mile 92.6.

DRAINAGE AREA.--170 mi² (see REMARKS).

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Lemolo No. 1 power canal is added to flow past station. Published as "below Lake Creek" prior to October 1952, as "below Lake Creek, near Toketee Falls" October 1952 to September 1953, and as "below Lemolo Reservoir near Toketee Falls" October 1953 to September 1960.

REVISED RECORDS.--WSP 1448: Drainage area. WDR OR-75-1: 1964(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,025 ft above sea level, from river-profile map. Prior to July 15, 1954, at site 1 mi upstream at datum about 65 ft higher. July 15, 1954, to Sept. 25, 1955, at site 400 ft upstream at datum 14.11 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1954 by Lemolo Lake (station 14313000); also slightly regulated by Diamond Lake. Records given herein do not include flow in Lemolo No. 1 power canal which, beginning July 1955, diverts 0.4 mi upstream from station for power generation with return flow 4.3 mi downstream.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 423 ft³/s, 33.79 in/yr, 306,500 acre-ft/yr, adjusted for storage. 30 years (water years 1968-97), 60.1 ft³/s, 43,570 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 4,600 ft³/s Dec. 25, 1964, from rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow, gage height, 9.20 ft, from floodmark; minimum discharge, 6.4 ft³/s July 17, 1954.

Combined flow, maximum discharge, 4,680 ft³/s Dec. 25, 1964, from river rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 9.7 ft³/s May 13, 1955.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 1,290 ft³/s Aug. 2, gage height, 7.52 ft; minimum discharge, 37 ft³/s Mar. 13-15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	39	142	386	165	38	39	332	180	39	39	40
2	39	39	140	759	161	38	39	293	180	39	78	41
3	39	39	187	1000	157	38	39	266	180	39	39	41
4	38	39	223	988	154	38	39	265	180	38	38	40
5	38	39	225	767	150	38	39	215	180	38	38	40
6	38	39	219	507	157	38	39	180	169	38	38	40
7	38	39	216	446	169	38	39	181	162	38	38	40
8	38	39	221	413	168	38	39	183	161	38	38	39
9	38	39	218	389	168	38	38	187	129	38	38	39
10	38	39	216	386	166	38	38	191	70	38	38	39
11	38	39	213	332	166	38	38	196	38	38	38	39
12	38	39	211	230	140	38	38	240	38	39	38	39
13	38	39	208	192	136	37	38	270	38	39	38	39
14	38	39	207	188	114	37	38	270	39	39	38	39
15	38	38	206	178	57	37	38	297	40	39	38	39
16	38	38	149	190	39	38	38	313	54	39	38	39
17	38	38	138	167	39	38	38	310	94	39	38	40
18	38	43	137	144	39	38	38	306	113	39	224	39
19	38	60	141	144	39	38	41	304	80	39	340	39
20	38	125	147	143	39	38	50	300	44	39	368	39
21	38	217	148	143	39	39	115	297	39	39	414	39
22	39	224	127	145	38	39	197	257	39	39	435	39
23	39	220	105	141	38	39	256	226	39	39	436	39
24	40	223	104	140	38	39	277	227	39	39	478	39
25	39	220	111	141	65	40	274	225	38	38	510	39
26	39	164	149	140	38	41	274	224	177	38	509	39
27	39	143	177	140	38	41	278	197	39	39	508	39
28	39	143	224	141	38	40	277	180	39	39	506	39
29	39	139	256	140	---	40	277	180	39	39	399	39
30	40	142	262	141	---	39	314	180	39	39	40	39
31	39	---	302	159	---	39	---	180	---	39	39	---
TOTAL	1193	2723	5729	9520	2755	1193	3322	7472	2696	1199	5894	1180
MEAN	38.5	90.8	185	307	98.4	38.5	111	241	89.9	38.7	190	39.3
MAX	40	224	302	1000	169	41	314	332	180	39	510	41
MIN	38	38	104	140	38	37	38	180	38	38	38	39
AC-FT	2370	5400	11360	18880	5460	2370	6590	14820	5350	2380	11690	2340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1997, BY WATER YEAR (WY)

	MEAN	38.3	35.0	40.5	44.7	35.2	38.6	39.9	114	139	82.3	70.3	42.4
MAX	126	150	185	307	144	200	119	301	687	301	321	225	
(WY)	1979	1979	1997	1997	1996	1972	1987	1972	1974	1996	1979	1985	
MIN	19.8	19.1	19.5	19.6	19.8	19.8	22.2	22.2	22.6	24.2	20.8	20.9	
(WY)	1973	1973	1971	1985	1973	1973	1973	1973	1973	1968	1971	1972	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1968 - 1997

ANNUAL TOTAL	47853	44876	
ANNUAL MEAN	131	123	60.1
HIGHEST ANNUAL MEAN			125
LOWEST ANNUAL MEAN			24.1
HIGHEST DAILY MEAN	622	Jan 25	1070
LOWEST DAILY MEAN	37	Aug 28	15
ANNUAL SEVEN-DAY MINIMUM	38	Oct 4	17
ANNUAL RUNOFF (AC-FT)	94920	89010	43570
10 PERCENT EXCEEDS	368	277	129
50 PERCENT EXCEEDS	46	39	29
90 PERCENT EXCEEDS	38	38	23

UMPQUA RIVER BASIN

14314500 CLEARWATER RIVER ABOVE TRAP CREEK, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°14'40", long 122°17'10", in SW 1/4 sec.1, T.27 S., R.4 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 900 ft downstream from Clearwater No. 1 diversion dam, 0.4 mi upstream from Trap Creek, 8.7 mi east of town of Toketee Falls, and at mile 7.8.

DRAINAGE AREA.--41.6 mi². (See REMARKS.)

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Clearwater No. 1 power canal is added to flow past station. Monthly discharge only December 1927 to March 1928, published in WSP 1318. Prior to October 1952, published as "above Trap Creek."

REVISED RECORDS.--WSP 1124: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,862.84 ft above sea level (levels by Pacific Power & Light Co.). Prior to Dec. 1, 1953, at two sites about 0.4 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Records after September 1983 do not include flow in Clearwater No. 1 power canal, completed in June 1953, which diverts 900 ft upstream from station for generation of power and returns water to Clearwater River 2.5 mi downstream from station.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 173 ft³/s, 125,300 acre-ft/yr.
14 years (water years 1984-97), 19.4 ft³/s, 14,080 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 848 ft³/s Dec. 23, 1964, gage height, 7.19 ft; maximum gage height, 7.87 ft Dec. 23, 1964, log jam; minimum discharge, 0.08 ft³/s Sept. 21, 1977, result of beavers plugging release gate at diversion dam 900 ft upstream.

Combined flow, maximum discharge, 1,020 ft³/s Dec. 23, 1964; minimum daily, 91 ft³/s Nov. 4-6, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 768 ft³/s Jan. 1, gage height, 6.92 ft; minimum discharge, 4.6 ft³/s Aug. 5-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	9.9	36	659	146	40	54	82	53	14	4.8	6.3
2	9.5	9.8	24	558	122	39	49	87	40	10	4.8	6.3
3	9.5	9.8	21	408	110	34	47	98	55	8.6	4.8	6.5
4	9.5	9.7	57	288	97	31	44	82	57	8.1	4.8	6.5
5	9.5	9.5	93	222	87	31	42	67	44	7.8	4.8	6.5
6	9.5	9.6	62	184	80	29	39	68	38	7.2	4.7	6.6
7	9.5	9.7	61	165	79	29	40	65	35	6.9	4.7	6.7
8	9.5	9.6	113	147	73	26	39	66	31	6.6	4.8	6.7
9	9.7	10	108	131	69	27	35	72	30	7.0	4.8	6.8
10	9.6	10	109	119	62	33	33	82	29	6.7	4.9	7.1
11	10	9.8	86	109	62	29	32	97	28	6.5	5.0	7.1
12	10	9.4	74	99	58	26	30	106	29	6.6	5.0	7.0
13	11	11	65	91	53	24	32	104	25	7.1	5.0	7.2
14	10	11	50	85	51	28	33	99	24	131	5.2	7.4
15	10	11	41	78	47	32	32	95	24	216	5.2	8.0
16	10	11	33	74	53	39	34	88	24	216	5.2	8.0
17	10	10	29	77	50	33	35	84	23	215	5.3	8.9
18	12	152	25	70	50	36	44	79	20	215	5.4	8.0
19	10	347	22	68	52	65	75	74	17	214	5.4	7.7
20	9.8	130	28	65	43	64	143	69	15	213	6.2	7.9
21	9.8	67	23	64	40	60	123	59	16	212	5.9	7.7
22	11	37	20	61	38	60	119	51	13	211	5.8	7.7
23	11	19	17	56	36	61	138	58	12	210	5.6	7.9
24	17	27	14	52	34	62	109	74	11	210	6.4	7.9
25	12	20	43	62	34	62	97	52	11	132	6.0	7.9
26	10	10	81	59	38	69	94	43	11	5.3	6.1	8.2
27	10	8.8	80	52	38	71	104	43	10	5.2	6.2	8.3
28	10	30	71	62	34	69	99	49	9.4	5.1	6.3	8.2
29	11	15	110	50	---	63	95	59	9.4	5.0	6.3	8.2
30	10	15	181	62	---	63	93	55	18	5.0	6.3	8.5
31	10	---	347	141	---	61	---	67	---	4.9	6.5	---
TOTAL	319.9	1048.6	2124	4418	1736	1396	1983	2274	761.8	2528.6	168.2	223.7
MEAN	10.3	35.0	68.5	143	62.0	45.0	66.1	73.4	25.4	81.6	5.43	7.46
MAX	17	347	347	659	146	71	143	106	57	216	6.5	8.9
MIN	9.5	8.8	14	50	34	24	30	43	9.4	4.9	4.7	6.3
AC-FT	635	2080	4210	8760	3440	2770	3930	4510	1510	5020	334	444

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	13.4	8.43	14.5	19.9	25.4	14.9	20.0	48.3	14.5	24.9	18.0	10.8		
MAX	76.8	35.0	68.5	143	177	45.0	66.1	125	41.5	88.3	100	59.4		
(WY)	1988	1997	1997	1997	1996	1997	1997	1984	1984	1993	1996	1994		
MIN	4.91	5.04	4.96	5.43	5.32	5.56	5.98	5.10	5.56	5.43	5.04	5.02		
(WY)	1989	1988	1989	1987	1990	1988	1991	1992	1992	1990	1986	1987		

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

	1993.0	18981.8	19.4	1997
ANNUAL TOTAL	54.5	52.0	52.0	
ANNUAL MEAN			5.85	1987
HIGHEST ANNUAL MEAN			659	Jan 1 1997
LOWEST ANNUAL MEAN			2.0	Aug 19 1986
HIGHEST DAILY MEAN	347	659	3.2	Aug 15 1986
LOWEST DAILY MEAN	8.8	4.7		
ANNUAL SEVEN-DAY MINIMUM	9.5	4.8		
ANNUAL RUNOFF (AC-FT)	39540	37650	14080	
10 PERCENT EXCEEDS	165	110	46	
50 PERCENT EXCEEDS	28	32	6.3	
90 PERCENT EXCEEDS	9.8	6.3	5.2	

14316000 FISH CREEK AT BIG CAMAS RANGER STATION, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°13'50", long 122°26'45", in SE 1/4 sec.10, T.27 S., R.3 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, 0.2 mi upstream from Camas Creek, 0.7 mi east of Big Camas ranger station, 3.2 mi south of town of Toketee Falls, and at mile 4.7.

DRAINAGE AREA.--68.8 mi² (see REMARKS).

PERIOD OF RECORD.--October 1947 to current year. Records since October 1983 are equivalent to earlier records if diversion to Fish Creek power canal is added to flow past station. Prior to October 1952, published as "at Big Camas ranger station."

REVISED RECORDS.--WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,858.52 ft above sea level (levels by Pacific Power & Light Co.). Prior to July 10, 1951, water-stage recorder and July 10 to Aug. 10, 1951, nonrecording gage at site 1,000 ft upstream at datum 13.72 ft higher. Aug. 11 to Nov. 3, 1951, nonrecording gage at site 200 ft downstream at different datum. Nov. 4, 1951, to Sept. 30, 1956, water-stage recorder at present site at datum 1.92 ft higher.

REMARKS.--Records good. Several measurements of water temperature were made during the year. Records given herein do not include flow in Fish Creek power canal (diversion began June 18, 1952), which diverts water 2 mi upstream from station for power generation at Fish Creek powerplant; diversion discharged to North Umpqua River 600 ft downstream from Toketee powerplant.

AVERAGE DISCHARGE.--36 years (water years 1947-83), 237 ft³/s, 46.78 in/yr, 171,700 acre-ft/yr.
14 years (water years 1984-97), 128 ft³/s, 25.37 in/yr, 93,070 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 12,100 ft³/s Dec. 22, 1964, gage height, 13.9 ft, from floodmark; minimum discharge, 2.3 ft³/s Sept. 25, 1957.

Combined flow, maximum discharge, 12,100 ft³/s Dec. 22, 1964; minimum daily, 19 ft³/s July 30, 1979, result of diversion dam manipulation.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 6,240 ft³/s Nov. 18, gage height, 10.66 ft; minimum discharge, 8.9 ft³/s Oct. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	22	680	4100	944	68	59	372	133	77	31	30
2	46	27	467	2810	649	59	47	294	104	48	32	27
3	46	31	348	1860	475	54	43	294	152	41	31	24
4	43	27	1110	1280	351	52	37	265	188	43	29	21
5	40	21	1540	962	277	54	32	243	149	38	29	24
6	42	18	866	754	231	59	26	239	116	38	28	25
7	44	24	765	622	156	62	23	220	95	40	29	22
8	44	22	1440	513	127	62	23	230	80	35	28	21
9	44	19	1260	380	107	84	21	282	66	39	28	22
10	43	21	1170	321	95	129	20	345	57	37	29	30
11	34	27	853	273	90	105	19	435	53	31	30	31
12	13	25	675	233	75	83	19	485	56	30	30	30
13	28	59	548	201	74	73	19	448	56	36	29	27
14	23	49	384	172	71	111	23	411	46	35	29	48
15	16	28	283	153	72	197	25	378	41	32	30	108
16	16	22	212	143	108	200	43	338	37	31	30	130
17	12	21	162	200	94	171	55	309	35	31	32	187
18	71	2420	128	176	155	361	128	272	34	32	33	122
19	16	2510	103	171	143	539	474	232	27	32	34	91
20	13	1380	144	172	117	355	1180	195	20	31	54	46
21	17	870	126	164	97	268	834	155	26	31	30	35
22	62	664	103	150	82	333	745	127	32	32	31	29
23	59	407	86	166	71	397	820	166	37	33	30	26
24	219	532	79	264	61	e398	664	242	33	32	61	24
25	82	516	445	270	60	402	535	156	27	32	30	23
26	25	356	1410	243	58	437	487	124	28	31	35	24
27	26	278	1150	514	53	395	556	121	31	31	38	24
28	59	507	879	469	57	301	452	128	34	31	33	21
29	103	325	1270	431	---	147	437	184	43	31	33	22
30	41	380	1830	1470	---	108	464	132	141	31	30	22
31	25	---	2650	1490	---	79	---	159	---	30	30	---
TOTAL	1399	11608	23166	21127	4950	6143	8310	7981	1977	1102	1006	1316
MEAN	45.1	387	747	682	177	198	277	257	65.9	35.5	32.5	43.9
MAX	219	2510	2650	4100	944	539	1180	485	188	77	61	187
MIN	12	18	79	143	53	52	19	121	20	30	28	21
AC-FT	2770	23020	45950	41910	9820	12180	16480	15830	3920	2190	2000	2610
CFSM	.66	5.62	10.9	9.91	2.57	2.88	4.03	3.74	.96	.52	.47	.64
IN.	.76	6.28	12.53	11.42	2.68	3.32	4.49	4.32	1.07	.60	.54	.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	MEAN	27.6	103	183	173	178	200	227	226	125	36.7	35.8	30.2
	MAX	78.8	387	747	682	545	581	434	505	366	90.2	74.5	74.5
	(WY)	1987	1997	1997	1997	1986	1993	1989	1993	1984	1995	1985	1986
	MIN	11.7	17.2	42.2	32.0	29.2	31.0	83.7	36.4	28.9	23.5	23.3	13.6
	(WY)	1984	1990	1993	1992	1990	1992	1994	1992	1987	1996	1992	1990

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1984 - 1997

ANNUAL TOTAL	89187	90085	128
ANNUAL MEAN	244	247	247
HIGHEST ANNUAL MEAN			40.4
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	2650	4100	4100
LOWEST DAILY MEAN	11	12	5.9
ANNUAL SEVEN-DAY MINIMUM	17	20	6.8
ANNUAL RUNOFF (AC-FT)	176900	178700	93070
ANNUAL RUNOFF (CFSM)	3.54	3.59	1.87
ANNUAL RUNOFF (INCHES)	48.22	48.71	25.37
10 PERCENT EXCEEDS	677	633	316
50 PERCENT EXCEEDS	100	71	47
90 PERCENT EXCEEDS	22	24	16

e Estimated

14316500 NORTH UMPQUA RIVER ABOVE COPELAND CREEK, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°17'45", long 122°32'10", in NW 1/4 sec.24, T.26 S., R.2 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on left bank 0.6 mi upstream from Copeland Creek, 4.7 mi west of town of Toketee Falls, and at mile 67.2.

DRAINAGE AREA.--475 mi².

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."

REVISED RECORDS.--WSP 1448: 1953(M), 1954, drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,580 ft above sea level, from river-profile map. Prior to Aug. 1, 1976, on right bank at same datum.

REMARKS.--No estimated daily discharges. Records excellent. Considerable fluctuation caused by powerplants upstream; flow slightly regulated by Diamond Lake and by Lemolo Lake (station 14313000). No diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--48 years (water years 1950-97), 1,479 ft³/s, 1,072,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,700 ft³/s Dec. 22, 1964, gage height, 19.1 ft, from floodmark, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 345 ft³/s July 24, 1992; minimum daily, 565 ft³/s Sept. 13, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,200 ft³/s Nov. 18, gage height, 14.56 ft; minimum discharge, 798 ft³/s Oct. 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	936	1250	3830	13200	6160	1720	1820	3070	1850	1460	1030	986
2	948	1140	3040	10900	4440	2090	1750	2740	1770	1310	1010	1000
3	944	1200	2640	8570	3570	1880	1650	2610	1790	1270	1070	1010
4	896	1180	3910	6250	3090	1700	1760	2510	1940	1230	1070	985
5	895	1120	6700	5000	2730	1680	1700	2420	1920	1230	966	975
6	939	1100	4430	4020	2480	1680	1640	2320	1760	1200	920	975
7	932	1150	4010	3470	2450	1800	1630	2230	1700	1220	1010	991
8	907	1110	6600	3200	2300	1940	1630	2200	1670	1230	1020	993
9	927	1130	6130	2910	2220	1900	1630	2220	1650	1210	1030	988
10	922	1120	5660	2700	2050	1970	1610	2360	1560	1230	1050	978
11	910	1090	4540	2570	2070	2230	1500	2510	1490	1190	1090	949
12	913	1080	4010	2390	2050	2190	1510	2660	1460	1100	964	967
13	886	1170	3710	2100	1980	2050	1520	2650	1460	1120	1030	1030
14	843	1260	3150	2090	2080	1930	1620	2570	1450	1100	987	1050
15	833	1260	2740	2040	1980	2010	1640	2490	1420	1090	996	1080
16	855	1350	2490	1960	1880	2120	1670	2450	1400	1140	952	1170
17	853	1210	2240	2050	2070	2290	1730	2370	1390	1150	1010	1120
18	1040	7410	2110	2010	2030	2220	1790	2300	1370	1100	940	1140
19	1010	8920	2000	1960	2320	2240	2460	2140	1380	1120	887	1020
20	876	5430	2340	1990	2370	2900	4070	2100	1420	1110	949	1030
21	870	3750	2390	1990	2140	2770	3390	2010	1330	1100	967	1000
22	998	3060	2180	1900	2020	2500	3270	1990	1330	1110	921	918
23	1110	2590	2060	1850	1900	2350	3780	1930	1320	1110	915	1070
24	1640	2770	2020	1850	1810	2230	3630	2080	1310	1080	1110	1000
25	1680	3050	4130	2000	1620	2200	3230	1950	1300	1060	1040	981
26	1380	2590	7080	2590	1820	2270	2950	1810	1110	1100	970	990
27	1230	2200	5850	2420	1750	2220	3040	1790	1190	1050	993	990
28	1320	2940	4820	2950	1720	2150	2860	1810	1220	1030	996	990
29	1860	2610	5640	2930	---	2020	2900	1940	1290	1020	959	1010
30	1400	2480	6700	2920	---	1950	3150	1850	1530	1080	1010	997
31	1350	---	8640	6580	---	1880	---	1890	---	1040	1030	---
TOTAL	33103	69720	127790	111360	67100	65080	68530	69970	44780	35590	30892	30383
MEAN	1068	2324	4122	3592	2396	2099	2284	2257	1493	1148	997	1013
MAX	1860	8920	8640	13200	6160	2900	4070	3070	1940	1460	1110	1170
MIN	833	1080	2000	1850	1620	1680	1500	1790	1110	1020	887	918
AC-FT	65660	138300	253500	220900	133100	129100	135900	138800	88820	70590	61270	60260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1997, BY WATER YEAR (WY)

	MEAN	926	1285	1804	1802	1844	1769	1875	2018	1645	1070	885	851
MAX	1568	2324	5163	3592	3462	4221	2876	3191	2933	1652	1178	1107	1107
(WY)	1951	1997	1965	1997	1996	1972	1952	1956	1974	1953	1972	1972	1972
MIN	661	754	803	788	670	873	1065	855	700	664	598	612	612
(WY)	1995	1988	1977	1977	1977	1977	1968	1992	1992	1992	1992	1994	1994

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1949 - 1997
ANNUAL TOTAL	760456	754298	
ANNUAL MEAN	2078	2067	1479
HIGHEST ANNUAL MEAN			2080
LOWEST ANNUAL MEAN			897
HIGHEST DAILY MEAN	8920	Nov 19	13200
LOWEST DAILY MEAN	828	Aug 25	833
ANNUAL SEVEN-DAY MINIMUM	870	Sep 5	870
ANNUAL RUNOFF (AC-FT)	1508000		1496000
10 PERCENT EXCEEDS	3890		3420
50 PERCENT EXCEEDS	1730		1730
90 PERCENT EXCEEDS	927		977
			764

UMPQUA RIVER BASIN

333

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 sea level (levels by Federal Highway Administration). October 1955 to June 1956, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--41 years (water years 1957-97), 736 ft³/s, 44.07 in/yr, 533,400 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, 27 ft³/s Sept. 24-28, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2000	*31,400	*19.54	Dec. 26	0100	13,500	11.18
Dec. 4	2130	22,400	15.51	Jan. 1	0500	13,100	10.98
Dec. 8	1130	14,700	11.78	Jan. 31	1700	12,700	10.77

Minimum discharge, 46 ft³/s Oct. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	405	6240	10100	6410	949	500	1890	233	316	64	e100
2	52	321	3060	8090	3200	3380	514	1340	203	218	62	e95
3	51	275	2060	5840	2020	1900	530	1080	238	174	61	e95
4	50	258	7280	3280	1460	1320	521	881	479	148	59	e90
5	51	251	9500	2140	1120	1080	470	741	415	132	60	e90
6	53	229	4220	1500	902	1310	421	659	319	120	62	e90
7	52	356	5380	1190	816	2060	412	573	268	112	61	e85
8	50	331	11900	978	754	2350	510	516	236	107	60	e85
9	49	277	6730	839	681	1780	610	486	213	107	58	e80
10	48	238	6220	756	608	2540	540	458	196	118	58	e75
11	48	213	4320	697	567	3380	465	453	183	104	58	211
12	47	191	3680	629	779	2200	413	441	196	98	58	231
13	73	239	3940	547	883	1560	397	398	196	94	58	232
14	122	617	2750	493	899	1240	603	362	175	91	57	311
15	104	916	1820	449	968	1380	718	337	164	87	56	415
16	105	1000	1350	417	847	1940	661	310	153	83	55	705
17	87	1280	1150	523	952	2910	607	292	144	82	55	1080
18	418	16300	969	610	958	1790	627	273	137	82	55	812
19	475	13700	822	601	2430	1490	1090	255	130	80	55	571
20	267	5370	1590	665	2570	1620	3140	238	124	77	86	e340
21	180	2570	2090	808	1640	1320	1980	220	122	75	108	e230
22	233	2020	1520	818	1180	1030	1390	208	128	74	99	e180
23	408	1640	1270	715	920	848	2400	213	120	72	101	e170
24	1320	2040	1700	611	748	725	2660	245	116	71	214	e160
25	1810	2450	8680	998	638	661	1700	226	111	70	174	e150
26	982	1600	12700	3660	595	665	1200	202	108	68	e160	e130
27	728	1150	7480	2190	660	641	1050	205	104	67	e150	e120
28	851	3220	4900	2910	666	629	885	208	103	66	e140	e110
29	1900	2770	6670	2470	---	535	1230	267	113	65	e120	e100
30	903	2370	6320	1930	---	501	1860	223	291	65	e110	e90
31	580	---	7020	8280	---	497	---	226	---	65	e105	---
TOTAL	12149	64597	145331	65734	36871	46231	30104	14426	5718	3188	2679	7233
MEAN	392	2153	4688	2120	1317	1491	1003	465	191	103	86.4	241
MAX	1900	16300	12700	10100	6410	3380	3140	1890	479	316	214	1080
MIN	47	191	822	417	567	497	397	202	103	65	55	75
AC-FT	24100	128100	288300	130400	73130	91700	59710	28610	11340	6320	5310	14350
CFSM	1.73	9.49	20.7	9.34	5.80	6.57	4.42	2.05	.84	.45	.38	1.06
IN.	1.99	10.59	23.82	10.77	6.04	7.58	4.93	2.36	.94	.52	.44	1.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1997, BY WATER YEAR (WY)

MEAN	166	905	1529	1490	1410	1249	992	624	276	98.4	61.0	70.8
MAX	536	2887	5391	3415	3195	2774	2017	1337	780	193	158	260
(WY)	1957	1974	1965	1970	1986	1972	1993	1963	1984	1983	1976	1986
MIN	31.5	56.5	62.6	108	142	211	287	165	87.5	56.6	35.9	34.8
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1973	1994	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1957 - 1997
ANNUAL TOTAL	492321	434261	
ANNUAL MEAN	1345	1190	736
HIGHEST ANNUAL MEAN			1253
LOWEST ANNUAL MEAN			239
HIGHEST DAILY MEAN	16300	Nov 18	33000
LOWEST DAILY MEAN	46	Sep 12	Dec 22 1964
ANNUAL SEVEN-DAY MINIMUM	48	Sep 7	
ANNUAL RUNOFF (AC-FT)	976500	861400	533400
ANNUAL RUNOFF (CFSM)	5.93	5.24	3.24
ANNUAL RUNOFF (INCHES)	80.68	71.17	44.07
10 PERCENT EXCEEDS	3240	2830	1750
50 PERCENT EXCEEDS	583	475	332
90 PERCENT EXCEEDS	56	68	48

e Estimated

UMPOUA RIVER BASIN

14317500 NORTH UMPQUA RIVER ABOVE ROCK CREEK, NEAR GLIDE, OR.

LOCATION.--Lat 43°19'51", long 123°00'07", near line between SE 1/4 SW 1/4 sec.1, T.26 S., R.3 W., Douglas County, Hydrologic Unit 17100301, on right bank, 0.1 mi upstream from Rock Creek, 5.1 mi northeast of Glide, and at mile 35.8.

DRAINAGE AREA.--886 mi².

PERIOD OF RECORD.--November 1992 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1992 to current year.

pH: November 1992 to current year.

WATER TEMPERATURE: November 1992 to current year.

DISSOLVED OXYGEN: November 1992 to current year.

INSTRUMENTATION.--Water-quality monitor and data logger since November 1992.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 77 microsiemens Nov. 25, 1993; minimum recorded, 33 microsiemens Mar. 17, Apr. 20, 1997.

pH: Maximum, 8.5 units Sept. 15, 1993, July 31, Aug. 1, 1994, July 29, 1995; minimum recorded, 6.9 units May 24, 1993.

WATER TEMPERATURE: Maximum, 23.0°C July 21, 1994; minimum, 0.5°C Nov. 26, 1993.

DISSOLVED OXYGEN: Maximum, 14.7 mg/L Dec. 24, 1993; minimum, 6.5 mg/L May 28, 1995.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 66 microsiemens Oct. 19; minimum recorded, 33 microsiemens Mar. 17, Apr. 20.

pH: Maximum recorded, 8.1 units Aug. 17, 18; minimum recorded, 7.1 units Feb. 24, Mar. 13, 17.

WATER TEMPERARURE: Maximum recorded, 20.0°C Aug. 6; minimum recorded, 4.0°C Feb. 23, 24, 28.

DISSOLVED OXYGEN: Maximum recorded, 13.9 mg/ Sept. 20, 21; minimum recorded, 8.9 mg/L Aug. 9, Sept. 2, 3.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

[illegible]

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	46	43	46	43	41	42	40	39	39
2	---	---	---	43	38	39	43	42	43	40	39	40
3	---	---	---	47	40	42	44	44	44	41	40	40
4	---	---	---	47	43	45	45	44	44	42	41	41
5	---	---	---	45	43	44	45	44	45	43	42	42
6	---	---	---	44	43	44	45	45	45	43	42	43
7	---	---	---	43	40	41	46	45	46	43	42	43
8	---	---	---	40	39	39	46	46	46	44	43	43
9	---	---	---	41	40	41	46	45	45	---	---	---
10	---	---	---	42	38	40	46	45	46	---	---	---
11	---	---	---	38	36	37	46	45	46	---	---	---
12	---	---	---	39	37	38	47	46	46	---	---	---
13	---	---	---	40	38	39	47	46	47	---	---	---
14	---	---	---	41	40	40	47	45	46	---	---	---
15	45	45	45	42	40	41	45	45	45	---	---	---
16	46	45	45	40	38	39	45	45	45	---	---	---
17	46	45	45	38	33	35	45	44	44	---	---	---
18	45	44	45	38	35	37	44	43	44	---	---	---
19	45	38	42	39	38	38	43	40	41	---	---	---
20	41	38	39	38	36	37	40	33	36	---	---	---
21	42	41	41	37	36	36	37	35	36	---	---	---
22	43	42	43	38	37	37	41	37	39	---	---	---
23	44	43	44	40	38	39	39	38	38	---	---	---
24	45	44	44	41	40	40	41	38	39	---	---	---
25	45	45	45	42	41	41	39	38	39	---	---	---
26	46	45	46	42	41	41	41	40	41	---	---	---
27	46	45	46	41	40	40	41	40	41	---	---	---
28	46	45	46	41	40	40	40	40	40	---	---	---
29	---	---	---	41	40	41	40	40	40	49	48	48
30	---	---	---	41	41	41	40	39	40	49	47	48
31	---	---	---	41	41	41	---	---	---	49	48	49
MONTH	---	---	---	47	33	40	47	33	43	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	48	47	47	---	---	---	59	57	58	62	61	61
2	49	47	48	---	---	---	60	58	59	62	61	61
3	48	48	48	---	---	---	59	58	59	62	61	61
4	49	47	48	---	---	---	59	58	58	62	61	61
5	49	47	48	---	---	---	59	58	58	62	60	61
6	---	---	---	---	---	---	60	59	59	61	60	61
7	---	---	---	---	---	---	61	59	60	61	60	61
8	---	---	---	---	---	---	60	59	60	61	60	60
9	---	---	---	---	---	---	61	59	60	61	60	60
10	---	---	---	---	---	---	61	60	60	---	---	---
11	---	---	---	---	---	---	60	59	60	---	---	---
12	---	---	---	---	---	---	61	59	60	---	---	---
13	---	---	---	---	---	---	62	61	61	---	---	---
14	---	---	---	---	---	---	62	61	61	---	---	---
15	---	---	---	60	59	60	62	61	61	---	---	---
16	---	---	---	61	59	60	62	61	61	---	---	---
17	---	---	---	61	59	60	62	60	61	---	---	---
18	---	---	---	61	60	60	61	60	61	---	---	---
19	---	---	---	61	60	60	---	---	---	---	---	---
20	---	---	---	61	59	60	---	---	---	60	59	60
21	---	---	---	62	60	61	---	---	---	60	59	60
22	---	---	---	62	60	61	---	---	---	61	59	60
23	---	---	---	62	60	61	---	---	---	62	61	61
24	---	---	---	62	61	61	---	---	---	62	61	61
25	---	---	---	63	61	62	---	---	---	62	61	61
26	---	---	---	63	62	62	---	---	---	62	61	61
27	---	---	---	63	62	63	---	---	---	61	61	61
28	---	---	---	64	63	63	---	---	---	61	61	61
29	---	---	---	64	59	61	61	59	60	62	61	61
30	---	---	---	60	58	59	61	60	60	62	61	61
31	---	---	---	59	57	58	62	60	61	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.8	7.6	7.5	7.4	---	---	---	---	---	---	7.4	7.4
2	8.0	7.6	7.5	7.4	---	---	---	---	---	---	7.4	7.3
3	8.0	7.5	7.6	7.4	---	---	---	---	---	---	7.4	7.3
4	8.0	7.5	7.6	7.4	---	---	---	---	---	---	7.5	7.3
5	7.9	7.5	7.6	7.5	---	---	---	---	---	---	7.5	7.3
6	7.8	7.6	7.6	7.5	---	---	---	---	---	---	7.4	7.3
7	7.7	7.5	7.5	7.4	---	---	---	---	---	---	7.4	7.3
8	7.7	7.5	7.5	7.4	---	---	---	---	---	---	7.4	7.2
9	---	---	7.5	7.4	---	---	---	---	---	---	7.4	7.3
10	8.0	7.6	7.6	7.4	---	---	---	---	---	---	7.3	7.3
11	8.0	7.6	7.5	7.4	---	---	---	---	---	---	7.3	7.2
12	8.0	7.6	7.6	7.4	---	---	---	---	---	---	7.3	7.2
13	8.0	7.6	7.6	7.4	---	---	---	---	---	---	7.3	7.1
14	8.0	7.6	7.5	7.4	---	---	---	---	---	---	7.4	7.2
15	8.0	7.6	7.5	7.4	---	---	---	---	7.5	7.4	7.3	7.2
16	7.9	7.6	7.5	7.4	---	---	---	---	7.5	7.5	7.3	7.2
17	7.9	7.6	7.4	7.3	---	---	---	---	7.5	7.4	7.3	7.1
18	---	---	---	---	---	---	---	---	7.5	7.4	7.3	7.3
19	7.7	7.6	---	---	---	---	---	---	7.5	7.4	7.3	7.3
20	7.8	7.6	---	---	---	---	---	---	7.4	7.3	7.4	7.2
21	7.9	7.6	---	---	---	---	---	---	7.4	7.2	7.4	7.2
22	7.7	7.6	---	---	---	---	---	---	7.4	7.2	7.4	7.2
23	7.8	7.6	---	---	---	---	---	---	7.4	7.2	7.4	7.2
24	---	---	---	---	---	---	---	---	7.4	7.1	7.4	7.2
25	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.2
26	7.6	7.5	---	---	---	---	---	---	7.4	7.4	7.4	7.3
27	7.6	7.5	---	---	---	---	---	---	7.5	7.4	7.4	7.3
28	7.6	7.4	---	---	---	---	---	---	7.4	7.3	7.4	7.3
29	7.4	7.3	---	---	---	---	---	---	---	---	7.4	7.3
30	7.5	7.4	---	---	---	---	---	---	---	---	7.5	7.4
31	7.5	7.4	---	---	---	---	---	---	---	---	7.5	7.4
MONTH	---	---	---	---	---	---	---	---	---	---	7.5	7.1

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.5	7.3	7.4	7.4	7.7	7.5	---	---	7.9	7.5	8.0	7.6
2	7.5	7.3	7.5	7.3	7.7	7.5	---	---	7.9	7.5	8.0	7.6
3	7.5	7.4	7.4	7.4	7.7	7.5	---	---	7.9	7.4	7.9	7.6
4	7.5	7.3	7.5	7.3	7.7	7.5	---	---	7.9	7.5	8.0	7.6
5	7.5	7.2	7.5	7.3	7.7	7.5	---	---	7.8	7.5	7.9	7.5
6	7.5	7.3	7.4	7.3	---	---	---	---	7.9	7.4	7.8	7.5
7	7.5	7.4	7.5	7.3	---	---	---	---	8.0	7.5	7.8	7.5
8	7.5	7.3	7.4	7.3	---	---	---	---	8.0	7.5	7.9	7.5
9	7.5	7.4	---	---	---	---	---	---	8.0	7.6	7.8	7.5
10	7.5	7.4	---	---	---	---	---	---	8.0	7.5	---	---
11	7.5	7.3	---	---	---	---	---	---	8.0	7.6	---	---
12	7.5	7.4	---	---	---	---	---	---	7.9	7.5	---	---
13	7.5	7.5	---	---	---	---	---	---	8.0	7.5	---	---
14	7.5	7.4	---	---	---	---	---	---	7.9	7.5	---	---
15	7.5	7.3	---	---	---	---	7.8	7.4	8.0	7.6	---	---
16	7.5	7.4	---	---	---	---	7.8	7.4	8.0	7.6	---	---
17	7.5	7.4	---	---	---	---	7.8	7.4	8.1	7.6	---	---
18	7.5	7.4	---	---	---	---	7.9	7.5	8.1	7.6	---	---
19	7.4	7.4	---	---	---	---	7.8	7.4	---	---	---	---
20	7.4	7.2	---	---	---	---	7.8	7.4	---	---	7.8	7.5
21	7.4	7.3	---	---	---	---	7.9	7.4	---	---	7.6	7.4
22	7.4	7.3	---	---	---	---	7.9	7.4	---	---	7.6	7.4
23	7.5	7.3	---	---	---	---	7.8	7.4	---	---	7.7	7.4
24	7.4	7.3	---	---	---	---	7.9	7.4	---	---	7.7	7.4
25	7.5	7.4	---	---	---	---	7.9	7.4	---	---	7.8	7.5
26	7.5	7.4	---	---	---	---	7.9	7.5	---	---	7.9	7.5
27	7.5	7.3	---	---	---	---	7.9	7.5	---	---	7.8	7.5
28	7.5	7.4	---	---	---	---	7.9	7.4	---	---	7.8	7.5
29	7.5	7.4	7.6	7.5	---	---	8.0	7.5	8.0	7.6	7.8	7.5
30	7.4	7.4	7.6	7.4	---	---	8.0	7.5	7.9	7.6	7.8	7.5
31	---	---	7.7	7.4	---	---	7.9	7.5	7.9	7.6	---	---
MONTH	7.5	7.2	---	---	---	---	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	12.5	11.0	11.5	6.5	6.0	6.5	---	---	---	---	---	---
2	12.0	10.5	11.0	6.5	6.0	6.0	---	---	---	---	---	---
3	12.0	11.0	11.5	7.0	6.5	6.5	---	---	---	---	---	---
4	12.0	11.0	11.5	7.0	7.0	7.0	---	---	---	---	---	---
5	13.0	11.5	12.0	7.0	6.5	6.5	---	---	---	---	---	---
6	12.5	11.5	12.0	6.5	6.0	6.0	---	---	---	---	---	---
7	12.5	11.0	11.5	7.0	6.5	6.5	---	---	---	---	---	---
8	12.5	11.0	11.5	7.0	6.5	7.0	---	---	---	---	---	---
9	---	---	---	7.0	6.0	6.5	---	---	---	---	---	---
10	12.0	11.0	11.5	6.5	6.0	6.0	---	---	---	---	---	---
11	12.0	11.0	11.5	7.0	6.5	6.5	---	---	---	---	---	---
12	11.5	11.0	11.0	7.5	7.0	7.0	---	---	---	---	---	---
13	11.5	10.5	11.0	8.0	7.5	7.5	---	---	---	---	---	---
14	11.0	10.0	10.5	7.5	7.5	7.5	---	---	---	---	---	---
15	---	10.0	---	7.5	7.0	7.0	---	---	---	---	---	---
16	10.0	9.0	9.5	7.0	6.5	7.0	---	---	---	---	---	---
17	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	8.5	8.0	8.0	---	---	---	---	---	---	---	---	---
20	8.0	7.0	7.5	---	---	---	---	---	---	---	---	---
21	7.0	6.5	7.0	---	---	---	---	---	---	---	---	---
22	8.0	7.0	7.5	---	---	---	---	---	---	---	---	---
23	8.5	8.0	8.5	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	7.0	6.5	6.5	---	---	---	---	---	---	---	---	---
27	7.0	6.5	6.5	---	---	---	---	---	---	---	---	---
28	7.0	6.5	6.5	---	---	---	---	---	---	---	---	---
29	8.0	7.0	7.5	---	---	---	---	---	---	---	---	---
30	8.0	7.5	7.5	---	---	---	---	---	---	---	---	---
31	7.5	6.5	7.0	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	5.5	4.5	5.0	6.0	5.0	5.5	8.5	7.0	8.0
2	---	---	---	---	---	---	6.5	4.5	6.0	8.5	7.0	7.5
3	---	---	---	---	---	---	7.0	5.5	6.5	9.5	8.5	8.5
4	---	---	---	---	---	---	7.5	5.5	6.5	10.0	7.5	9.0
5	---	---	---	---	---	---	7.0	5.5	6.5	11.0	8.5	10.0
6	---	---	---	6.5	5.0	6.0	7.0	5.5	6.5	11.5	9.5	10.5
7	---	---	---	6.5	6.0	6.5	7.5	6.5	7.0	11.5	8.5	10.0
8	---	---	---	6.5	6.0	6.5	8.0	7.0	7.5	13.0	9.5	11.0
9	---	---	---	7.0	6.0	6.5	7.5	6.5	7.0	---	---	---
10	---	---	---	7.5	6.5	7.0	8.0	6.0	7.0	---	---	---
11	---	---	---	7.5	6.5	7.0	8.0	6.0	7.5	---	---	---
12	---	---	---	6.5	5.5	5.5	8.0	6.5	7.0	---	---	---
13	---	---	---	6.0	5.0	5.5	7.5	7.0	7.5	---	---	---
14	---	---	---	6.0	5.0	5.5	8.0	7.5	7.5	---	---	---
15	6.0	5.5	5.5	7.0	6.0	6.5	10.0	7.0	8.5	---	---	---
16	6.0	5.5	5.5	7.0	7.0	7.0	10.0	8.5	9.5	---	---	---
17	7.0	6.0	6.5	7.0	6.5	7.0	11.0	8.5	10.0	---	---	---
18	6.5	6.0	6.0	7.5	6.5	7.0	10.5	9.5	10.0	---	---	---
19	6.5	6.0	6.5	8.0	7.5	7.5	9.5	8.5	9.0	---	---	---
20	6.0	5.5	6.0	8.5	7.5	8.0	---	---	---	---	---	---
21	6.0	5.5	5.5	7.5	6.5	7.0	---	---	---	---	---	---
22	5.5	5.0	5.0	7.5	6.0	7.0	---	---	---	---	---	---
23	5.0	4.0	4.5	7.5	6.5	7.0	---	---	---	---	---	---
24	5.0	4.0	4.5	9.0	7.0	8.0	---	---	---	---	---	---
25	5.0	4.5	5.0	9.0	7.5	8.5	---	---	---	---	---	---
26	6.0	5.0	5.5	8.5	7.5	8.0	10.5	9.0	9.5	---	---	---
27	6.0	4.5	5.0	8.0	7.0	7.5	10.5	9.5	10.0	---	---	---
28	5.0	4.0	4.5	7.5	6.5	7.0	9.5	8.0	8.5	---	---	---
29	---	---	---	6.5	5.5	6.0	9.5	8.0	8.5	14.0	11.5	12.5
30	---	---	---	6.5	6.0	6.0	9.0	8.0	8.5	15.5	12.5	14.0
31	---	---	---	6.0	5.5	5.5	---	---	---	15.5	13.5	14.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

[illegible]

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	11.2	10.9	11.0		12.3	12.0	12.2		---	---	---		---	---	---
2	11.4	10.9	11.2		12.3	12.0	12.1		---	---	---		---	---	---
3	11.2	10.9	11.1		12.1	11.7	11.9		---	---	---		---	---	---
4	11.1	10.9	11.0		11.9	11.7	11.8		---	---	---		---	---	---
5	11.0	10.7	10.8		12.0	11.7	11.8		---	---	---		---	---	---
6	11.1	10.9	10.9		12.2	11.9	12.1		---	---	---		---	---	---
7	11.0	10.8	10.9		12.2	11.6	12.0		---	---	---		---	---	---
8	11.0	10.7	10.8		12.0	11.7	11.9		---	---	---		---	---	---
9	---	---	---		12.4	11.8	12.1		---	---	---		---	---	---
10	11.0	10.5	10.7		12.3	12.0	12.1		---	---	---		---	---	---
11	10.9	10.6	10.7		12.2	11.9	12.1		---	---	---		---	---	---
12	10.7	10.5	10.6		12.2	11.8	12.0		---	---	---		---	---	---
13	10.7	10.6	10.6		12.1	11.7	11.9		---	---	---		---	---	---
14	10.8	10.7	10.8		11.9	11.7	11.9		---	---	---		---	---	---
15	---	---	---		11.9	11.7	11.8		---	---	---		---	---	---
16	11.5	11.2	11.4		11.9	11.6	11.7		---	---	---		---	---	---
17	11.7	11.2	11.5		11.8	11.4	11.7		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	11.9	11.5	11.7		---	---	---		---	---	---		---	---	---
20	12.3	11.7	12.0		---	---	---		---	---	---		---	---	---
21	12.5	12.0	12.3		---	---	---		---	---	---		---	---	---
22	12.4	12.0	12.1		---	---	---		---	---	---		---	---	---
23	12.1	11.9	12.0		---	---	---		---	---	---		---	---	---
24	---	---	---		---	---	---		---	---	---		---	---	---
25	---	---	---		---	---	---		---	---	---		---	---	---
26	13.0	12.5	12.8		---	---	---		---	---	---		---	---	---
27	12.8	12.4	12.7		---	---	---		---	---	---		---	---	---
28	12.6	12.2	12.4		---	---	---		---	---	---		---	---	---
29	12.3	11.5	11.9		---	---	---		---	---	---		---	---	---
30	11.8	11.6	11.7		---	---	---		---	---	---		---	---	---
31	12.1	11.6	11.9		---	---	---		---	---	---		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	12.6	12.3	12.5	12.4	11.9	12.2	12.2	11.9	12.1
2	---	---	---	---	---	---	12.4	11.9	12.2	12.1	11.7	11.9
3	---	---	---	---	---	---	12.2	11.5	11.9	11.8	11.6	11.7
4	---	---	---	---	---	---	11.8	11.5	11.7	11.9	11.6	11.7
5	---	---	---	---	---	---	12.0	11.6	11.8	11.8	10.9	11.4
6	---	---	---	12.5	12.3	12.4	12.0	11.7	11.9	11.1	10.4	10.7
7	---	---	---	12.5	12.1	12.3	12.0	11.7	11.8	11.0	10.5	10.8
8	---	---	---	12.2	11.8	12.1	11.9	11.6	11.8	10.9	10.2	10.6
9	---	---	---	12.0	11.8	11.9	11.8	11.6	11.7	---	---	---
10	---	---	---	11.9	11.5	11.8	11.8	11.2	11.6	---	---	---
11	---	---	---	11.8	11.5	11.6	11.6	11.2	11.4	---	---	---
12	---	---	---	11.9	11.6	11.7	11.6	11.2	11.4	---	---	---
13	---	---	---	11.9	11.6	11.8	11.4	11.0	11.2	---	---	---
14	---	---	---	11.8	11.6	11.8	11.2	10.9	11.1	---	---	---
15	12.6	12.3	12.4	11.4	10.9	11.2	11.1	10.4	10.8	---	---	---
16	12.6	12.2	12.4	11.0	10.8	10.9	10.7	10.4	10.6	---	---	---
17	12.4	12.2	12.3	---	---	---	10.6	9.9	10.4	---	---	---
18	12.6	12.2	12.4	---	---	---	10.3	9.9	10.1	---	---	---
19	12.6	12.1	12.3	11.9	11.6	11.7	10.4	10.2	10.3	---	---	---
20	12.7	12.2	12.5	11.8	11.6	11.7	---	---	---	---	---	---
21	12.6	11.7	12.3	12.1	11.6	11.9	---	---	---	---	---	---
22	12.6	12.2	12.4	12.1	11.7	11.9	---	---	---	---	---	---
23	12.8	12.5	12.6	11.9	11.6	11.8	---	---	---	---	---	---
24	12.9	12.6	12.7	11.7	11.1	11.4	---	---	---	---	---	---
25	12.7	12.4	12.6	11.5	11.1	11.3	---	---	---	---	---	---
26	12.5	12.2	12.4	11.4	11.2	11.3	11.7	11.0	11.4	---	---	---
27	12.5	12.2	12.3	11.6	11.4	11.5	11.4	11.1	11.3	---	---	---
28	12.6	12.4	12.5	11.7	11.5	11.7	11.6	11.3	11.5	---	---	---
29	---	---	---	11.9	11.6	11.8	12.0	11.6	11.7	10.8	10.1	10.5
30	---	---	---	12.0	11.6	11.8	12.0	11.6	11.8	10.6	9.7	10.1
31	---	---	---	12.2	11.9	12.0	---	---	---	10.3	9.8	10.1
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.6	10.2	10.4	---	---	---	10.7	9.7	10.1	---	---	---
2	10.7	10.1	10.4	---	---	---	10.8	9.8	10.3	10.1	8.9	9.3
3	10.5	10.1	10.3	---	---	---	10.8	9.8	10.3	10.1	8.9	9.3
4	10.8	10.5	10.6	---	---	---	10.7	9.9	10.3	10.8	9.4	9.9
5	10.9	10.1	10.5	---	---	---	11.3	9.6	10.4	10.8	9.7	10.0
6	---	---	---	---	---	---	11.0	9.4	10.2	11.4	9.5	10.2
7	---	---	---	---	---	---	10.8	9.4	10.0	11.8	9.6	1

UMPQUA RIVER BASIN

14319500 NORTH UMPQUA RIVER AT WINCHESTER, OR

LOCATION.--Lat 43°16'20", long 123°24'40", in NW 1/4 NE 1/4 sec.33, T.26 S., R.6 W., Douglas County, Hydrologic Unit 17100301, on left bank 300 ft downstream from county bridge, 3.0 mi west of Winchester, and at mile 1.8.

DRAINAGE AREA.--1,344 mi².

PERIOD OF RECORD.--October 1908 to December 1913, October 1923 to September 1929, August 1954 to current year. Prior to December 1908, monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1448: 1909-12, drainage area. WDR OR-65-1: 1954(M). WDR OR-72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 372.97 ft above sea level (Douglas County Road Department bench mark). Oct. 1, 1908, to Dec. 31, 1913, and Oct. 1, 1923, to Sept. 30, 1929, nonrecording gage at site 4.8 mi upstream at different datums. Aug. 27, 1954, to Aug. 12, 1965, water-stage recorder on right bank at same datum.

REMARKS.--No estimated daily discharges. Records good. Occasional regulation caused by upstream powerplants; slight regulation by Lemolo Lake and Diamond Lake. Several small diversions for irrigation upstream from station. Continuous water-quality records for water years 1967-69, 1971-91, have been collected at this site.

AVERAGE DISCHARGE.--54 years (water years 1909-13, 1924-29, 1955-97), 3,737 ft³/s, 37.78 in/yr, 2,707,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150,000 ft³/s Dec. 22, 1964, gage height, 34.2 ft, from floodmark; minimum discharge, 235 ft³/s Aug. 27, 1987, result of regulation at Winchester Dam 5.2 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of 23.2 ft, from floodmark, at site 4.8 mi upstream at different datum, discharge, 88,000 ft³/s. Flood of Nov. 23, 1953, reached a stage of 28.4 ft, from floodmarks, present site and datum, discharge, 93,300 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	0130	*90,000	*27.60	Dec. 30	0230	31,700	13.30
Dec. 1	1330	23,600	11.05	Dec. 31	0800	37,000	14.70
Dec. 5	0300	57,200	19.84	Jan. 1	1100	50,500	18.10
Dec. 8	1900	60,200	20.61	Jan. 31	2230	33,700	13.84
Dec. 26	0430	41,800	15.90				

Minimum discharge, 934 ft³/s Aug. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1050	2950	19200	40300	25400	4970	4090	8660	2760	2770	1260	1240
2	1060	2470	14700	34200	14800	14500	3940	7050	2590	2330	1230	1190
3	1070	2220	11300	27400	10300	10800	3790	6110	2560	2000	1200	1210
4	1060	2180	13300	18200	8080	7770	3730	5470	3100	1860	1260	1260
5	1010	2110	40600	12800	6670	6340	3660	4870	3370	1750	1250	1280
6	1010	1970	21800	9650	5770	5870	3410	4480	3010	1710	1130	1150
7	1060	2190	17600	7850	5680	6800	3330	4160	2730	1650	1070	1180
8	1050	2330	48400	6830	5660	8250	3460	3930	2560	1660	1170	1200
9	1010	2180	41700	6070	5070	7190	3770	3720	2490	1660	1180	1160
10	1030	2060	26600	5490	4660	7410	3640	3710	2380	1670	1180	1170
11	1020	1960	20700	5090	4320	9720	3400	3790	2260	1690	1220	1190
12	1010	1840	15500	4710	4980	8780	3110	3890	2180	1580	1260	1190
13	1070	1870	15100	4260	5250	7070	3060	3870	2210	1460	1110	1200
14	1200	2380	12400	3900	5060	6020	3350	3710	2150	1490	1190	1300
15	1140	3620	9240	3770	5010	5790	3860	3560	2070	1430	1130	1470
16	1140	4110	7380	3580	4660	6760	3700	3410	2020	1430	1150	1660
17	1310	4790	6290	3650	4730	9000	3630	3310	1970	1470	1100	1950
18	1330	30800	5560	3810	5050	7580	3530	3190	1950	1480	1170	2720
19	2620	57600	4950	3780	7120	6440	4470	3000	1890	1430	1090	1970
20	1880	26700	5530	3950	10100	6800	8550	2860	1900	1420	1060	1610
21	1520	13700	8890	4590	7590	6710	8910	2790	1880	1400	1290	1480
22	1410	10300	7530	4800	6100	5840	7000	2720	1840	1380	1230	1370
23	2140	8360	6610	4370	5260	5200	9060	2690	1820	1390	1120	1220
24	3590	8030	6680	4030	4560	4750	11700	2800	1790	1380	1250	1370
25	8360	10700	20500	5070	4070	4440	8990	2900	1760	1320	1630	1270
26	6500	8400	39500	11800	3920	4310	7070	2660	1710	1300	1360	1240
27	4100	6600	27400	9530	4620	4370	6350	2540	1510	1350	1260	1250
28	3310	11100	19000	9610	4800	4420	5720	2570	1630	1270	1280	1260
29	6250	12800	21100	10500	---	4110	6190	2860	1740	1250	1230	1250
30	4990	9280	26700	8230	---	3860	7410	2840	2250	1240	1180	1250
31	3610	---	30600	19100	---	4050	---	2690	---	1310	1240	---
TOTAL	69910	257600	572360	300920	189290	205920	155880	116810	66080	48530	37480	41260
MEAN	2255	8587	18460	9707	6760	6643	5196	3768	2203	1565	1209	1375
MAX	8360	57600	48400	40300	25400	14500	11700	8660	3370	2770	1630	2720
MIN	1010	1840	4950	3580	3920	3860	3060	2540	1510	1240	1060	1150
AC-FT	138700	510900	1135000	596900	375500	408400	309200	231700	131100	96260	74340	81840
CFSM	1.68	6.39	13.7	7.22	5.03	4.94	3.87	2.80	1.64	1.16	.90	1.02
IN.	1.94	7.13	15.84	8.33	5.24	5.70	4.31	3.23	1.83	1.34	1.04	1.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1997, BY WATER YEAR (WY)

MEAN	1359	4175	6404	6704	6275	5610	4848	3831	2448	1339	1001	993
MAX	2752	12550	23640	15220	13250	12880	8881	7147	4992	2824	1578	1689
(WY)	1963	1974	1965	1965	1986	1972	1993	1963	1984	1913	1976	1986
MIN	683	931	1005	1125	1019	1681	1605	1401	913	717	635	708
(WY)	1988	1994	1977	1977	1977	1992	1926	1926	1926	1926	1992	1929

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1909 - 1997

ANNUAL TOTAL	2313672	2062040	
ANNUAL MEAN	6322	5649	
HIGHEST ANNUAL MEAN			3737
LOWEST ANNUAL MEAN			6116
HIGHEST DAILY MEAN	57600	Nov 19	117000
LOWEST DAILY MEAN	869	Aug 26	549
ANNUAL SEVEN-DAY MINIMUM	943	Sep 6	600
ANNUAL RUNOFF (AC-FT)	4589000	4090000	2707000
ANNUAL RUNOFF (CFSM)	4.70	4.20	2.78
ANNUAL RUNOFF (INCHES)	64.04	57.07	37.78
10 PERCENT EXCEEDS	13300	11500	7580
50 PERCENT EXCEEDS	3900	3460	2430
90 PERCENT EXCEEDS	1050	1190	890

UMPQUA RIVER BASIN

341

14319850 GASSY CREEK NEAR NONPAREIL, OR

LOCATION.--Lat 43°25'02", long 123°07'14", in NW 1/4 NE 1/4 sec.12, T.25 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank 0.9 mi upstream from confluence with Calapooya Creek, and 4.2 mi northeast of community of Nonpareil.

DRAINAGE AREA.--9.19 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 790 ft above sea level, from topographic map.

REMARKS.--Records fair. No diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years (water years 1989-97), 15.2 ft³/s, 22.44 in/yr, 10,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s Nov. 18, 1996, gage height, 6.59 ft, from slope-area measurement of peak flow; no flow on many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 240 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1800	*1,940	*6.59	Dec. 8	1030	656	4.40
Dec. 4	2030	338	3.43	Dec. 31	2400	325	3.38

No flow many days in August.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	3.9	169	187	112	e34	13	26	e2.6	3.6	e.20	.28
2	.11	2.5	118	93	59	e160	12	21	e1.9	2.1	e.10	.24
3	.11	1.9	110	85	41	e130	10	21	e1.8	1.5	e.10	.21
4	.11	1.8	140	64	32	e70	8.7	14	e3.0	1.0	e.10	.20
5	.13	2.2	146	44	23	e54	7.4	10	e2.5	.83	.06	.17
6	.15	2.0	126	31	18	e40	6.6	7.9	2.1	.73	.05	.16
7	.16	2.4	117	24	23	e37	6.4	6.5	1.7	e.60	.04	.09
8	.16	2.5	457	19	28	e38	5.9	5.5	1.5	e.50	.02	.10
9	.15	2.4	308	15	26	e34	5.7	4.6	1.3	e.50	.02	.09
10	.14	2.2	167	12	22	e32	5.6	4.2	1.1	e.70	.01	.16
11	.13	1.8	120	10	19	e50	5.1	3.8	1.1	e.60	.01	.47
12	.12	1.6	68	8.9	28	e47	4.7	3.2	1.4	e.50	.00	.60
13	.30	3.6	72	7.1	31	e35	4.9	2.9	1.5	e.50	.00	.57
14	.54	6.6	56	5.9	27	e27	6.0	e2.7	1.3	e.40	.00	1.2
15	e.40	11	40	5.3	21	e24	5.4	e2.5	1.1	e.40	.00	1.7
16	e.60	19	28	5.1	17	e42	4.9	e2.3	.95	e.40	.00	1.8
17	e.30	30	19	5.1	17	e80	4.5	e2.1	.88	e.40	.00	4.9
18	4.4	736	13	4.4	15	e50	4.5	e2.0	.83	e.40	.00	2.9
19	5.8	373	11	4.1	49	e34	5.4	e1.9	.77	e.40	.00	2.0
20	2.7	159	14	11	59	e32	13	e1.8	.70	e.30	.17	1.3
21	1.2	59	41	19	41	e22	12	e1.7	.77	e.20	.50	.96
22	1.2	44	37	24	28	e17	14	e1.6	.88	e.20	.22	.71
23	2.6	36	36	17	21	e14	35	e2.0	.80	e.20	.15	.61
24	13	39	42	13	16	e11	37	e2.2	.74	e.20	1.3	.66
25	41	40	112	34	13	e10	28	e2.7	.69	e.20	.70	.91
26	21	26	173	78	12	e9.6	19	e2.1	.63	e.20	.70	1.2
27	8.0	19	90	46	e24	e9.4	16	e2.0	.59	e.20	.70	1.6
28	8.7	76	62	46	e26	e10	13	e2.1	.70	e.20	.55	1.7
29	27	80	74	40	---	e9.7	14	e2.7	1.3	e.20	.49	1.7
30	12	52	76	34	---	e9.5	22	e2.4	4.8	e.20	.44	1.6
31	6.7	---	105	136	---	e12	---	e2.3	---	e.20	.33	---
TOTAL	159.02	1836.4	3147	1127.9	848	1184.2	349.7	169.7	41.93	18.56	6.96	30.79
MEAN	5.13	61.2	102	36.4	30.3	38.2	11.7	5.47	1.40	.60	.22	1.03
MAX	41	736	457	187	112	160	37	26	4.8	3.6	1.3	4.9
MIN	.11	1.6	11	4.1	12	9.4	4.5	1.6	.59	.20	.00	.09
AC-PT	315	3640	6240	2240	1680	2350	694	337	83	37	14	61
CFSM	.56	6.66	11.0	3.96	3.30	4.16	1.27	.60	.15	.07	.02	.11
IN.	.64	7.43	12.74	4.57	3.43	4.79	1.42	.69	.17	.08	.03	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1997, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1.13	18.2	34.3	39.4	25.0	25.3	21.1	11.8	5.19	.72
MAX	5.13	61.2	102	86.9	48.0	43.4	50.3	26.9	26.6	2.42
(WY)	1997	1997	1997	1996	1996	1989	1993	1996	1993	1993
MIN	.14	.62	2.93	10.8	11.6	4.18	5.44	2.01	.73	.14
(WY)	1989	1994	1990	1992	1992	1992	1990	1992	1992	1994

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1988 - 1997
ANNUAL TOTAL	11641.76	8920.16	
ANNUAL MEAN	31.8	24.4	15.2
HIGHEST ANNUAL MEAN			24.4
LOWEST ANNUAL MEAN			6.47
HIGHEST DAILY MEAN	736	Nov 18	736
LOWEST DAILY MEAN	.00	Aug 20	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 12	.00
ANNUAL RUNOFF (AC-FT)	23090	17690	10990
ANNUAL RUNOFF (CFSM)	3.46	2.66	1.65
ANNUAL RUNOFF (INCHES)	47.12	36.11	22.44
10 PERCENT EXCEEDS	81	60	42
50 PERCENT EXCEEDS	8.4	4.7	3.8
90 PERCENT EXCEEDS	.11	.17	.02

e Estimated

UMPQUA RIVER BASIN

14320700 CALAPOOYA CREEK NEAR OAKLAND, OR

LOCATION.--Lat 43°24'10", long 123°21'45", in NW 1/4 sec.13, T.25 S., R.6 W., Douglas County, Hydrologic Unit 17100303, near center of span on downstream side of highway bridge, 0.9 mi downstream from Williams Creek, 2.5 mi northwest of Sutherlin, 3.5 mi southwest of Oakland, and at mile 10.1

DRAINAGE AREA.--210 mi².

PERIOD OF RECORD.--October 1955 to September 1973, October 1986 to current year. Records for the years 1974-86 are available at the Douglas County Water Resources Dept. in Roseburg.

GAGE.--Water-stage recorder. Datum of gage is 371.26 ft above sea level. Prior to June 22, 1968, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records fair. Diversion upstream from station for municipal supply of cities of Sutherlin and Oakland. Small diversions by pumping for irrigation upstream from station.

AVERAGE DISCHARGE.--29 years (water years 1956-73, 1987-97), 455 ft³/s, 29.46 in/yr, 329,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s Nov. 18, 1996, gage height, 21.62 ft; no flow Sept. 9-11, 1966, Sept. 8, 1988, all or part of several days in August 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2330	*27,100	*21.62	Dec. 8	1700	12,400	18.42
Dec. 5	0100	9,380	16.79	Jan. 1	0530	6,390	13.13

Minimum discharge, 1.8 ft³/s Aug. 5-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	157	3650	4640	2890	1140	354	460	89	91	11	14
2	9.8	122	2930	2700	1770	3610	317	410	67	57	7.8	13
3	11	99	2980	2480	1250	2540	294	392	66	43	9.0	13
4	12	91	3950	1950	976	1710	275	336	103	35	7.3	12
5	14	100	5820	1450	769	1260	254	287	94	30	6.9	12
6	19	89	3870	1090	625	1030	234	262	77	27	5.4	11
7	18	111	3750	897	864	984	230	234	66	24	4.5	13
8	17	116	9150	742	973	1020	227	207	60	23	3.7	12
9	17	101	6830	622	810	885	236	182	54	23	4.6	10
10	17	90	4420	536	661	855	217	163	49	30	4.4	13
11	16	81	3790	476	582	1200	201	149	45	27	6.0	14
12	16	72	2350	426	714	1110	187	134	49	22	6.7	16
13	21	91	2590	376	695	947	181	121	59	19	4.0	19
14	46	157	1980	339	625	803	207	111	52	17	3.6	23
15	35	270	1450	310	555	742	192	102	44	16	7.3	37
16	51	342	1090	292	498	1060	178	92	39	15	8.6	76
17	37	481	876	300	487	1720	167	86	37	15	11	96
18	71	7610	710	272	443	1180	163	80	35	15	12	115
19	175	13900	594	256	1120	902	172	74	32	15	13	71
20	115	4410	732	351	1410	844	309	69	31	14	16	53
21	66	2230	1310	598	1040	674	313	65	30	13	21	41
22	49	1720	1180	678	807	569	297	62	35	12	21	35
23	66	1380	1190	535	642	486	706	72	35	13	16	31
24	207	1570	1180	454	532	422	904	77	32	11	22	28
25	823	1560	2830	1450	468	373	657	94	31	9.9	37	26
26	655	1200	4350	2980	450	340	493	74	30	11	25	25
27	294	1020	2950	1450	777	330	421	69	29	10	23	25
28	196	2320	2090	1830	870	345	363	70	27	10	22	28
29	491	2320	3010	1380	---	301	398	95	34	10	19	26
30	330	1700	3210	1100	---	284	426	78	63	8.1	17	25
31	217	---	3720	3350	---	330	---	74	---	11	15	---
TOTAL	4121.4	45510	90532	36310	24303	29996	9573	4781	1494	677.0	390.8	.933
MEAN	133	1517	2920	1171	868	968	319	154	49.8	21.8	12.6	31.1
MAX	823	13900	9150	4640	2890	3610	904	460	103	91	37	115
MIN	9.6	72	594	256	443	284	163	62	27	8.1	3.6	10
AC-FT	8170	90270	179600	72020	48210	59500	18990	9480	2960	1340	775	1850
CFSM	.63	7.22	13.9	5.58	4.13	4.61	1.52	.73	.24	.10	.06	.15
IN.	.73	8.06	16.04	6.43	4.31	5.31	1.70	.85	.26	.12	.07	.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1997, BY WATER YEAR (WY)

	MEAN	60.9	479	1099	1173	900	824	490	289	112	28.2	11.1	13.9
MAX	329	1517	3856	2296	2229	1912	1342	912	595	73.1	41.9	35.0	
(WY)	1957	1997	1956	1956	1961	1961	1963	1963	1993	1993	1993	1971	
MIN	6.48	22.6	104	120	290	142	164	58.0	19.9	9.05	1.59	3.06	
(WY)	1988	1994	1990	1963	1973	1992	1987	1966	1992	1993	1994	1991	

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1956 - 1997

ANNUAL TOTAL	300678.89	248621.2	
ANNUAL MEAN	822	681	455
HIGHEST ANNUAL MEAN			905
LOWEST ANNUAL MEAN			186
HIGHEST DAILY MEAN	13900	Nov 19	15200
LOWEST DAILY MEAN	.89	Aug 27	.00
ANNUAL SEVEN-DAY MINIMUM	2.3	Aug 22	.34
ANNUAL RUNOFF (AC-FT)	596400	493100	329900
ANNUAL RUNOFF (CFSM)	3.91	3.24	2.17
ANNUAL RUNOFF (INCHES)	53.26	44.04	29.46
10 PERCENT EXCEEDS	2310	1880	1180
50 PERCENT EXCEEDS	254	172	144
90 PERCENT EXCEEDS	6.8	13	8.5

14321000 UMPQUA RIVER NEAR ELKTON, OR

LOCATION.--Lat 43°35'10", long 123°33'15", in NW 1/4 sec.8, T.23 S., R.7 W., Douglas County, Hydrologic Unit 17100303, on left bank 3.5 mi south of Elkton, 8.3 mi upstream from Elk Creek, and at mile 56.9.

DRAINAGE AREA.--3,683 mi².

PERIOD OF RECORD.--October 1905 to current year.

REVISED RECORDS.--WSP 1184: 1927(M), 1938(M), 1943(M), 1946(M). WSP 1448: 1911-13, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 90.42 ft above sea level. Prior to June 29, 1972, at site 2,400 ft downstream at same datum. See WSP 1931 or 2135 for history of changes prior to June 29, 1972.

REMARKS.--No estimated daily discharges. Records good. Regulation by powerplants on North Umpqua River ordinarily does not affect discharge at this station. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--92 years (water years 1906-97), 7,422 ft³/s, 27.38 in/yr, 5,377,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 265,000 ft³/s Dec. 23, 1964, gage height, 51.95 ft, from floodmarks; minimum discharge observed, 640 ft³/s July 18, 1926.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least December 1861, 51.95 ft on Dec. 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 52,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	1130	162,000	38.41	Dec. 30	0930	86,500	26.07
Dec. 5	1300	116,000	31.27	Jan. 1	2000	127,000	33.14
Dec. 9	0430	*169,000	*39.42	Feb. 1	0730	60,200	21.07
Dec. 26	1430	85,900	25.97				

Minimum discharge, 1,060 ft³/s Aug. 8.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1140	5140	28800	103000	54400	10000	6820	13300	4050	2960	1370	1370
2	1130	4140	37900	101000	35000	27200	6640	12500	3910	3530	1320	1350
3	1130	3430	29700	76600	24000	35400	6330	10500	3690	3130	1300	1300
4	1150	3060	25600	51800	18400	24500	6090	9290	3690	2610	1270	1300
5	1170	2920	93000	34700	15000	18300	6000	8210	4470	2330	1300	1330
6	1130	2770	66900	25200	12700	15100	5760	7440	4780	2140	1270	1380
7	1100	2580	46800	19900	11500	14100	5430	6840	4240	2040	1200	1250
8	1150	2850	108000	17000	12800	15500	5360	6340	3820	1950	1120	1260
9	1140	2920	150000	14800	11800	15100	5660	5950	3510	1930	1200	1280
10	1130	2800	86100	13200	10600	13500	5900	5670	3320	1910	1190	1290
11	1110	2610	70600	11900	9630	15200	5620	5610	3110	1900	1200	1280
12	1130	2480	47100	11100	9420	16700	5210	5630	2940	1900	1210	1310
13	1140	2360	40900	10200	10400	14200	4900	5650	2900	1820	1250	1380
14	1180	2440	38400	9230	10000	12000	4890	5510	2910	1700	1140	1450
15	1270	3230	28000	8680	9650	10700	5390	5270	2830	1700	1170	1630
16	1280	4890	21200	8240	9170	11300	5720	5020	2680	1630	1130	1810
17	1270	6120	17200	7940	8690	15500	5510	4820	2560	1580	1150	2120
18	1510	17600	14600	8040	9480	15900	5400	4610	2440	1620	1120	2930
19	1700	139000	12700	7410	10200	13000	5420	4400	2380	1620	1160	3310
20	3290	80600	11700	7080	18000	11700	7730	4140	2280	1590	1160	2750
21	2770	35700	17700	8060	16600	12000	15000	3930	2310	1590	1160	2210
22	2070	23200	20100	10100	13400	10900	12400	3760	2240	1550	1300	1990
23	1770	18700	17800	9790	11300	9570	12500	3700	2210	1520	1320	1840
24	2740	15900	16500	8780	9770	8620	18900	3690	2180	1500	1310	1690
25	7250	19000	25000	9330	8630	7870	17700	4060	2120	1480	1400	1760
26	12400	17700	77500	29900	7770	7370	13400	4180	2070	1430	1710	1680
27	8130	14000	69100	30300	8180	7260	11100	3780	1990	1390	1570	1630
28	5600	15300	46600	23700	9970	7220	10100	3610	1820	1420	1460	1620
29	5540	26900	44500	25800	---	7130	9450	3840	1920	1370	1430	1630
30	9550	21400	75200	20500	---	6550	10500	4340	2090	1320	1400	1620
31	6820	---	86900	27200	---	6480	---	4370	---	1310	1340	---
TOTAL	90890	501740	1472100	750480	396460	415870	246830	179960	87460	57470	39630	50750
MEAN	2932	16720	47490	24210	14160	13420	8228	5805	2915	1854	1278	1692
MAX	12400	139000	150000	103000	54400	35400	18900	13300	4780	3530	1710	3310
MIN	1100	2360	11700	7080	7770	6480	4890	3610	1820	1310	1120	1250
AC-FT	180300	995200	2920000	1489000	786400	824900	489600	357000	173500	114000	78610	100700
CFSM	.80	4.54	12.9	6.57	3.84	3.64	2.23	1.58	.79	.50	.35	.46
IN.	.92	5.07	14.87	7.58	4.00	4.20	2.49	1.82	.88	.58	.40	.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1997, BY WATER YEAR (WY)

	1876	7091	13520	15840	15040	12230	9583	6473	3744	1725	1174	1197
MEAN	1876	7091	13520	15840	15040	12230	9583	6473	3744	1725	1174	1197
MAX	14200	29500	51220	34900	32800	27100	20480	15800	9526	5063	1867	3475
(WY)	1951	1974	1965	1956	1907	1972	1937	1921	1953	1913	1976	1920
MIN	857	832	1238	1440	1365	2909	2432	1934	1053	742	703	740
(WY)	1930	1930	1977	1977	1977	1992	1926	1934	1926	1926	1931	1931

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1906 - 1997
ANNUAL TOTAL	4944366	4289640	
ANNUAL MEAN	13510	11750	7422
HIGHEST ANNUAL MEAN			13360
LOWEST ANNUAL MEAN			2321
HIGHEST DAILY MEAN	150000	150000	260000
LOWEST DAILY MEAN	961	1100	663
ANNUAL SEVEN-DAY MINIMUM	1010	1130	663
ANNUAL RUNOFF (AC-FT)	9807000	8509000	5377000
ANNUAL RUNOFF (CFSM)	3.67	3.19	2.02
ANNUAL RUNOFF (INCHES)	49.94	43.33	27.38
10 PERCENT EXCEEDS	33600	26200	17200
50 PERCENT EXCEEDS	6480	5360	3950
90 PERCENT EXCEEDS	1130	1280	1050

14321400 ELK CREEK NEAR ELKHEAD, OR

LOCATION.--Lat 43°35'45", long 123°11'35", in NW 1/4 SE 1/4 sec.5, T.23 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank downstream side of Milltown Hill Bridge, 1.5 mi upstream from Adams Creek, 4.0 mi north of Elkhead, and at mile 37.7.

DRAINAGE AREA.--28.7 mi².

PERIOD OF RECORD.--January to August 1968 (gage heights and discharge measurements only), September 1968 to June 1972, October 1986 to current year.

REVISED RECORDS.--WDR OR-93-OR-1: 1991-92, 1991-92 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 463.99 ft above sea level (Douglas County Highway Department bench mark). Prior to Sept. 1, 1968, nonrecording gage at site 20 ft upstream at datum 1.70 ft lower.

REMARKS.--Records for flows greater than 10 ft³/s good, those below and estimated daily discharges fair.

AVERAGE DISCHARGE.--14 years (water years 1969-71, 1987-97), 51.9 ft³/s, 24.58 in/yr, 37,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,670 ft³/s Nov. 18, 1996, gage height, 10.82 ft, from rating curve extended above 763 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.15 ft³/s Aug. 28, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 820 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2300	*6,670	*10.82	Jan. 1	0230	945	5.86
Dec. 4	2130	1,600	6.86	Jan. 26	0130	923	5.82
Dec. 8	1400	2,420	7.79	Jan. 31	1430	885	5.75
Dec. 10	2130	869	5.72				

Minimum daily discharge, 0.85 ft³/s Sept. 6, 9.

(a) From rating curve extended above 763 ft³/s on basis of slope-area measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.94	12	e500	606	356	142	48	46	14	8.9	1.7	e1.5
2	.97	9.5	e370	335	205	467	41	42	11	6.4	1.5	e1.3
3	.96	7.8	e370	314	144	343	37	42	12	5.5	1.4	e1.2
4	1.2	7.7	e520	220	114	212	34	35	13	4.9	1.3	e1.1
5	2.3	8.4	810	158	90	150	31	30	12	4.3	1.3	e1.0
6	2.3	7.3	567	121	73	120	28	28	10	4.0	1.3	e.85
7	2.3	9.0	592	98	113	114	28	25	9.3	3.8	1.2	e1.0
8	2.1	8.8	1760	82	118	107	28	23	8.9	3.6	1.2	e.95
9	2.0	7.8	1010	69	101	91	28	20	8.2	4.6	1.2	e.85
10	1.7	8.0	663	61	85	86	26	19	7.7	5.4	1.2	e1.1
11	1.5	7.6	559	55	76	121	23	18	7.5	4.5	1.2	e1.3
12	1.5	7.3	284	50	95	114	22	16	8.5	3.9	1.2	e1.6
13	4.3	31	349	44	88	103	22	15	9.9	3.5	1.2	e2.0
14	5.2	54	233	40	80	90	24	14	8.2	3.2	1.1	e2.6
15	4.3	55	152	36	70	85	21	13	7.2	3.0	1.1	e4.9
16	4.3	59	106	35	62	169	20	12	6.5	2.9	1.1	e9.9
17	3.3	77	86	37	58	246	19	12	6.1	2.9	1.1	e13
18	14	2040	73	33	53	147	19	11	6.0	3.0	1.3	e17
19	22	2920	62	33	144	108	20	10	5.4	2.8	1.3	e9.5
20	9.9	e750	81	48	147	96	52	9.6	5.2	2.5	2.2	e6.6
21	4.7	e350	169	87	112	75	41	9.4	5.4	2.4	2.7	e4.7
22	3.6	e250	149	110	87	63	45	9.1	6.0	2.4	2.1	e3.9
23	3.3	e170	157	83	72	54	135	11	6.0	2.2	1.9	e3.2
24	27	e200	150	70	60	47	131	12	5.6	2.1	4.2	e2.7
25	103	e190	281	238	52	42	87	15	5.4	2.0	3.7	e2.5
26	59	e150	481	544	51	39	64	11	5.1	1.9	3.1	e2.4
27	24	e100	351	231	74	38	55	11	4.9	1.8	3.6	e2.3
28	18	e320	254	242	78	38	46	11	4.8	1.7	2.9	e2.7
29	48	e310	334	187	---	33	47	15	6.8	1.7	e2.4	e2.5
30	27	e200	389	151	---	32	49	11	8.7	1.7	e2.2	e2.3
31	17	---	458	516	---	41	---	14	---	1.7	e1.7	---
TOTAL	421.67	8327.2	12320	4934	2858	3613	1271	570.1	235.3	105.2	56.6	108.45
MEAN	13.6	278	397	159	102	117	42.4	18.4	7.84	3.39	1.83	3.62
MAX	103	2920	1760	606	356	467	135	46	14	8.9	4.2	17
MIN	.94	7.3	62	33	51	32	19	9.1	4.8	1.7	1.1	.85
AC-FT	836	16520	24440	9790	5670	7170	2520	1130	467	209	112	215
CFSM	.47	9.67	13.8	5.55	3.56	4.06	1.48	.64	.27	.12	.06	.13
IN.	.55	10.79	15.97	6.40	3.70	4.68	1.65	.74	.30	.14	.07	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1997, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	5.76	66.9	128	152	95.8	85.3	59.1	31.8	14.6	4.06	1.79	1.97																		
MAX	16.3	278	397	280	191	184	133	78.2	71.7	7.72	5.21	4.01																		
(WY)	1969	1977	1997	1996	1969	1972	1993	1996	1993	1993	1993	1971																		
MIN	1.51	3.66	15.6	35.4	31.1	19.2	21.0	8.16	3.27	1.61	.46	.43																		
(WY)	1988	1994		1992	1988	1992	1987	1987	1992	1994	1994	1994																		

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1968 - 1997
ANNUAL TOTAL	43143.76	34820.52	
ANNUAL MEAN	118	95.4	51.9
HIGHEST ANNUAL MEAN			95.4
LOWEST ANNUAL MEAN			22.3
HIGHEST DAILY MEAN	2920	2920	2920
LOWEST DAILY MEAN	.93	.85	.22
ANNUAL SEVEN-DAY MINIMUM	.98	.98	.25
ANNUAL RUNOFF (AC-FT)	85580	69070	37610
ANNUAL RUNOFF (CFSM)	4.11	3.32	1.81
ANNUAL RUNOFF (INCHES)	55.92	45.13	24.58
10 PERCENT EXCEEDS	314	244	137
50 PERCENT EXCEEDS	38	20	18
90 PERCENT EXCEEDS	1.3	1.7	1.4

e Estimated

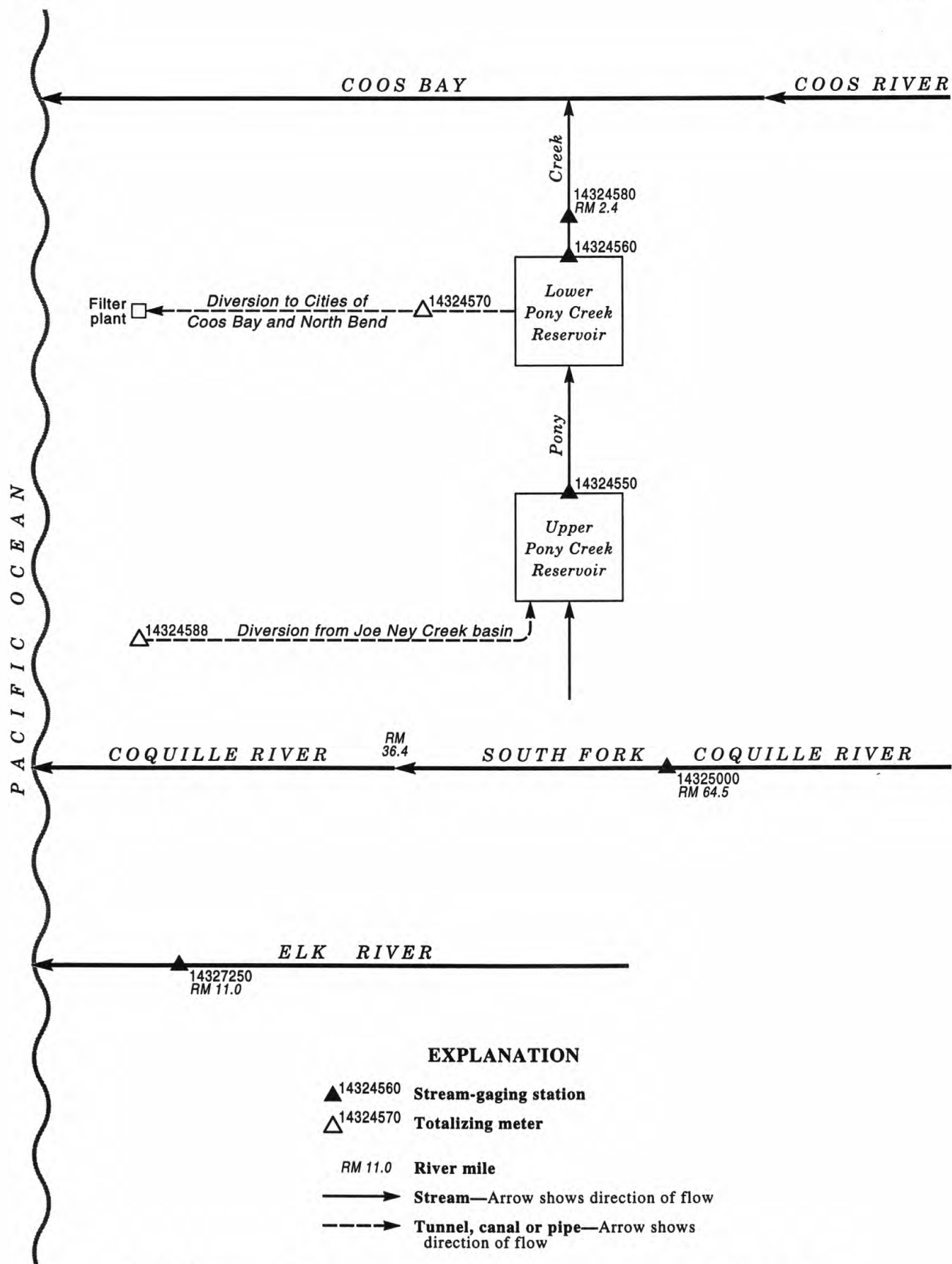


Figure 31. Schematic diagram showing gaging stations and diversions in the Pony Creek Basin.

COOS RIVER BASIN

14324580 PONY CREEK AT COOS BAY, OR

LOCATION.--Lat 43°22'44", long 124°14'29", in NE 1/4 NE 1/4 sec.28, T.25 S., R.13 W., Coos County, Hydrologic Unit 17100304, at spillway for Lower Pony Creek Reservoir, in Coos Bay, and at mile 2.3.

DRAINAGE AREA.--3.88 mi².

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

REVISED RECORDS.--WDR OR-93-1: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is sea level (Coos Bay-North Bend Water Board bench mark). Oct. 1, 1982 to September 30, 1987, gage at site 500 ft downstream at same datum. July 1975 to Sept. 30, 1982 and Oct. 1, 1987 to Sept. 30, 1992, at site 0.1 mi downstream, at datum 12.23 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Records prior to 1993 were computed for site at the lower end of culvert under Ocean Boulevard. Flow regulated by Upper and Lower Pony Creek Reservoirs (stations 14324550 and 14324560), diversion upstream from station from Lower Pony Creek Reservoir to municipal water supply of Coos Bay-North Bend (station 14323570) and diversion into the basin from Joe Ney Creek (station 14324590). Approximately 5.5 ft³/s is diverted to the Coos Bay-North Bend water treatment plant, maximum capacity, 10.8 ft³/s.

COOPERATION.--Data for diversion from Joe Ney Creek into Pony Creek (14324590), and diversion from Lower Pony Creek Reservoir to City of Coos Bay (14324570) provided by Coos Bay-North Bend Water Board.

AVERAGE DISCHARGE.--22 years (water years 1976-97), 10.06 ft³/s, 35.21 in/yr, 7,290 acre-ft/yr, adjusted for Joe Ney diversion into Pony Creek, Coos Bay-North Bend diversion, and change in contents in Upper and Lower Pony Creek Reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 181 ft³/s Dec. 6, 1981, gage height, 6.19 ft; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 84 ft³/s Feb. 1, gage height, 39.90 ft; minimum discharge, no flow many days during year.

MONTHLY DISCHARGE OF PONY CREEK, JOE NEY CREEK DIVERSION, PONY CREEK DIVERSION AND MONTHLY CHANGE IN CONTENTS
OF RESERVOIRS NEAR COOS BAY, OR, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

	14324588 Diversion from Joe Ney Creek into Pony Creek (acre-feet)	14324580 Pony Creek at Coos Bay (acre-feet)	14324570 Diversion from Lower Pony Creek Reservoir to City of Coos Bay (acre-feet)	14324560 Lower Pony Creek Reservoir Change in Contents (acre-feet)	14324550 Upper Pony Creek Reservoir Change in Contents (acre-feet)	Pony Creek adjusted for diversion and change in contents (acre-feet)	(inches)
October.....	0	0	340.9	+26.5	-146.0	221.4	1.06
November.....	0	348.7	320.0	+82.5	+998.0	1,749.2	8.41
December.....	0	2,060.9	319.4	+53.6	+43.0	2,476.9	11.91
CAL YR 1996...	0	6,964.7	4,429.2	+47.7	+39.0	11,480.7	55.21
January.....	0	1,750.6	308.8	+6.2	+6.0	2,071.6	9.96
February.....	0	903.7	282.3	-79.5	-49.0	1,057.5	5.08
March.....	0	407.6	300.1	+7.8	+350.0	1,065.5	5.12
April.....	0	206.5	299.8	-6.9	-12.0	487.4	2.34
May.....	0	10.1	401.9	-85.1	-37.0	289.9	1.39
June.....	0	0	384.9	-17.7	-199.0	168.2	0.81
July.....	0	0	490.1	-9.5	-392.0	88.6	0.43
August.....	0	0	505.9	+55.4	-554.0	7.3	0.04
September.....	0	0	399.7	-4.0	-248.0	147.7	0.71
WTR YR 1997...	0	5,688.1	4,353.7	+29.3	-240.0	9,831.1	47.28

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	19	67	74	2.2	6.9	1.9	.00	.00	.00	.00
2	.00	.00	20	51	52	4.3	6.5	1.4	.00	.00	.00	.00
3	.00	.00	21	38	36	3.7	5.4	1.1	.00	.00	.00	.00
4	.00	.00	27	29	28	1.9	4.1	.21	.00	.00	.00	.00
5	.00	.00	43	24	22	1.1	3.6	.10	.00	.00	.00	.00
6	.00	.00	34	20	19	.96	2.7	.23	.00	.00	.00	.00
7	.00	.00	36	18	20	.71	3.2	.17	.00	.00	.00	.00
8	.00	.00	67	15	19	.44	4.2	.00	.00	.00	.00	.00
9	.00	.00	63	14	16	.33	4.8	.00	.00	.00	.00	.00
10	.00	.00	52	13	14	.38	3.7	.00	.00	.00	.00	.00
11	.00	.00	54	12	13	.50	2.8	.00	.00	.00	.00	.00
12	.00	.00	46	10	13	2.1	2.0	.00	.00	.00	.00	.00
13	.00	.00	43	9.1	11	4.7	2.0	.00	.00	.00	.00	.00
14	.00	.00	34	8.0	10	6.1	2.5	.00	.00	.00	.00	.00
15	.00	.00	26	8.5	9.9	8.2	2.6	.00	.00	.00	.00	.00
16	.00	.00	21	9.0	9.9	12	2.2	.00	.00	.00	.00	.00
17	.00	.00	17	26	9.1	16	1.7	.00	.00	.00	.00	.00
18	.00	4.8	14	33	8.2	14	1.6	.00	.00	.00	.00	.00
19	.00	33	12	26	11	13	1.7	.00	.00	.00	.00	.00
20	.00	14	12	25	11	16	2.5	.00	.00	.00	.00	.00
21	.00	4.9	15	33	8.8	14	2.7	.00	.00	.00	.00	.00
22	.00	10	15	35	7.0	12	4.0	.00	.00	.00	.00	.00
23	.00	4.7	12	29	5.8	9.7	6.6	.00	.00	.00	.00	.00
24	.00	6.4	11	24	5.0	8.7	5.7	.00	.00	.00	.00	.00
25	.00	16	17	32	4.7	7.8	3.8	.00	.00	.00	.00	.00
26	.00	18	42	59	5.2	7.4	2.9	.00	.00	.00	.00	.00
27	.00	16	49	48	7.5	7.2	3.0	.00	.00	.00	.00	.00
28	.00	18	43	40	5.5	8.8	2.8	.00	.00	.00	.00	.00
29	.00	16	52	29	---	7.2	3.2	.00	.00	.00	.00	.00
30	.00	14	53	27	---	6.9	2.7	.00	.00	.00	.00	.00
31	.00	---	69	71	---	7.2	---	.00	---	.00	.00	---
TOTAL	0.00	175.80	1039	882.6	455.6	205.52	104.1	5.11	0.00	0.00	0.00	0.00
MEAN	.0000	5.86	33.5	28.5	16.3	6.63	3.47	.16	.0000	.0000	.0000	.0000
MAX	.00	33	69	71	74	16	6.9	1.9	.00	.00	.00	.00
MIN	.00	.00	11	8.0	4.7	.33	1.6	.00	.00	.00	.00	.00
AC-FT	.00	349	2060	1750	904	408	206	10	.00	.00	.00	.00
CAL YR 1996	TOTAL	3511.35	MEAN	9.59	MAX 69	MIN .00	AC-FT 6960					
WTR YR 1997	TOTAL	2867.73	MEAN	7.86	MAX 74	MIN .00	AC-FT 5690					

COQUILLE RIVER BASIN

347

14325000 SOUTH FORK COQUILLE RIVER AT POWERS, OR

LOCATION.--Lat 42°53'30", long 124°04'10", in SE 1/4 sec.12, T.31 S., R.12 W., Coos County, Hydrologic Unit 17100305, on left bank 0.6 mi downstream from highway bridge at Powers, 0.9 mi upstream from Woodward Creek, and at mile 64.5.

DRAINAGE AREA.--169 mi².

PERIOD OF RECORD.--September 1916 to September 1926, October 1928 to current year.

REVISED RECORDS.--WSP 1184: 1946(M). WSP 1448: 1917-18(M), 1919, 1920(M), 1925.

GAGE.--Water-stage recorder. Datum of gage is 197.42 ft above sea level. Prior to Nov. 17, 1938, nonrecording gage at various sites within 1 mi of present site at different datums.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--78 years (water years 1917-26, 1930-97), 782 ft³/s, 62.89 in/yr, 566,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,900 ft³/s Dec. 22, 1964, gage height, 26.51 ft, from floodmarks, from rating curve extended above 19,000 ft³/s on basis of contracted-opening measurement at gage height 18.14 ft and slope-area measurement of peak flow; minimum discharge, 6.4 ft³/s Oct. 10-12, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1930	*38,500	*21.93	Dec. 8	1130	15,300	12.36
Dec. 4	2030	12,600	11.12	Jan. 1	0530	16,600	12.96

Minimum discharge, 8.1 ft³/s Sept. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	193	2940	11800	3620	1350	490	527	261	90	37	14
2	21	149	2240	7450	2120	4690	459	476	190	82	36	13
3	20	125	2210	4650	1480	2660	428	441	195	74	33	12
4	20	111	5210	2850	1170	1750	401	389	240	69	30	12
5	20	101	6890	1860	930	1320	372	351	208	64	28	12
6	20	91	4230	1320	782	1450	345	333	180	60	26	10
7	21	98	5860	1020	770	1470	335	303	168	59	25	9.7
8	20	98	12100	831	788	1490	336	277	160	57	24	9.3
9	19	90	8260	696	713	1230	343	254	145	58	24	9.1
10	19	84	8200	598	638	1090	329	238	134	62	25	31
11	18	78	5890	529	584	1340	310	224	129	57	25	43
12	18	75	4580	471	615	1240	293	208	145	54	25	28
13	29	99	5080	418	581	1070	278	194	180	52	26	21
14	55	153	2990	377	539	955	284	183	158	49	26	125
15	41	195	1850	346	503	940	272	175	141	47	25	178
16	38	231	1290	322	474	1460	260	166	129	47	24	407
17	32	356	987	729	618	1960	255	157	119	46	22	701
18	239	16900	790	628	615	1360	242	149	114	46	22	466
19	270	19400	657	501	1390	1060	252	143	107	45	22	279
20	162	5900	675	548	1390	950	1370	136	100	44	27	193
21	97	2710	987	836	1030	788	862	131	102	45	29	148
22	74	2240	1060	978	810	671	761	127	101	43	23	121
23	73	1660	1220	743	669	581	1400	129	94	42	20	103
24	116	1430	1600	607	568	515	1270	134	89	41	19	91
25	685	1320	2290	1750	498	462	949	129	85	39	20	82
26	791	1000	5190	5590	478	423	738	121	82	39	33	82
27	342	811	5210	2510	685	397	640	125	78	39	59	82
28	284	1530	3410	3470	887	410	548	155	80	38	26	73
29	844	1780	7270	2250	---	360	534	224	83	38	20	67
30	437	1450	7530	1540	---	395	533	159	81	39	17	62
31	272	---	9570	3860	---	489	---	196	---	39	15	---
TOTAL	5118	60458	128266	62078	25945	36326	15889	6954	4078	1604	813	3484.1
MEAN	165	2015	4138	2003	927	1172	530	224	136	51.7	26.2	116
MAX	844	19400	12100	11800	3620	4690	1400	527	261	90	59	701
MIN	18	75	657	322	474	360	242	121	78	38	15	9.1
AC-FT	10150	119900	254400	123100	51460	72050	31520	13790	8090	3180	1610	6910
CFSM	.98	11.9	24.5	11.8	5.48	6.93	3.13	1.33	.80	.31	.16	.69
IN.	1.13	13.31	28.23	13.66	5.71	8.00	3.50	1.53	.90	.35	.18	.77

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1997, BY WATER YEAR (WY)

MEAN	201	1019	1721	1802	1629	1337	926	454	174	61.6	34.8	46.2
MAX	1945	4232	5361	4244	4151	3818	2451	1568	699	186	101	385
(WY)	1951	1974	1965	1970	1958	1938	1963	1953	1937	1947	1947	1978
MIN	11.1	15.8	44.1	97.3	209	330	203	78.3	50.8	27.7	17.4	12.1
(WY)	1988	1937	1977	1977	1977	1934	1990	1939	1924	1926	1939	1987

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1917 - 1997

ANNUAL TOTAL	485187	351013.1	782
ANNUAL MEAN	1326	962	1374
HIGHEST ANNUAL MEAN			237
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	19400	Nov 19	34900
LOWEST DAILY MEAN	18	Oct 11	7.2
ANNUAL SEVEN-DAY MINIMUM	19	Oct 6	7.3
ANNUAL RUNOFF (AC-FT)	962400	696200	566700
ANNUAL RUNOFF (CFSM)	7.84	5.69	4.63
ANNUAL RUNOFF (INCHES)	106.80	77.26	62.89
10 PERCENT EXCEEDS	3600	2240	2000
50 PERCENT EXCEEDS	479	260	260
90 PERCENT EXCEEDS	25	25	26

14327250 ELK RIVER ABOVE ANVIL CREEK, NEAR PORT ORFORD, OR

LOCATION (Revised).--Lat 42°44'07", long 124°24'01", in SW 1/4 NE 1/4 sec.7, T.33 S., R.14 W., Curry County, Hydrologic Unit 17100306, on left bank, 0.6 mi upstream from Anvil Creek, 5.0 mi east of Port Orford, and at mile 13.6.

DRAINAGE AREA.--70.7 mi², at cableway 0.6 mi downstream where all discharge measurements are made.

PERIOD OF RECORD.--October 1993 to current year. Operated by Oregon Water Resources Department January 1977 to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above sea level, from topographic map. Oct. 1, 1993 to Sept. 12, 1995 at site 0.7 mi downstream at different datum. Prior to Oct. 1, 1993 gage operated by Oregon Water Resources Department at several different sites both above and below Anvil Creek.

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

AVERAGE DISCHARGE.--4 years (water years 1994-97), 622 ft³/s, 119.62 in/yr, 450,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft³/s Nov. 18, 1996, gage height 22.58 ft; minimum discharge, 18 ft³/s Sept. 26, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2200	28,900	22.58	Dec. 26	1300	7,950	13.66
Dec. 4	1900	13,900	16.82	Jan. 1	0230	6,970	13.04
Dec. 8	1130	7,300	13.25				

Minimum discharge, 35 ft³/s Sept. 9, but may have been lower during period of missing record.

CORRECTIONS.--The drainage area previously published in reports for water years 1994-96 is incorrect. The correct value is 70.7 mi².

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	309	1250	5160	3460	645	402	436	318	97	e73	e38
2	40	268	950	3460	2110	1810	385	408	242	97	e71	e38
3	40	234	1030	2620	1500	1220	363	411	277	97	e69	e38
4	42	211	3710	1920	1210	944	340	359	286	96	e67	e38
5	49	191	5490	1510	981	779	320	324	256	94	e65	e37
6	42	196	3320	1220	841	897	304	298	228	94	e63	e37
7	41	225	3220	975	761	991	315	273	206	93	e61	e37
8	40	194	6030	743	683	960	300	250	190	92	e59	e36
9	39	173	4550	609	614	784	305	230	178	96	e57	e35
10	39	152	4300	536	553	760	293	216	167	93	e58	e30
11	42	139	3720	476	524	1020	278	201	161	90	e59	47
12	55	244	3290	430	502	848	266	192	161	89	e60	46
13	161	421	2960	388	461	708	264	180	154	90	e62	71
14	109	515	2120	359	433	611	329	172	148	88	e62	168
15	120	510	1550	341	406	647	306	165	140	86	e61	348
16	75	1250	1210	338	398	1740	301	160	133	85	e59	313
17	61	3660	995	778	443	2160	297	151	131	e85	e57	888
18	547	14200	835	669	422	1230	286	144	129	e83	e55	398
19	419	11200	689	529	1150	1000	353	136	123	e82	e55	224
20	285	3600	597	652	968	1240	1350	132	119	e81	e57	161
21	195	1790	761	905	704	e900	786	127	122	e82	e60	132
22	249	1450	856	1040	566	e750	754	124	115	80	e62	115
23	262	1050	1000	783	477	e700	1160	119	112	79	e56	104
24	600	891	1190	566	406	e600	887	157	109	78	e53	96
25	830	850	2120	1330	354	e550	681	152	108	76	e53	91
26	794	643	5960	3140	358	476	553	151	106	77	e75	99
27	487	547	4930	1750	428	442	467	163	104	76	e100	89
28	425	873	3360	2710	409	430	421	212	104	74	e65	83
29	592	705	4630	1840	---	386	488	214	101	74	e45	79
30	460	706	4750	1330	---	408	475	166	100	74	e42	75
31	370	---	4880	5110	---	418	---	319	---	e75	e40	---
TOTAL	7550	47397	86253	44217	22122	27054	14029	6742	4828	2653	1881	4011
MEAN	244	1580	2782	1426	790	873	468	217	161	85.6	60.7	134
MAX	830	14200	6030	5160	3460	2160	1350	436	318	97	100	888
MIN	39	139	597	338	354	386	264	119	100	74	40	35
AC-FT	14980	94010	171100	87700	43880	53660	27830	13370	9580	5260	3730	7960
CFSM	3.44	22.3	39.4	20.2	11.2	12.3	6.61	3.08	2.28	1.21	.86	1.89
IN.	3.97	24.94	45.38	23.27	11.64	14.23	7.38	3.55	2.54	1.40	.99	2.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1997, BY WATER YEAR (WY)

	1994	1995	1996	1997
MEAN	106	763	1619	1532
MAX	244	1580	2782	2151
(WY)	1997	1997	1997	1995
MIN	44.6	47.5	752	743
(WY)	1994	1994	1994	1994

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1994 - 1997
ANNUAL TOTAL	342335	268737	
ANNUAL MEAN	935	736	
HIGHEST ANNUAL MEAN			759
LOWEST ANNUAL MEAN			309
HIGHEST DAILY MEAN	14200	Nov 18	14200
LOWEST DAILY MEAN	39	Sep 29	23
ANNUAL SEVEN-DAY MINIMUM	40	Sep 26	23
ANNUAL RUNOFF (AC-FT)	679000	533000	450900
ANNUAL RUNOFF (CFSM)	13.2	10.4	8.80
ANNUAL RUNOFF (INCHES)	180.13	141.40	119.62
10 PERCENT EXCEEDS	2440	1740	1500
50 PERCENT EXCEEDS	475	304	277
90 PERCENT EXCEEDS	49	59	44

e Estimated

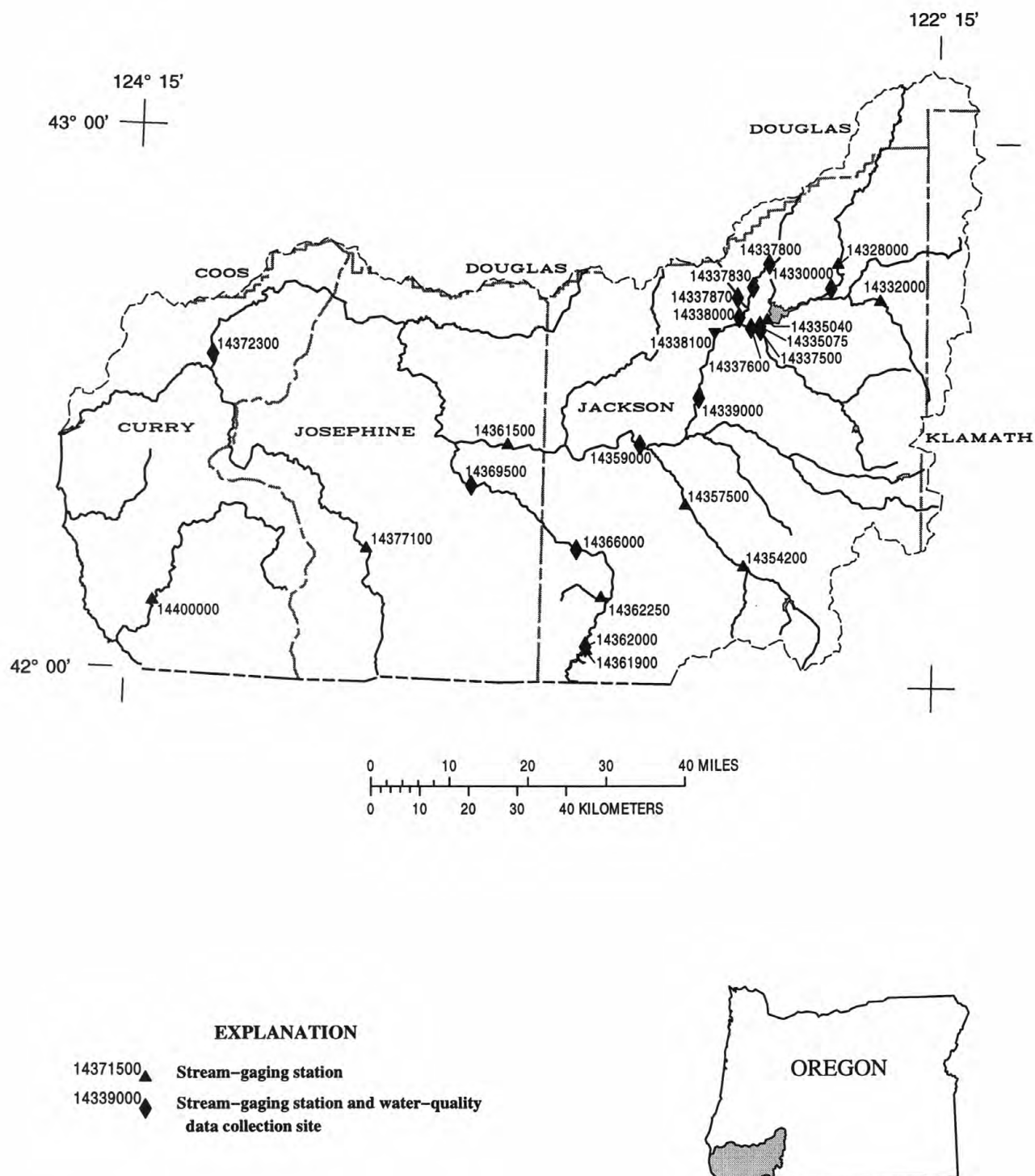


Figure 32. Location of surface-water and water-quality stations in the Rogue and Chetco River Basins.

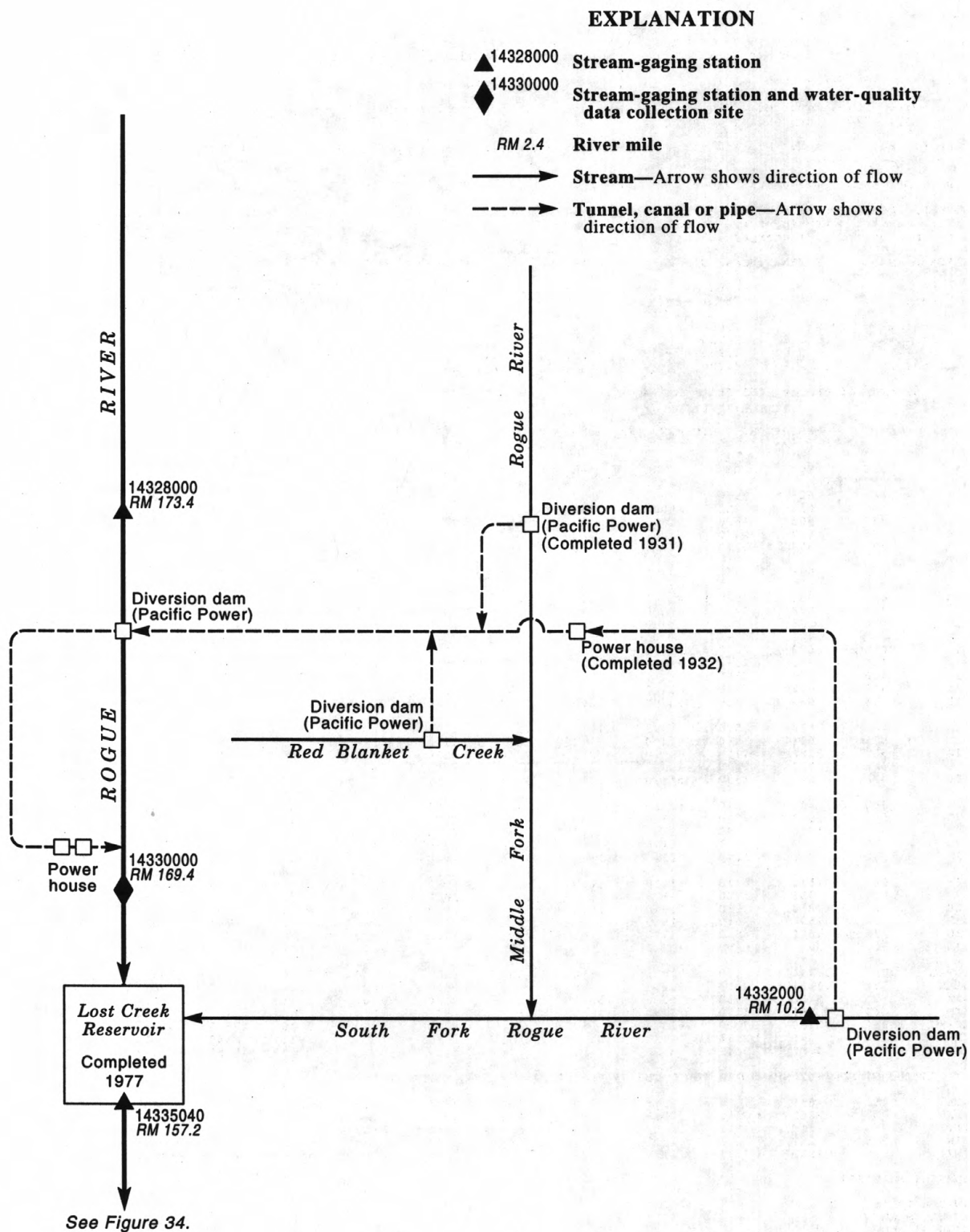


Figure 33. Schematic diagram showing gaging stations in the Rogue River Basin, upstream from Lost Creek Reservoir.

14328000 ROGUE RIVER ABOVE PROSPECT, OR

LOCATION.--Lat 42°46'30", long 122°29'55", in SE 1/4 NE 1/4 sec.19, T.32 S., R.3 E., Jackson County, Hydrologic Unit 17100307, Rogue River National Forest, on left bank 1.4 mi upstream from Pacific Power and Light Co. diversion dam, 1.8 mi northwest of Prospect, and at mile 173.4.

DRAINAGE AREA.--312 mi².

PERIOD OF RECORD.--January 1908 to February 1912, October 1923 to 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 above sea level, from river-profile map. Prior to Feb. 17, 1912, nonrecording gage at several sites within a few hundred feet upstream at various datums.

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--77 years (water years 1909-11, 1924-97), 825 ft³/s, 35.91 in/yr, 597,400 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)
Nov. 19	1900	7,600	6.62	Dec. 31	0300	7,760	6.69
Dec. 5	0330	5,720	5.72	Jan. 1	1400	*12,000	*8.38
Dec. 10	1130	3,950	4.71	Jan. 31	2130	4,430	5.01
Dec. 26	1800	4,780	5.22	Apr. 20	1300	3,790	4.67

Minimum discharge, 463 ft³/s Oct. 11-13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	628	2260	e9600	3690	1020	1130	1900	1260	975	699	604
2	480	612	1820	e8000	2640	1090	1070	1700	1170	896	695	601
3	476	605	1620	e6000	2190	1020	1050	1650	1200	859	692	623
4	475	597	2030	e3700	1950	985	1020	1570	1370	843	689	599
5	475	584	4250	e2700	1750	964	991	1520	1250	831	685	590
6	472	566	2590	e2300	1610	971	963	1510	1180	824	683	590
7	469	592	e2050	e2200	1580	1000	963	1470	1130	814	679	585
8	469	588	e3600	e2000	1510	1030	972	1460	1110	805	678	582
9	469	578	e3900	e1800	1440	1020	942	1540	1090	814	672	575
10	469	578	e3600	e1750	1380	1050	923	1640	1080	829	671	588
11	464	578	2850	e1650	1330	1190	906	1730	1050	801	667	607
12	463	582	2520	e1550	1320	1160	901	1820	1040	788	659	591
13	486	596	2300	e1450	1230	1070	902	1820	1050	779	649	575
14	508	678	1930	e1400	1220	1030	987	1750	1020	772	644	651
15	486	660	1710	e1400	1200	1120	1010	1700	1000	765	640	689
16	484	636	1570	e1300	1180	1280	1110	1630	988	761	638	788
17	475	616	1440	e1400	1290	1470	1130	1570	983	756	636	743
18	627	3150	1350	e1350	1260	1330	1230	1530	968	756	633	699
19	622	6720	1270	e1320	1370	1350	1800	1470	951	750	628	626
20	528	4240	1350	e1320	1330	1740	3150	1410	937	741	750	597
21	508	2410	1310	e1320	1260	1740	2650	1340	927	734	705	582
22	581	1960	1230	e1300	1190	1570	2370	1280	930	728	649	570
23	648	1640	1190	e1200	1140	1530	2700	1260	915	723	632	564
24	1120	1760	1170	1170	1090	1480	2380	1400	899	720	723	559
25	942	1750	2240	1250	1070	1500	2060	1280	887	715	654	553
26	684	1510	4410	1420	1060	1600	1930	1210	876	713	641	548
27	628	1380	3780	1390	1070	1550	2030	1200	865	713	643	553
28	625	1850	2950	1810	1030	1460	1890	1200	856	707	624	547
29	803	1590	3640	1920	---	1330	1890	1290	858	705	624	542
30	716	1500	4550	1780	---	1270	1980	1220	1030	707	617	534
31	660	---	6650	e2500	---	1210	---	1270	---	703	610	---
TOTAL	17792	41734	79130	71250	41380	39130	45030	46340	30870	24027	20509	18055
MEAN	574	1391	2553	2298	1478	1262	1501	1495	1029	775	662	602
MAX	1120	6720	6650	9600	3690	1740	3150	1900	1370	975	750	788
MIN	463	566	1170	1170	1030	964	901	1200	856	703	610	534
AC-FT	35290	82780	157000	141300	82080	77610	89320	91920	61230	47660	40680	35810
CFSM	1.84	4.46	8.18	7.37	4.74	4.05	4.81	4.79	3.30	2.48	2.12	1.93
IN.	2.12	4.98	9.43	8.50	4.93	4.67	5.37	5.53	3.68	2.86	2.45	2.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1997, BY WATER YEAR (WY)

	MEAN	451	699	931	925	970	994	1195	1343	971	548	441	421
MAX	957	2062	3368	2298	2093	2820	1888	2263	2564	1010	662	602	
(WY)	1951	1910	1965	1997	1958	1972	1966	1952	1933	1953	1997	1997	
MIN	256	292	313	292	325	480	649	456	335	253	222	230	
(WY)	1993	1932	1931	1937	1937	1977	1926	1992	1931	1931	1931	1931	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1908 - 1997
ANNUAL TOTAL	468280	475247	
ANNUAL MEAN	1279	1302	825
HIGHEST ANNUAL MEAN			1302
LOWEST ANNUAL MEAN			411
HIGHEST DAILY MEAN	6720	Nov 19	16000
LOWEST DAILY MEAN	463	Oct 12	210
ANNUAL SEVEN-DAY MINIMUM	468	Oct 6	216
ANNUAL RUNOFF (AC-FT)	928800	942700	597400
ANNUAL RUNOFF (CFSM)	4.10	4.17	2.64
ANNUAL RUNOFF (INCHES)	55.83	56.66	35.91
10 PERCENT EXCEEDS	2340	2110	1500
50 PERCENT EXCEEDS	1120	1050	635
90 PERCENT EXCEEDS	504	582	359

e Estimated

ROGUE RIVER BASIN

14330000 ROGUE RIVER BELOW PROSPECT, OR

LOCATION.--Lat 42°43'50", long 122°30'55", in SE 1/4 NW 1/4 sec.6, T.33 S., R.3 E., Jackson County, Hydrologic Unit 17100307, on right bank 600 ft downstream from Prospect No. 1 powerplant, 1.4 mi downstream from Mill Creek, 2.0 mi southwest of Prospect, 2.1 mi upstream from South Fork Rogue River, and at mile 169.4.

DRAINAGE AREA.--379 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1913 to September 1930, October 1968 to current year.

REVISED RECORDS.--WSP 1518: 1914-23, 1924(M), 1925, 1928.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,964.56 ft above sea level (Pacific Power and Light Co. bench mark). Prior to September 1927 nonrecording gage at site 1,000 ft upstream, above powerplants, at different datum, also concurrent nonrecording gage on headrace to obtain equivalent combined flow.

REMARKS.--No estimated daily discharges. Records good. Fluctuations caused by powerplant 600 ft upstream from station. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--29 years, (water years 1969-97), 1,475 ft³/s, 1,069,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Jan. 1, 1997, gage height, 8.15 ft; minimum discharge, 166 ft³/s Sept. 29, 1992, result of regulation by upstream diversion gates.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 12.4 ft Dec. 22, 1964, from floodmarks, discharge, 25,000 ft³/s, from records for station upstream from Prospect (station 14328000) and for station downstream from South Fork Rogue River near Prospect (station 14335000) after adjusting for estimated intervening tributary inflow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,200 ft³/s Jan. 1, gage height 8.15 ft; minimum discharge, 485 ft³/s Aug. 14, result of regulation by upstream diversion gates.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	1270	2810	10500	4390	1620	1740	2360	1710	1380	1060	994
2	1000	1240	2360	8940	3290	1710	1680	2310	1630	1300	1050	979
3	994	1230	2140	6990	2710	1650	1660	2280	1700	1260	1050	1010
4	993	1230	2560	4760	2490	1600	1640	2220	1850	1240	1050	983
5	991	1210	4970	3680	2340	1570	1600	2070	1710	1230	1010	974
6	986	1180	3210	3200	2230	1580	1580	2050	1640	1210	1040	984
7	982	1220	3010	2960	2210	1630	1570	2040	1600	1210	1040	977
8	976	1210	4650	2600	2150	1670	1580	2040	1570	1190	1030	972
9	1020	1190	4850	2460	2070	1680	1530	2180	1540	1210	1030	971
10	1060	1180	4580	2350	2020	1700	1520	2280	1520	1220	1020	992
11	1050	1190	3580	2260	1950	1840	1510	2370	1490	1180	1010	1010
12	1050	1190	3220	2180	1940	1730	1500	2420	1490	1170	1040	985
13	1080	1170	2990	2050	1840	1730	1500	2400	1490	1150	1000	979
14	1100	1310	2620	2020	1820	1700	1580	2300	1450	1150	981	1060
15	1080	1280	2390	2000	1800	1790	1570	2240	1420	1140	1010	1100
16	1070	1260	2220	1910	1790	1960	1650	2200	1420	1130	1010	1200
17	1060	1240	2060	2020	1910	2170	1690	2150	1400	1130	997	1160
18	1220	3640	1940	1980	1830	2020	1820	2100	1380	1120	1010	1120
19	1240	7420	1930	1950	1980	2050	2380	1960	1360	1110	996	1030
20	1140	4910	2030	1960	1920	2400	3760	1890	1350	1100	1120	996
21	1120	2940	2000	1960	1810	2390	3110	1790	1340	1100	1070	978
22	1200	2520	1920	1920	1780	2270	2750	1740	1340	1100	1010	973
23	1290	2210	1860	1830	1720	2250	3150	1800	1320	1100	1000	963
24	1700	2270	1850	1790	1680	2170	2790	1940	1300	1100	1090	954
25	1590	2280	2890	1910	1650	2180	2540	1790	1280	1090	995	950
26	1310	2000	5480	2070	1660	2210	2510	1720	1270	1090	1020	946
27	1250	1890	4870	2030	1670	2220	2590	1720	1260	1070	1010	949
28	1220	2380	3770	2380	1620	2150	2390	1710	1250	1060	981	941
29	1360	2100	4480	2470	---	1990	2360	1770	1270	1070	1020	931
30	1280	2010	5610	2340	---	1920	2410	1700	1470	1070	1020	932
31	1230	---	7820	3900	---	1820	---	1750	---	1060	1000	---
TOTAL	35682	59370	102670	93370	58270	59370	61660	63290	43820	35740	31770	29993
MEAN	1151	1979	3312	3012	2081	1915	2055	2042	1461	1153	1025	1000
MAX	1700	7420	7820	10500	4390	2400	3760	2420	1850	1380	1120	1200
MIN	976	1170	1850	1790	1620	1570	1500	1700	1250	1060	981	931
AC-FT	70780	117800	203600	185200	115600	117800	122300	125500	86920	70890	63020	59490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1997, BY WATER YEAR (WY)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	949	1245	1601	1692	1692	1830	1883	2037	1628	1194	1017	949																	
MAX	1342	2100	3312	3012	2728	3627	2668	3282	2923	1660	1356	1268																	
(WY)	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980																	
MIN	606	728	926	946	946	1045	1272	933	765	717	632	623																	
(WY)	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980																	

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1969 - 1997
ANNUAL TOTAL	706862	675005	
ANNUAL MEAN	1931	1849	1475
HIGHEST ANNUAL MEAN			2053
LOWEST ANNUAL MEAN			968
HIGHEST DAILY MEAN	7820	10500	10500
LOWEST DAILY MEAN	976	931	931
ANNUAL SEVEN-DAY MINIMUM	989	943	560
ANNUAL RUNOFF (AC-FT)	1402000	1339000	1069000
10 PERCENT EXCEEDS	3040	2730	2290
50 PERCENT EXCEEDS	1790	1640	1310
90 PERCENT EXCEEDS	1090	1000	835

ROGUE RIVER BASIN

353

14330000 ROGUE RIVER BELOW PROSPECT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1976 to September 1981.

pH: November 1976 to September 1981.

WATER TEMPERATURE: October 1968 to current year.

DISSOLVED OXYGEN: October 1979 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: November 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981.

REMARKS.--During low flows and warm weather, water temperatures may be influenced by return flows from hydroelectric plant 600 ft upstream.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 73 microsiemens Sept. 22, 1980; minimum recorded, 28 microsiemens Jan. 13, 1980, may have been lower during period of missing record Jan. 14-17, 1980.

pH: Maximum recorded, 8.3 units Aug. 10, 1981, may have been higher during period of no record in July and August 1981; minimum, 7.0 units Nov. 30, 1976.

WATER TEMPERATURE: Maximum, 20.5°C July 20, 1979 (result of regulation); minimum, 0.0°C at times most years.

DISSOLVED OXYGEN: Maximum, 13.6 mg/L Dec. 8, 1980, Feb. 21, 1981; minimum, 7.2 mg/L June 21, 1980, result of regulation.

SEDIMENT CONCENTRATION: Maximum daily mean (water years 1977-79), 1,270 mg/L (estimated) Jan. 11, 1979; minimum, 0 mg/L on many days each year. Maximum daily mean (period October 1979 to April 1981), 716 mg/L Oct. 25, 1979; minimum daily mean, 0 mg/L on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

SEDIMENT DISCHARGE: Maximum daily (water years 1977-79), 17,790 tons Dec. 15, 1977; minimum daily, 0 tons on many days each year. Maximum daily (period October 1979 to April 1981), 5,570 tons Jan. 13, 1980; minimum daily, 0 tons on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.0°C Aug. 6; minimum, 2.0°C Jan. 23-25, Mar. 3, but may have been less during period of no record.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.5	8.0	9.0	5.0	4.0	4.5	5.5	4.0	4.5	5.5	3.5	4.5
2	9.5	8.0	8.5	5.0	4.0	4.5	4.0	3.5	4.0	5.5	4.5	5.0
3	9.5	8.0	8.5	5.0	4.0	4.5	3.5	3.0	3.5	5.0	4.5	4.5
4	9.0	8.0	8.5	5.5	4.5	5.0	4.5	3.5	4.0	4.5	3.5	4.0
5	10.0	8.0	9.0	4.5	4.0	4.5	4.5	4.0	4.5	3.5	3.0	3.5
6	9.5	8.0	8.5	4.5	3.5	4.0	4.5	4.0	4.0	---	---	---
7	9.0	7.5	8.5	5.5	4.5	5.0	4.5	4.0	4.5	---	---	---
8	9.5	7.5	8.5	5.0	4.5	5.0	5.0	4.0	4.5	---	---	---
9	9.5	8.0	8.5	5.0	4.0	4.5	5.0	3.5	4.0	---	---	---
10	9.0	8.0	8.5	5.0	4.0	4.5	5.0	4.0	5.0	---	---	---
11	9.0	7.0	8.0	6.0	5.0	5.5	4.5	4.0	4.5	---	---	---
12	9.0	7.5	8.0	5.5	5.0	5.0	5.0	4.5	5.0	---	---	---
13	8.5	7.5	8.0	6.0	5.0	5.5	5.0	4.0	5.0	---	---	---
14	7.5	6.5	7.0	6.0	5.5	5.5	4.0	3.5	3.5	---	---	---
15	7.5	7.0	7.0	5.5	5.0	5.0	3.5	3.0	3.5	---	---	---
16	7.0	6.0	6.5	5.0	4.5	4.5	4.0	3.5	3.5	---	---	---
17	6.0	5.0	5.5	4.5	4.0	4.5	3.5	3.5	3.5	---	---	---
18	6.5	5.5	6.0	6.5	4.5	5.5	3.5	3.0	3.0	---	---	---
19	6.0	4.0	5.0	7.0	6.0	6.5	3.5	3.0	3.0	---	---	---
20	5.0	3.5	4.5	6.5	5.5	6.0	3.5	3.0	3.5	---	---	---
21	5.0	3.5	4.5	6.5	6.0	6.0	3.0	2.5	2.5	---	---	---
22	5.5	5.0	5.0	6.0	6.0	6.0	3.5	3.0	3.0	---	---	---
23	6.0	5.5	5.5	6.0	6.0	6.0	3.5	3.0	3.0	4.0	2.0	3.0
24	6.5	6.0	6.0	6.5	6.0	6.0	3.5	3.0	3.5	2.5	2.0	2.0
25	6.0	3.0	4.0	6.5	5.0	6.0	4.0	3.5	4.0	3.0	2.0	2.5
26	4.0	2.5	3.5	5.0	4.5	4.5	4.5	3.5	4.0	4.0	2.5	3.5
27	4.5	3.5	4.0	6.0	4.5	5.0	4.5	4.5	4.5	4.5	3.5	4.0
28	4.5	3.5	4.0	6.0	4.0	5.5	5.0	4.5	4.5	4.5	4.0	4.5
29	5.5	4.5	5.0	4.5	4.0	4.5	5.5	5.0	5.0	4.5	3.5	4.0
30	5.5	4.5	5.0	5.0	4.5	5.0	5.5	5.0	5.0	4.5	4.0	4.5
31	5.5	4.0	4.5	---	---	---	5.5	4.0	4.5	4.5	4.0	4.5
MONTH	10.0	2.5	6.5	7.0	3.5	5.1	5.5	2.5	4.0	---	---	---

ROGUE RIVER BASIN

14330000 ROGUE RIVER BELOW PROSPECT, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	4.0	4.5	4.0	3.5	4.0	5.0	3.0	4.0	6.5	5.0	6.0
2	4.5	4.0	4.5	3.5	2.5	3.0	5.0	3.5	4.5	7.0	5.5	6.0
3	4.0	3.5	4.0	3.0	2.0	2.5	6.0	4.0	5.0	7.5	7.0	7.0
4	4.5	4.0	4.5	4.0	3.0	3.5	6.0	5.0	5.0	7.5	6.0	7.0
5	4.5	3.5	4.0	4.0	3.0	3.5	5.5	4.0	5.0	8.5	7.0	7.5
6	3.5	3.0	3.0	4.5	3.5	4.5	5.0	4.5	4.5	8.5	7.5	8.0
7	4.5	3.5	4.0	5.0	4.5	4.5	5.5	5.0	5.0	8.0	6.5	7.5
8	5.0	4.0	4.5	5.5	4.5	5.0	6.0	5.0	5.5	9.0	7.5	8.5
9	4.5	4.0	4.0	5.0	4.5	4.5	6.0	4.5	5.0	9.5	8.5	9.0
10	4.5	4.0	4.0	5.5	5.0	5.0	6.0	5.0	5.5	9.5	8.5	9.0
11	4.0	3.5	4.0	5.5	4.5	5.5	6.5	5.0	5.5	10.0	9.0	9.5
12	4.0	3.5	4.0	4.5	4.0	4.5	6.0	5.0	5.5	10.0	9.0	9.5
13	4.0	3.5	3.5	5.0	3.5	4.0	6.0	5.5	5.5	10.0	9.0	9.5
14	5.0	4.0	4.5	5.0	4.0	4.5	6.5	5.5	6.0	10.0	9.5	9.5
15	4.5	4.0	4.0	6.0	5.0	5.0	7.5	5.5	6.5	10.5	9.5	10.0
16	5.0	4.0	4.5	5.5	5.5	5.5	7.5	6.5	7.0	10.0	9.5	10.0
17	5.5	4.5	5.0	5.5	4.5	5.0	8.0	6.0	7.0	10.5	9.5	10.0
18	5.0	4.0	4.5	6.0	5.0	5.5	7.5	6.5	7.0	10.5	9.5	10.0
19	5.0	3.5	4.5	6.0	5.5	6.0	6.5	6.0	6.0	10.5	9.5	10.0
20	4.0	3.0	4.0	6.5	5.5	6.0	6.5	6.0	6.0	10.0	9.0	9.5
21	4.5	3.5	4.0	6.0	4.5	5.0	6.5	5.5	6.0	9.5	8.5	9.0
22	4.5	3.5	3.5	6.0	4.5	5.5	6.0	5.5	6.0	9.0	8.5	8.5
23	4.0	3.0	3.5	6.0	5.0	5.5	6.0	5.0	5.5	9.5	8.5	8.5
24	4.0	3.0	3.5	6.5	5.5	6.0	6.5	4.5	5.5	8.5	7.5	8.0
25	4.0	3.5	4.0	6.5	5.5	6.0	7.5	5.5	6.5	9.0	7.0	8.0
26	5.0	4.0	4.5	6.5	5.5	6.0	8.0	7.0	7.5	8.5	8.0	8.5
27	4.5	3.5	4.0	5.5	5.0	5.5	8.5	7.0	7.5	9.5	8.0	8.5
28	4.0	3.0	3.5	5.5	4.5	5.0	7.0	5.5	6.0	9.5	9.0	9.5
29	---	---	---	5.5	4.0	5.0	7.0	5.5	6.0	11.0	9.0	10.0
30	---	---	---	5.0	4.5	5.0	7.0	6.0	6.5	12.5	10.5	11.0
31	---	---	---	4.5	3.5	4.0	---	---	---	11.5	10.0	11.0
MONTH	5.5	3.0	4.1	6.5	2.0	4.8	8.5	3.0	5.8	12.5	5.0	8.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	9.5	10.0	10.0	8.5	9.0	14.0	11.5	12.5	12.0	10.0	10.5
2	10.5	9.0	9.5	11.5	9.0	10.0	14.0	11.0	12.5	12.0	10.0	11.0
3	10.0	9.0	9.5	12.5	10.0	11.0	14.0	11.5	12.5	12.0	10.0	11.0
4	9.5	8.5	9.0	14.0	11.0	12.0	14.0	11.5	12.5	12.0	10.0	11.0
5	10.0	8.5	9.0	13.5	11.5	12.5	14.5	11.5	13.0	11.5	10.0	10.5
6	11.0	9.0	9.5	13.0	11.0	12.0	15.0	12.0	13.0	11.5	9.0	10.0
7	10.0	9.5	9.5	13.5	11.0	12.0	14.5	12.0	13.0	11.5	9.0	10.0
8	11.0	9.0	10.0	13.0	11.0	12.0	14.0	11.5	12.5	10.5	9.0	10.0
9	11.5	10.0	10.5	12.5	11.0	12.0	13.5	11.0	12.0	10.5	9.0	10.0
10	11.5	10.0	10.5	11.5	9.5	10.5	13.5	11.0	12.0	11.0	9.5	10.0
11	11.5	10.5	11.0	12.0	9.5	10.5	13.0	10.5	12.0	10.0	9.5	10.0
12	10.5	9.5	10.0	12.5	9.5	11.0	12.5	10.0	11.5	10.5	9.0	9.5
13	10.5	8.5	9.5	13.0	10.5	11.5	13.0	10.0	11.5	10.0	8.5	9.5
14	12.0	9.5	10.5	13.5	11.0	12.0	13.5	10.5	12.0	10.0	9.0	9.5
15	13.0	10.5	11.5	14.0	11.5	12.5	13.0	11.0	12.0	9.0	8.5	9.0
16	13.5	11.0	12.0	13.5	11.5	12.5	12.5	10.0	11.5	9.5	8.0	8.5
17	13.0	11.5	12.0	13.5	11.0	12.0	13.0	10.5	11.5	9.5	8.5	9.0
18	13.0	10.5	11.5	13.5	11.0	12.0	12.5	10.5	11.5	9.0	8.0	8.0
19	12.5	10.5	11.5	13.5	11.0	12.0	12.5	10.5	11.5	9.0	7.0	7.5
20	12.0	10.0	11.0	14.0	11.5	13.0	11.5	10.5	11.0	9.0	7.0	8.0
21	10.5	9.0	10.0	14.5	12.0	13.0	13.0	10.0	11.0	9.5	7.5	8.5
22	10.0	8.0	9.0	14.0	11.5	12.5	13.0	10.5	11.5	10.0	8.0	8.5
23	11.0	8.5	9.5	14.0	11.5	12.5	13.0	10.5	11.5	10.0	8.0	9.0
24	12.0	9.0	10.5	14.0	11.5	12.5	13.0	11.0	12.0	10.0	8.5	9.0
25	12.5	10.0	11.0	14.0	11.0	12.5	11.5	10.5	11.0	10.0	8.5	9.0
26	12.5	10.5	11.5	14.0	11.0	12.5	10.5	10.0	10.5	9.5	9.0	9.0
27	12.0	9.5	11.0	14.0	11.5	12.5	11.5	9.0	10.0	9.5	8.0	8.5
28	10.5	9.5	10.0	14.5	12.0	13.0	11.0	10.0	10.5	9.0	7.5	8.0
29	10.5	8.5	9.5	13.0	11.5	12.5	11.5	9.5	10.5	9.5	8.0	8.5
30	10.0	8.5	9.0	13.0	10.5	11.5	12.0	9.5	10.5	9.0	8.0	8.5
31	---	---	---	14.0	11.0	12.5	12.0	9.5	10.5	---	---	---
MONTH	13.5	8.0	10.3	14.5	8.5	11.9	15.0	9.0	11.6	12.0	7.0	9.3

14332000 SOUTH FORK ROGUE RIVER NEAR PROSPECT, OR

LOCATION.--Lat 42°42'30", long 122°23'30", in SE 1/4 SW 1/4 sec.7, T.33 S., R.4 E., Jackson County, Hydrologic Unit 17100307, in Rogue River National Forest, on left bank 0.3 mi downstream from South Fork dam and intake of South Fork power canal, 0.31 mi downstream from Imnaha Creek, 5.6 mi southeast of Prospect, and at mile 10.2.

DRAINAGE AREA.--83.8 mi². Drainage area at site upstream from Imnaha Creek was used October 1931 to September 1949, 61.3 mi²; and Imnaha Creek near Prospect, 22.2 mi².

PERIOD OF RECORD.--April 1924 to September 1931, October 1949 to current year. Equivalent records for period October 1931 to September 1949 may be obtained by combining flow of South Fork Rogue River above Imnaha Creek, near Prospect and Imnaha Creek near Prospect. Records for period October 1949 to September 1983 included flow of South Fork power canal.

REVISED RECORDS.--WSP 1318: 1925(M), 1927(M), 1930(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,300 ft above sea level, from topographic map. Prior to Sept. 10, 1965, at site 1,000 ft upstream at different datum.

REMARKS.--Records fair. All records given herein do not include flow in South Fork power canal (completed in March 1932) which diverts 1,500 ft upstream from station and returns water to main stem Rogue River upstream from South Fork Rogue River; practically no storage upstream from diversion dam.

AVERAGE DISCHARGE.--59 years (water years 1925-83), 178 ft³/s, 129,000 acre-ft/yr (includes flow of South Fork power canal). 14 years (water years 1984-97), 77.9 ft³/s, 56,450 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 7,010 ft³/s Dec. 22, 1964, gage height, 11.1 ft, from floodmark, from rating curve extended above 410 ft³/s on basis of measurement of flow over dam of 3,180 ft³/s; no flow Jan. 31, 1950, Sept. 29, 30, 1967 (entire flow diverted to canal).

Combined flow, maximum discharge, 7,010 ft³/s Dec. 22, 1964 (no flow in canal); minimum daily, about 38 ft³/s Aug. 1-31, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 3,710 ft³/s Jan. 3, gage height, 6.95 ft; minimum discharge, 0.14 ft³/s Oct. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	24	280	e2670	315	e50	255	511	e315	229	130	113
2	89	24	172	e2430	236	e48	245	437	e295	194	129	113
3	88	23	138	e1370	188	e47	240	e400	e320	184	128	112
4	88	23	332	e966	157	e45	223	e370	e350	178	127	111
5	87	21	861	e701	157	e46	208	e330	e310	173	110	111
6	87	21	439	e554	144	e47	202	e340	285	170	127	111
7	86	28	457	e459	131	e48	197	e330	267	168	127	109
8	86	27	776	e384	120	e50	207	e320	254	167	125	108
9	42	23	978	e323	111	e50	208	e310	243	167	124	108
10	11	22	838	e281	102	e52	202	e370	235	163	123	116
11	9.9	25	645	e242	95	e63	196	e380	229	159	122	123
12	9.8	27	565	e202	100	e62	193	e410	227	156	121	115
13	12	36	600	e190	116	e55	195	e410	225	154	120	112
14	12	48	560	e190	99	e53	210	e380	218	152	119	126
15	11	39	487	e190	82	e70	212	e370	209	150	119	127
16	10	32	384	e180	74	e85	220	e360	204	148	118	132
17	9.4	28	322	e207	e75	e120	224	e350	199	148	118	150
18	38	670	282	e168	e73	e110	245	e340	194	147	117	133
19	28	967	e250	e151	e80	e115	333	e330	191	146	116	121
20	17	733	e218	e140	e77	148	589	e320	188	144	141	116
21	15	470	e180	e136	50	161	573	e310	187	143	126	113
22	23	333	e178	e124	49	145	577	e305	185	142	120	111
23	27	164	e156	e110	e47	142	658	e300	182	141	119	108
24	68	193	e150	97	e46	138	526	e330	180	139	123	107
25	27	189	e795	118	e46	143	468	e320	178	137	102	106
26	.72	124	e923	141	e45	157	443	e310	176	136	119	106
27	21	95	e800	131	e44	155	517	e300	173	135	121	106
28	84	190	e730	144	e44	144	473	e300	173	133	118	105
29	133	127	e766	140	---	128	522	e310	177	134	116	104
30	121	118	e875	132	---	119	600	e300	203	134	115	103
31	83	---	e1160	213	---	217	---	e315	---	131	114	---
TOTAL	1484.82	4844	16297	13484	2903	3013	10161	10768	6772	4802	3754	3436
MEAN	47.9	161	526	435	104	97.2	339	347	226	155	121	115
MAX	133	967	1160	2670	315	217	658	511	350	229	141	150
MIN	.72	21	138	97	44	45	193	300	173	131	102	103
AC-FT	2950	9610	32330	26750	5760	5980	20150	21360	13430	9520	7450	6820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1997, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	19.4	36.4	103	81.4	93.4	103	141	167	112	29.5	20.3	30.6		
MAX	71.6	161	526	435	323	238	345	347	301	155	121	115		
(WY)	1994	1997	1997	1997	1996	1993	1989	1997	1984	1997	1997	1997		
MIN	1.85	5.38	3.80	2.87	3.42	9.91	19.9	12.8	5.23	5.30	4.11	1.16		
(WY)	1984	1986	1987	1985	1985	1985	1988	1992	1987	1988	1986	1984		

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1984 - 1997

	1996	1997	1984-1997
ANNUAL TOTAL	67729.62	81718.82	
ANNUAL MEAN	185	224	77.9
HIGHEST ANNUAL MEAN			224
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	1160	2670	2670
LOWEST DAILY MEAN	.72	.72	.22
ANNUAL SEVEN-DAY MINIMUM	8.9	11	.23
ANNUAL RUNOFF (AC-FT)	134300	162100	56450
10 PERCENT EXCEEDS	473	469	210
50 PERCENT EXCEEDS	127	144	16
90 PERCENT EXCEEDS	13	45	4.1

e Estimated

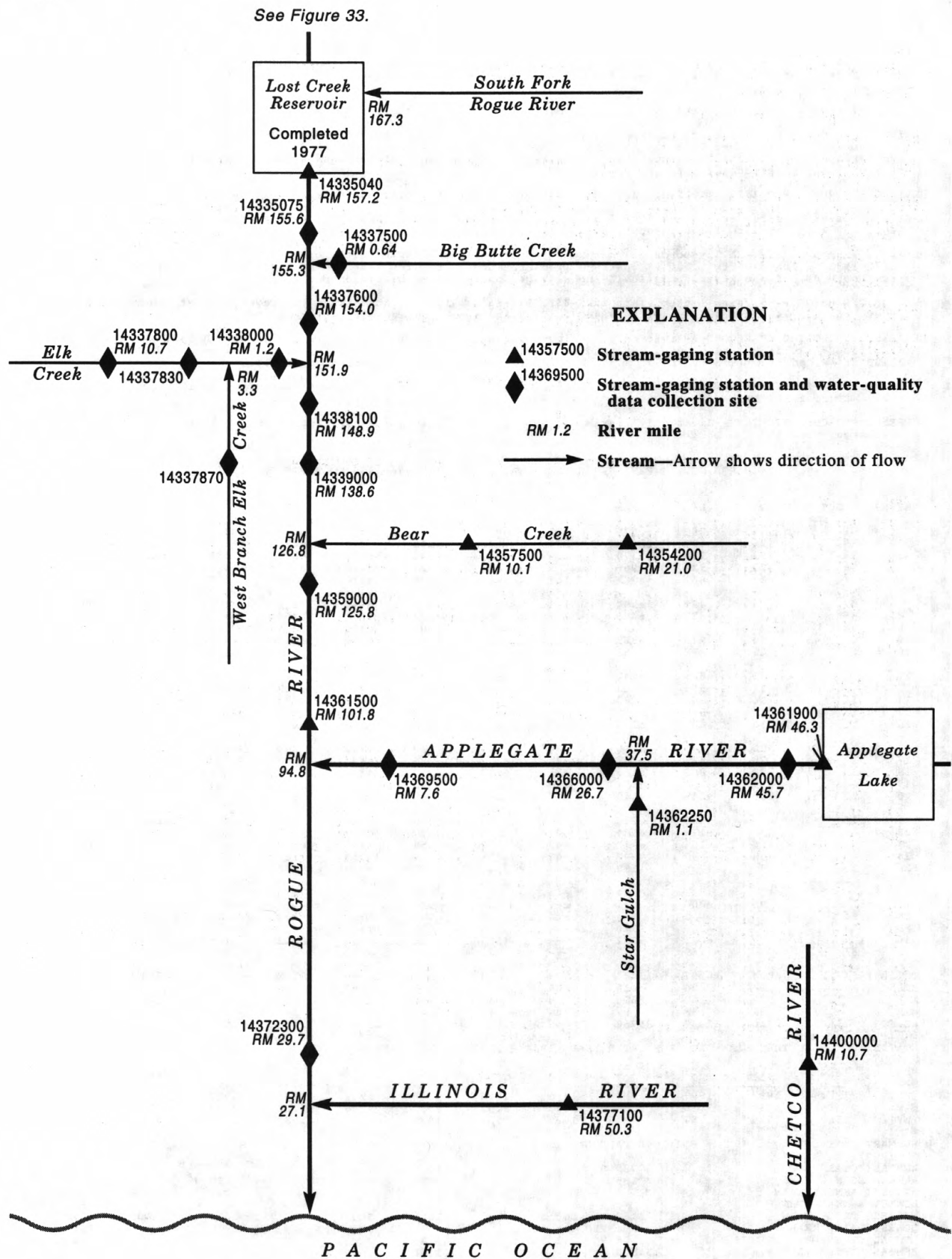


Figure 34. Location of surface-water and water-quality stations in the Rogue River Basin, downstream from Lost Creek Reservoir.

ROGUE RIVER BASIN

357

14335040 LOST CREEK LAKE NEAR MCLEOD, OR

LOCATION.--Lat 42°40'16", long 122°40'25", in SW 1/4 sec.26, T.33 S., R. 1 E., Jackson County, Hydrologic Unit 17100307, in outlet structure of Lost Creek Dam on Rogue River, 1.0 mi northeast of McLeod and at mile 157.2.

DRAINAGE AREA.--686 mi².

PERIOD OF RECORD.--February 1977 to current year.

REVISED RECORDS.--WDR OR-85-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Nov. 28, 1977, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed in October 1976. Storage began in February 1977. Total capacity, 465,000 acre-ft between elevations 1,551.0 ft and 1,872.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,823.0 ft. Usable storage, 315,000 acre-ft between elevation 1,751.0 ft and 1,872.0 ft. Water is used for flood control, recreation, power generation, pollution abatement, domestic use and other purposes. Readings during period of no U.S. Geological Survey record, Mar. 29 to May 27, furnished by the U.S. Army Corps of Engineers.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 465,800 acre-ft June 1, 2, 1988, elevation, 1,872.24 ft; minimum contents since first filling, 100,800 acre-ft Oct. 29, 1977, elevation, 1,720.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 465,000 acre-ft May 3, elevation, 1,872.00 ft; minimum contents, 284,900 acre-ft Nov. 13, elevation, 1,811.98 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 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1818.71	1820.15	1817.81	1853.07	1826.34	1848.97	e1861.70	e1871.75	1870.82	1852.30	1838.84	1822.34
2	1818.73	1819.30	1816.75	1864.43	1827.21	1849.90	e1861.98	e1871.87	1870.60	1851.71	1838.50	1821.70
3	1818.74	1818.43	1815.48	1868.96	1827.56	1850.73	e1862.35	e1871.72	1870.53	1851.12	1838.14	1821.08
4	1818.75	1817.56	1815.97	1868.00	1828.06	1851.45	e1862.84	e1871.23	1870.61	1850.50	1837.77	1820.42
5	1818.76	1816.63	1820.58	1866.02	1828.71	1852.14	e1863.28	e1870.66	1870.49	1849.86	1837.41	1819.76
6	1818.76	1815.71	1822.20	1861.68	1829.31	1852.86	e1863.71	e1870.27	1870.29	1849.23	1837.04	1819.10
7	1818.76	1814.79	1823.90	1856.20	1830.14	1853.56	e1864.11	e1870.13	1870.03	1848.64	1836.66	1818.43
8	1818.76	1813.87	1829.39	1850.73	1830.92	1854.29	e1864.50	e1870.11	1869.72	1848.13	1836.27	1817.74
9	1818.76	1813.10	1834.79	1844.16	1831.75	1854.82	e1864.76	e1870.11	1869.29	1847.70	1835.87	1817.08
10	1818.76	1812.58	1837.32	1839.18	1832.60	1855.27	e1865.01	e1870.46	1868.77	1847.26	1835.46	1816.42
11	1818.75	1812.22	1836.90	1832.44	1833.40	1855.70	e1865.29	e1870.65	1868.15	1846.77	1835.02	1815.81
12	1818.74	1812.01	1835.09	1826.43	1834.18	1855.98	e1865.60	e1870.75	1867.51	1846.30	1834.52	1815.24
13	1818.75	1812.00	1832.86	1821.67	1834.96	1856.20	e1865.95	e1870.73	1866.86	1845.79	1833.92	1814.75
14	1818.75	1812.08	1829.97	1817.71	1835.80	1856.38	e1866.37	e1870.64	1866.18	1845.29	1833.30	1814.49
15	1818.73	1812.10	1826.67	1816.36	1836.75	1856.70	e1866.77	e1870.59	1865.47	1844.78	1832.67	1814.23
16	1818.70	1812.08	1823.06	1816.57	1837.68	1857.18	e1867.26	e1870.65	1864.74	1844.25	1832.05	1814.07
17	1818.62	1812.05	1819.52	1816.89	1838.67	1857.69	e1867.57	e1870.62	1864.00	1843.80	1831.43	1813.99
18	1818.77	1816.10	1816.64	1817.10	1839.62	1858.00	e1867.88	e1870.68	1863.20	1843.42	1830.79	1813.94
19	1818.86	1823.09	1815.07	1817.27	1840.72	1858.32	e1868.48	e1870.68	1862.32	1843.03	1830.14	1813.90
20	1818.82	1826.43	1815.12	1817.47	1841.72	1859.00	e1868.48	e1870.68	1861.43	1842.63	1829.70	1813.92
21	1818.75	1827.16	1815.31	1817.68	1842.67	1859.65	e1869.12	e1870.59	1860.54	1842.26	1829.12	1814.01
22	1818.77	1826.99	1815.32	1817.87	1843.58	1860.17	e1868.66	e1870.74	1859.62	1841.96	1828.48	1814.08
23	1818.84	1826.20	1815.24	1818.04	1844.41	1860.65	e1868.90	e1871.01	1858.69	1841.70	1827.87	1814.14
24	1819.43	1825.64	1815.16	1817.93	1845.14	1861.03	e1869.38	e1871.27	1857.73	1841.40	1827.31	1814.20
25	1819.89	1825.05	1817.19	1818.16	1845.88	1861.33	e1869.86	e1871.33	1856.75	1841.10	1826.67	1814.24
26	1819.97	1823.84	1822.87	1818.53	1846.64	1861.66	e1870.25	e1871.30	1855.79	1840.79	1826.03	1814.29
27	1819.98	1822.18	1825.29	1819.11	1847.45	1861.92	e1870.77	e1871.23	1854.88	1840.47	1825.40	1814.33
28	1820.04	1821.20	1826.50	1820.62	1848.17	1861.99	e1871.19	1871.11	1854.04	1840.14	1824.82	1814.36
29	1820.27	1819.81	1827.78	1821.82	---	e1861.82	e1871.57	1871.06	1853.34	1839.83	1824.22	1814.40
30	1820.37	1818.31	1829.98	1822.44	---	e1861.61	e1871.84	1870.95	1852.82	1839.51	1823.60	1814.43
31	1820.39	---	1838.57	1824.31	---	e1861.57	---	1870.91	---	1839.18	1822.96	---
MAX	1820.39	1827.16	1838.57	1868.96	1848.17	1861.99	1871.84	1871.87	1870.82	1852.30	1838.84	1822.34
MIN	1818.62	1812.00	1815.07	1816.36	1826.34	1848.97	1861.70	1870.11	1852.82	1839.18	1822.96	1813.90
(†)	307250	301660	358540	317940	387430	430020	464440	461260	401910	360330	314240	291360
(#)	+4550	-5590	+56880	-40600	+69490	+42590	+34420	-3180	-59350	-41580	-46090	-22880

CAL YR 1996 MAX 1871.96 MIN 1812.00 AC-FT† +36700
WTR YR 1997 MAX 1871.87 MIN 1812.00 AC-FT† -11340

e Estimated

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

Change in contents, in acre-feet.

ROGUE RIVER BASIN

14335075 ROGUE RIVER AT MCLEOD, OR

LOCATION.--Lat 42°39'35", long 122°41'30", in SW 1/4 NW 1/4 sec.34, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.3 mi upstream from Big Butte Creek, 0.1 southwest of McLeod, and at mile 155.6.

DRAINAGE AREA.--689 mi².

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1976 to September 1981.

pH: November 1976 to September 1981.

WATER TEMPERATURE: November 1976 to current year.

DISSOLVED OXYGEN: November 1976 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: October 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981.

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, several days in July and August 1994; minimum, 0.5°C Jan. 9, 1977; minimum since full operation of Lost Creek Lake, 3.5°C several days in February 1979, February 1985, February and March 1989. The minimum may have been lower during period of missing record Feb. 1-20, 1985.

DISSOLVED OXYGEN: Maximum, 15.7 mg/L Jan. 8, 1977; minimum, 6.8 mg/L Aug. 20, 1977.

SEDIMENT CONCENTRATION: Maximum recorded daily mean, 75 mg/L Dec. 14, 1977; minimum daily, 0 mg/L many days.

SEDIMENT DISCHARGE: Maximum recorded daily, 1,570 tons Dec. 14, 1977; minimum daily, 0 tons many days.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 14.0°C June 13; minimum recorded, 4.5°C Feb. 27, but may have been higher or lower during periods of missing record Nov. 20 to Jan. 23, Apr. 14 to May 29.

WATER TEMPERATURE, DEGREES CELSIUS. WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	8.5	7.5	8.0		9.0	8.0	8.5		---	---	---		---	---	---
2	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
3	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
4	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
5	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
6	8.5	7.5	8.0		8.5	8.5	8.5		---	---	---		---	---	---
7	8.5	8.0	8.0		9.0	8.5	8.5		---	---	---		---	---	---
8	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
9	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
10	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
11	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
12	8.5	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
13	8.0	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
14	8.0	7.5	8.0		9.0	8.5	8.5		---	---	---		---	---	---
15	8.0	7.5	8.0		8.5	8.5	8.5		---	---	---		---	---	---
16	8.0	7.5	8.0		8.5	8.5	8.5		---	---	---		---	---	---
17	8.0	8.0	8.0		8.5	8.5	8.5		---	---	---		---	---	---
18	8.5	8.0	8.0		9.0	8.5	8.5		---	---	---		---	---	---
19	8.5	8.0	8.0		9.0	8.5	9.0		---	---	---		---	---	---
20	8.5	7.5	8.0		---	---	---		---	---	---		---	---	---
21	8.5	8.0	8.0		---	---	---		---	---	---		---	---	---
22	8.5	8.0	8.5		---	---	---		---	---	---		---	---	---
23	8.5	8.5	8.5		---	---	---		---	---	---		---	---	---
24	9.0	8.5	8.5		---	---	---		---	---	---		5.5	5.0	5.0
25	8.5	8.0	8.5		---	---	---		---	---	---		5.5	5.0	5.0
26	9.0	8.5	8.5		---	---	---		---	---	---		5.5	5.0	5.0
27	9.0	8.0	8.5		---	---	---		---	---	---		5.0	5.0	5.0
28	8.5	8.5	8.5		---	---	---		---	---	---		5.5	5.0	5.0
29	9.0	8.5	8.5		---	---	---		---	---	---		5.0	5.0	5.0
30	9.0	8.5	8.5		---	---	---		---	---	---		5.0	5.0	5.0
31	9.0	8.0	8.5		---	---	---		---	---	---		5.0	5.0	5.0
MONTH	9.0	7.5	8.2		---	---	---		---	---	---		---	---	---

ROGUE RIVER BASIN

359

14335075 ROGUE RIVER AT MCLEOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

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	5.0	5.0	6.5	5.5	6.0	---	---	---
2	5.0	5.0	5.0	5.5	5.0	5.0	6.5	5.5	6.0	---	---	---
3	5.0	5.0	5.0	5.5	5.0	5.0	7.0	6.0	6.5	---	---	---
4	5.5	5.0	5.0	6.0	5.0	5.5	7.0	6.0	6.5	---	---	---
5	5.5	5.0	5.0	5.5	5.0	5.0	7.5	6.0	6.5	---	---	---
6	5.5	5.0	5.0	5.5	5.0	5.0	7.0	6.0	6.5	---	---	---
7	5.0	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.5	---	---	---
8	5.5	5.0	5.0	6.0	5.0	5.5	6.5	6.0	6.0	---	---	---
9	5.5	5.0	5.0	5.5	5.0	5.5	7.0	6.0	6.5	---	---	---
10	5.5	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5	---	---	---
11	5.5	5.0	5.0	5.5	5.0	5.5	7.5	6.0	7.0	---	---	---
12	5.5	5.0	5.0	5.5	5.0	5.5	7.0	6.5	6.5	---	---	---
13	5.5	5.0	5.0	6.0	5.0	5.5	7.0	6.5	6.5	---	---	---
14	5.5	5.0	5.0	5.5	5.5	5.5	---	---	---	---	---	---
15	5.5	5.0	5.0	5.5	5.5	5.5	---	---	---	---	---	---
16	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
17	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
18	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
19	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
20	5.5	5.0	5.0	6.0	5.5	6.0	---	---	---	---	---	---
21	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
22	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
23	5.5	5.0	5.0	6.0	5.5	5.5	---	---	---	---	---	---
24	5.5	5.0	5.0	6.0	5.5	6.0	---	---	---	---	---	---
25	5.5	5.0	5.0	6.0	5.5	6.0	---	---	---	---	---	---
26	5.5	5.0	5.0	6.0	5.5	6.0	---	---	---	---	---	---
27	5.5	4.5	5.0	6.0	5.5	6.0	---	---	---	---	---	---
28	5.5	5.0	5.0	6.5	5.5	6.0	---	---	---	---	---	---
29	---	---	---	6.0	5.5	6.0	---	---	---	---	---	---
30	---	---	---	6.0	5.5	5.5	---	---	---	9.5	8.5	9.0
31	---	---	---	6.0	5.5	5.5	---	---	---	9.5	8.5	9.0
MONTH	5.5	4.5	5.0	6.5	5.0	5.5	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.5	9.0	9.0	10.0	9.5	10.0	12.5	11.5	12.0	12.5	9.5	11.0
2	9.5	8.5	9.0	10.5	9.5	10.0	12.5	11.5	12.0	11.5	10.0	11.0
3	9.5	9.0	9.0	10.5	9.5	10.0	12.5	11.5	12.5	11.5	10.0	11.0
4	9.5	9.0	9.0	11.0	9.5	10.5	13.0	11.5	12.5	11.5	10.0	11.0
5	9.5	9.0	9.0	11.0	9.5	10.5	13.0	12.0	12.5	12.0	10.5	11.0
6	9.5	9.0	9.5	10.5	9.5	10.0	13.0	12.0	12.5	12.0	10.5	11.5
7	9.5	9.0	9.5	10.5	9.5	10.5	13.0	12.0	12.5	11.5	10.5	11.5
8	10.0	9.0	9.5	10.5	9.5	10.5	13.0	12.0	12.5	11.5	9.5	11.0
9	10.0	9.0	9.5	10.5	9.0	10.0	13.0	12.0	12.5	10.0	9.5	10.0
10	10.5	9.5	10.0	10.0	9.5	9.5	13.0	12.0	13.0	10.5	9.5	10.0
11	10.0	8.5	9.5	10.0	9.5	9.5	13.0	12.5	13.0	10.5	10.0	10.5
12	13.0	8.5	10.0	10.0	9.5	10.0	13.0	12.5	13.0	11.0	10.0	10.5
13	14.0	8.5	11.5	10.5	9.0	10.0	13.5	12.5	13.0	11.0	10.0	10.5
14	9.0	8.5	8.5	10.5	9.0	10.0	13.5	12.5	13.0	11.0	10.5	10.5
15	9.0	8.0	9.0	10.0	9.0	10.0	13.5	12.0	13.0	11.0	10.5	10.5
16	9.5	8.5	9.0	12.0	9.5	11.0	13.5	12.5	13.0	11.0	10.5	10.5
17	9.5	8.5	9.0	12.0	10.5	11.5	13.5	12.0	13.0	11.0	10.0	10.5
18	9.5	8.5	9.0	11.5	10.5	11.5	13.5	12.5	13.0	10.5	9.5	10.0
19	10.0	8.5	9.5	12.0	10.5	11.5	13.5	12.5	13.0	10.5	9.5	10.0
20	9.5	8.5	9.0	12.0	11.0	11.5	13.5	13.0	13.0	10.5	9.5	10.0
21	9.5	8.5	9.0	12.0	11.0	11.5	13.5	13.0	13.0	10.5	10.0	10.0
22	9.0	8.5	9.0	12.0	10.5	11.5	13.5	13.0	13.5	10.5	7.0	8.5
23	9.5	8.5	9.0	12.0	10.5	11.5	13.5	12.0	13.0	7.5	6.5	7.0
24	9.5	9.0	9.5	12.0	11.0	11.5	13.5	12.0	13.0	7.5	6.5	7.0
25	10.0	9.0	9.5	12.0	11.0	11.5	13.0	13.0	13.0	7.5	7.0	7.0
26	10.0	9.0	9.5	12.5	11.0	11.5	13.0	13.0	13.0	7.5	7.0	7.0
27	10.0	9.0	9.5	12.5	11.0	12.0	13.5	13.0	13.0	7.5	6.5	7.0
28	10.0	9.0	9.5	12.5	11.0	12.0	13.5	12.0	12.5	7.5	7.0	7.5
29	10.0	9.0	9.5	12.0	11.5	12.0	12.5	11.5	12.5	8.0	7.0	7.5
30	10.0	9.0	9.5	12.5	11.5	12.0	13.0	11.5	12.5	7.5	7.0	7.5
31	---	---	---	12.5	11.5	12.0	12.5	11.5	12.0	---	---	---
MONTH	14.0	8.0	9.4	12.5	9.0	10.9	13.5	11.5	12.8	12.5	6.5	9.6

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 sea level. 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.--42 years (water years 1946-57, 1968-97), 261 ft³/s, 189,000 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)
Nov. 18	1700	2,690	7.89	Dec. 28	0230	3,510	8.84
Dec. 4	2230	4,050	9.41	Dec. 30	2300	4,040	9.40
Dec. 9	0230	4,360	9.72	Jan. 1	2130	*7,390	*12.61

Minimum discharge, 64 ft³/s July 26-29, Aug. 11, 12, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	143	78	541	5900	751	509	275	624	164	168	66	71
2	143	75	430	5520	671	932	251	550	153	120	68	70
3	144	73	418	4260	632	733	241	497	169	102	67	78
4	146	73	1190	2760	612	620	235	444	259	95	68	70
5	146	78	2390	1990	569	550	227	395	200	92	69	71
6	146	75	1510	1520	537	512	221	355	178	91	70	71
7	147	76	1700	1270	661	496	218	328	161	88	68	71
8	146	74	3170	1070	648	485	217	306	158	85	67	70
9	145	72	3860	975	594	473	213	284	151	88	67	69
10	141	72	2940	878	581	463	203	269	146	88	67	70
11	143	70	2030	808	552	470	194	259	143	86	67	75
12	146	69	1480	743	584	480	185	250	143	84	66	70
13	149	74	1330	669	548	441	183	239	146	82	67	67
14	150	92	983	619	518	422	197	228	140	79	66	84
15	150	105	814	589	500	435	183	214	133	77	66	84
16	147	97	686	569	490	471	178	202	127	77	66	82
17	147	88	587	572	558	508	172	194	122	76	67	106
18	179	1060	521	540	523	430	179	186	116	74	67	103
19	179	1100	471	515	562	400	218	178	108	79	67	89
20	165	639	686	536	546	433	338	170	103	73	93	82
21	157	407	816	581	519	418	433	161	101	70	85	82
22	130	340	667	553	500	391	464	155	103	68	85	78
23	80	261	622	488	479	367	763	191	97	68	73	69
24	161	342	642	459	455	347	716	234	94	67	97	68
25	246	311	1300	e850	441	330	580	204	93	66	82	68
26	179	244	2830	e1000	441	318	494	177	91	65	78	69
27	85	215	2790	e900	541	305	458	175	90	65	79	68
28	84	453	3000	e950	522	310	448	185	90	65	76	68
29	145	378	2310	e1000	---	282	505	191	98	65	73	68
30	102	317	2250	e650	---	275	663	172	150	67	71	70
31	85	---	2830	736	---	287	---	171	---	67	71	---
TOTAL	4456	7408	47794	40470	15535	13893	9852	8188	4027	2537	2239	2261
MEAN	144	247	1542	1305	555	448	328	264	134	81.8	72.2	75.4
MAX	246	1100	3860	5900	751	932	763	624	259	168	97	106
MIN	80	69	418	459	441	275	172	155	90	65	66	67
AC-FT	8840	14690	94800	80270	30810	27560	19540	16240	7990	5030	4440	4480

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1997, BY WATER YEAR (WY)

MEAN	123	190	410	481	480	491	367	240	139	80.4	67.5	70.3
MAX	330	535	1542	1325	1234	1362	723	492	450	148	121	106
(WY)	1951	1974	1997	1956	1996	1972	1974	1953	1953	1948	1956	1948
MIN	64.5	60.2	58.0	64.2	91.7	92.2	73.4	57.0	43.7	36.7	43.0	43.8
(WY)	1982	1988	1977	1977	1977	1992	1977	1968	1968	1968	1992	1988

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1946 - 1997

ANNUAL TOTAL	171187	158660	
ANNUAL MEAN	468	435	
HIGHEST ANNUAL MEAN			261
LOWEST ANNUAL MEAN			501
HIGHEST DAILY MEAN	3860	Dec 9	5900
LOWEST DAILY MEAN	64	Sep 2	65
ANNUAL SEVEN-DAY MINIMUM	65	Aug 28	66
ANNUAL RUNOFF (AC-FT)	339500		314700
10 PERCENT EXCEEDS	1150		830
50 PERCENT EXCEEDS	254		186
90 PERCENT EXCEEDS	70		69

e Estimated

ROGUE RIVER BASIN

361

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, 21.5°C Aug. 6; minimum recorded, 1.5°C Jan. 14, but may have been lower during period of missing record Feb. 22 to Mar. 31.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	13.0	10.5	11.5	8.0	5.5	6.5	8.0	6.0	7.5	9.0	8.0	8.5
2	13.0	10.0	11.5	8.0	5.5	6.5	6.0	5.5	6.0	8.0	7.5	8.0
3	12.5	10.0	11.0	8.0	6.0	7.0	6.5	6.0	6.0	7.5	6.0	6.5
4	12.0	10.0	11.0	8.5	7.0	7.5	7.0	5.5	6.0	6.0	5.0	5.5
5	13.5	11.0	12.0	7.5	5.5	6.5	7.0	7.0	7.0	6.0	5.0	5.5
6	12.5	9.5	11.0	7.5	5.0	6.0	7.0	6.0	6.5	5.0	4.0	4.5
7	12.5	9.5	11.0	9.5	7.5	8.0	7.0	6.5	7.0	5.0	4.0	4.5
8	13.0	10.0	11.0	8.0	6.0	7.0	7.5	7.0	7.5	5.5	4.0	5.0
9	13.0	10.0	11.5	8.0	5.5	6.5	8.0	7.0	7.5	6.0	5.0	5.5
10	12.5	10.0	11.0	8.0	5.5	7.0	8.0	7.0	7.5	6.0	5.0	5.5
11	12.0	9.0	10.5	9.0	7.0	8.0	7.5	6.5	7.0	5.5	4.5	5.0
12	12.0	10.0	10.5	8.5	6.5	7.5	7.5	7.0	7.5	5.0	3.5	4.0
13	11.5	9.5	10.5	9.0	7.5	8.5	7.5	6.5	7.0	3.5	2.0	2.5
14	10.5	8.0	9.5	8.5	7.5	8.0	6.5	5.0	5.5	3.0	1.5	2.5
15	10.5	9.0	10.0	8.0	7.0	7.5	5.5	4.5	5.0	4.5	2.5	3.5
16	9.5	7.5	8.5	7.5	7.0	7.0	5.5	4.5	5.0	5.5	4.0	4.5
17	8.5	6.5	7.5	8.0	7.0	7.5	5.0	4.5	4.5	6.5	5.5	6.0
18	9.5	8.5	9.0	9.5	7.5	8.5	5.0	4.0	4.5	6.5	5.5	6.0
19	8.5	7.0	8.0	10.5	9.0	9.5	4.5	3.5	4.0	7.0	6.0	6.5
20	8.0	6.0	7.0	9.0	8.0	8.5	5.0	4.0	5.0	6.5	5.5	6.0
21	7.5	5.5	6.5	8.5	8.0	8.0	4.5	4.0	4.0	5.5	5.0	5.0
22	9.0	7.5	8.5	8.5	8.0	8.5	5.0	4.0	4.5	5.0	4.5	4.5
23	10.0	8.5	9.0	8.5	8.0	8.0	5.5	4.5	5.0	4.5	3.0	3.5
24	10.5	9.0	9.5	9.5	8.0	8.5	6.5	5.0	5.5	4.0	3.0	3.5
25	9.0	7.5	8.0	9.0	7.0	8.5	6.0	6.0	6.0	5.5	4.0	4.5
26	8.0	6.0	7.0	7.0	6.0	6.5	7.0	6.0	6.5	6.5	5.5	6.0
27	8.0	5.0	6.5	8.0	6.5	7.0	7.0	6.0	6.5	6.5	5.0	5.5
28	8.0	5.5	6.5	8.0	7.5	8.0	7.0	6.5	6.5	7.5	6.5	7.0
29	9.0	7.5	8.0	7.5	6.5	7.0	8.0	7.0	7.5	6.5	5.0	6.0
30	8.0	6.0	7.0	8.0	7.0	7.5	8.0	6.5	7.0	7.0	6.0	6.5
31	8.5	6.0	7.0	---	---	---	9.0	7.5	8.0	8.0	7.0	7.5
MONTH	13.5	5.0	9.3	10.5	5.0	7.6	9.0	3.5	6.1	9.0	1.5	5.3

ROGUE RIVER BASIN

14337500 BIG BUTTE CREEK NEAR MCLEOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	6.5	7.0	---	---	---	9.0	6.0	7.0	11.0	8.0	9.5
2	6.5	5.5	6.0	---	---	---	9.5	2.0	7.0	11.5	8.0	10.0
3	6.0	5.0	5.5	---	---	---	10.0	6.0	8.0	11.5	10.5	11.0
4	7.0	6.0	6.5	---	---	---	10.0	6.0	8.0	12.0	8.5	10.5
5	6.5	4.5	5.5	---	---	---	10.0	6.0	7.5	13.0	9.5	11.5
6	5.5	4.0	4.5	---	---	---	8.5	6.0	7.5	13.0	10.0	11.5
7	6.0	5.5	6.0	---	---	---	10.0	7.5	8.5	13.5	9.5	11.5
8	7.0	5.5	6.0	---	---	---	9.0	7.5	8.5	14.5	10.5	12.5
9	6.5	5.5	6.0	---	---	---	10.0	6.5	8.0	15.5	11.5	13.5
10	6.5	5.5	6.0	---	---	---	10.5	7.0	8.5	15.0	12.0	13.5
11	6.5	5.5	6.0	---	---	---	11.0	6.5	8.5	16.5	12.5	14.5
12	6.5	5.5	6.0	---	---	---	11.0	8.0	9.0	17.0	13.5	15.0
13	6.0	4.5	5.5	---	---	---	9.5	8.5	9.0	17.0	13.0	15.0
14	7.5	5.5	6.5	---	---	---	11.0	8.5	9.5	17.0	13.5	15.0
15	6.5	5.0	6.0	---	---	---	13.5	8.0	10.5	17.5	13.5	15.5
16	7.5	5.5	6.5	---	---	---	12.0	10.5	11.0	17.0	13.5	15.0
17	7.5	6.5	7.0	---	---	---	14.0	9.5	11.5	17.5	13.0	15.0
18	7.5	5.5	6.5	---	---	---	12.0	10.5	11.0	17.5	13.5	15.5
19	7.5	6.5	7.0	---	---	---	11.0	10.5	10.5	17.5	12.5	15.0
20	7.0	5.5	6.0	---	---	---	12.5	10.5	11.0	16.5	12.0	14.0
21	6.5	5.5	6.0	---	---	---	12.5	10.0	11.0	16.0	11.0	13.5
22	---	---	---	---	---	---	11.0	9.5	10.5	14.0	11.0	12.5
23	---	---	---	---	---	---	11.0	9.0	10.0	14.0	11.5	12.5
24	---	---	---	---	---	---	11.5	8.5	9.5	13.0	11.5	12.5
25	---	---	---	---	---	---	12.0	8.5	10.5	14.5	10.0	12.0
26	---	---	---	---	---	---	13.0	10.0	11.5	13.0	11.0	12.0
27	---	---	---	---	---	---	13.0	10.5	11.5	14.5	12.0	13.0
28	---	---	---	---	---	---	11.0	9.0	9.5	14.5	13.0	13.5
29	---	---	---	---	---	---	11.5	9.0	10.0	16.0	13.0	14.5
30	---	---	---	---	---	---	11.0	10.0	10.5	18.0	14.0	15.5
31	---	---	---	---	---	---	---	---	---	16.5	14.5	15.5
MONTH	---	---	---	---	---	---	14.0	2.0	9.5	18.0	8.0	13.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.0	13.0	14.5	16.0	12.0	13.5	20.0	15.5	17.5	18.0	13.5	15.5
2	15.5	12.0	14.0	18.0	12.0	14.5	20.5	15.0	17.0	18.0	13.5	15.5
3	14.5	13.0	13.5	19.0	13.0	16.0	20.5	15.0	17.5	18.0	13.5	15.5
4	14.5	12.0	13.0	20.0	14.5	17.0	21.0	15.5	18.0	18.0	13.5	15.5
5	15.5	12.0	13.5	19.5	15.0	17.0	21.0	15.5	18.0	15.5	13.5	14.5
6	16.5	12.0	14.0	19.5	14.0	16.5	21.5	16.5	18.5	16.5	12.0	14.0
7	14.5	12.0	12.5	19.5	14.0	16.5	21.0	16.5	18.5	17.0	12.5	14.5
8	15.5	10.5	12.5	18.5	14.0	16.0	20.5	15.5	17.5	16.0	13.0	14.0
9	16.0	12.0	14.0	16.5	14.5	15.5	19.5	14.5	17.0	15.0	12.5	14.0
10	17.5	12.5	14.5	18.0	12.5	15.0	20.0	14.5	17.0	16.5	12.5	14.5
11	16.0	13.0	14.5	17.5	12.5	15.0	20.0	15.0	17.0	15.0	13.5	14.0
12	14.5	12.5	13.5	18.5	13.0	15.5	20.0	14.5	17.0	16.5	12.5	14.0
13	14.5	10.5	12.5	19.5	14.0	16.5	20.0	15.0	17.0	15.0	12.0	13.5
14	17.0	11.0	14.0	20.0	14.5	17.0	19.5	15.0	17.0	14.5	12.5	13.5
15	18.5	13.0	15.5	20.5	15.0	17.0	19.5	15.0	17.0	13.0	11.5	12.5
16	19.0	14.0	16.0	18.5	15.0	16.5	18.5	14.5	16.5	14.0	11.5	12.5
17	18.5	14.0	16.0	18.0	15.0	16.5	19.0	15.0	17.0	14.5	11.5	13.0
18	19.0	13.5	16.0	18.5	14.0	16.0	19.0	14.5	16.5	11.5	9.5	10.5
19	18.5	13.0	15.5	20.0	15.0	17.0	19.0	14.5	16.5	13.5	9.0	11.0
20	18.0	12.5	15.0	21.0	15.5	17.5	17.5	15.0	16.0	14.0	9.5	11.5
21	15.5	13.0	14.0	21.0	16.0	18.5	19.0	14.0	16.0	14.5	10.0	12.0
22	16.0	11.0	13.5	20.5	15.0	17.5	19.0	14.5	16.5	14.5	10.5	12.5
23	17.5	12.0	14.5	20.5	15.0	17.5	19.0	15.0	17.0	15.0	11.0	13.0
24	18.0	12.0	14.5	20.5	15.0	17.5	19.0	15.0	16.5	15.0	11.5	13.0
25	18.5	12.5	15.0	20.0	14.5	17.0	16.5	14.5	15.0	14.0	11.5	13.0
26	18.5	13.0	15.5	20.0	14.5	17.0	15.0	13.5	14.5	14.0	12.0	13.0
27	17.5	12.0	14.5	21.0	15.5	18.0	16.5	13.0	14.5	13.5	10.0	11.5
28	15.0	12.5	13.5	21.0	16.0	18.0	16.5	13.5	15.0	14.0	10.0	12.0
29	16.0	11.0	13.0	19.0	15.5	16.5	18.0	13.5	15.5	14.5	10.5	12.5
30	13.5	12.0	13.0	20.0	13.5	16.5	18.0	13.5	15.5	13.0	11.5	12.0
31	---	---	---	20.5	15.5	18.0	18.0	14.0	15.5	---	---	---
MONTH	19.0	10.5	14.2	21.0	12.0	16.6	21.5	13.0	16.6	18.0	9.0	13.3

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 Obsolete J Ranch, 1.3 mi downstream from Big Butte Creek, 1.6 mi southwest of McLeod, and at mile 154.0.

DRAINAGE AREA.--938 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,489.08 ft above sea level.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Diversions for irrigation upstream from station; most of low flow of Big Butte Creek is diverted near Butte Falls.

AVERAGE DISCHARGE.--12 years (water years 1966-77), 2,176 ft³/s, 1,577,000 acre-ft/yr.
20 years (water years 1978-97), 2,056 ft³/s, 1,489,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s Mar. 3, 1972, gage height, 12.24 ft; minimum discharge, 468 ft³/s Feb. 18, 1977, result of closure of Lost Creek Dam, minimum prior to that time, 604 ft³/s Sept. 5, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 20.35 ft Dec. 22, 1964, from floodmarks, discharge, 74,300 ft³/s, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,400 ft³/s Jan. 7, gage height, 9.01 ft; minimum discharge, 1,090 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1170	1710	5480	7440	4270	1660	2500	4670	2860	3060	1890	2170
2	1180	2540	5330	7240	4410	2150	2100	3840	2850	2860	1890	2170
3	1180	2550	5230	10700	4330	1900	1880	4090	2860	2720	1900	2180
4	1180	2550	5410	14200	3810	1760	1610	4540	2970	2710	1900	e2180
5	1180	2570	4920	12900	3120	1680	1540	4480	2900	2720	1890	e2180
6	1190	2570	4830	15500	2980	1640	1540	4110	2860	2670	1890	e2180
7	1190	2570	5040	16200	2820	1620	1640	3560	2850	2580	1890	e2180
8	1190	2560	4560	e15900	2690	1610	1720	3230	2890	2430	1910	e2180
9	1180	2370	5630	e16500	2420	1890	1810	3120	3040	2350	1910	e2170
10	1170	1990	8260	13000	2240	2070	1800	3100	3150	2360	1910	e2200
11	1180	1800	9500	15300	2170	2290	1670	3330	3300	2360	1960	e2180
12	1190	1570	10200	13600	2250	2460	1590	3710	3310	2350	2060	e2100
13	1220	1390	10100	11000	2030	2420	1570	3900	3310	2340	2160	e1970
14	1240	1450	9640	9560	1870	2400	1580	3870	3310	2340	2210	e1890
15	1250	1480	9490	5670	1630	2410	1550	3670	3290	2330	2210	e1860
16	1250	1480	9330	3210	1620	2440	1530	3360	3310	2330	2200	e1860
17	1280	1470	8770	3210	1700	2650	1840	3390	3300	2220	2200	e1810
18	1370	2780	7480	3170	1670	2660	2140	3160	3350	2080	2210	e1780
19	1380	4000	5510	3140	1730	2650	2440	3150	3420	2090	2230	e1500
20	1370	3620	3930	3170	1700	2730	4200	3100	3420	2090	2270	e1330
21	1360	3870	3720	3250	1660	2730	5800	2830	3420	2030	2270	e1190
22	1340	4270	3560	3080	1600	2690	5890	2420	3420	1890	2280	e1190
23	1340	4430	3510	2840	1530	2670	5770	2560	3420	1830	2270	e1180
24	1480	4520	3540	3160	1540	2660	4560	2760	3420	1860	2290	e1180
25	1550	4480	4160	3510	1550	2830	3800	2720	3430	1860	2270	e1180
26	1500	4710	5100	3580	1580	2990	3600	2700	3390	1880	2270	e1190
27	1400	5120	8390	3080	1700	2980	3560	2770	3300	1880	2270	e1180
28	1400	5370	8550	2350	1660	3150	3550	2870	3220	1870	2160	e1180
29	1470	5300	8450	2720	---	3300	3660	2880	3150	1870	2180	e1180
30	1430	5240	9150	3280	---	3290	4350	2860	3120	1880	2180	e1180
31	1410	---	3600	3630	---	2930	---	2860	---	1890	2170	---
TOTAL	40220	92330	200370	235090	64280	75310	82790	103610	95840	69730	65300	51900
MEAN	1297	3078	6464	7584	2296	2429	2760	3342	3195	2249	2106	1730
MAX	1550	5370	10200	16500	4410	3300	5890	4670	3430	3060	2290	2200
MIN	1170	1390	3510	2350	1530	1610	1530	2420	2850	1830	1890	1180
AC-FT	79780	183100	397400	466300	127500	149400	164200	205500	190100	138300	129500	102900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1997, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1259	1620	2403	2110	1776	2004	2368	2706	2400	2135	2156	1703								
MAX	1905	3544	6464	7584	4131	3557	3821	4024	3755	3025	2921	2195								
(WY)	1984	1985	1997	1997	1996	1986	1989	1996	1984	1984	1984	1983								
MIN	894	898	964	1049	844	843	864	1578	1658	1123	1761	1290								
(WY)	1993	1993	1993	1992	1988	1988	1994	1992	1992	1992	1994	1980								

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1978 - 1997
ANNUAL TOTAL	1171620	1176770	
ANNUAL MEAN	3201	3224	2056
HIGHEST ANNUAL MEAN			3224
LOWEST ANNUAL MEAN			1314
HIGHEST DAILY MEAN	10200	Dec 12	16500 Jan 9 1997
LOWEST DAILY MEAN	1140	Sep 25	730 Feb 4 1981
ANNUAL SEVEN-DAY MINIMUM	1170	Sep 24	734 Feb 6 1981
ANNUAL RUNOFF (AC-FT)	2324000	2334000	1489000
10 PERCENT EXCEEDS	5520	5350	3250
50 PERCENT EXCEEDS	2620	2500	1870
90 PERCENT EXCEEDS	1400	1400	1020

e Estimated

ROGUE RIVER BASIN

14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1970 to current year.

INSTRUMENTATION.--Temperature recorder since August 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.0°C July 17, 18, Aug. 7, 1973; minimum, 0.5°C Jan. 3-5, 14, 15, 1971. Maximum since full operation of Lost Creek Lake, 16.0°C July 30, 31, Aug. 1, 2, 1994; minimum, 3.0°C Feb. 2, 1979, Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C Aug. 22, 23; minimum, 4.0°C Jan. 23-25.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.0	7.5	8.0	8.0	7.5	8.0	8.0	7.5	8.0	8.0	7.5	7.5
2	8.0	7.5	8.0	8.0	8.0	8.0	8.0	7.5	7.5	7.5	7.5	7.5
3	8.0	7.5	8.0	8.0	8.0	8.0	7.5	7.5	7.5	7.5	6.0	6.5
4	8.0	7.5	8.0	8.0	8.0	8.0	7.5	7.0	7.5	6.0	5.5	5.5
5	8.0	8.0	8.0	8.0	8.0	8.0	7.5	7.0	7.0	5.5	5.5	5.5
6	8.0	7.5	8.0	8.0	8.0	8.0	7.0	7.0	7.0	5.5	5.5	5.5
7	8.0	7.5	8.0	8.5	8.0	8.0	7.0	7.0	7.0	5.5	5.5	5.5
8	8.0	7.5	8.0	8.0	8.0	8.0	7.5	7.0	7.0	5.5	5.5	5.5
9	8.0	8.0	8.0	8.0	8.0	8.0	7.5	7.0	7.0	5.5	5.5	5.5
10	8.0	7.5	8.0	8.0	8.0	8.0	7.0	7.0	7.0	5.5	5.5	5.5
11	8.0	7.5	7.5	8.5	8.0	8.0	7.0	7.0	7.0	5.5	5.5	5.5
12	8.0	7.5	8.0	8.0	8.0	8.0	7.0	7.0	7.0	5.5	5.0	5.5
13	8.0	7.5	8.0	---	---	---	7.0	6.5	6.5	5.5	4.5	5.0
14	8.0	7.5	7.5	---	---	---	6.5	6.5	6.5	5.0	4.5	5.0
15	8.0	7.5	7.5	8.5	8.0	8.0	6.5	6.5	6.5	5.0	4.5	4.5
16	8.0	7.5	7.5	8.0	8.0	8.0	6.5	6.5	6.5	5.0	4.5	4.5
17	7.5	7.5	7.5	8.5	8.0	8.0	6.5	6.0	6.5	5.0	4.5	5.0
18	8.0	7.5	7.5	9.0	8.0	8.5	6.5	6.0	6.0	5.0	4.5	5.0
19	7.5	7.5	7.5	9.0	8.5	9.0	6.5	6.0	6.0	5.0	4.5	5.0
20	7.5	7.5	7.5	9.0	8.0	8.5	6.0	6.0	6.0	5.0	4.5	5.0
21	7.5	7.0	7.5	8.5	8.0	8.0	6.0	5.5	5.5	5.0	4.5	4.5
22	8.0	7.5	7.5	8.5	8.0	8.0	5.5	5.5	5.5	4.5	4.5	4.5
23	8.0	8.0	8.0	8.0	8.0	8.0	6.0	5.5	5.5	4.5	4.0	4.5
24	8.5	8.0	8.0	8.5	8.0	8.0	6.0	5.5	6.0	4.5	4.0	4.5
25	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	6.0	4.5	4.0	4.5
26	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	6.0	5.0	4.5	4.5
27	8.0	7.5	8.0	8.5	8.0	8.0	6.0	6.0	6.0	5.0	4.5	5.0
28	8.0	7.5	8.0	8.0	8.0	8.0	6.0	6.0	6.0	5.5	4.5	5.0
29	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	6.0	5.0	4.5	5.0
30	8.0	7.5	8.0	8.0	8.0	8.0	6.0	6.0	6.0	5.0	4.5	4.5
31	8.0	7.5	8.0	---	---	---	7.5	6.0	7.0	5.0	4.5	5.0
MONTH	8.5	7.0	7.8	---	---	---	8.0	5.5	6.5	8.0	4.0	5.2

ROGUE RIVER BASIN

365

14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	5.0	4.5	5.0	5.0	5.0	5.0	6.0	5.0	5.5	9.0	8.0	8.5
2	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.0	5.5	9.0	8.5	9.0
3	4.5	4.5	4.5	5.0	4.5	5.0	6.0	5.5	6.0	9.0	8.5	9.0
4	5.0	4.5	4.5	5.0	4.5	5.0	6.5	5.5	6.0	9.0	8.5	8.5
5	5.0	4.5	4.5	5.0	5.0	5.0	6.5	6.0	6.0	9.0	8.5	9.0
6	4.5	4.5	4.5	5.5	5.0	5.5	6.5	6.0	6.0	9.0	8.5	9.0
7	5.0	4.5	5.0	5.5	5.5	5.5	6.5	6.0	6.5	9.5	9.0	9.5
8	5.0	4.5	5.0	6.0	5.5	5.5	6.5	6.0	6.5	9.5	9.0	9.5
9	5.0	4.5	5.0	6.0	5.5	5.5	6.5	6.0	6.5	10.0	9.0	9.5
10	5.0	4.5	5.0	5.5	5.5	5.5	7.0	6.0	6.5	10.0	9.5	9.5
11	5.0	4.5	5.0	5.5	5.5	5.5	7.0	6.5	6.5	10.0	9.5	10.0
12	5.0	4.5	5.0	5.5	5.0	5.0	7.0	7.0	7.0	10.0	9.5	10.0
13	5.0	4.5	4.5	5.0	5.0	5.0	7.0	6.5	7.0	10.0	10.0	10.0
14	5.0	4.5	5.0	5.5	5.0	5.0	7.0	6.5	7.0	10.0	9.5	10.0
15	5.0	4.5	5.0	5.5	5.0	5.5	7.5	7.0	7.0	10.5	9.5	10.0
16	5.5	5.0	5.0	5.5	5.5	5.5	7.5	7.0	7.5	10.5	9.5	10.0
17	5.5	5.5	5.5	5.5	5.5	5.5	8.0	7.0	7.5	10.0	9.5	9.5
18	5.5	5.0	5.0	5.5	5.0	5.5	8.0	8.0	8.0	10.0	9.5	10.0
19	5.5	5.5	5.5	5.5	5.5	5.5	8.0	8.0	8.0	10.0	9.5	10.0
20	5.5	5.0	5.0	6.0	5.5	5.5	8.0	8.0	8.0	10.0	9.5	10.0
21	5.0	5.0	5.0	6.0	5.5	5.5	8.0	7.5	8.0	10.0	9.5	10.0
22	5.0	5.0	5.0	6.0	5.5	5.5	8.0	7.5	8.0	10.0	9.0	9.5
23	5.0	4.5	5.0	6.0	5.5	5.5	8.5	8.0	8.0	9.5	9.0	9.0
24	5.0	4.5	5.0	6.0	5.5	6.0	9.0	8.5	8.5	9.5	9.0	9.5
25	5.0	4.5	5.0	6.0	5.5	6.0	9.0	8.5	8.5	9.5	9.0	9.5
26	5.5	5.0	5.0	6.0	5.5	5.5	9.0	9.0	9.0	9.5	9.0	9.5
27	5.5	5.0	5.0	6.0	5.5	5.5	9.0	8.5	9.0	9.5	9.0	9.5
28	5.0	5.0	5.0	6.0	5.5	5.5	9.0	8.5	9.0	9.5	9.5	9.5
29	---	---	---	6.0	5.5	5.5	9.0	8.5	8.5	10.0	9.5	9.5
30	---	---	---	5.5	5.5	5.5	9.0	8.5	8.5	10.0	9.5	9.5
31	---	---	---	5.5	5.5	5.5	---	---	---	10.0	9.5	9.5
MONTH	5.5	4.5	4.9	6.0	4.5	5.4	9.0	5.0	7.3	10.5	8.0	9.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.0	9.5	9.5	10.5	10.5	10.5	13.0	12.5	12.5	12.5	12.0	12.5
2	10.0	9.5	10.0	11.0	10.5	10.5	13.0	12.0	12.5	12.0	11.5	11.5
3	10.0	9.5	10.0	11.0	10.5	10.5	13.0	12.5	12.5	12.0	11.5	11.5
4	10.0	9.5	10.0	11.0	10.5	11.0	13.0	12.5	12.5	12.0	11.5	11.5
5	10.5	9.5	10.0	11.0	10.5	11.0	13.0	12.5	12.5	12.0	11.5	11.5
6	10.5	10.0	10.0	11.0	11.0	11.0	13.0	12.5	13.0	12.0	11.5	11.5
7	10.5	10.0	10.0	11.0	10.5	11.0	13.0	12.5	13.0	12.0	11.5	12.0
8	10.5	10.0	10.0	11.0	10.5	11.0	13.0	12.5	13.0	12.0	11.5	12.0
9	10.5	10.0	10.0	11.0	10.5	10.5	13.0	12.5	13.0	11.5	11.0	11.0
10	10.5	10.5	10.5	10.5	10.5	10.5	13.0	12.5	13.0	11.0	10.5	10.5
11	10.5	10.0	10.5	10.5	10.5	10.5	13.0	12.5	13.0	11.0	11.0	11.0
12	10.0	9.5	9.5	10.5	10.5	10.5	13.0	13.0	13.0	11.0	11.0	11.0
13	9.5	9.5	9.5	10.5	10.0	10.5	13.0	13.0	13.0	11.0	11.0	11.0
14	10.0	9.5	9.5	10.5	10.5	10.5	13.5	13.0	13.0	11.0	11.0	11.0
15	10.0	9.5	9.5	10.5	10.0	10.5	13.5	13.0	13.0	11.0	11.0	11.0
16	10.0	10.0	10.0	11.5	10.0	10.5	13.5	13.0	13.0	11.0	11.0	11.0
17	10.0	10.0	10.0	12.0	11.0	11.5	13.5	13.0	13.5	11.5	11.0	11.0
18	10.0	10.0	10.0	12.0	11.5	11.5	13.5	13.0	13.5	11.0	10.5	11.0
19	10.5	10.0	10.0	12.0	11.5	12.0	13.5	13.0	13.5	11.0	10.5	11.0
20	10.0	10.0	10.0	12.5	11.5	12.0	13.5	13.0	13.5	11.5	10.5	11.0
21	10.0	9.5	10.0	12.5	11.5	12.0	13.5	13.0	13.5	11.5	11.0	11.0
22	10.0	9.5	9.5	12.5	12.0	12.0	14.0	13.5	13.5	11.0	10.0	11.0
23	10.0	9.5	10.0	12.5	11.5	12.0	14.0	13.5	13.5	10.0	9.0	9.5
24	10.0	9.5	10.0	12.5	11.5	12.0	13.5	13.0	13.5	9.0	8.5	9.0
25	10.5	10.0	10.0	12.5	11.5	12.0	13.5	13.5	13.5	9.0	8.5	8.5
26	10.5	10.0	10.0	12.5	12.0	12.0	13.5	13.0	13.0	9.0	8.5	8.5
27	10.5	10.0	10.0	12.5	12.0	12.5	13.5	13.0	13.0	8.5	8.0	8.5
28	10.5	10.0	10.0	12.5	12.0	12.5	13.5	13.0	13.0	8.5	8.5	8.5
29	10.5	10.0	10.0	12.5	12.0	12.5	13.0	12.5	13.0	9.0	8.5	8.5
30	10.5	10.0	10.5	12.5	12.0	12.5	13.0	12.5	12.5	9.0	8.5	8.5
31	---	---	---	13.0	12.5	12.5	13.0	12.5	13.0	---	---	---
MONTH	10.5	9.5	9.9	13.0	10.0	11.4	14.0	12.0	13.0	12.5	8.0	10.6

ROGUE RIVER BASIN

14337800 ELK CREEK NEAR CASCADE GORGE, OR

LOCATION.--Lat 42°46'25", long 122°40'15", in NW 1/4 sec.23, T.32 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.1 mi downstream from Sugarpine Creek, 6.5 mi northwest of town of Cascade Gorge, and at mile 10.7.

DRAINAGE AREA.--78.8 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,813.83 ft above sea level (levels by Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. No regulation. Some diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--24 years (water years 1974-97), 140 ft³/s, 24.22 in/yr, 101,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,780 ft³/s Jan. 15, 1974, gage height, 8.9 ft, from floodmark; minimum discharge, 0.45 ft³/s Aug. 31, Sept. 1, 1992.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1830	*5,750	*8.49	Dec. 26	0400	2,800	6.69
Dec. 4	2130	3,550	7.21	Jan. 1	0330	5,610	8.42
Dec. 8	1730	3,320	7.05				

Minimum discharge, 3.8 ft³/s Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	39	586	3880	545	172	92	385	45	33	7.1	7.7
2	4.7	32	448	2970	424	399	86	295	40	25	7.0	7.1
3	4.7	27	339	2170	335	303	81	243	41	22	6.9	6.4
4	4.7	24	1120	1110	282	252	80	201	63	18	6.6	5.9
5	4.7	22	1850	676	235	221	74	172	56	17	6.2	5.7
6	4.7	19	838	485	202	214	70	152	47	16	5.8	6.2
7	4.5	23	1320	381	208	237	71	134	42	15	5.6	6.0
8	4.8	23	2870	313	209	264	71	120	39	14	5.7	5.4
9	4.2	21	2700	263	192	256	70	108	35	14	5.8	5.1
10	4.0	19	2090	227	184	244	66	99	32	15	5.5	5.7
11	4.0	18	1370	203	169	260	63	92	31	15	5.2	6.4
12	4.2	16	1050	181	166	240	60	84	30	15	4.9	6.9
13	5.0	16	885	159	160	203	61	77	29	13	4.7	6.3
14	6.0	20	612	143	153	178	65	73	27	12	4.5	8.4
15	6.0	31	450	133	145	197	63	67	25	12	4.2	12
16	5.7	39	346	121	138	232	64	62	24	12	4.3	18
17	5.7	39	277	119	152	288	64	57	23	11	4.7	18
18	17	2120	229	109	147	248	76	53	22	11	4.6	16
19	20	2760	196	103	192	220	138	48	21	11	4.7	12
20	14	1290	282	109	217	231	350	46	20	10	12	9.6
21	10	499	333	119	198	208	323	44	20	9.4	11	8.5
22	14	324	289	127	175	185	309	42	20	9.0	7.7	7.7
23	19	232	262	117	155	167	530	50	19	9.1	7.9	7.1
24	102	238	296	106	136	154	566	59	18	8.9	29	6.7
25	102	241	1890	342	122	143	377	49	18	8.4	13	6.0
26	78	196	2590	558	116	139	278	43	17	8.2	11	6.4
27	49	163	1700	439	133	131	231	44	17	7.9	11	7.1
28	49	359	1330	492	141	125	207	43	17	7.8	9.7	6.7
29	174	388	1830	487	---	110	232	45	18	7.5	9.1	6.7
30	89	323	2220	380	---	103	407	41	37	8.7	8.1	6.2
31	55	---	2850	472	---	98	---	44	---	7.9	8.0	---
TOTAL	874.6	9561	35448	17494	5631	6422	5225	3072	893	403.8	241.5	243.9
MEAN	28.2	319	1143	564	201	207	174	99.1	29.8	13.0	7.79	8.13
MAX	174	2760	2870	3880	545	399	566	385	63	33	29	18
MIN	4.0	16	196	103	116	98	60	41	17	7.5	4.2	5.1
AC-FT	1730	18960	70310	34700	11170	12740	10360	6090	1770	801	479	484
CFSM	.36	4.04	14.5	7.16	2.55	2.63	2.21	1.26	.38	.17	.10	.10
IN.	.41	4.51	16.73	8.26	2.66	3.03	2.47	1.45	.42	.19	.11	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1997, BY WATER YEAR (WY)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	13.1	133	308	287	307	255	198	122	47.6	12.7	5.57	6.41												
MAX	39.8	656	1143	802	717	556	352	300	156	27.1	16.4	33.7												
(WY)	1980	1974	1997	1974	1996	1974	1993	1975	1993	1995	1976	1986												
MIN	2.47	7.76	8.00	11.3	11.2	34.1	54.5	18.3	7.10	3.57	.94	.91												
(WY)	1989	1994	1977	1977	1977	1992	1992	1992	1992	1994	1992	1992												

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1974 - 1997
ANNUAL TOTAL	104322.6	85509.8	
ANNUAL MEAN	285	234	140
HIGHEST ANNUAL MEAN			292
LOWEST ANNUAL MEAN			27.4
HIGHEST DAILY MEAN	2870	3880	5200
LOWEST DAILY MEAN	3.3	4.0	.52
ANNUAL SEVEN-DAY MINIMUM	3.6	4.3	.60
ANNUAL RUNOFF (AC-FT)	206900	169600	101800
ANNUAL RUNOFF (CFSM)	3.62	2.97	1.78
ANNUAL RUNOFF (INCHES)	49.25	40.37	24.22
10 PERCENT EXCEEDS	695	459	353
50 PERCENT EXCEEDS	114	63	49
90 PERCENT EXCEEDS	4.6	6.0	4.0

WATER-QUALITY RECORDS

WATER TEMPERATURE: Maximum, 24.5°C Aug. 6; minimum recorded, 1.5°C Feb. 27, but may have been lower during period of missing record in November, December, and January.

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	16.0	11.5	13.5		7.5	4.5	6.0		---	---	---		---	---	---
2	15.5	11.0	13.0		7.5	4.5	6.0		---	---	---		---	---	---
3	15.0	11.0	13.0		7.5	5.0	6.5		---	---	---		---	---	---
4	15.5	11.0	13.0		8.0	5.5	6.5		---	---	---		---	---	---
5	16.5	12.5	14.5		6.5	4.0	5.0		---	---	---		---	---	---
6	15.5	11.5	13.5		6.0	3.5	5.0		---	---	---		---	---	---
7	16.0	11.0	13.5		8.0	6.0	6.5		---	---	---		---	---	---
8	16.0	11.5	13.5		7.0	4.5	5.5		---	---	---		---	---	---
9	16.5	11.5	13.5		6.5	4.0	5.5		---	---	---		---	---	---
10	15.0	11.0	13.0		7.0	4.0	5.5		---	---	---		---	---	---
11	13.5	10.0	12.0		8.5	6.5	7.0		---	---	---		---	---	---
12	15.0	11.0	12.5		8.0	5.5	7.0		---	---	---		---	---	---
13	13.5	10.5	12.0		8.5	7.0	7.5		---	---	---		---	---	---
14	11.5	8.0	10.0		8.0	7.0	7.5		---	---	---		---	---	---
15	12.0	9.5	10.5		8.0	6.5	7.0		---	---	---		---	---	---
16	9.5	6.5	8.0		7.0	6.0	6.5		---	---	---		---	---	---
17	9.0	5.5	7.5		7.0	6.0	6.5		---	---	---		---	---	---
18	10.0	8.0	9.0		---	---	---		---	---	---		---	---	---
19	8.5	6.5	7.5		---	---	---		---	---	---		---	---	---
20	7.5	5.0	6.0		---	---	---		---	---	---		---	---	---
21	7.0	4.5	6.0		---	---	---		---	---	---		---	---	---
22	9.0	7.0	8.0		---	---	---		---	---	---		---	---	---
23	9.5	7.5	8.5		---	---	---		---	---	---		---	---	---
24	10.0	8.0	9.0		---	---	---		---	---	---		---	---	---
25	8.0	6.0	7.0		---	---	---		---	---	---		---	---	---
26	8.0	6.0	6.5		---	---	---		---	---	---		---	---	---
27	7.5	5.0	6.0		---	---	---		---	---	---		---	---	---
28	7.5	5.0	6.0		---	---	---		---	---	---		---	---	---
29	8.0	7.0	7.5		---	---	---		---	---	---		---	---	---
30	8.0	6.0	7.0		---	---	---		---	---	---		---	---	---
31	7.5	5.5	6.5		---	---	---		---	---	---		7.5	6.5	7.0
MONTH	16.5	4.5	9.9		---	---	---		---	---	---		---	---	---

ROGUE RIVER BASIN

14337800 ELK CREEK NEAR CASCADE GORGE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.5	6.0	7.0	5.0	4.0	4.5	8.5	3.5	5.5	9.0	5.5	6.5
2	6.5	5.0	6.0	6.0	5.0	5.5	9.0	2.5	5.5	9.5	4.5	7.5
3	6.0	5.0	5.5	6.5	4.5	5.0	9.5	3.5	6.0	9.5	7.5	8.5
4	7.0	5.5	6.0	6.5	4.5	5.0	9.5	4.0	6.0	11.0	6.5	8.5
5	6.0	4.0	5.0	7.0	4.5	5.5	9.5	3.0	5.5	11.5	7.0	9.0
6	5.5	3.5	4.5	7.0	5.5	6.0	7.5	3.0	5.5	12.0	8.0	9.5
7	6.0	5.0	5.5	7.0	6.0	6.5	8.5	5.5	6.5	13.5	7.0	9.5
8	7.0	4.5	5.5	7.5	5.0	6.0	8.5	5.0	6.5	15.0	8.5	11.0
9	6.5	4.5	5.5	7.0	5.0	6.0	9.5	4.0	6.5	15.0	9.5	12.0
10	7.0	4.5	5.5	8.0	6.5	7.0	10.5	4.5	7.0	15.0	10.0	12.5
11	6.5	5.0	5.5	8.0	5.0	6.5	10.5	4.0	6.5	17.5	11.0	14.0
12	6.5	4.5	5.5	6.5	4.5	5.5	10.0	5.0	7.0	17.5	11.5	14.5
13	6.0	4.0	5.0	7.5	4.5	5.5	7.5	6.0	7.0	17.0	11.5	14.0
14	8.0	5.0	6.0	7.5	4.5	6.0	10.0	6.5	7.5	17.0	12.0	14.5
15	7.5	4.0	5.5	8.0	6.5	7.0	13.5	5.5	9.0	18.0	12.5	14.5
16	8.0	5.0	6.5	8.0	6.5	7.5	10.5	8.0	9.0	16.5	12.0	14.5
17	8.0	5.5	7.0	8.0	5.5	6.5	14.0	8.0	10.5	18.0	12.0	14.5
18	7.5	5.0	6.0	9.0	6.0	7.5	10.0	8.5	9.5	17.5	12.0	14.5
19	7.5	5.5	6.5	9.5	7.5	8.5	9.5	8.5	9.0	17.0	11.5	14.0
20	7.0	5.0	5.5	10.5	7.0	8.5	9.0	7.0	8.0	16.0	10.5	13.0
21	7.0	5.0	5.5	10.0	5.5	7.5	9.5	7.5	8.0	15.0	9.5	12.0
22	7.0	4.0	5.0	11.0	5.5	7.5	9.5	7.5	8.5	13.0	9.5	11.5
23	7.0	3.5	4.5	10.5	5.5	7.5	8.5	6.5	7.5	13.5	11.0	12.0
24	8.0	3.0	5.0	12.0	6.5	9.0	9.5	6.0	7.0	12.5	10.0	11.0
25	6.5	4.0	5.0	12.5	6.5	9.0	11.5	5.5	8.0	14.0	8.5	11.0
26	7.5	5.5	6.0	10.5	7.0	8.5	12.5	7.5	10.0	12.0	9.0	11.0
27	5.5	1.5	4.0	11.0	6.5	8.0	11.0	8.5	9.5	14.5	11.0	12.5
28	6.5	3.5	4.5	9.5	5.0	7.0	9.0	8.0	8.0	14.5	12.5	13.5
29	---	---	---	9.0	4.0	6.0	10.5	7.5	8.5	17.0	12.0	14.0
30	---	---	---	7.0	5.0	6.0	8.5	6.5	8.0	19.0	13.0	16.0
31	---	---	---	6.5	4.5	5.5	---	---	---	16.5	14.0	15.0
MONTH	8.0	1.5	5.5	12.5	4.0	6.7	14.0	2.5	7.6	19.0	4.5	12.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	16.0	12.5	14.0	16.0	11.5	13.5	22.5	16.5	19.0	20.0	15.0	17.0
2	15.5	10.5	13.0	18.0	11.5	14.5	23.0	16.5	19.0	20.0	15.0	17.5
3	14.5	12.5	13.5	19.5	12.5	16.0	23.0	16.0	19.5	20.5	15.5	17.5
4	15.0	11.5	12.5	21.0	14.5	17.5	23.5	17.0	20.0	20.5	15.0	17.5
5	15.0	10.5	12.5	21.0	15.5	18.0	24.0	17.0	20.0	18.0	15.0	16.5
6	16.0	10.0	13.0	20.5	14.0	17.0	24.5	18.0	20.5	18.5	13.0	15.5
7	14.0	11.0	12.0	20.5	14.0	17.0	24.0	17.5	20.5	19.0	13.5	16.0
8	15.5	9.5	13.0	19.5	14.5	17.0	23.0	16.5	19.5	18.5	14.0	16.0
9	16.0	11.0	14.0	17.5	15.0	16.5	22.5	15.5	18.5	17.0	14.0	15.5
10	18.0	12.5	15.0	17.5	12.5	15.0	22.5	15.5	18.5	18.5	15.0	16.5
11	16.0	13.0	14.5	18.5	12.0	15.0	22.5	16.0	19.0	17.5	15.5	16.5
12	14.5	12.5	13.0	19.0	12.5	15.5	23.0	15.5	19.0	18.5	15.0	16.0
13	16.0	10.5	13.0	20.5	14.0	17.0	23.0	16.5	19.5	17.5	13.5	15.5
14	17.0	11.5	14.0	21.5	15.0	18.0	23.0	16.0	19.0	16.0	14.0	15.0
15	19.0	12.5	15.5	22.0	15.0	18.0	22.5	16.5	19.0	14.0	13.0	13.5
16	19.5	14.0	16.5	20.5	15.0	18.0	21.5	15.0	18.0	15.0	12.5	13.5
17	19.0	14.5	17.0	19.5	15.5	17.0	22.0	16.0	18.5	15.5	12.5	14.0
18	19.5	13.5	16.0	21.0	14.0	17.0	21.5	15.5	18.5	13.0	10.5	12.0
19	18.5	12.5	15.5	22.0	15.0	18.0	22.0	15.5	18.5	14.5	9.5	11.5
20	18.0	12.0	14.5	23.0	16.0	19.0	19.0	17.5	18.0	15.5	10.0	12.5
21	15.5	12.5	14.0	23.5	17.0	19.5	22.0	16.5	18.5	15.5	10.5	13.0
22	16.0	10.0	13.0	22.5	15.5	18.5	22.0	16.0	18.5	16.0	11.0	13.5
23	17.0	10.5	13.5	22.5	15.5	18.5	21.5	16.0	18.5	16.5	12.0	14.0
24	17.5	11.0	14.0	22.5	15.5	18.5	19.5	16.0	17.5	16.5	12.0	14.0
25	18.5	12.0	15.0	22.0	15.0	18.0	17.5	15.5	16.5	15.5	12.0	14.0
26	18.5	12.5	15.0	22.0	15.0	18.0	17.0	15.5	16.0	15.5	13.0	14.0
27	17.5	11.5	14.5	22.5	15.5	18.5	19.0	14.5	16.0	14.5	10.5	12.5
28	14.0	12.5	13.5	23.0	16.5	19.5	18.0	15.0	16.5	15.0	10.5	12.5
29	16.0	11.0	13.5	19.5	17.5	18.5	19.5	14.0	16.5	15.5	11.5	13.5
30	13.5	12.0	12.5	22.5	15.5	18.5	19.5	14.0	16.5	15.0	12.5	13.5
31	---	---	---	22.5	16.5	19.0	20.0	14.5	17.0	---	---	---
MONTH	19.5	9.5	14.0	23.5	11.5	17.4	24.5	14.0	18.4	20.5	9.5	14.7

ROGUE RIVER BASIN

369

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR

LOCATION.--Lat 42°40'46", long 122°42'37", in NW 1/4 sec.4, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Corps of Engineers' Land, on right bank 500 ft downstream from Alco Creek, and 7.5 mi northeast of Trail.

DRAINAGE AREA.--111 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1986 to current year (operated as a low-flow station only).

GAGE.--Water-stage recorder. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Some diversions upstream from station for irrigation. Operated as a low-flow station only. Discharges above 440 ft³/s not published.

EXTREMES FOR PERIOD OF RECORD.--Minimum discharge recorded, 0.54 ft³/s Sept. 23, 1992, but may have been less during period of estimated discharge during that year.

EXTREMES FOR CURRENT YEAR.--Minimum discharge, 3.8 ft³/s Oct. 1, Aug. 14, 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	54	---	---	---	---	109	---	48	36	7.2	8.2
2	4.6	43	---	---	---	---	101	364	43	27	7.4	8.0
3	4.5	36	---	---	---	---	97	298	48	22	7.1	7.7
4	5.3	31	---	---	366	388	95	241	74	19	6.7	6.6
5	5.8	28	---	---	302	334	90	203	63	16	6.7	6.4
6	5.4	26	---	---	258	321	86	176	53	15	6.1	7.0
7	6.2	30	---	---	263	350	86	156	47	15	6.0	5.8
8	6.0	28	---	388	271	385	86	140	43	14	5.7	5.8
9	5.2	26	---	329	251	357	84	128	39	14	6.0	5.9
10	5.1	25	---	282	236	335	82	117	36	16	5.7	6.2
11	5.1	23	---	249	216	348	79	108	33	13	5.7	6.9
12	5.1	22	---	221	216	309	76	99	32	13	5.4	7.6
13	8.1	20	---	190	207	256	76	91	32	12	4.2	7.4
14	9.6	25	---	171	199	221	81	87	29	12	3.8	9.3
15	8.6	40	---	161	188	239	78	77	28	11	3.8	13
16	8.2	53	---	150	177	279	78	71	25	10	4.0	19
17	8.4	55	---	147	195	363	77	66	24	10	4.8	18
18	21	---	392	135	189	313	86	61	22	10	4.0	20
19	31	---	342	127	250	270	159	57	21	9.6	4.1	14
20	20	---	---	134	294	278	---	53	20	8.5	7.4	12
21	15	---	---	150	264	251	415	50	20	8.5	11	11
22	16	---	---	163	228	221	---	48	20	8.2	8.3	9.7
23	25	364	---	153	197	198	---	60	18	8.2	7.5	9.0
24	113	359	---	140	170	178	---	76	18	8.0	24	8.5
25	135	379	---	---	153	166	---	61	17	8.5	14	7.7
26	107	319	---	---	149	159	360	53	16	8.4	11	7.8
27	70	267	---	---	172	150	290	55	16	7.7	13	8.3
28	65	---	---	---	189	145	254	53	16	7.4	11	8.3
29	220	---	---	---	---	129	284	54	18	7.5	10	8.1
30	116	---	---	---	---	121	---	48	35	8.4	9.4	7.8
31	72	---	---	---	---	116	---	52	---	8.0	8.6	---
TOTAL	1131.0	---	---	---	---	---	---	---	954	391.9	239.6	281.0
MEAN	36.5	---	---	---	---	---	---	---	31.8	12.6	7.73	9.37
MAX	220	---	---	---	---	---	---	---	74	36	24	20
MIN	3.8	---	---	---	---	---	---	---	16	7.4	3.8	5.8
AC-FT	2240	---	---	---	---	---	---	---	1890	777	475	557
CFSM	.33	---	---	---	---	---	---	---	.29	.11	.07	.08
IN.	.38	---	---	---	---	---	---	---	.32	.13	.08	.09

ROGUE RIVER BASIN

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1986 to current year.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5°C June 22, 1992, but may have been higher during period of missing record in August 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 29.5°C Aug. 6; minimum, 0.5°C Jan. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.0	13.5	16.0	7.0	5.0	6.5	8.0	6.5	7.0	8.5	8.0	8.0
2	18.0	13.5	15.5	7.0	5.0	6.0	6.5	6.0	6.5	8.5	8.0	8.0
3	18.0	13.5	15.5	7.0	5.5	6.5	7.0	5.5	6.0	8.0	6.5	7.0
4	17.5	13.5	15.5	8.0	6.5	7.0	7.5	5.5	6.5	6.5	5.5	6.0
5	19.0	14.5	16.5	7.0	5.0	6.0	8.0	7.5	7.5	6.0	5.5	5.5
6	19.0	13.5	16.0	6.0	4.5	5.5	7.5	7.0	7.0	5.5	4.5	5.0
7	19.0	13.5	16.0	8.5	6.0	7.0	8.0	7.0	7.5	5.0	4.5	4.5
8	19.5	13.5	16.5	7.5	5.0	6.5	8.0	7.5	8.0	5.5	4.0	5.0
9	19.0	14.0	16.5	7.0	4.5	6.0	8.5	7.5	8.0	6.0	4.5	5.5
10	17.5	13.5	15.5	7.0	4.5	6.0	8.0	7.0	7.5	6.0	5.0	5.5
11	17.0	13.0	15.0	8.5	6.5	7.0	7.5	7.0	7.5	5.5	4.5	5.0
12	17.5	13.5	15.0	8.0	6.0	7.0	8.0	7.5	7.5	5.0	2.5	3.5
13	16.0	13.0	14.5	8.5	7.5	8.0	7.5	6.5	7.0	2.5	1.0	1.5
14	14.0	11.0	12.5	8.5	7.5	8.0	6.5	5.5	6.0	2.0	.5	1.0
15	14.0	12.0	13.0	8.0	7.0	7.5	6.0	5.0	5.5	3.5	1.0	2.0
16	12.5	9.0	11.0	7.0	6.5	7.0	6.0	5.0	5.5	4.0	2.5	3.5
17	11.0	8.5	9.5	7.5	6.5	7.0	5.5	4.5	5.0	5.5	4.0	5.0
18	11.0	9.5	10.5	9.5	7.0	8.0	5.0	4.0	4.5	6.0	4.5	5.5
19	10.0	8.5	9.0	10.0	8.5	9.5	4.5	3.5	4.0	6.0	5.0	5.5
20	9.5	7.0	8.0	8.5	8.0	8.5	5.0	4.5	4.5	6.0	5.5	5.5
21	8.5	6.0	7.5	9.0	8.5	8.5	5.0	4.5	4.5	5.5	3.5	4.0
22	10.0	8.5	9.0	9.0	8.0	8.5	5.0	4.5	5.0	4.5	3.5	4.0
23	10.0	8.5	9.5	8.5	8.0	8.0	5.5	4.5	5.0	4.0	3.0	3.5
24	10.0	9.0	9.5	9.5	8.0	8.5	6.0	5.0	5.5	4.0	3.0	3.0
25	9.0	7.0	7.5	8.5	7.0	8.0	7.0	5.5	6.0	5.0	3.5	4.0
26	7.5	6.0	6.5	7.0	5.5	6.5	7.5	6.5	7.0	6.5	5.0	6.0
27	7.0	5.0	6.0	8.0	6.5	7.5	7.5	7.0	7.0	6.5	5.0	6.0
28	7.0	5.5	6.5	8.0	7.0	7.5	7.5	7.0	7.5	7.5	6.0	6.5
29	8.0	7.0	7.5	7.5	7.0	7.5	8.0	7.5	7.5	7.0	5.5	6.0
30	7.5	6.0	7.0	8.0	7.0	7.5	8.0	7.5	8.0	7.0	6.0	6.5
31	7.5	5.5	6.5	---	---	---	8.5	8.0	8.0	7.5	7.0	7.0
MONTH	19.5	5.0	11.6	10.0	4.5	7.3	8.5	3.5	6.4	8.5	.5	5.0

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	6.5	6.5	5.0	4.5	4.5	9.0	4.0	6.0	10.5	6.0	8.0
2	7.0	5.0	6.0	6.0	5.0	5.5	9.0	3.0	6.0	11.5	5.5	8.5
3	6.0	4.5	5.5	6.0	4.5	5.0	9.5	4.5	7.0	11.0	9.0	9.5
4	7.0	5.5	6.0	6.5	4.5	5.0	10.0	5.0	7.5	12.0	7.0	9.5
5	5.5	4.0	5.0	7.0	4.0	5.5	10.0	4.0	7.0	13.5	8.0	10.5
6	5.5	3.0	4.5	7.0	5.5	6.5	8.0	4.0	6.5	12.5	9.0	10.5
7	6.0	5.0	5.5	7.5	6.0	6.5	9.5	6.5	8.0	14.0	7.0	10.5
8	6.5	5.5	6.0	8.0	5.5	6.5	10.5	6.5	8.0	15.5	9.0	12.5
9	6.0	4.5	5.5	7.5	5.0	6.5	11.0	5.5	8.0	16.0	10.5	13.5
10	6.5	5.0	5.5	8.5	6.5	7.5	12.0	6.0	9.0	16.0	11.0	13.5
11	6.5	5.5	6.0	8.0	5.5	7.0	11.5	5.5	8.5	18.5	12.5	15.5
12	6.5	4.5	5.5	6.5	4.5	5.5	11.0	6.5	8.5	19.0	13.5	16.0
13	6.0	4.0	5.0	7.5	4.0	5.5	10.0	8.0	8.5	18.5	13.0	16.0
14	7.5	5.0	6.0	7.5	4.0	6.0	11.0	7.5	9.0	19.0	13.5	16.5
15	7.0	4.0	5.5	8.5	6.5	7.5	14.5	7.5	11.0	19.5	14.0	16.5
16	7.5	4.5	6.0	8.5	7.0	7.5	13.5	10.0	11.5	18.5	14.0	16.5
17	8.0	6.0	7.0	8.5	5.5	7.0	15.5	9.5	12.5	20.0	14.0	16.5
18	7.0	4.5	5.5	10.0	6.0	8.0	13.5	10.5	11.5	20.0	14.0	17.0
19	7.0	5.5	6.5	10.0	8.0	9.0	11.0	9.5	10.0	19.0	13.5	16.0
20	6.5	4.5	5.5	11.0	8.0	9.5	10.5	9.0	10.0	18.0	12.5	15.5
21	6.5	4.5	5.5	10.0	5.5	7.5	10.5	8.0	9.0	17.5	11.5	14.5
22	6.5	3.5	5.0	10.5	5.5	8.0	10.0	8.0	9.0	14.5	11.5	13.0
23	6.0	3.0	4.5	10.5	6.0	8.0	9.5	7.5	8.5	14.5	12.0	13.0
24	6.0	3.0	4.5	12.0	7.0	9.5	10.5	7.0	8.5	14.0	10.5	12.0
25	6.0	3.5	5.0	12.5	7.0	9.5	12.5	6.5	9.0	15.0	9.0	12.0
26	7.0	5.5	6.5	10.5	7.5	9.0	13.5	8.5	11.0	13.0	10.5	12.0
27	6.0	2.5	4.5	9.5	6.5	8.5	12.0	9.0	10.5	16.0	11.5	13.5
28	6.0	4.0	4.5	10.0	6.0	8.0	9.5	8.0	8.5	16.0	13.5	14.5
29	---	---	---	9.0	4.0	7.0	11.0	8.0	9.0	19.0	13.0	16.0
30	---	---	---	8.0	5.5	6.5	10.5	7.5	9.0	21.5	15.0	18.0
31	---	---	---	7.5	5.0	6.0	---	---	---	19.5	15.0	17.5
MONTH	8.0	2.5	5.5	12.5	4.0	7.1	15.5	3.0	8.9	21.5	5.5	13.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	17.5	14.0	15.5	18.5	12.5	15.5	27.0	18.5	22.5	24.5	17.0	20.5
2	18.0	12.5	15.0	21.0	13.0	17.0	27.5	18.5	22.5	25.5	17.0	20.5
3	16.0	13.5	15.0	23.0	14.5	18.5	27.5	18.5	22.5	25.5	17.5	21.0
4	15.5	12.5	13.5	25.0	16.5	20.5	28.5	19.0	23.5	25.5	17.5	21.0
5	18.0	12.0	14.5	24.0	18.0	20.5	29.0	19.5	24.0	21.0	17.5	19.5
6	18.0	11.5	15.0	24.0	16.5	20.0	29.5	20.5	24.5	23.5	15.0	18.5
7	15.0	12.5	14.0	24.5	16.0	20.0	29.0	20.0	24.0	24.5	15.5	19.5
8	17.5	11.0	14.5	23.5	17.0	20.5	28.0	18.5	22.5	23.0	16.5	19.5
9	17.5	13.0	15.5	21.0	17.5	19.5	27.0	17.0	21.5	21.0	16.5	18.5
10	20.5	14.0	17.0	20.5	14.0	17.5	27.5	18.0	22.0	23.5	17.0	19.5
11	18.5	15.0	16.5	22.0	13.5	17.5	27.5	18.0	22.5	20.0	17.5	18.5
12	16.0	13.5	14.5	23.5	14.5	18.5	28.0	18.0	22.5	23.0	16.5	19.0
13	18.0	12.0	14.5	24.5	16.0	20.0	28.0	18.5	23.0	21.5	15.0	18.0
14	20.5	13.0	16.5	25.5	17.5	21.0	28.5	18.0	23.0	19.0	16.0	17.5
15	22.0	14.5	18.0	26.0	18.0	22.0	27.5	18.5	22.5	16.0	14.5	15.0
16	23.0	16.0	19.5	25.0	18.0	21.5	26.5	16.5	21.0	18.0	14.0	15.5
17	22.5	17.0	19.5	23.0	18.0	20.0	26.5	18.0	22.0	17.5	15.0	16.0
18	23.0	16.0	19.0	24.5	16.0	20.0	26.5	17.0	21.5	15.0	12.5	13.5
19	22.0	15.0	18.5	26.5	17.0	21.5	27.0	17.5	22.0	17.5	11.0	14.0
20	21.5	14.0	17.5	28.0	18.5	23.0	22.5	19.0	20.5	19.0	12.0	15.0
21	17.5	14.0	16.0	28.0	20.0	23.5	25.5	18.0	21.0	19.5	12.0	15.5
22	19.5	12.0	15.5	27.0	18.0	22.0	26.5	18.0	21.5	20.0	13.0	16.0
23	20.5	13.0	16.5	27.0	18.0	22.0	26.5	18.0	21.5	21.0	14.0	17.0
24	21.5	13.0	17.0	27.0	18.0	22.0	22.5	18.0	20.0	21.0	14.0	17.0
25	22.0	14.0	18.0	26.5	17.5	21.5	20.5	17.5	19.0	20.0	14.0	16.5
26	22.0	14.5	18.0	26.5	17.0	21.5	19.0	17.0	18.0	18.0	14.5	16.5
27	21.5	13.5	17.5	27.0	18.0	22.0	22.0	16.0	18.5	18.5	12.0	15.0
28	16.5	14.0	15.5	27.5	19.0	23.0	21.0	16.5	18.5	19.5	12.0	15.5
29	19.0	12.0	15.5	22.0	19.5	21.0	23.5	16.0	19.0	20.5	13.0	16.0
30	15.0	13.5	14.0	26.0	17.5	21.5	24.0	16.5	19.5	18.0	14.0	15.5
31	---	---	---	26.5	18.5	22.5	24.5	17.0	20.0	---	---	---
MONTH	23.0	11.0	16.2	28.0	12.5	20.5	29.5	16.0	21.5	25.5	11.0	17.4
YEAR	29.5	.5	11.8									

14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°42'40", long 122°44'55", in SW 1/4 sec.7, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Bureau of Land Management land, on left bank 300 ft upstream from Spot Creek and 5.3 mi northeast of Trail.

DRAINAGE AREA.--14.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to September 1976, October 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,772.29 ft above sea level (Corps of Engineers bench mark). Prior to Dec. 8, 1996, at datum 0.95 ft higher.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversions upstream from station.

AVERAGE DISCHARGE.--23 years (water years 1974-76, 1978-97), 19.2 ft³/s, 18.40 in/yr, 13,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s Jan. 15, 1974, gage height, 6.25 ft, present datum, from rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.18 ft³/s Aug. 17-19, 21, 1992 and Sept. 23, 1994.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	1830	549	3.47	Dec. 30	2130	562	4.50
Dec. 4	2030	491	3.33	Jan. 1	0230	514	4.36
Dec. 8	1500	*590	*4.58				

Minimum discharge, 0.78 ft³/s Oct. 1, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	2.6	43	391	59	26	8.5	27	5.1	4.3	1.9	1.7
2	.85	2.3	31	277	48	99	8.4	23	4.2	3.5	1.9	1.6
3	.82	2.1	20	190	38	63	8.3	19	4.5	3.4	1.9	1.6
4	.88	2.0	130	107	31	46	8.1	15	6.0	3.2	1.8	1.6
5	.96	1.8	186	78	25	39	7.8	13	5.3	3.1	1.8	1.6
6	1.0	1.8	65	57	22	38	7.3	11	4.5	3.1	1.8	1.8
7	1.0	1.9	134	43	22	44	7.2	10	4.1	3.1	1.7	1.5
8	1.0	1.9	436	36	24	50	6.7	9.1	3.8	2.9	1.7	1.6
9	1.0	1.9	307	31	24	45	6.5	8.4	3.5	3.2	1.7	1.5
10	.93	1.9	249	27	23	42	6.4	7.7	3.4	3.6	1.7	1.7
11	.96	1.9	196	24	21	41	6.1	6.6	3.2	3.3	1.6	1.8
12	1.0	1.8	164	22	21	33	5.9	6.0	3.2	3.2	1.5	1.8
13	1.2	1.8	157	20	20	25	6.0	5.6	3.2	3.0	1.4	1.7
14	1.4	2.2	128	18	19	21	6.1	5.3	3.1	3.0	1.4	2.4
15	1.4	2.7	100	16	18	20	5.8	4.9	3.0	2.9	1.4	2.8
16	1.4	2.8	85	15	17	23	5.4	4.9	2.8	2.9	1.5	2.9
17	1.5	2.8	74	14	18	30	5.4	4.9	3.1	3.0	1.5	3.0
18	3.1	1.95	66	13	18	25	7.4	5.2	3.3	3.2	1.6	2.7
19	3.1	1.87	60	12	21	21	15	5.1	3.2	3.0	1.5	2.3
20	2.3	74	66	13	24	19	41	5.0	3.2	2.7	3.0	1.9
21	1.9	28	76	15	22	17	34	5.0	3.2	2.5	2.4	1.8
22	1.8	15	73	16	19	15	33	5.0	3.3	2.4	1.9	1.8
23	2.1	9.7	73	15	17	14	67	7.0	3.1	2.4	1.7	1.8
24	5.3	11	87	14	14	12	68	9.2	3.1	2.3	2.6	1.7
25	8.2	15	185	43	13	11	42	7.2	3.0	2.3	1.9	1.7
26	6.0	11	238	107	14	11	27	6.8	3.1	2.3	2.1	1.7
27	4.0	7.6	211	81	16	10	20	7.2	3.0	2.2	2.3	1.7
28	4.0	22	172	91	17	9.9	18	5.9	3.1	2.1	2.1	1.8
29	10	29	211	89	---	9.2	18	5.5	3.3	2.1	1.9	1.8
30	5.3	22	268	59	---	9.2	23	4.5	4.9	2.4	1.8	1.7
31	3.3	---	288	53	---	9.2	---	5.4	---	2.1	1.7	---
TOTAL	78.52	662.5	4579	1987	645	877.5	529.3	265.4	108.8	88.7	56.7	57.0
MEAN	2.53	22.1	148	64.1	23.0	28.3	17.6	8.56	3.63	2.86	1.83	1.90
MAX	10	195	436	391	59	99	68	27	6.0	4.3	3.0	3.0
MIN	.82	1.8	20	12	13	9.2	5.4	4.5	2.8	2.1	1.4	1.5
AC-FT	156	1310	9080	3940	1280	1740	1050	526	216	176	112	113
CFSM	.18	1.56	10.4	4.51	1.62	1.99	1.24	.60	.26	.20	.13	.13
IN.	.21	1.74	12.00	5.21	1.69	2.30	1.39	.70	.29	.23	.15	.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1997, BY WATER YEAR (WY)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	2.90	18.9	40.6	41.2	45.7	36.8	24.7	11.0	5.05	2.16	1.57	1.73												
MAX	7.27	102	148	140	100	124	52.4	28.2	17.2	4.94	4.30	4.44												
(WY)	1980	1974	1997	1974	1983	1974	1974	1979	1993	1983	1976	1978												
MIN	.75	1.70	3.45	6.53	9.47	3.18	4.54	1.67	.74	.31	.26	.36												
(WY)	1989	1994	1990	1992	1988	1992	1990	1992	1994	1994	1992	1994												

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1974 - 1997

ANNUAL TOTAL	11575.92	9935.42	
ANNUAL MEAN	31.6	27.2	19.2
HIGHEST ANNUAL MEAN			49.8
LOWEST ANNUAL MEAN			4.05
HIGHEST DAILY MEAN	436	436	904
LOWEST DAILY MEAN	.66	.82	.20
ANNUAL SEVEN-DAY MINIMUM	.75	.90	.21
ANNUAL RUNOFF (AC-FT)	22960	19710	13930
ANNUAL RUNOFF (CFSM)	2.23	1.92	1.35
ANNUAL RUNOFF (INCHES)	30.33	26.03	18.40
10 PERCENT EXCEEDS	78	73	49
50 PERCENT EXCEEDS	9.2	5.9	5.1
90 PERCENT EXCEEDS	.94	1.7	.98

ROGUE RIVER BASIN

373

14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1977 to current year.

INSTRUMENTATION.--Temperature recorder since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.0°C Aug. 14, 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 21.0°C Aug. 6; minimum, 1.0°C Jan. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.5	11.0	13.0	6.5	5.0	6.0	8.0	6.5	7.5	9.0	9.0	9.0
2	14.0	11.0	12.5	6.5	5.0	5.5	6.5	6.0	6.5	9.0	8.5	9.0
3	14.0	11.0	12.5	7.0	5.0	6.0	7.0	5.5	6.0	8.5	7.0	8.0
4	13.5	11.0	12.5	7.0	5.5	6.5	8.5	5.5	6.5	7.0	6.5	6.5
5	15.0	12.0	13.5	5.5	4.5	5.0	8.5	7.5	8.0	6.5	6.0	6.5
6	14.0	11.0	12.5	6.0	4.0	5.0	7.5	7.0	7.5	6.0	5.0	5.5
7	14.0	11.0	12.5	7.5	6.0	6.5	8.5	7.0	7.5	5.5	5.0	5.5
8	14.5	11.5	13.0	6.5	5.0	6.0	8.5	8.0	8.5	6.0	5.0	5.5
9	14.5	11.5	13.0	6.5	4.5	5.5	9.0	8.0	8.5	6.5	5.5	6.0
10	13.5	11.5	12.5	7.0	5.0	6.0	8.5	8.0	8.5	6.5	5.5	6.0
11	13.0	10.5	12.0	7.5	6.5	7.0	8.5	8.0	8.0	5.5	5.0	5.5
12	13.5	11.0	12.0	7.5	6.0	7.0	8.5	8.0	8.0	5.0	3.0	4.0
13	12.5	10.5	11.5	9.0	7.5	8.0	8.0	7.0	7.5	3.0	2.0	2.5
14	11.0	8.0	10.0	8.0	7.0	7.5	7.0	6.0	6.5	2.5	1.0	2.0
15	11.5	9.5	10.5	7.5	6.5	7.0	6.5	5.5	6.0	4.0	2.0	3.0
16	9.5	7.0	8.5	7.0	6.0	6.5	6.0	5.5	6.0	5.0	3.5	4.0
17	8.5	6.0	7.5	7.0	6.0	6.5	5.5	5.0	5.5	6.5	5.0	5.5
18	9.5	8.0	9.0	10.0	7.0	8.5	5.0	4.5	5.0	6.5	5.0	6.0
19	8.0	6.5	7.5	10.0	9.0	10.0	5.0	4.0	4.5	7.0	6.0	6.5
20	7.0	5.0	6.0	9.0	8.5	8.5	5.5	5.0	5.0	6.5	5.0	6.0
21	7.5	4.5	6.0	9.5	8.5	8.5	5.5	5.0	5.0	5.0	4.0	4.5
22	9.0	7.5	8.0	9.0	8.0	8.5	5.5	5.0	5.0	4.5	4.0	4.0
23	9.0	7.5	8.5	9.0	8.0	8.5	6.0	5.0	5.5	4.0	3.5	4.0
24	10.0	8.0	9.0	9.0	8.0	8.5	6.5	5.5	6.0	4.0	3.5	3.5
25	8.0	7.0	7.5	8.5	6.5	7.5	7.5	6.5	7.0	5.5	4.0	4.5
26	7.0	5.5	6.5	6.5	6.0	6.5	8.0	7.5	7.5	7.0	5.5	6.0
27	6.5	4.5	5.5	8.5	6.5	7.5	8.0	7.5	8.0	7.0	6.0	6.5
28	7.0	5.0	6.0	8.0	7.5	7.5	8.5	8.0	8.0	7.5	6.5	7.0
29	8.0	7.0	7.5	7.5	7.0	7.5	8.5	8.0	8.5	7.5	6.5	7.0
30	7.5	5.5	6.5	8.0	7.0	7.5	8.5	8.0	8.5	8.0	7.0	7.5
31	7.0	5.0	6.0	---	---	---	9.0	8.5	9.0	8.5	7.5	8.0
MONTH	15.0	4.5	9.6	10.0	4.0	7.1	9.0	4.0	6.9	9.0	1.0	5.6

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	8.0	7.0	7.5	5.5	4.5	4.5	8.0	4.0	5.5	9.5	6.0	7.5
2	7.0	5.5	6.5	6.0	5.5	5.5	9.0	3.5	6.0	11.0	6.0	8.5
3	6.5	5.5	6.0	6.0	5.0	5.5	9.0	4.5	6.5	10.5	9.0	9.5
4	7.0	6.0	6.5	6.0	4.5	5.0	9.5	5.0	6.5	11.5	7.0	9.5
5	6.0	5.0	5.5	7.0	4.5	5.5	9.0	4.0	6.0	12.5	8.0	10.0
6	6.0	4.0	5.0	7.0	5.5	6.5	8.0	4.0	6.0	12.0	9.0	10.0
7	6.5	6.0	6.0	7.0	6.0	6.5	8.5	6.0	7.0	13.5	7.5	10.0
8	7.0	5.5	6.0	7.5	5.5	6.5	9.0	6.0	7.0	14.5	9.0	11.5
9	7.0	5.5	6.0	7.5	5.5	6.5	9.5	5.0	7.0	15.0	10.0	12.5
10	6.5	5.0	6.0	8.0	6.5	7.5	10.0	5.5	7.5	15.0	10.5	12.5
11	7.0	6.0	6.0	7.5	5.5	7.0	10.5	4.5	7.0	17.0	12.0	14.0
12	6.0	4.5	5.5	6.5	5.0	5.5	10.0	6.0	7.5	17.5	12.5	14.5
13	6.0	4.5	5.0	7.0	4.5	5.5	8.0	7.0	7.5	17.0	12.0	14.5
14	7.0	5.5	6.0	7.5	5.0	6.0	10.0	7.0	8.5	17.0	12.5	14.5
15	6.5	5.0	6.0	8.5	6.5	7.5	13.5	7.0	9.5	17.0	13.0	14.5
16	7.5	5.0	6.5	8.5	7.0	7.5	11.0	9.0	10.0	16.5	12.5	14.5
17	7.5	5.5	6.5	8.5	5.5	7.0	14.0	9.0	11.0	17.0	12.5	14.5
18	7.0	5.0	6.0	9.5	6.0	7.5	11.0	9.5	10.5	17.5	12.5	14.5
19	7.5	5.5	6.5	10.0	8.0	9.0	10.0	9.0	9.5	17.0	12.0	14.0
20	6.5	5.0	5.5	10.5	7.5	9.0	10.0	8.5	9.5	15.5	11.0	13.0
21	6.5	5.0	5.5	10.0	5.5	7.5	9.5	8.0	9.0	15.0	10.0	12.5
22	6.0	4.0	5.0	10.0	6.0	8.0	10.0	8.0	9.0	13.0	10.0	11.5
23	5.5	3.5	4.5	10.0	6.0	8.0	9.0	7.5	8.0	13.0	11.0	12.0
24	6.0	3.5	4.5	11.0	7.0	9.0	10.0	7.0	8.0	12.0	10.0	11.0
25	6.5	4.0	5.0	12.0	7.5	9.5	11.5	7.0	9.0	13.0	8.5	10.5
26	7.0	5.5	6.0	10.0	8.0	9.0	12.5	8.5	10.5	12.0	9.0	10.5
27	5.5	2.0	4.0	9.5	6.5	8.0	11.0	8.5	10.0	14.0	11.0	12.0
28	5.5	4.0	4.5	9.5	6.0	7.5	9.0	8.0	8.5	14.0	12.0	13.0
29	---	---	---	9.0	4.5	7.0	10.0	8.0	9.0	16.0	11.5	13.5
30	---	---	---	7.5	5.5	6.5	10.0	7.5	8.5	18.0	13.0	15.0
31	---	---	---	6.5	5.0	5.5	---	---	---	16.0	13.5	14.5
MONTH	8.0	2.0	5.7	12.0	4.5	7.0	14.0	3.5	8.2	18.0	6.0	12.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	14.0	12.0	13.0	14.5	11.0	12.5	19.5	15.0	17.5	17.5	14.0	16.0
2	15.0	10.5	13.0	16.0	11.0	13.5	19.5	15.0	17.5	18.0	14.5	16.0
3	14.0	12.0	13.0	17.0	12.0	14.5	19.5	15.0	17.5	18.0	15.0	16.5
4	13.5	11.0	12.0	18.5	13.5	15.5	20.0	16.0	18.0	18.0	14.5	16.5
5	14.5	11.0	12.5	18.0	15.0	16.0	20.5	16.0	18.5	16.5	14.5	15.5
6	15.0	10.0	12.0	18.0	13.5	15.5	21.0	17.0	19.0	16.5	13.0	14.5
7	13.0	11.0	12.0	17.5	13.0	15.0	20.5	17.0	19.0	16.5	13.0	15.0
8	14.5	10.0	12.0	17.5	13.5	15.5	19.5	15.5	17.5	16.5	13.5	15.0
9	15.5	11.0	13.0	16.0	14.0	15.5	19.0	14.5	17.0	16.5	14.0	15.0
10	16.5	12.0	14.0	15.5	11.5	13.5	19.0	15.0	17.0	17.0	14.5	15.5
11	15.0	12.5	14.0	16.0	11.0	13.5	19.5	15.0	17.5	16.0	15.0	15.5
12	13.5	11.5	12.5	16.5	11.5	14.0	19.5	15.0	17.5	15.5	14.0	15.0
13	15.0	10.5	12.5	18.0	12.5	15.0	20.0	15.5	17.5	15.0	12.5	14.0
14	16.5	11.0	13.5	18.0	13.5	16.0	20.0	15.5	17.5	15.0	13.0	14.0
15	17.5	12.0	14.5	18.5	14.0	16.5	19.5	15.5	17.5	13.0	12.0	12.5
16	18.0	13.0	15.5	18.0	14.0	16.0	18.5	14.0	16.5	14.0	11.5	13.0
17	18.0	14.0	15.5	17.0	14.5	15.5	19.5	15.0	17.0	13.5	12.0	13.0
18	17.5	13.0	15.0	17.5	13.0	15.5	19.0	15.0	16.5	12.0	10.0	11.0
19	16.5	12.0	14.0	19.0	13.5	16.0	19.0	14.5	17.0	12.5	9.0	11.0
20	16.0	11.0	13.5	20.0	14.5	17.5	17.5	16.5	16.5	13.0	10.0	11.5
21	14.0	11.5	12.5	20.0	16.0	18.0	19.0	15.5	17.5	13.5	10.5	12.0
22	14.0	9.5	11.5	19.0	14.5	17.0	19.0	15.0	17.0	14.0	11.0	12.5
23	14.5	10.0	12.0	19.0	14.5	17.0	18.5	15.5	17.0	15.0	11.5	13.0
24	15.5	10.0	12.5	19.0	14.0	16.5	17.5	15.5	16.5	15.0	11.5	13.5
25	16.0	11.0	13.5	18.5	13.5	16.5	17.0	15.0	16.0	15.0	12.0	13.5
26	16.0	11.5	13.5	18.5	14.0	16.5	16.0	15.0	15.5	15.0	12.5	13.5
27	15.5	10.5	13.0	19.0	14.5	17.0	16.5	14.0	15.5	13.5	10.5	12.0
28	13.0	11.5	12.5	19.5	15.5	17.5	16.5	14.0	15.5	13.5	10.5	12.0
29	14.5	10.0	12.0	18.0	16.5	17.0	17.0	13.5	15.5	14.5	11.0	13.0
30	12.5	11.0	11.5	19.0	15.0	17.0	17.0	13.5	15.5	14.0	12.0	13.0
31	---	---	---	19.0	15.5	17.5	17.5	14.0	16.0	---	---	---
MONTH	18.0	9.5	13.1	20.0	11.0	15.8	21.0	13.5	17.0	18.0	9.0	13.8
YEAR	21.0	1.0	10.2									

14338000 ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°40'30", long 122°44'38", in NE 1/4 sec.30, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 3.7 mi northeast of Trail and at mile 1.2.

DRAINAGE AREA.--129 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year. Prior to March 1946 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-89-2: Drainage area. WDR OR-92-1: 1989(M), 1990(M), 1991(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,493.91 ft above sea level. Prior to July 5, 1946, nonrecording gage at various sites within 1.0 mi of present site at different datums. July 5, 1946, to June 22, 1950, nonrecording gage, and June 23, 1950, to May 23, 1954, water-stage recorder, at site 0.5 mi downstream at datum 25.21 ft lower, May 24, 1954, to Sept. 30, 1988 at site 0.8 mi downstream at datum 37.35 ft lower.

REMARKS.--No estimated daily discharges. Records good. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--52 years (water years 1947-97), 220 ft³/s, 159,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s Dec. 22, 1964, gage height, 18.84 ft, from rating curve extended above 4,700 ft³/s on basis of slope-area measurement of peak flow, site and datum then in use; minimum discharge, 0.01 ft³/s Oct. 8, 1987, result of dam construction 1.3 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2100	8,920	11.19	Dec. 25	1730	3,800	8.63
Dec. 4	2330	6,650	10.25	Jan. 1	0530	*11,300	a*12.00
Dec. 8	1600	6,700	10.27	Jan. 1	0530	---	b*12.58

Minimum discharge, 1.8 ft³/s Aug. 15.

a Recorded gage height.

b From outside high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	57	919	7270	811	233	123	524	69	46	7.1	7.9
2	3.9	46	747	5150	640	800	115	402	61	36	7.0	7.3
3	4.2	41	550	3170	503	589	111	322	66	30	6.8	6.7
4	4.3	35	1520	1620	416	470	107	263	95	25	6.1	6.1
5	4.5	31	3240	1090	345	392	103	222	86	22	5.9	5.5
6	4.5	27	1420	740	290	365	99	192	74	20	5.5	6.0
7	4.6	30	1780	568	290	393	100	170	64	19	5.2	5.6
8	5.1	31	5340	467	304	433	99	154	60	17	4.8	5.1
9	4.3	29	4450	388	283	408	97	140	54	17	4.5	5.1
10	4.2	26	2970	330	268	367	95	128	50	20	4.8	5.3
11	4.0	25	2110	290	247	395	91	119	45	17	4.5	5.8
12	4.1	23	1650	259	245	353	89	109	43	17	4.1	6.7
13	5.2	23	1400	226	236	292	88	103	43	15	3.4	7.0
14	6.7	26	1060	201	224	251	93	99	39	14	2.2	7.9
15	7.1	40	729	186	212	259	90	91	37	13	2.1	15
16	6.7	52	557	171	199	291	89	85	35	12	2.1	22
17	7.0	53	439	167	213	403	89	82	32	12	2.7	22
18	17	2760	365	155	210	346	95	78	30	12	2.8	25
19	34	4280	309	147	261	297	165	73	28	11	2.5	18
20	24	2050	392	153	315	297	431	68	26	9.0	5.8	14
21	17	789	531	175	289	272	451	64	26	9.9	13	12
22	16	502	476	194	253	242	421	62	27	8.5	8.4	11
23	26	359	448	181	220	217	688	76	24	8.5	7.0	9.7
24	103	352	517	165	194	193	875	96	23	8.4	24	8.7
25	137	382	2280	444	170	179	622	82	23	8.0	17	8.1
26	121	317	3470	988	164	171	405	72	21	9.3	13	7.0
27	73	262	2540	797	193	162	314	75	20	7.9	14	7.5
28	62	520	1930	783	216	159	271	73	21	7.2	13	8.0
29	194	657	2360	808	---	143	297	74	24	7.3	11	7.7
30	127	515	3080	598	---	134	442	66	41	8.6	9.7	7.4
31	80	---	4510	640	---	131	---	71	---	8.3	8.5	---
TOTAL	1114.9	14340	54089	28521	8211	9637	7155	4235	1287	475.9	228.5	291.1
MEAN	36.0	478	1745	920	293	311	239	137	42.9	15.4	7.37	9.70
MAX	194	4280	5340	7270	811	800	875	524	95	46	24	25
MIN	3.5	23	309	147	164	131	88	62	20	7.2	2.1	5.1
AC-FT	2210	28440	107300	56570	16290	19110	14190	8400	2550	944	453	577

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1997, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
31.5	189	456	518	504	423
404	1008	1851	1283	1131	1074
1951	1974	1965	1958	1972	1956
3.17	8.92	13.1	19.8	23.1	45.4
1953	1994	1977	1977	1977	1992

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1946 - 1997
ANNUAL TOTAL	148710.4	129585.4	
ANNUAL MEAN	406	355	220
HIGHEST ANNUAL MEAN			438
LOWEST ANNUAL MEAN			41.7
HIGHEST DAILY MEAN	5340	Dec 8	12200
LOWEST DAILY MEAN	1.7	Sep 3	.12
ANNUAL SEVEN-DAY MINIMUM	2.1	Aug 31	.12
ANNUAL RUNOFF (AC-FT)	295000	257000	159200
10 PERCENT EXCEEDS	995	743	556
50 PERCENT EXCEEDS	146	89	68
90 PERCENT EXCEEDS	4.0	6.1	4.6

ROGUE RIVER BASIN

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, Aug. 16, 18, 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.5°C Aug. 6; minimum, 0.5°C Jan. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	18.5	15.5	17.0	7.5	6.0	7.0	8.0	6.5	7.5	9.0	8.5	8.5
2	18.0	15.5	17.0	7.5	5.5	6.5	6.5	6.0	6.5	8.5	8.0	8.5
3	18.0	15.5	16.5	7.5	6.0	6.5	7.0	6.0	6.5	8.0	7.0	7.5
4	17.5	15.5	16.5	7.5	7.0	7.5	7.5	6.0	6.5	7.0	6.0	6.0
5	18.5	15.5	17.0	7.5	6.0	6.5	8.0	7.5	8.0	6.0	5.5	6.0
6	18.5	15.5	17.0	6.5	5.5	6.0	7.5	7.0	7.5	5.5	4.5	5.0
7	18.5	15.5	17.0	8.0	6.5	7.0	8.0	7.0	7.5	5.0	4.5	5.0
8	18.5	15.5	17.0	8.0	7.0	7.5	8.5	7.5	8.0	5.5	4.0	5.0
9	19.0	15.5	17.5	7.5	6.0	7.0	8.5	7.5	8.0	6.0	5.0	5.5
10	17.5	15.5	16.5	7.0	6.0	6.5	8.5	7.5	8.0	6.0	5.0	5.5
11	17.5	15.0	16.0	8.0	7.0	7.5	8.0	7.5	7.5	5.5	5.0	5.0
12	16.5	15.0	16.0	8.0	7.5	8.0	8.0	7.5	8.0	5.0	3.0	4.0
13	16.0	14.5	15.0	9.0	8.0	8.5	8.0	7.0	7.5	3.0	1.5	2.0
14	15.5	13.5	14.5	9.0	8.5	8.5	7.0	5.5	6.0	2.0	.5	1.0
15	14.5	13.0	13.5	8.5	8.0	8.0	6.0	5.0	5.5	3.0	1.0	2.0
16	14.0	12.0	13.0	8.0	7.0	7.5	6.0	5.0	5.5	4.0	2.5	3.5
17	13.0	11.0	12.0	7.5	7.0	7.0	5.5	4.5	5.0	5.5	4.0	5.0
18	11.5	10.5	11.0	9.5	7.5	8.0	5.0	4.0	4.5	6.0	5.0	5.5
19	10.5	9.5	10.0	10.0	9.0	10.0	4.5	3.5	4.0	6.0	5.5	6.0
20	9.5	8.5	9.0	9.0	8.5	9.0	5.0	4.5	4.5	6.0	5.5	6.0
21	9.0	8.0	8.5	9.5	8.5	9.0	5.0	4.5	4.5	5.5	4.0	4.5
22	10.0	8.5	9.0	9.0	8.5	9.0	5.5	4.5	5.0	5.0	3.5	4.0
23	10.0	9.0	9.5	9.0	8.5	8.5	5.5	5.0	5.0	4.5	3.5	4.0
24	10.5	10.0	10.0	9.5	8.5	9.0	6.5	5.5	6.0	4.0	3.0	3.5
25	10.0	7.5	8.5	9.0	7.5	8.5	7.0	5.5	6.0	5.0	3.5	4.5
26	8.0	6.5	7.0	7.5	6.0	6.5	7.5	7.0	7.0	7.0	5.0	6.0
27	7.5	6.0	6.5	8.0	7.0	7.5	7.5	7.5	7.5	6.5	5.5	6.0
28	7.5	6.0	6.5	8.5	7.5	8.0	7.5	7.5	7.5	7.5	6.5	7.0
29	8.5	7.0	7.5	8.0	7.0	7.5	8.0	7.5	8.0	7.5	6.0	6.5
30	7.5	6.5	7.0	8.0	7.5	7.5	8.0	7.5	8.0	7.0	6.5	7.0
31	8.0	6.0	7.0	---	---	---	8.5	8.0	8.0	8.0	7.0	7.5
MONTH	19.0	6.0	12.5	10.0	5.5	7.7	8.5	3.5	6.6	9.0	.5	5.3

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.5	7.0	7.0	5.5	4.5	5.0	8.5	5.0	6.5	10.5	6.5	8.5
2	7.0	6.0	6.5	6.0	5.0	5.5	8.5	5.0	7.0	11.0	6.5	9.0
3	6.0	5.0	5.5	6.0	4.5	5.0	9.5	6.0	7.5	11.0	9.5	10.0
4	7.5	6.0	6.5	7.0	4.5	5.5	9.5	6.5	8.0	12.0	8.0	10.0
5	6.5	4.5	5.5	7.0	4.0	5.5	9.5	6.0	7.5	13.0	9.0	11.0
6	5.5	3.5	4.5	7.5	5.5	6.5	8.0	6.0	7.0	12.5	10.0	11.5
7	6.0	5.5	5.5	7.5	6.0	7.0	9.5	7.0	8.0	13.5	9.0	11.0
8	7.0	5.5	6.0	8.0	5.5	7.0	9.0	7.5	8.0	15.0	10.5	13.0
9	6.0	5.0	5.5	7.5	5.5	6.5	10.0	6.5	8.0	16.0	12.0	14.0
10	6.5	5.5	6.0	8.5	6.5	7.5	10.5	7.0	9.0	16.0	12.5	14.5
11	6.5	5.5	6.0	8.0	6.5	7.5	11.0	7.0	9.0	18.5	13.5	16.0
12	6.5	5.0	6.0	7.0	5.0	6.0	10.5	8.0	9.0	18.5	15.0	17.0
13	6.0	4.0	5.0	7.5	4.5	6.0	10.0	9.0	9.0	18.0	15.0	16.5
14	7.5	5.0	6.5	7.0	5.0	6.0	10.5	8.0	9.0	18.5	15.5	17.0
15	6.5	4.5	6.0	8.5	6.5	7.5	13.5	8.5	10.5	19.5	15.5	17.5
16	7.0	5.0	6.0	8.5	7.0	8.0	13.0	11.0	12.0	19.0	16.0	17.5
17	7.5	6.5	7.0	8.5	6.0	7.0	14.5	10.5	12.0	19.0	15.5	17.5
18	7.0	5.0	6.0	9.5	6.0	8.0	13.5	11.5	12.0	19.5	16.0	18.0
19	7.0	6.0	6.5	10.0	8.0	9.0	11.5	10.0	10.5	19.0	15.5	17.5
20	6.5	5.0	5.5	11.0	9.0	9.5	10.5	9.5	10.0	18.0	15.0	16.5
21	6.5	4.5	5.5	10.0	6.5	8.0	10.5	8.5	9.0	17.0	14.0	15.5
22	6.5	4.0	5.0	10.0	6.5	8.5	10.0	8.0	9.0	16.5	13.5	15.0
23	6.0	3.5	4.5	10.0	7.0	8.5	9.5	8.0	9.0	15.0	13.5	14.5
24	6.0	3.0	4.5	11.5	8.0	9.5	10.5	7.0	8.5	14.5	13.0	13.5
25	6.0	3.5	5.0	12.0	8.0	10.0	12.0	7.0	9.5	15.0	11.0	13.0
26	7.5	6.0	6.5	11.0	8.5	9.5	13.0	9.0	11.0	14.5	12.5	13.5
27	6.5	3.5	5.0	10.0	7.5	9.0	12.5	10.0	11.0	16.0	13.0	14.0
28	6.0	4.0	5.0	10.0	7.0	8.5	10.5	8.5	9.0	16.5	15.0	15.5
29	---	---	---	9.0	6.0	7.5	11.0	8.5	9.5	18.5	14.5	16.5
30	---	---	---	8.5	6.5	7.0	10.5	8.5	9.5	21.0	16.5	18.5
31	---	---	---	7.5	6.0	6.5	---	---	---	20.0	18.0	19.0
MONTH	7.5	3.0	5.7	12.0	4.0	7.4	14.5	5.0	9.1	21.0	6.5	14.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	18.0	16.0	17.0	18.0	14.5	16.0	26.0	21.5	23.5	23.0	19.0	21.0
2	18.0	15.0	16.5	20.0	16.0	18.0	26.0	22.0	24.0	23.5	19.0	21.0
3	17.5	16.0	16.5	22.0	17.5	19.5	26.0	21.5	23.5	23.5	19.5	21.5
4	16.5	14.0	15.0	23.5	19.5	21.5	26.5	22.0	24.0	23.5	20.0	21.5
5	17.0	14.0	15.5	23.5	21.0	22.0	27.0	22.5	24.5	21.5	19.5	20.5
6	18.0	14.0	16.0	23.0	20.0	21.5	27.5	22.5	25.0	22.0	18.0	20.0
7	17.5	15.0	15.5	23.0	19.5	21.5	27.0	22.5	24.5	22.0	18.0	20.0
8	17.5	13.5	15.0	23.0	20.0	21.5	26.0	22.0	24.0	21.5	18.5	20.0
9	18.0	15.0	16.5	22.0	20.0	21.0	25.5	21.0	23.0	21.0	18.5	19.5
10	19.5	16.0	18.0	20.5	18.5	19.5	26.0	21.0	23.5	22.0	18.0	20.0
11	19.0	17.5	18.0	21.0	17.5	19.5	25.5	21.0	23.0	20.0	18.5	19.5
12	18.0	15.5	16.5	22.0	17.5	20.0	26.0	21.0	23.0	22.0	18.0	19.5
13	17.5	14.0	15.5	23.5	18.5	21.0	25.5	21.0	23.0	20.0	17.5	19.0
14	19.5	15.5	17.0	24.0	20.0	22.0	26.5	20.5	23.5	19.0	17.0	18.0
15	21.0	17.0	19.0	25.0	20.5	22.5	26.0	20.5	23.0	17.5	15.5	16.5
16	22.0	19.0	20.0	24.5	21.0	22.5	25.0	19.5	22.5	17.0	15.0	16.0
17	22.0	19.5	20.5	22.5	20.5	21.5	25.0	20.0	22.5	17.5	16.0	16.5
18	21.5	19.5	20.5	23.5	19.5	21.5	25.0	20.0	22.5	16.5	14.0	15.0
19	21.0	19.0	20.0	24.5	20.0	22.0	25.0	19.5	22.5	16.0	13.0	14.5
20	20.5	18.0	19.0	26.0	21.0	23.5	22.5	20.5	21.5	17.0	13.5	15.5
21	19.5	17.0	18.0	26.0	22.0	24.0	23.5	20.0	21.5	17.5	14.0	16.0
22	18.5	16.0	17.0	26.0	21.5	23.5	24.5	20.5	22.5	18.0	15.0	16.5
23	19.0	16.0	17.5	26.0	21.5	23.5	24.5	20.5	22.5	19.0	15.5	17.5
24	20.0	16.5	18.0	25.5	21.0	23.0	22.0	21.0	21.5	19.0	15.5	17.5
25	20.5	17.5	19.0	25.0	21.0	23.0	21.0	19.5	20.5	18.5	16.0	17.5
26	21.0	17.5	19.0	25.0	20.5	22.5	20.0	18.5	19.5	17.5	16.0	17.0
27	20.5	17.5	19.0	25.5	21.0	23.0	21.0	18.0	19.5	18.0	15.0	16.5
28	19.0	17.0	17.5	26.5	21.5	23.5	21.0	18.5	19.5	18.0	14.5	16.0
29	18.5	16.0	17.0	24.0	21.5	22.5	21.5	18.0	20.0	18.5	15.0	16.5
30	17.0	15.0	16.0	25.0	20.5	22.5	22.5	18.5	20.5	17.0	15.5	16.5
31	---	---	---	25.5	21.5	23.5	23.0	19.0	21.0	---	---	---
MONTH	22.0	13.5	17.5	26.5	14.5	21.7	27.5	18.0	22.4	23.5	13.0	18.1
YEAR	27.5	.5	12.4									

ROGUE RIVER BASIN

14338100 ROGUE RIVER AT TRAIL, OR

LOCATION.--Lat 42°38'51", long 122°48'18", in NW 1/4 NE 1/4 sec.3, T.34 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 0.2 mi upstream from Trail Creek, and at mile 148.9.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1988 to current year.

INSTRUMENTATION.--Water-quality monitor since March 1988.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.0°C July 27, 29, 1992; minimum, 2.0°C Feb. 5, 6, 1989, Feb. 14, 15, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.5°C Aug. 22; minimum, 4.0°C Feb. 23, 24.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.5	7.5	8.5	9.0	7.0	8.0	8.0	7.5	8.0	8.5	8.0	8.5
2	10.0	7.5	8.5	9.0	7.5	8.0	7.5	7.5	7.5	8.0	7.5	8.0
3	10.0	7.5	8.5	8.5	7.5	8.0	7.5	7.5	7.5	7.5	6.0	6.5
4	9.5	7.5	8.5	8.5	8.0	8.0	7.5	7.0	7.5	6.0	5.5	5.5
5	10.5	7.5	8.5	8.5	7.5	8.0	7.5	7.5	7.5	6.0	5.5	5.5
6	10.0	7.5	8.5	8.5	7.5	8.0	7.5	7.0	7.0	6.0	5.5	6.0
7	10.5	7.5	8.5	9.0	8.0	8.0	7.5	7.0	7.0	6.0	5.5	6.0
8	10.5	7.5	8.5	9.0	8.0	8.0	8.0	7.5	7.5	6.0	5.5	5.5
9	10.0	7.5	8.5	9.0	7.5	8.0	8.0	7.5	7.5	6.0	5.5	5.5
10	9.5	7.5	8.0	8.5	7.5	8.0	7.5	7.0	7.5	6.0	5.5	5.5
11	10.0	7.0	8.0	9.0	8.0	8.0	7.0	7.0	7.0	5.5	5.5	5.5
12	9.5	7.5	8.5	9.0	7.5	8.0	7.0	7.0	7.0	5.5	5.5	5.5
13	9.0	7.5	8.0	9.0	8.0	8.5	7.0	7.0	7.0	5.5	5.0	5.0
14	9.5	7.0	8.0	8.5	8.0	8.0	7.0	6.5	6.5	5.0	5.0	5.0
15	8.5	7.5	8.0	8.5	8.0	8.0	6.5	6.5	6.5	5.0	5.0	5.0
16	8.5	7.0	7.5	8.0	8.0	8.0	6.5	6.5	6.5	5.0	5.0	5.0
17	8.5	7.0	7.5	8.5	8.0	8.0	6.5	6.0	6.5	5.5	5.0	5.5
18	8.5	7.5	8.0	9.5	8.0	8.5	6.5	6.0	6.0	5.5	5.0	5.5
19	9.0	7.5	8.0	9.5	9.0	9.5	6.0	6.0	6.0	5.5	5.5	5.5
20	9.0	7.0	7.5	9.0	8.0	8.5	6.0	5.5	6.0	5.5	5.0	5.5
21	8.5	7.0	7.5	8.5	8.0	8.5	5.5	5.0	5.5	5.0	5.0	5.0
22	8.5	8.0	8.0	8.5	8.0	8.5	5.5	5.5	5.5	5.0	4.5	5.0
23	9.0	8.0	8.0	8.5	8.0	8.5	6.0	5.5	5.5	5.0	4.5	4.5
24	9.5	8.0	8.5	8.5	8.0	8.5	6.0	5.5	6.0	5.0	4.5	4.5
25	8.0	7.5	8.0	8.5	8.0	8.0	6.5	6.0	6.0	5.0	4.5	5.0
26	9.0	7.5	8.0	8.0	7.5	8.0	7.0	6.5	6.5	5.5	5.0	5.5
27	9.0	7.0	8.0	8.5	8.0	8.0	6.5	6.5	6.5	5.5	5.0	5.5
28	8.5	7.5	8.0	8.5	8.0	8.0	6.5	6.5	6.5	6.5	5.5	6.0
29	9.0	7.5	8.0	8.0	8.0	8.0	7.0	6.5	6.5	6.0	5.0	5.5
30	8.5	7.5	8.0	8.0	8.0	8.0	7.5	6.5	6.5	5.5	5.5	5.5
31	9.0	7.5	8.0	---	---	---	8.5	7.5	8.0	6.0	5.5	5.5
MONTH	10.5	7.0	8.1	9.5	7.0	8.2	8.5	5.0	6.7	8.5	4.5	5.6

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.0	5.5	5.5	5.0	4.5	5.0	6.5	5.0	5.5	9.0	7.0	8.0
2	5.5	5.0	5.5	5.5	5.0	5.0	7.5	5.0	6.0	9.5	8.0	8.5
3	5.0	5.0	5.0	5.5	4.5	5.0	7.5	5.0	6.0	9.0	8.0	8.5
4	5.5	5.0	5.5	6.0	4.5	5.0	8.0	5.0	6.5	9.5	8.0	8.5
5	5.5	4.5	5.0	6.0	4.5	5.0	8.5	5.5	6.5	9.5	8.0	8.5
6	5.0	4.5	4.5	6.5	5.5	6.0	7.0	5.5	6.0	9.5	8.0	9.0
7	5.5	5.0	5.0	6.5	5.5	6.0	7.5	6.0	6.5	10.0	8.5	9.0
8	6.0	5.0	5.5	7.0	5.5	6.0	7.5	6.0	6.5	10.5	8.5	9.5
9	5.5	5.0	5.0	6.0	5.0	5.5	8.0	5.5	6.5	10.5	8.5	9.5
10	6.0	5.0	5.5	7.0	5.5	6.0	8.0	5.5	6.5	11.0	8.5	9.5
11	5.5	5.0	5.0	6.5	5.5	6.0	8.5	6.0	7.0	11.0	9.0	10.0
12	6.0	5.0	5.5	6.0	5.0	5.5	8.0	6.5	7.0	11.0	9.0	10.0
13	5.5	4.5	5.0	6.5	5.0	5.5	7.0	6.5	6.5	11.0	8.5	10.0
14	6.5	5.0	5.5	6.0	5.0	5.5	8.0	6.5	7.0	11.0	9.0	10.0
15	6.0	4.5	5.5	6.5	5.5	6.0	9.5	6.5	7.5	11.0	9.0	10.0
16	6.0	5.0	5.5	6.5	6.0	6.0	8.0	7.0	7.5	10.5	8.5	9.5
17	6.5	5.5	6.0	6.5	5.5	6.0	10.0	7.0	8.0	11.0	8.5	9.5
18	6.0	5.0	5.5	7.0	5.5	6.0	9.0	7.5	8.5	11.0	8.5	9.5
19	6.5	5.5	6.0	6.5	6.0	6.0	8.0	7.5	8.0	11.0	8.5	10.0
20	6.0	5.0	5.5	7.5	6.0	6.5	9.0	7.5	8.0	11.0	8.5	9.5
21	6.0	5.0	5.5	7.0	5.5	6.0	8.5	7.5	7.5	10.5	8.5	9.5
22	6.0	4.5	5.0	7.5	5.5	6.0	8.0	7.5	7.5	10.0	8.0	9.0
23	6.0	4.0	5.0	7.0	5.5	6.0	8.5	7.5	8.0	10.0	8.5	9.0
24	6.0	4.0	5.0	7.5	5.5	6.5	9.0	7.5	8.5	10.0	8.5	9.0
25	5.5	4.5	5.0	7.5	5.5	6.5	9.5	7.5	8.5	10.5	8.0	9.0
26	6.0	5.0	5.5	6.5	5.5	6.0	9.5	8.5	9.0	9.5	8.0	9.0
27	5.5	4.5	5.0	6.5	5.5	6.0	9.5	8.5	9.0	10.0	8.5	9.0
28	6.0	4.5	5.0	7.0	5.5	6.0	9.0	8.0	8.5	9.5	8.5	9.0
29	---	---	---	6.5	5.0	5.5	9.0	8.0	8.5	11.0	8.5	9.5
30	---	---	---	6.0	5.5	5.5	9.0	8.0	8.5	11.0	9.0	9.5
31	---	---	---	6.0	5.0	5.5	---	---	---	10.5	8.5	9.5
MONTH	6.5	4.0	5.3	7.5	4.5	5.9	10.0	5.0	7.4	11.0	7.0	9.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.5	8.5	9.5	11.0	9.5	10.5	14.5	11.5	12.5	13.0	11.5	12.0
2	11.0	8.5	9.5	12.0	9.0	10.5	14.5	11.5	13.0	13.0	10.0	11.5
3	10.0	9.0	9.5	12.0	9.5	10.5	14.5	11.5	13.0	13.5	10.0	12.0
4	11.0	9.0	9.5	12.0	9.5	11.0	15.0	11.5	13.0	13.0	10.5	12.0
5	11.5	9.0	10.0	12.0	9.5	11.0	15.0	11.5	13.0	12.5	10.5	11.5
6	11.0	9.0	10.0	12.0	9.5	10.5	15.0	12.0	13.0	13.0	10.5	12.0
7	10.0	9.0	9.5	12.0	9.5	10.5	15.0	12.0	13.0	13.5	11.0	12.0
8	11.0	9.0	10.0	12.0	9.5	10.5	15.0	12.0	13.0	13.0	10.0	11.5
9	11.0	9.0	10.0	11.0	9.0	10.0	14.5	11.5	13.0	11.5	10.0	10.5
10	11.5	9.5	10.5	11.5	9.0	10.0	15.0	12.0	13.0	12.0	10.0	10.5
11	11.0	9.0	10.0	11.5	9.0	10.5	14.5	12.0	13.0	11.0	10.0	10.5
12	10.0	8.5	9.0	12.0	9.5	10.5	14.5	12.0	13.0	12.0	10.0	11.0
13	10.0	8.0	9.0	12.0	9.5	10.5	14.5	12.0	13.0	12.0	10.0	11.0
14	10.5	8.5	9.5	12.0	9.5	10.5	15.0	12.0	13.5	11.5	10.5	11.0
15	11.0	8.5	9.5	12.0	9.0	10.5	15.0	12.0	13.5	11.5	10.5	10.5
16	11.0	9.0	9.5	12.5	9.5	11.0	15.0	12.0	13.5	12.0	10.5	11.0
17	11.0	9.0	10.0	13.0	11.0	12.0	15.0	12.5	13.5	12.0	10.5	11.0
18	11.0	8.5	10.0	13.5	11.0	12.0	15.0	12.0	13.5	11.5	10.0	10.5
19	11.0	9.0	10.0	14.0	11.0	12.0	15.0	12.5	13.5	13.0	10.0	11.0
20	10.5	9.0	9.5	14.0	11.0	12.5	13.5	13.0	13.5	13.0	10.0	11.0
21	10.0	8.5	9.0	14.5	11.0	12.5	15.0	13.0	14.0	13.0	10.0	11.0
22	10.5	8.5	9.5	14.5	11.0	12.5	15.5	13.0	14.0	13.0	8.0	10.5
23	10.5	8.5	9.5	14.0	10.5	12.5	15.0	13.0	13.5	10.5	7.5	8.5
24	10.5	8.5	9.5	14.0	11.0	12.5	15.0	12.0	13.5	10.5	7.5	8.5
25	11.0	8.5	10.0	14.0	11.0	12.5	14.0	13.0	13.5	10.0	7.5	8.5
26	11.0	9.0	10.0	14.0	11.0	12.5	13.5	13.0	13.0	9.0	7.5	8.0
27	11.0	9.0	10.0	14.5	11.0	12.5	14.5	13.0	13.5	10.0	7.0	8.0
28	10.0	9.0	9.5	14.5	11.0	12.5	14.0	12.5	13.0	10.0	7.5	8.5
29	11.0	9.0	10.0	12.5	11.5	12.0	14.5	12.0	13.0	10.5	7.5	8.5
30	10.5	9.0	10.0	14.5	11.5	12.5	14.5	12.0	13.0	9.0	7.5	8.0
31	---	---	---	14.5	11.5	13.0	14.5	12.0	13.0	---	---	---
MONTH	11.5	8.0	9.7	14.5	9.0	11.4	15.5	11.5	13.2	13.5	7.0	10.4
YEAR	15.5	4.0	8.4									

ROGUE RIVER BASIN

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR

LOCATION.--Lat 42°31'30", long 122°50'30", in SE 1/4 sec.17, T.35 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 50 ft upstream from Dodge Bridge, 0.7 mi downstream from Reese Creek, 4.3 mi northwest of Eagle Point, and at mile 138.6.

DRAINAGE AREA.--1,215 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

REVISED RECORDS.--WSP 1094: 1942(M), 1943, 1945(M), 1946. WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,271.99 ft above sea level. Prior to Dec. 21, 1938, nonrecording gage, Dec. 21, 1938, to Aug. 15, 1968, water-stage recorder, at datum 2.27 ft higher, Aug. 16, 1968, to Sept. 30, 1976, water-stage recorder, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. 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 (station 14337500) is diverted near Butte Falls.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 2,636 ft³/s, 1,910,000 acre-ft/yr.
20 years (water years 1978-97), 2,405 ft³/s, 1,743,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,600 ft³/s Dec. 22, 1964, gage height, 12.78 ft, datum then in use, from rating curve extended above 23,000 ft³/s; minimum discharge, 567 ft³/s Feb. 18, 1977, result of closure of Lost Creek dam, minimum prior to that time, 611 ft³/s Aug. 6, 14, 29, Sept. 9, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25,500 ft³/s Jan. 1, gage height, 10.20 ft; minimum discharge, 1,220 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1290	1690	6940	22200	5940	2240	2800	5750	3050	3180	2030	2300
2	1300	2580	6630	20100	5780	4230	2380	4800	3030	3010	2040	2300
3	1300	2620	6260	18200	5450	3230	2190	4550	3050	2900	2060	2310
4	1300	2630	8220	18000	4890	2830	1890	5160	3190	2880	2040	2300
5	1300	2640	11500	15400	3900	2550	1860	5010	3120	2890	2030	2310
6	1300	2630	7620	17600	3700	2420	1850	4680	3080	2850	2030	2310
7	1300	2630	9020	17800	3560	2400	1860	4030	3050	2760	2030	2310
8	1300	2630	15700	17000	3490	2400	1910	3610	3050	2620	2050	2310
9	1280	2510	14400	17800	3150	2560	2020	3440	3190	2500	2040	2290
10	1280	2130	14400	14400	2930	2750	2020	3410	3280	2520	2030	2320
11	1290	1910	13500	16500	2770	2920	1930	3570	3450	2520	2070	2300
12	1300	1730	13000	14900	2840	3080	1820	3960	3460	2520	2160	2230
13	1320	1520	12700	11900	2640	2960	1820	4210	3460	2500	2270	2080
14	1340	1540	11500	10600	2460	2880	1840	4170	3450	2490	2330	1990
15	1340	1600	10800	6880	2150	2890	1820	4010	3440	2480	2330	1970
16	1340	1610	10400	3710	2120	2980	1790	3570	3440	2480	2320	1970
17	1360	1610	9890	3630	2200	3370	2020	3630	3420	2410	2330	1920
18	1470	5800	8630	3590	2180	3290	2360	3350	3470	2250	2350	1800
19	1510	11500	6700	3540	2310	3180	2830	3310	3550	2250	2360	1610
20	1490	7430	4740	3580	2350	3220	4670	3280	3560	2260	2420	1470
21	1470	5160	5120	3810	2250	3210	6920	3060	3550	2210	2430	1340
22	1460	5100	4680	3770	2170	3130	6970	2660	3550	2100	2420	1330
23	1420	5090	4470	3350	2090	3070	7660	2710	3550	1990	2410	1320
24	1650	5220	4580	3610	2020	3020	6400	3000	3550	2010	2460	1320
25	1780	5250	6890	4950	1970	3090	4970	2940	3550	2020	2430	1310
26	1750	5180	10100	5910	1970	3280	4390	2890	3510	2030	2430	1320
27	1570	5600	13500	4930	2200	3260	4210	2940	3380	2040	2440	1310
28	1560	6420	12900	4100	2250	3360	4110	3080	3290	2040	2300	1310
29	1760	6470	12800	4240	---	3560	4280	3100	3220	2030	2320	1310
30	1670	6130	15700	4550	---	3530	5060	3060	3230	2030	2320	1310
31	1600	---	13900	5020	---	3270	---	3050	---	2030	2310	---
TOTAL	44400	116560	307190	305570	83730	94160	98650	113990	100170	74800	69590	55580
MEAN	1432	3885	9909	9857	2990	3037	3288	3677	3339	2413	2245	1853
MAX	1780	11500	15700	22200	5940	4230	7660	5750	3560	3180	2460	2320
MIN	1280	1520	4470	3350	1970	2240	1790	2660	3030	1990	2030	1310
AC-FT	88070	231200	609300	606100	166100	186800	195700	226100	198700	148400	138000	110200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1997, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1293	1921	3285	2878	2646	2575	2765	2915	2479	2166	2195	1745								
MAX	1931	4925	9909	9857	6045	4645	4520	4658	3939	3152	3092	2200								
(WY)	1983	1985	1997	1997	1982	1989	1989	1996	1984	1984	1984	1983								
MIN	874	928	1274	1232	1080	920	969	1577	1656	1116	1795	1288								
(WY)	1993	1988	1990	1992	1988	1992	1992	1992	1992	1992	1994	1980								

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1978 - 1997
ANNUAL TOTAL	1473050	1464390	
ANNUAL MEAN	4025	4012	2405
HIGHEST ANNUAL MEAN			4012
LOWEST ANNUAL MEAN			1381
HIGHEST DAILY MEAN	15700	Dec 8	22200
LOWEST DAILY MEAN	1280	Oct 9	1280
ANNUAL SEVEN-DAY MINIMUM	1290	Oct 5	1290
ANNUAL RUNOFF (AC-FT)	2922000		2905000
10 PERCENT EXCEEDS	7350		7640
50 PERCENT EXCEEDS	3000		2880
90 PERCENT EXCEEDS	1530		1550
			1743000
			3980
			2010
			1140

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE:

Prior to construction of Lost Creek Dam and Lake: Maximum, 20.0°C July 27, 28, 1975; minimum, 0.0°C Jan. 6-8, 10, 11, 1974, Jan. 6-9, 1977.

After full operation of Lost Creek Dam and Lake: Maximum, 21.0°C July 26-29, 1992; minimum, 0.5°C Feb. 5, 6, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 17.5°C Aug. 22; minimum, 4.0°C Jan. 15, 24, Feb. 23, 24.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.5	8.0	10.0	9.5	7.0	8.0	8.0	7.5	8.0	8.5	8.0	8.5
2	11.0	8.0	9.5	9.5	7.5	8.0	7.5	7.5	7.5	8.0	7.5	8.0
3	11.0	8.0	9.5	9.0	8.0	8.5	8.0	7.0	7.5	7.5	6.0	6.5
4	10.5	8.0	9.5	9.0	8.0	8.5	7.5	7.0	7.5	6.0	5.5	5.5
5	11.5	8.5	10.0	9.0	7.5	8.0	7.5	7.0	7.5	5.5	5.5	5.5
6	11.5	8.0	9.5	9.0	7.5	8.0	7.0	6.5	7.0	5.5	5.5	5.5
7	11.5	8.0	9.5	9.5	8.0	8.5	7.0	6.5	7.0	6.0	5.5	5.5
8	11.5	8.0	10.0	9.5	7.5	8.5	7.5	7.0	7.5	5.5	5.5	5.5
9	11.5	8.0	9.5	9.5	7.5	8.0	7.5	7.0	7.5	5.5	5.5	5.5
10	11.0	8.0	9.5	9.0	7.5	8.0	7.5	7.0	7.5	5.5	5.5	5.5
11	11.0	7.5	9.0	9.5	8.0	8.5	7.0	7.0	7.0	5.5	5.0	5.5
12	11.0	8.0	9.5	9.5	7.5	8.5	7.5	7.0	7.0	5.5	5.0	5.0
13	10.0	8.5	9.0	9.5	8.0	8.5	7.0	6.5	7.0	5.0	4.5	4.5
14	10.5	7.0	8.5	9.5	8.0	8.5	6.5	6.0	6.5	5.0	4.5	4.5
15	10.0	8.0	9.0	9.0	8.0	8.5	6.5	6.0	6.0	5.0	4.0	4.5
16	9.5	7.0	8.5	8.5	7.5	8.0	6.5	6.0	6.0	5.0	4.5	4.5
17	9.5	7.0	8.0	8.5	7.5	8.0	6.5	6.0	6.0	5.5	5.0	5.0
18	9.5	8.5	8.5	9.5	8.0	8.5	6.5	6.0	6.0	6.0	5.0	5.5
19	9.5	8.0	8.5	10.0	9.5	9.5	6.5	6.0	6.0	5.5	5.0	5.5
20	9.5	7.0	8.0	9.5	8.5	8.5	6.0	5.5	6.0	5.5	5.0	5.0
21	9.5	6.5	8.0	8.5	7.0	8.5	5.5	5.0	5.5	5.0	4.5	4.5
22	9.5	8.5	9.0	8.5	8.5	8.5	6.0	5.5	5.5	5.0	4.5	5.0
23	10.0	8.5	9.0	9.0	8.0	8.5	6.0	5.5	5.5	5.0	4.5	4.5
24	10.0	9.0	9.5	9.0	8.0	8.5	6.0	6.0	6.0	5.0	4.0	4.5
25	9.0	8.5	8.5	8.5	8.0	8.5	6.5	6.0	6.0	5.0	4.5	5.0
26	9.5	7.5	8.5	8.0	7.5	8.0	7.0	6.5	6.5	6.0	5.0	5.5
27	9.5	7.0	8.0	8.5	7.5	8.0	6.5	6.5	6.5	6.0	5.0	5.5
28	9.0	7.5	8.0	8.5	8.0	8.0	6.5	6.5	6.5	7.0	6.0	6.5
29	9.5	8.0	9.0	8.0	8.0	8.0	7.0	6.5	7.0	6.5	5.5	6.0
30	9.0	7.5	8.0	8.5	8.0	8.0	7.5	6.5	7.0	6.0	5.5	5.5
31	9.0	7.5	8.0	---	---	---	8.5	7.5	8.0	6.5	5.5	6.0
MONTH	11.5	6.5	8.9	10.0	7.0	8.3	8.5	5.0	6.7	8.5	4.0	5.5

ROGUE RIVER BASIN

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.5	5.5	6.0	6.0	5.0	5.5	7.5	4.5	5.5	9.5	6.0	7.0
2	6.0	5.0	5.5	6.0	5.5	5.5	8.5	4.5	6.0	9.5	8.0	8.5
3	5.0	5.0	5.0	6.5	5.0	5.5	8.5	5.0	6.5	9.5	6.5	8.5
4	6.0	5.0	5.5	6.5	4.5	5.5	9.0	5.0	7.0	9.5	6.5	8.0
5	6.0	4.5	5.0	6.5	4.5	5.5	9.5	5.5	7.0	10.5	6.5	8.5
6	5.5	4.5	5.0	7.0	5.0	6.0	8.0	5.5	6.5	10.0	7.0	8.5
7	5.5	5.0	5.5	7.0	5.0	6.5	9.0	6.0	7.0	11.5	7.5	9.0
8	6.5	5.0	5.5	7.5	5.5	6.5	8.0	6.0	7.0	11.5	5.0	8.0
9	6.0	5.0	5.5	6.5	5.0	6.0	9.5	5.5	7.0	10.5	5.0	7.5
10	6.5	5.5	5.5	7.5	5.5	6.5	9.5	6.0	7.5	10.5	5.0	7.0
11	6.0	5.5	5.5	7.0	5.5	6.0	10.0	6.0	7.5	11.5	5.5	8.0
12	6.5	5.0	5.5	6.5	4.5	5.5	10.0	6.5	8.0	10.0	5.5	7.5
13	6.0	4.5	5.5	7.0	4.5	5.5	8.0	6.5	7.5	8.0	5.0	6.5
14	7.0	5.0	6.0	6.5	5.0	5.5	9.0	6.5	7.5	8.0	5.5	6.5
15	6.5	5.0	5.5	7.0	5.5	6.0	11.0	6.5	8.5	8.5	5.5	7.0
16	6.0	5.0	5.5	7.0	6.0	6.5	9.5	7.5	8.5	8.5	5.5	6.5
17	7.0	6.0	6.5	7.0	5.5	6.0	11.0	7.0	9.0	9.0	5.5	7.0
18	6.5	5.0	5.5	7.5	5.5	6.5	9.5	8.5	9.0	12.0	5.0	7.5
19	7.0	5.5	6.0	7.5	6.0	6.5	8.5	8.0	8.5	9.0	5.0	7.0
20	6.5	5.0	5.5	8.0	6.0	7.0	10.0	8.0	8.5	12.0	5.0	7.5
21	6.5	5.0	5.5	8.0	5.5	6.5	9.0	7.5	8.0	9.5	5.0	7.0
22	6.5	4.5	5.5	8.0	5.5	6.5	8.5	7.5	8.0	11.0	5.0	7.5
23	6.5	4.0	5.5	8.0	5.5	6.5	9.5	8.0	8.5	---	---	---
24	6.5	4.0	5.5	8.5	5.5	7.0	10.0	8.0	9.0	7.5	5.5	6.0
25	6.0	4.5	5.5	8.5	5.5	7.0	10.5	8.0	9.5	12.0	5.0	7.5
26	7.0	5.5	6.0	7.5	5.5	6.5	11.0	9.0	10.0	10.0	5.0	6.5
27	6.0	5.0	5.5	7.5	5.5	6.0	10.5	9.0	9.5	7.5	5.5	6.5
28	6.5	4.5	5.5	8.0	5.5	6.5	9.5	8.5	9.0	7.5	6.0	6.5
29	---	---	---	7.0	4.5	5.5	---	---	---	9.0	5.5	7.0
30	---	---	---	6.0	5.0	5.5	8.5	6.5	7.5	9.5	6.0	7.5
31	---	---	---	6.5	5.0	5.5	---	---	---	9.0	6.0	7.0
MONTH	7.0	4.0	5.6	8.5	4.5	6.1	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.0	6.0	7.0	9.5	6.5	7.5	16.5	11.5	14.0	15.5	12.0	13.5
2	---	---	---	10.0	6.0	8.0	17.0	12.0	14.0	15.0	10.5	12.5
3	---	---	---	---	---	---	17.0	12.0	14.0	15.0	10.5	13.0
4	---	---	---	---	---	---	17.0	12.0	14.5	15.0	10.5	13.0
5	---	---	---	---	---	---	17.0	12.0	14.5	13.5	11.0	12.5
6	---	---	---	---	---	---	17.0	12.0	14.5	15.0	10.5	12.5
7	---	---	---	---	---	---	17.0	12.0	14.5	15.0	11.0	12.5
8	---	---	---	---	---	---	17.0	12.0	14.5	14.0	11.0	12.5
9	---	---	---	---	---	---	17.0	11.5	14.0	12.0	10.0	11.0
10	---	---	---	---	---	---	17.0	12.0	14.5	13.5	10.0	11.5
11	---	---	---	---	---	---	17.0	12.5	14.5	12.5	10.5	11.5
12	7.0	5.0	6.0	14.5	9.5	12.0	17.0	12.0	14.5	13.5	10.5	12.0
13	8.0	5.0	6.5	15.0	10.0	12.0	17.0	12.5	14.5	13.5	10.0	11.5
14	9.0	5.0	7.0	15.0	10.0	12.0	17.0	12.5	14.5	12.5	11.0	11.5
15	9.5	5.0	7.0	14.5	9.5	12.0	17.0	12.5	14.5	12.0	10.5	11.0
16	9.0	5.5	7.0	14.0	9.5	12.0	17.0	12.0	14.5	13.0	10.5	11.5
17	9.0	6.0	7.0	15.0	11.5	13.0	17.0	12.5	14.5	13.0	11.0	11.5
18	9.5	5.5	7.5	16.0	11.0	13.0	17.0	12.5	14.5	12.0	10.0	11.0
19	9.5	5.5	7.0	16.0	11.0	13.5	17.0	12.5	14.5	14.0	9.5	11.5
20	9.0	5.5	7.0	16.5	11.5	13.5	14.5	13.5	14.0	14.0	10.0	12.0
21	8.5	5.0	6.5	16.5	11.5	14.0	17.0	13.0	14.5	14.5	10.0	12.0
22	8.5	5.0	6.5	16.5	11.5	14.0	17.5	13.0	15.0	14.5	10.5	12.0
23	10.5	6.0	8.5	16.5	11.0	13.5	16.5	13.0	14.5	12.0	8.0	10.0
24	9.0	5.5	7.0	16.5	11.0	13.5	16.5	12.5	14.5	12.0	8.0	10.0
25	9.0	5.5	7.0	16.5	11.0	13.5	15.0	13.0	14.0	11.5	8.0	10.0
26	9.5	5.5	7.0	16.5	11.0	13.5	14.5	13.0	13.5	10.5	8.5	9.5
27	9.5	5.0	7.0	16.5	11.5	14.0	16.0	13.0	14.0	11.0	7.5	9.0
28	7.5	5.5	6.5	16.5	11.5	14.0	16.0	13.0	14.0	11.5	7.5	9.5
29	9.0	5.5	7.0	14.0	11.5	13.0	16.0	12.0	14.0	11.5	8.0	9.5
30	7.5	6.0	7.0	16.5	11.5	14.0	16.0	12.0	14.0	10.5	8.5	9.0
31	---	---	---	17.0	11.5	14.0	16.0	12.0	14.0	---	---	---
MONTH	---	---	---	---	---	---	17.5	11.5	14.3	15.5	7.5	11.3

ROGUE RIVER BASIN

383

14354200 BEAR CREEK BELOW ASHLAND CREEK, AT ASHLAND, OR

LOCATION.--Lat 42°12'58", long 122°43'16", in SE 1/4 SE 1/4 sec.32, T.38 S., R.1 E, Jackson County, Hydrologic Unit 17100308, on left bank, 0.1 mi downstream from Ashland Creek, and at mile 21.0.

DRAINAGE AREA.--168 mi².

PERIOD OF RECORD.--July 1990 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,686.64 ft above sea level.

REMARKS.--Records fair. Flow regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station.

AVERAGE DISCHARGE.--7 years (water years 1991-97) 87.6 ft³/s, 63,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Jan. 1, 1997, gage height 11.00 ft; minimum discharge, 0.33 ft³/s Oct. 18, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,000 ft³/s Jan. 1, gage height, 11.00 ft; minimum discharge, 6.8 ft³/s Oct. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	32	e150	6910	201	e100	e60	e255	66	55	63	22
2	e13	32	e125	3110	169	e160	e155	e135	90	53	58	21
3	e11	32	e120	2900	e145	e100	273	e120	132	34	47	20
4	10	31	315	1900	e130	274	237	e110	149	26	46	19
5	10	31	520	1320	e125	375	186	e95	137	33	60	18
6	10	30	288	1120	e135	358	172	e90	117	40	75	19
7	9.9	31	503	1050	e205	321	160	e75	79	35	63	17
8	9.9	29	1290	1000	209	319	189	e60	74	33	77	16
9	10	29	1720	973	185	317	e170	e50	77	61	66	14
10	9.2	29	1370	951	184	262	e125	e50	67	44	80	15
11	8.5	28	1290	919	168	e145	e110	e60	47	51	64	17
12	8.5	28	1110	885	169	e145	e120	e55	47	56	55	16
13	10	31	1090	864	e140	e110	e85	e40	46	59	57	17
14	12	33	970	738	e130	e110	e90	e40	44	64	51	30
15	11	46	914	397	e120	e115	e80	66	36	68	59	23
16	10	39	810	819	e115	e110	e75	66	27	64	64	21
17	11	35	672	823	200	e125	e50	66	28	46	67	27
18	28	189	534	808	163	e110	e25	60	27	45	64	22
19	25	322	126	797	159	e100	e60	57	23	51	50	22
20	24	196	397	655	e135	e115	e70	54	22	46	90	22
21	19	118	586	434	e120	e105	e215	57	24	44	71	19
22	23	99	536	782	e110	e95	e290	55	20	54	54	19
23	23	88	425	707	e105	e90	e130	101	24	62	44	20
24	62	85	314	500	e100	e85	e105	143	53	63	48	18
25	56	84	790	533	e115	e80	e110	132	55	65	36	19
26	36	80	701	539	193	e80	e85	98	55	68	31	17
27	30	100	524	521	192	e75	e80	132	54	69	27	24
28	36	e150	603	348	e110	e80	e110	70	59	60	24	27
29	71	e130	1310	168	---	e55	189	63	68	65	22	25
30	40	e100	1980	158	---	e55	331	57	82	94	21	23
31	34	---	2440	187	---	e65	---	58	---	80	20	---
TOTAL	685.0	2287	24523	33816	4232	4636	4137	2570	1829	1688	1654	609
MEAN	22.1	76.2	791	1091	151	150	138	82.9	61.0	54.5	53.4	20.3
MAX	71	322	2440	6910	209	375	331	255	149	94	90	30
MIN	8.5	28	120	158	100	55	25	40	20	26	20	14
AC-FT	1360	4540	48640	67070	8390	9200	8210	5100	3630	3350	3280	1210

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1997, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997
MEAN	13.7	24.0	172	240	137	95.5	93.0
MAX	22.1	76.2	791	1091	607	193	209
(WY)	1997	1997	1997	1997	1996	1995	1995
MIN	4.93	9.70	14.4	18.5	16.9	13.6	12.7
(WY)	1991	1993	1991	1992	1992	1992	1992

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1991 - 1997

	1996	1997	1991-1997
ANNUAL TOTAL	75061.0	82666.0	
ANNUAL MEAN	205	226	87.6
HIGHEST ANNUAL MEAN			226
LOWEST ANNUAL MEAN			22.0
HIGHEST DAILY MEAN	2440	Dec 31	6910
LOWEST DAILY MEAN	8.5	Oct 11	8.5
ANNUAL SEVEN-DAY MINIMUM	9.4	Oct 6	9.4
ANNUAL RUNOFF (AC-FT)	148900	164000	63480
10 PERCENT EXCEEDS	609	624	170
50 PERCENT EXCEEDS	83	74	36
90 PERCENT EXCEEDS	24	20	10

e Estimated

ROGUE RIVER BASIN

14357500 BEAR CREEK AT MEDFORD, OR

LOCATION.--Lat 42°19'28", long 122°51'55", in NW 1/4 sec.30, T.37 S., R.1 W., Jackson County, Hydrologic Unit 17100308, on left bank 300 ft upstream from 10th street Bridge, in Medford, and at mile 10.1.

DRAINAGE AREA. --289 mi².

PERIOD OF RECORD.--March 1915 to June 1920 (no low-flow records), October 1920 to September 1981, December 1983 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1044: 1944. WSP 1448: 1916, 1917(M), 1918-20, 1922, 1924, 1927(M), 1928, 1930. WSP 1568: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,343.27 ft above sea level. Prior to Sept. 19, 1991, at site 0.2 mi downstream, at datum 1.29 ft lower, Dec. 31, 1947, to Sept. 23, 1985, at datum 2.00 ft higher. See WSP 1738 for history of changes prior to Dec. 31, 1947.

REMARKS.--Records good. Flow partly regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station.

AVERAGE DISCHARGE.--75 years (water years 1921-81, 1984-97), 112 ft³/s, 81,260 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s Jan. 1, 1997, gage height, 14.69 ft, present datum: no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 17,600 ft³/s Jan. 1, gage height, 14.69 ft; minimum discharge, 21 ft³/s Oct. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	50	218	10900	e290	209	139	356	112	135	71	53
2	26	47	177	4330	e270	345	136	177	101	121	69	58
3	23	47	156	3620	e260	273	267	162	121	86	63	55
4	23	46	387	2160	e250	343	265	154	238	62	56	45
5	26	46	1000	1660	e250	458	202	138	200	51	43	43
6	27	45	519	1390	e260	439	186	126	145	54	45	48
7	27	44	942	1240	e420	393	186	119	133	48	41	52
8	27	43	2510	1140	e420	388	230	101	129	41	45	53
9	29	42	2910	1080	300	376	224	87	114	41	53	49
10	32	42	1630	1030	305	340	171	86	86	44	58	60
11	32	42	1420	984	271	216	157	94	90	45	61	75
12	31	41	1150	942	271	217	167	89	90	46	55	78
13	37	49	1070	895	240	181	140	80	101	47	55	76
14	39	53	931	846	226	175	142	81	101	50	52	102
15	43	73	857	447	219	187	135	80	92	57	45	92
16	54	61	783	826	213	186	124	78	76	63	43	79
17	26	54	653	822	303	197	101	75	74	48	58	101
18	52	424	570	801	261	184	70	71	69	46	63	86
19	43	589	151	791	251	177	103	70	74	52	42	71
20	41	317	424	750	227	186	130	63	45	58	97	69
21	34	189	669	454	217	180	279	55	38	55	94	67
22	35	158	559	801	206	169	397	60	39	46	81	60
23	42	133	458	750	192	165	194	146	39	50	80	51
24	102	124	316	547	179	162	162	201	48	55	127	47
25	102	115	962	616	196	158	167	136	46	92	103	46
26	67	105	973	610	262	155	147	112	44	50	90	50
27	51	125	663	582	285	154	140	107	43	52	95	51
28	61	195	664	485	218	156	165	135	50	48	80	56
29	126	168	1370	294	---	133	245	107	93	47	73	56
30	66	151	1710	e240	---	132	421	99	186	71	64	51
31	55	---	2940	e280	---	143	---	116	---	103	57	---
TOTAL	1404	3618	29742	42313	7262	7177	5592	3561	2817	1864	2059	1880
MEAN	45.3	121	959	1365	259	232	186	115	93.9	60.1	66.4	62.7
MAX	126	589	2940	10900	420	458	421	356	238	135	127	102
MIN	23	41	151	240	179	132	70	55	38	41	41	43
AC-FT	2780	7180	58990	83930	14400	14240	11090	7060	5590	3700	4080	3730

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1997, BY WATER YEAR (WY)

MEAN	31.8	59.9	160	221	212	192	188	132	72.8	32.4	32.9	35.1
MAX	216	290	1137	1365	873	787	686	391	232	95.4	115	91.6
(WY)	1963	1985	1965	1997	1958	1957	1974	1963	1953	1971	1976	1971
MIN	4.74	8.23	17.3	13.2	11.5	13.7	4.88	1.46	2.12	.53	.39	.70
(WY)	1932	1937	1931	1937	1931	1931	1931	1931	1931	1924	1924	1931

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1921 - 1997
--------------------	------------------------	---------------------	-------------------------

ANNUAL TOTAL	99327		109289						
ANNUAL MEAN	271		299			112			
HIGHEST ANNUAL MEAN						304			1974
LOWEST ANNUAL MEAN						8.42			1931
HIGHEST DAILY MEAN	2940	Dec 31	10900	Jan 1	10900		Jan 1	1997	
LOWEST DAILY MEAN	23	Oct 3	23	Oct 3		.20	Jul 30	1922	
ANNUAL SEVEN-DAY MINIMUM	25	Sep 30	25	Oct 1		.20	Jul 23	1924	
ANNUAL RUNOFF (AC-FT)	197000		216800			81260			
10 PERCENT EXCEEDS	847		750			257			
50 PERCENT EXCEEDS	123		115			51			
90 PERCENT EXCEEDS	42		43			11			

e Estimated

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR

LOCATION.--Lat 42°26'15", long 122°59'10", in SW 1/4 sec.18, T.36 S., R.2 W., Jackson County, Hydrologic Unit 17100308, on right bank at Raygold, 0.1 mi downstream from Gold Ray Dam, 1.0 mi downstream from Bear Creek, 5.6 mi northwest of Central Point, and at mile 125.8.

DRAINAGE AREA.--2,053 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1905 to current year. Prior to October 1921, published as "near Tolo."

REVISED RECORDS.--WSP 1248: 1906, 1914(M), 1915. WSP 1398: 1910(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,121.78 ft above sea level. Prior to Sept. 19, 1914, nonrecording gage and Sept. 19, 1914, to Sept. 30, 1956, water-stage recorder, at site 300 ft upstream at same datum.

REMARKS.--Water-discharge records excellent except for estimated daily discharges, which are good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--72 years (water years 1906-77), 2,976 ft³/s, 2,156,000 acre-ft/yr.
20 years (water years 1978-97), 2,895 ft³/s, 2,097,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131,000 ft³/s Dec. 23, 1964, gage height, 23.43 ft, from rating curve extended above 63,000 ft³/s on basis of slope-area measurement of 113,000 ft³/s; minimum discharge recorded, 418 ft³/s Sept. 19, 1968, as result of regulation, but may have been lower during periods of no record during water years 1931-34.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70,500 ft³/s Jan. 1, gage height, 17.17 ft; minimum discharge, 1,280 ft³/s Oct. 1, but may have been lower during periods of missing record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1380	1920	7970	53900	6970	2980	3560	6760	3310	3780	e2170	e2320
2	1390	2810	7550	43500	6550	6220	3060	5620	3290	3510	e2150	e2350
3	1380	2920	7050	33100	6140	4790	2990	5010	3300	3280	e2140	e2350
4	1380	2920	8780	24600	5760	4230	2640	5560	3780	3230	e2140	e2350
5	1400	2940	21600	20500	4690	3870	2500	5380	3640	3210	e2130	e2350
6	1400	2920	11400	20500	4470	3610	2440	5080	3420	3240	2010	e2350
7	1400	2930	12200	20200	5030	3490	2450	4480	3290	3030	1990	e2350
8	1380	2920	30100	19600	5530	3460	2500	4010	3270	2860	2010	e2350
9	1380	2890	31300	19700	4440	3490	2620	3750	3380	2780	2040	e2380
10	1370	2490	24000	16600	4160	3740	2540	3660	3380	2720	2030	e2400
11	1390	2260	21000	17500	3820	3720	2410	3680	3560	2760	2050	e2380
12	1410	2080	18300	16700	3910	3900	2270	3920	3560	2740	2090	e2250
13	1470	1850	17100	13200	3660	3740	2220	4120	3660	2730	2170	e2150
14	1530	1870	15100	11900	3400	3720	2260	4080	3620	2690	2270	e2150
15	1500	2030	13500	8090	2980	3830	2210	4010	3530	2690	2290	e2130
16	1580	2050	12600	5210	2900	3760	2130	3630	3530	2700	2250	e2120
17	1570	2000	11700	5100	3320	4430	2270	3740	3530	2660	2280	e2100
18	1780	6840	10100	4940	3250	4210	2560	3480	3730	2460	2310	e1820
19	1810	16500	7570	4830	3280	3920	3120	3390	3880	2440	2270	e1700
20	1730	10500	6480	4880	3320	4070	4740	3240	3860	2460	2440	e1600
21	1680	6250	8370	4770	3070	4160	7440	3050	3810	2400	2460	e1450
22	1650	5920	6940	5330	2920	3970	7760	2700	3810	2200	2390	e1400
23	1670	5710	6240	4680	2780	3870	8920	2860	3800	2080	2330	e1350
24	2030	5790	5970	4630	2660	3810	7540	3520	3800	2110	2530	e1350
25	2240	5880	9820	6370	2580	3870	5810	3340	3810	2120	2490	e1350
26	2160	5600	16000	7620	2660	4060	5090	3160	3760	2080	2450	e1350
27	1920	6020	18800	6570	3190	4030	4840	3200	3610	2070	2460	e1350
28	1920	7300	18700	5460	3290	4120	4740	3450	3540	2050	e2380	e1350
29	2470	7320	17600	5130	---	4270	5130	3440	3550	2040	e2360	e1380
30	2140	6730	22000	5350	---	4190	6160	3280	3920	2090	e2350	e1600
31	1960	---	29100	5720	---	4090	---	3240	---	2110	e2350	---
TOTAL	51470	138160	454940	426180	110730	123620	116920	121840	107930	81320	69780	57880
MEAN	1660	4605	14680	13750	3955	3988	3897	3930	3598	2623	2251	1929
MAX	2470	16500	31300	53900	6970	6220	8920	6760	3920	3780	2530	2400
MIN	1370	1850	5970	4630	2580	2980	2130	2700	3270	2040	1990	1350
AC-FT	102100	274000	902400	845300	219600	245200	231900	241700	214100	161300	138400	114800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1997, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1431	2340	4409	3794	3575	3364	3485	3370	2665	2217	2229	1878								
MAX	2110	6184	14680	13750	8461	6151	5596	5273	4426	3161	3115	2508								
(WY)	1984	1985	1997	1997	1996	1989	1983	1996	1993	1984	1984	1983								
MIN	932	1089	1512	1446	1407	1111	1125	1605	1649	1117	1744	1434								
(WY)	1995	1988	1990	1992	1992	1992	1992	1992	1992	1992	1994	1980								

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1978 - 1997
ANNUAL TOTAL	1878140	1860770	
ANNUAL MEAN	5132	5098	2895
HIGHEST ANNUAL MEAN			5098
LOWEST ANNUAL MEAN			1491
HIGHEST DAILY MEAN	31300	53900	53900
LOWEST DAILY MEAN	1370	1350	880
ANNUAL SEVEN-DAY MINIMUM	1390	1350	897
ANNUAL RUNOFF (AC-FT)	3725000	3691000	2097000
10 PERCENT EXCEEDS	9820	9930	5100
50 PERCENT EXCEEDS	3550	3320	2200
90 PERCENT EXCEEDS	1860	1840	1300

e Estimated

ROGUE RIVER BASIN

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, prior to operation of Lost Creek Dam, 22.0°C July 25, 26, 1976; minimum, 0.0°C Jan. 7, 1974. Maximum since full operation of Lost Creek Dam, 26.0°C July 26, 1996; minimum, 1.0°C Dec. 30, 1978, Jan. 30, 1980, Feb. 5, 6, 1989, Dec. 21, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 21.5°C July 19, but may have been higher during periods of missing record July to September; minimum, 4.5°C Jan. 14, 15, 24, 25.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	20.5	12.5	15.5	12.0	7.0	9.0	9.0	8.0	8.5	10.0	9.0	9.5
2	19.0	12.5	15.5	8.5	8.0	8.0	8.0	7.5	7.5	9.0	8.5	9.0
3	20.0	12.5	15.5	9.0	8.0	8.5	8.0	7.5	8.0	9.0	7.0	8.0
4	17.5	13.0	15.0	9.0	8.5	9.0	8.0	7.5	7.5	7.0	6.5	6.5
5	20.5	12.5	15.5	9.0	8.0	8.5	8.0	8.0	8.0	6.5	6.0	6.5
6	20.5	12.5	15.5	8.5	7.5	8.0	8.0	7.5	7.5	6.5	5.5	6.0
7	20.5	12.5	15.5	9.5	8.0	8.5	8.0	7.5	7.5	6.5	5.5	6.0
8	20.5	12.5	16.0	9.0	8.0	8.5	8.5	8.0	8.5	6.5	5.5	6.0
9	21.0	13.0	16.5	8.5	8.0	8.5	8.5	8.0	8.0	6.5	6.0	6.0
10	20.0	13.5	16.0	8.5	7.5	8.0	8.5	8.0	8.5	6.5	5.5	6.5
11	19.0	12.0	15.0	12.5	7.5	9.5	8.0	7.5	8.0	6.5	6.0	6.0
12	19.0	13.0	15.0	12.5	8.0	10.0	8.0	7.5	8.0	6.5	5.5	6.0
13	17.0	12.0	14.0	11.5	9.0	10.0	8.0	7.5	8.0	5.5	5.0	5.5
14	16.5	10.0	13.0	10.5	8.5	9.5	7.5	7.0	7.5	5.5	4.5	5.0
15	17.0	11.5	13.5	11.5	8.5	9.5	7.0	6.5	7.0	5.5	4.5	5.0
16	15.0	9.0	11.5	9.0	8.0	8.5	7.0	6.5	7.0	6.0	5.0	5.5
17	14.0	8.0	10.5	10.0	8.0	9.0	7.0	6.5	6.5	7.0	6.0	6.5
18	13.0	9.0	11.0	10.0	8.5	9.0	7.0	6.0	6.5	7.0	6.0	6.5
19	12.5	8.0	9.5	11.0	10.0	10.5	6.5	6.0	6.5	7.0	6.0	6.5
20	13.5	7.0	9.5	10.5	9.0	9.5	6.5	6.0	6.5	6.5	6.0	6.5
21	11.5	6.5	8.5	9.0	9.0	9.0	6.0	5.0	5.5	6.5	5.0	6.0
22	11.0	9.5	10.0	9.5	9.0	9.0	6.5	5.5	6.0	6.0	5.0	5.5
23	12.5	10.0	11.0	9.5	9.0	9.0	6.5	6.0	6.0	5.5	5.0	5.0
24	13.5	10.0	11.5	9.5	9.0	9.0	7.0	6.5	6.5	5.0	4.5	5.0
25	10.0	8.5	9.5	9.5	9.0	9.0	7.5	7.0	7.0	6.0	4.5	5.0
26	11.5	7.5	9.0	9.0	8.0	8.5	8.0	7.0	7.5	7.0	5.5	6.0
27	12.0	6.5	8.5	9.0	8.0	8.5	8.0	7.0	7.5	7.0	5.5	6.5
28	9.0	6.5	8.0	9.0	8.5	9.0	7.5	7.0	7.5	8.0	6.0	7.0
29	9.5	8.5	9.0	8.5	8.0	8.5	8.0	7.5	8.0	7.5	6.0	7.0
30	9.5	7.5	8.5	9.0	8.5	8.5	8.0	7.5	7.5	7.0	6.0	6.5
31	11.0	7.5	8.5	---	---	---	9.5	8.0	8.5	8.0	6.0	7.0
MONTH	21.0	6.5	12.3	12.5	7.0	8.9	9.5	5.0	7.4	10.0	4.5	6.3

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.5	6.0	7.0	7.0	6.5	7.0	8.0	6.0	7.0	10.5	8.0	9.5
2	7.0	5.5	6.5	7.0	6.0	6.5	8.5	6.5	7.5	11.5	9.0	10.0
3	6.5	5.5	5.5	7.0	5.5	6.0	9.0	7.5	8.0	11.0	8.5	10.5
4	7.0	5.5	6.5	7.0	5.0	6.0	10.0	7.5	8.5	11.0	8.0	9.5
5	6.5	5.5	6.0	7.0	5.5	6.5	10.5	7.0	9.0	12.0	8.5	10.5
6	6.0	4.5	5.5	8.0	6.5	7.5	9.5	7.5	8.0	11.5	9.0	10.5
7	6.5	5.5	6.0	8.5	7.0	8.0	10.0	7.5	8.5	12.5	9.0	10.5
8	7.0	6.0	6.5	8.5	7.5	8.0	9.5	8.5	9.0	13.0	10.0	11.5
9	7.0	6.0	6.5	8.5	7.5	8.0	9.5	7.5	8.5	13.0	11.0	12.0
10	7.0	6.0	6.5	9.0	7.5	8.0	10.0	8.0	9.0	13.0	11.5	12.0
11	7.0	6.5	6.5	9.0	8.0	8.5	---	---	---	13.5	11.5	12.5
12	7.0	6.5	6.5	8.5	7.0	7.5	---	---	---	13.5	12.0	13.0
13	7.0	6.0	6.5	7.5	6.0	7.0	---	---	---	13.5	11.5	12.5
14	7.5	6.5	6.5	7.5	6.5	7.0	---	---	---	13.0	11.5	12.5
15	7.5	6.5	7.0	8.0	7.0	7.5	---	---	---	13.5	12.0	12.5
16	7.0	6.0	7.0	8.5	7.5	8.0	---	---	---	13.5	12.0	12.5
17	8.0	7.0	7.5	8.5	7.0	8.0	---	---	---	13.5	11.5	12.5
18	8.0	7.0	7.5	8.5	7.0	8.0	12.5	10.5	11.0	13.5	12.0	13.0
19	7.5	7.0	7.5	9.0	8.0	8.5	10.5	9.5	10.0	13.5	12.0	13.0
20	7.5	7.0	7.0	9.5	8.5	9.0	11.0	9.0	10.0	13.5	11.5	12.5
21	7.0	6.5	6.5	9.5	8.0	8.5	10.5	8.0	9.0	13.0	11.5	12.0
22	7.0	6.0	6.5	9.5	7.5	8.5	10.0	8.5	9.0	13.0	11.0	11.5
23	7.5	5.5	6.5	9.5	7.5	8.5	10.5	8.5	9.5	12.0	10.5	11.5
24	7.5	5.5	6.5	10.0	8.0	9.0	---	---	---	12.0	10.5	11.5
25	7.0	5.5	6.5	10.0	8.0	9.5	12.0	8.5	10.0	13.0	10.0	11.5
26	8.0	6.5	7.0	10.0	8.5	9.0	13.0	9.5	11.0	12.5	10.5	11.5
27	7.5	6.5	7.0	9.0	7.5	8.5	12.0	10.0	11.0	12.0	10.5	11.5
28	7.0	6.0	6.5	9.0	7.5	8.5	11.0	9.5	10.0	12.5	11.0	11.5
29	---	---	---	9.0	7.0	7.5	11.5	9.0	10.0	13.5	11.0	12.0
30	---	---	---	8.0	7.0	7.5	11.5	9.0	10.0	14.5	11.5	13.0
31	---	---	---	7.5	6.0	7.0	---	---	---	14.0	12.0	13.0
MONTH	8.0	4.5	6.6	10.0	5.0	7.8	---	---	---	14.5	8.0	11.7

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	13.5	11.0	12.5	13.0	11.0	12.0	---	---	---	---	---	---
2	13.0	11.0	12.0	14.5	11.0	12.5	---	---	---	---	---	---
3	13.0	11.0	11.5	15.0	12.0	13.5	---	---	---	11.5	8.5	10.0
4	13.0	10.5	11.5	15.5	12.0	14.0	---	---	---	11.5	8.5	10.0
5	14.0	11.0	12.5	15.5	12.5	14.0	---	---	---	11.0	8.0	9.5
6	14.0	11.0	12.5	15.0	12.0	14.0	---	---	---	10.5	7.5	9.0
7	14.0	11.0	12.0	15.0	12.0	13.5	---	---	---	---	---	---
8	13.5	10.0	11.5	15.0	12.0	13.5	---	---	---	---	---	---
9	13.5	11.0	12.5	14.5	12.0	13.5	---	---	---	---	---	---
10	14.0	11.0	12.5	14.0	11.0	12.5	---	---	---	---	---	---
11	13.5	11.5	12.5	14.5	11.0	13.0	---	---	---	---	---	---
12	---	---	---	15.0	11.0	13.0	---	---	---	---	---	---
13	12.0	10.0	11.0	15.5	11.5	13.5	---	---	---	---	---	---
14	13.0	10.0	11.5	16.0	11.5	14.0	---	---	---	---	---	---
15	14.0	10.5	12.0	16.0	11.5	14.0	---	---	---	---	---	---
16	13.5	11.0	12.5	15.5	12.0	13.5	---	---	---	---	---	---
17	13.5	11.0	12.5	15.5	12.5	14.5	13.5	10.0	11.5	---	---	---
18	14.0	11.0	12.5	19.0	13.0	15.5	13.0	10.0	11.5	---	---	---
19	13.5	10.5	12.0	21.5	13.5	16.5	13.0	9.5	11.5	---	---	---
20	13.5	10.5	12.0	19.0	14.0	16.5	12.5	10.0	11.0	---	---	---
21	13.0	10.5	11.5	20.0	15.0	17.0	13.0	9.5	11.0	---	---	---
22	12.5	9.5	11.0	---	---	---	13.0	10.0	12.0	---	---	---
23	13.0	10.0	11.5	---	---	---	13.0	10.0	11.5	---	---	---
24	13.0	10.0	11.0	---	---	---	12.5	10.0	11.5	---	---	---
25	13.5	10.0	12.0	---	---	---	12.0	9.5	10.5	---	---	---
26	13.0	10.5	12.0	---	---	---	10.5	9.0	10.0	---	---	---
27	13.5	10.5	12.0	---	---	---	12.0	9.0	10.5	---	---	---
28	13.0	10.5	11.5	---	---	---	12.5	9.5	11.0	---	---	---
29	12.5	10.0	11.0	---	---	---	12.5	9.0	11.0	---	---	---
30	12.5	11.0	11.5	---	---	---	12.5	9.0	11.0	---	---	---
31	---	---	---	---	---	---	12.0	9.0	11.0	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

ROGUE RIVER BASIN

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 sea level. Prior to Aug. 8, 1957, at site 300 ft upstream at datum 4.00 ft higher and Aug. 8, 1957, to Sept. 2, 1983, at site 300 ft upstream at datum 1.00 ft higher.

REMARKS.--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.--39 years (water years 1939-77), 3,543 ft³/s, 2,566,000 acre-ft/yr.
20 years (water years 1978-97), 3,259 ft³/s, 2,361,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 152,000 ft³/s Dec. 23, 1964, gage height, 35.15 ft, present datum, from rating curve extended above 93,000 ft³/s; minimum discharge, 195 ft³/s Jan. 30, 1961; minimum daily, 606 ft³/s Sept. 10, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1861 reached a stage of about 43 ft, present datum (information furnished by Corps of Engineers). Flood in February 1890 reached a stage of about 36 ft, present datum, and that of Feb. 21, 1927, about 32 ft, present datum, according to local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 90,800 ft³/s Jan. 1, gage height, 26.49 ft; minimum discharge, 1,110 ft³/s Oct. 10, result of regulation at Savage Rapids Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1220	2060	8750	e69000	8740	3660	3970	8050	3500	3730	2000	2380
2	1200	2960	8740	e56000	7960	7880	3530	6870	3410	3430	2010	2350
3	1220	3310	7990	e43500	7250	6540	3330	5540	3430	3130	1990	2450
4	1210	3300	8660	e31000	6870	5570	3040	6470	3880	3070	1980	2410
5	1230	3320	24000	e26000	5930	5010	2830	6210	3910	2980	1930	2390
6	1230	3300	13600	e23500	5920	4610	2750	5940	3650	2990	1920	2400
7	1250	3290	15300	21800	6060	4400	2760	5170	3500	2870	1910	2400
8	1220	3290	40200	21700	7220	4310	2790	4620	3470	2720	1910	2410
9	1210	3290	38500	20800	5640	4220	2940	4210	3520	2650	1940	2400
10	1200	2860	28100	18900	5200	4500	2870	4130	3550	2550	1970	2440
11	1210	2500	25000	18100	4730	4390	2760	4120	3700	2530	1960	2510
12	1250	2310	20800	18300	4750	4600	2580	4440	3770	2510	2030	2490
13	1300	1980	19500	14700	4560	4380	2520	4690	3820	2490	2200	2300
14	1460	1940	17200	13400	4180	4220	2560	4610	3780	2480	2250	2210
15	1470	2130	15200	9600	3770	4250	2500	4490	3690	2470	2260	2270
16	1570	2180	14100	5930	3580	4330	2430	4040	3670	2470	2240	2240
17	1570	2120	13100	5840	3840	4930	2460	4080	3610	2470	2240	2270
18	1860	5360	11700	5880	3980	4790	2810	3840	3570	2230	2300	2250
19	1920	e18700	9460	5850	3920	4530	3430	3700	3660	2200	2300	1960
20	1850	13400	7650	5850	4100	4540	4570	3620	3640	2220	2420	1730
21	1770	7350	10800	5870	3830	4630	8390	3430	3620	2230	2570	1510
22	1740	6660	9330	6220	3630	4470	9200	3020	3610	2000	2480	1430
23	1740	6390	8440	5960	3420	4340	10500	2940	3610	1890	2470	1400
24	2100	6250	7970	5960	3260	4240	9390	3750	3580	1900	2650	1370
25	2510	6650	11200	7630	3130	4200	7060	3610	3580	1930	2620	1350
26	2520	6100	19000	10200	3200	4460	6070	3400	3560	1940	2590	1340
27	2140	6580	22600	8880	3650	4410	5700	3370	3440	1940	2610	1350
28	2090	7860	22200	7670	4130	4420	5560	3640	3360	1930	2510	1370
29	2860	8310	e22000	6950	---	4670	5860	3720	3350	1910	2420	1370
30	2850	7530	26600	6800	---	4590	6310	3530	3720	1950	2410	1900
31	2210	---	38400	6960	---	4600	---	3440	---	2020	2380	---
TOTAL	52180	153280	546090	514750	136450	144690	133470	136690	108160	75830	69470	60650
MEAN	1683	5109	17620	16600	4873	4667	4449	4409	3605	2446	2241	2022
MAX	2860	18700	40200	69000	8740	7880	10500	8050	3910	3730	2650	2510
MIN	1200	1940	7650	5840	3130	3660	2430	2940	3350	1890	1910	1340
AC-FT	103500	304000	1083000	1021000	270600	287000	264700	271100	214500	150400	137800	120300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1997, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1499	2670	5251	4684	4556	4034	4002	3607	2709	2146	2164	1840								
MAX	2282	7669	17620	16600	10960	8119	6843	5910	4572	3127	3080	2642								
(WY)	1984	1985	1997	1997	1983	1983	1983	1996	1993	1984	1984	1983								
MIN	1008	1160	1557	1575	1641	1099	1211	1857	1549	1059	1620	1333								
(WY)	1995	1988	1990	1992	1992	1992	1994	1992	1992	1992	1994	1980								

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1978 - 1997

ANNUAL TOTAL	2162820	2131710	
ANNUAL MEAN	5909	5840	
HIGHEST ANNUAL MEAN		5840	1997
LOWEST ANNUAL MEAN		1538	1992
HIGHEST DAILY MEAN	40200	Dec 8	69000 Jan 1 1997
LOWEST DAILY MEAN	1200	Oct 2	744 Oct 10 1994
ANNUAL SEVEN-DAY MINIMUM	1220	Oct 4	799 Sep 22 1994
ANNUAL RUNOFF (AC-FT)	4290000	4228000	2361000
10 PERCENT EXCEEDS	12400	11400	6080
50 PERCENT EXCEEDS	3930	3580	2260
90 PERCENT EXCEEDS	1730	1910	1310

e Estimated

ROGUE RIVER BASIN

389

14361900 APPLGATE LAKE NEAR COPPER, OR

LOCATION.--Lat 42°03'25", long 123°06'30", in SE 1/4 sec.25, T.40 S., R.4 W., Jackson County, Hydrologic Unit 17100309, in outlet structure of Applegate Dam on Applegate River, 2.5 mi northeast of former town of Copper, 13 mi south of Ruch, and at mile 46.3.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--December 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in October 1980. Storage began Dec. 2, 1980. Total capacity, 82,200 acre-ft between elevations 1,763.0 ft and 1,987.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,943.7 ft. Usable contents, 75,200 acre-ft between elevations 1,854.0 ft and 1,987.0 ft. Water is used for flood control, recreation, pollution abatement, irrigation, and other purposes.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 82,610 acre-ft May 11, 1997, elevation, 1,987.41 ft; minimum contents since first filling, 7,230 acre-ft Jan. 11, 1991, elevation, 1,855.1 ft, from graph of gage readings furnished by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 82,610 acre-ft May 11, elevation, 1,987.41 ft; minimum contents, 15,640 acre-ft Nov. 18, elevation, 1,885.21 ft.

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

1,840.0	4,400	1,900.0	21,380	1,960.0	58,060
1,860.0	8,330	1,920.0	30,960	1,980.0	75,470
1,880.0	13,890	1,940.0	43,090	1,990.0	85,190

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY OBSERVATION AT 2400 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1931.65	1894.91	1891.22	1986.33	1890.98	1929.42	1965.25	1987.01	1984.69	1981.44	1967.40	1950.64
2	1930.57	1894.22	1890.84	1983.25	1892.54	1930.75	1965.89	1986.88	1984.48	1981.17	1966.92	1950.06
3	1929.48	1893.53	1890.09	1979.72	1894.36	1931.82	1966.50	1986.91	1984.58	1980.83	1966.42	1949.50
4	1928.38	1892.80	1895.72	1968.49	1896.46	1932.79	1967.09	1986.94	1984.73	1980.46	1965.91	1948.91
5	1927.26	1892.06	1903.41	1953.59	1898.29	1933.80	1967.62	1987.10	1984.84	1980.05	1965.40	1948.30
6	1926.16	1891.28	1906.45	1944.63	1899.73	1934.79	1968.14	1987.27	1984.87	1979.64	1964.88	1947.70
7	1925.07	1890.68	1916.82	1938.52	1901.07	1935.78	1968.68	1987.31	1984.87	1979.23	1964.35	1947.08
8	1923.87	1890.27	1937.58	1927.57	1902.45	1936.74	1969.24	1987.32	1984.87	1978.81	1963.85	1946.69
9	1922.69	1889.72	1941.61	1914.97	1904.03	1937.65	1969.77	1987.38	1984.84	1978.39	1963.31	1946.40
10	1921.50	1889.18	1941.45	1903.14	1905.62	1938.62	1970.29	1987.33	1984.80	1977.97	1962.77	1946.07
11	1920.29	1888.60	1934.61	1900.96	1907.10	1939.64	1970.80	1987.33	1984.74	1977.53	1962.24	1945.56
12	1919.04	1888.02	1923.64	1900.64	1908.42	1940.61	1971.30	1987.22	1984.71	1977.09	1961.70	1944.95
13	1917.81	1887.47	1910.75	1902.53	1909.57	1941.53	1971.82	1987.21	1984.72	1976.63	1961.14	1944.34
14	1916.54	1886.94	1901.01	1903.81	1910.92	1942.46	1972.33	1987.14	1984.66	1976.15	1960.59	1943.82
15	1915.28	1886.37	1897.57	1902.79	1912.54	1943.47	1972.89	1986.98	1984.57	1975.67	1960.05	1943.28
16	1914.00	1885.78	1896.04	1901.54	1914.10	1944.88	1973.52	1986.73	1984.47	1975.17	1959.51	1942.73
17	1912.67	1885.24	1893.87	1900.54	1915.66	1946.45	1974.19	1986.45	1984.35	1974.68	1958.94	1942.28
18	1911.58	1892.78	1891.92	1899.53	1917.08	1947.71	1975.20	1986.42	1984.22	1974.19	1958.40	1941.78
19	1910.40	1902.08	1891.21	1897.74	1918.71	1949.24	1976.93	1986.42	1984.07	1973.69	1957.84	1941.13
20	1909.11	1901.24	1891.23	1895.86	1920.11	1951.23	1980.01	1986.37	1983.89	1973.16	1957.31	1940.29
21	1907.78	1897.77	1891.03	1894.05	1921.40	1952.88	1981.06	1986.37	1983.70	1972.64	1956.78	1939.35
22	1906.49	1893.65	1890.72	1891.83	1922.59	1954.30	1981.44	1986.29	1983.51	1972.12	1956.21	1938.32
23	1905.25	1890.20	1890.59	1889.61	1923.67	1955.60	1981.95	1986.32	1983.32	1971.63	1955.67	1937.15
24	1904.33	1890.14	1890.50	1888.96	1924.68	1956.87	1982.73	1986.26	1983.12	1971.13	1955.15	1935.81
25	1903.40	1890.19	1891.30	1889.22	1925.63	1958.20	1983.59	1986.12	1982.91	1970.66	1954.60	1934.28
26	1902.21	1890.07	1899.37	1889.14	1926.58	1959.59	1984.50	1985.96	1982.67	1970.20	1954.04	1932.64
27	1900.92	1890.03	1907.00	1889.09	1927.55	1960.85	1985.38	1985.81	1982.41	1969.73	1953.50	1930.99
28	1899.59	1890.54	1913.23	1889.12	1928.39	1961.95	1986.11	1985.65	1982.13	1969.27	1952.94	1929.32
29	1898.72	1890.43	1931.87	1889.01	---	1962.89	1986.76	1985.45	1981.89	1968.81	1952.37	1927.59
30	1897.52	1890.21	1944.35	1889.01	---	1963.78	1987.12	1985.20	1981.69	1968.35	1951.80	1925.82
31	1896.19	---	1961.40	1890.49	---	1964.56	---	1984.98	---	1967.87	1951.22	---
MAX	1931.65	1902.08	1961.40	1986.33	1928.39	1964.56	1987.12	1987.38	1984.87	1981.44	1967.40	1950.64
MIN	1896.19	1885.24	1890.09	1888.96	1890.98	1929.42	1965.25	1984.98	1981.69	1967.87	1951.22	1925.82
(†)	19790	17450	59160	17560	35690	61780	82320	80220	77060	64590	51150	34180
(‡)	-18530	-2340	+41710	-41600	+18130	+26090	+20540	-2100	-3160	-12470	-13440	-16970

CAL YR 1996 MAX 1987.01 MIN 1885.24 AC-FT‡ +33680

WTR YR 1997 MAX 1987.38 MIN 1885.24 AC-FT‡ -4140

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

‡ Change in contents, in acre-feet.

ROGUE RIVER BASIN

14362000 APPLEGATE RIVER NEAR COPPER, OR

LOCATION.--Lat 42°03'50", long 123°06'37", in SW 1/4 NW 1/4 sec.30, T.40 S., R.3 W., Jackson County, Hydrologic Unit 17100309, U.S. Corps of Engineers land, on left bank 0.1 mi downstream from Brushy Gulch, 0.6 mi downstream from Applegate Dam, 3.1 mi northeast of former town of Copper, and at mile 45.7.

DRAINAGE AREA.--225 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year. Prior to January 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-78-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,747.51 ft above sea level. Prior to Oct. 1, 1977, at site 0.6 mi upstream at datum 12.15 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Some storage during winter in Squaw Lakes Reservoir, capacity, 1,100 acre-ft on Squaw Creek upstream from station. Diversions upstream from station from Carberry Creek for irrigation in Thompson Creek basin. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1939-81), 438 ft³/s, 317,300 acre-ft/yr.
16 years (water years 1982-97), 430 ft³/s, 311,300 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s Jan. 15, 1974, gage height, 25.38 ft, site and datum then in use, from high-water mark in well, from rating curve extended above 12,000 ft³/s on basis of four slope-area measurements of peak flows made in 1950, 1955, 1964, and 1974; minimum discharge, 1.5 ft³/s Dec. 20, 1980, result of regulation at Applegate dam, 0.6 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,800 ft³/s Jan. 1, gage height, 16.23 ft; minimum discharge, 127 ft³/s Mar. 13-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	367	355	339	11700	1770	171	153	786	425	278	269	265
2	371	221	468	15500	1090	175	153	717	376	277	268	264
3	375	221	486	9890	847	175	155	649	259	302	268	264
4	372	221	332	10300	654	175	155	612	257	327	271	263
5	372	219	568	9980	578	156	155	516	257	325	273	268
6	371	220	438	6360	581	138	155	484	258	327	270	267
7	368	186	582	4650	584	141	137	542	258	324	269	267
8	374	161	1550	5710	505	141	128	560	258	325	269	190
9	373	188	4200	5490	417	141	128	559	258	297	268	157
10	371	186	4200	4660	361	142	128	643	258	297	269	181
11	370	185	4940	1990	342	145	128	671	258	297	270	255
12	377	184	5400	1330	345	145	128	673	258	300	270	275
13	381	183	5190	701	344	142	128	600	258	304	269	276
14	378	183	3690	750	272	122	128	597	257	306	267	276
15	377	183	2070	1200	157	122	128	617	256	308	267	278
16	374	183	1500	1190	159	122	128	632	256	307	266	279
17	378	183	1470	1140	159	123	128	632	254	309	267	280
18	383	288	1310	1090	160	124	128	464	250	309	266	281
19	381	631	983	1200	161	128	128	431	248	309	267	312
20	375	1300	865	1190	160	128	336	431	256	308	268	381
21	374	1400	865	1180	165	129	961	364	262	308	268	416
22	373	1370	817	1170	167	130	1250	394	257	299	267	440
23	374	1060	742	1120	167	128	1200	397	254	286	268	490
24	377	385	741	790	168	124	700	413	253	285	267	543
25	374	336	710	975	169	125	475	412	253	276	267	595
26	374	307	665	1370	170	128	404	413	258	266	267	627
27	376	267	1030	1190	171	130	407	415	275	266	267	628
28	383	258	1060	1780	171	132	409	415	282	266	267	626
29	379	318	925	1450	---	141	413	419	280	266	267	635
30	376	337	3540	1240	---	151	598	422	280	266	266	635
31	376	---	4410	1510	---	151	---	422	---	266	264	---
TOTAL	11624	11719	56086	109796	10994	4325	9752	16302	8069	9186	8306	10914
MEAN	375	391	1809	3542	393	140	325	526	269	296	268	364
MAX	383	1400	5400	15500	1770	175	1250	786	425	327	273	635
MIN	367	161	332	701	157	122	128	364	248	266	264	157
AC-FT	23060	23240	111200	217800	21810	8580	19340	32340	16000	18220	16470	21650

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1997, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	342	401	596	644	581	490	419	599	380	225	213	272				
MAX	506	1033	2374	3542	1685	1303	909	1416	1026	340	326	435				
(WY)	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997		
MIN	204	187	121	115	123	117	118	165	140	109	108	110				
(WY)	1982	1988	1995	1991	1991	1994	1994	1994	1990	1992	1992	1992				

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1982 - 1997

	1996	1997	1982-1997
ANNUAL TOTAL	256770	267073	
ANNUAL MEAN	702	732	430
HIGHEST ANNUAL MEAN			829
LOWEST ANNUAL MEAN			157
HIGHEST DAILY MEAN	5400	15500	15500
LOWEST DAILY MEAN	161	122	85
ANNUAL SEVEN-DAY MINIMUM	181	124	91
ANNUAL RUNOFF (AC-FT)	509300	529700	311300
10 PERCENT EXCEEDS	1340	1200	862
50 PERCENT EXCEEDS	413	308	257
90 PERCENT EXCEEDS	222	145	123

ROGUE RIVER BASIN

391

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 recorded, 21.0°C Sept. 8; minimum, 4.0°C Jan. 16-19, 26, 27.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	10.5	12.5	11.5	11.0	11.0	8.0	8.0	8.0	7.5	6.5	7.0
2	13.0	12.5	13.0	11.5	11.0	11.0	8.0	8.0	8.0	7.0	7.0	7.0
3	13.0	12.5	13.0	11.0	10.5	11.0	8.0	7.0	7.5	7.5	7.0	7.0
4	13.5	13.0	13.0	11.0	10.5	11.0	7.0	7.0	7.0	7.0	7.0	7.0
5	13.5	13.0	13.0	11.0	10.5	11.0	7.5	7.0	7.0	7.0	6.5	7.0
6	13.5	12.0	12.5	11.0	10.5	11.0	7.0	7.0	7.0	6.5	6.5	6.5
7	12.5	12.0	12.5	11.0	10.5	10.5	7.0	6.5	6.5	6.5	6.0	6.5
8	12.5	10.5	11.5	11.0	10.5	10.5	6.5	6.5	6.5	6.5	6.0	6.0
9	11.0	10.5	11.0	10.5	10.0	10.5	7.0	6.5	6.5	6.0	5.5	5.5
10	11.0	11.0	11.0	10.5	10.0	10.0	7.0	7.0	7.0	5.5	5.0	5.5
11	11.5	11.0	11.0	10.5	10.0	10.0	7.0	7.0	7.0	5.5	5.0	5.5
12	11.5	11.0	11.0	10.5	10.0	10.0	7.0	7.0	7.0	5.5	5.0	5.0
13	11.5	11.0	11.0	10.5	10.0	10.0	7.0	7.0	7.0	5.0	5.0	5.0
14	11.0	11.0	11.0	10.5	10.0	10.0	7.0	6.5	7.0	5.0	4.5	5.0
15	11.0	11.0	11.0	10.5	10.0	10.0	7.0	6.5	6.5	5.0	4.5	4.5
16	11.0	11.0	11.0	10.0	10.0	10.0	6.5	6.0	6.0	4.5	4.0	4.5
17	11.0	8.0	10.5	10.0	10.0	10.0	6.0	6.0	6.0	4.5	4.0	4.0
18	8.0	8.0	8.0	10.5	10.0	10.0	6.0	5.5	6.0	4.5	4.0	4.0
19	8.0	8.0	8.0	10.5	9.5	10.0	5.5	5.5	5.5	4.5	4.0	4.5
20	8.0	8.0	8.0	9.5	9.0	9.5	5.5	5.0	5.5	4.5	4.5	4.5
21	8.5	8.0	8.0	---	---	---	5.5	5.0	5.0	4.5	4.5	4.5
22	8.5	8.5	8.5	9.0	8.5	9.0	5.5	5.0	5.0	5.0	4.5	5.0
23	8.5	8.5	8.5	9.0	9.0	9.0	5.5	5.0	5.0	5.0	4.5	5.0
24	9.0	8.5	8.5	9.0	8.5	9.0	5.0	5.0	5.0	5.0	4.5	4.5
25	9.0	9.0	9.0	9.0	8.5	8.5	5.0	5.0	5.0	4.5	4.5	4.5
26	9.5	9.0	9.5	9.0	8.5	8.5	5.0	5.0	5.0	4.5	4.0	4.5
27	10.5	9.5	10.0	8.5	8.0	8.5	5.5	5.0	5.0	4.5	4.0	4.5
28	11.0	10.5	10.5	8.0	8.0	8.0	5.5	5.5	5.5	4.5	4.5	4.5
29	11.5	11.0	11.0	8.0	8.0	8.0	6.0	5.5	5.5	5.0	4.5	5.0
30	11.5	11.0	11.0	8.5	8.0	8.0	6.0	5.5	6.0	5.0	5.0	5.0
31	11.0	11.0	11.0	---	---	---	6.5	6.0	6.5	5.5	5.0	5.0
MONTH	13.5	8.0	10.6	---	---	---	8.0	5.0	6.2	7.5	4.0	5.3

ROGUE RIVER BASIN

14362000 APPLEGATE RIVER NEAR COPPER, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.5	5.5	5.5	6.0	5.5	5.5	6.5	6.0	6.0	---	---	---
2	6.0	5.5	6.0	6.0	5.0	5.5	7.0	5.5	6.0	---	---	---
3	6.0	6.0	6.0	6.0	5.5	5.5	7.0	6.0	6.0	---	---	---
4	6.0	5.5	5.5	6.5	5.5	6.0	7.0	6.0	6.0	---	---	---
5	5.5	5.5	5.5	6.5	5.5	6.0	7.0	6.0	6.0	---	---	---
6	5.5	5.5	5.5	6.0	5.5	6.0	6.5	6.0	6.0	---	---	---
7	5.5	5.0	5.0	6.5	5.5	5.5	7.0	6.0	6.5	---	---	---
8	5.0	5.0	5.0	6.5	5.5	5.5	7.0	6.0	6.5	---	---	---
9	5.0	5.0	5.0	6.5	5.5	6.0	7.0	6.0	6.5	---	---	---
10	5.5	5.0	5.0	6.5	5.5	5.5	7.0	6.0	6.5	---	---	---
11	5.5	5.0	5.5	6.5	5.5	5.5	7.0	6.0	6.5	---	---	---
12	5.5	5.0	5.5	6.0	5.5	5.5	7.5	6.0	6.5	---	---	---
13	5.5	5.5	5.5	6.5	5.5	6.0	7.0	6.0	6.5	---	---	---
14	6.0	5.5	5.5	6.5	5.5	6.0	8.0	7.0	7.0	---	---	---
15	6.0	5.5	5.5	6.5	5.5	5.5	8.0	6.5	7.5	---	---	---
16	6.0	5.0	5.5	6.5	5.5	6.0	7.5	7.0	7.0	---	---	---
17	6.0	5.5	5.5	6.5	5.5	6.0	8.0	6.5	7.0	---	---	---
18	6.0	5.5	5.5	6.5	5.5	6.0	7.5	7.0	7.0	---	---	---
19	5.5	5.5	5.5	6.5	5.5	6.0	7.5	7.0	7.0	---	---	---
20	6.0	5.5	5.5	7.0	5.5	6.0	8.0	7.0	7.0	---	---	---
21	6.0	5.5	5.5	6.5	5.5	6.0	7.0	6.5	7.0	---	---	---
22	6.0	5.5	5.5	7.0	5.5	6.0	---	---	---	---	---	---
23	6.0	5.5	5.5	6.5	5.5	6.0	---	---	---	---	---	---
24	6.0	5.5	5.5	---	---	---	---	---	---	---	---	---
25	6.0	5.5	5.5	---	---	---	---	---	---	---	---	---
26	6.0	5.0	5.5	---	---	---	---	---	---	---	---	---
27	5.5	5.0	5.0	---	---	---	---	---	---	---	---	---
28	6.0	5.0	5.5	---	---	---	---	---	---	---	---	---
29	---	---	---	7.0	5.5	6.0	---	---	---	---	---	---
30	---	---	---	6.5	6.0	6.0	---	---	---	---	---	---
31	---	---	---	6.5	6.0	6.0	---	---	---	---	---	---
MONTH	6.0	5.0	5.4	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	15.5	14.5	15.0	15.5	15.0	15.5
2	---	---	---	---	---	---	15.5	14.5	15.0	16.0	15.0	15.5
3	---	---	---	---	---	---	15.5	15.0	15.5	16.0	15.5	15.5
4	---	---	---	15.0	14.5	15.0	16.0	14.5	15.0	16.0	15.5	15.5
5	---	---	---	15.0	15.0	15.0	15.5	14.5	15.0	16.0	15.0	15.5
6	---	---	---	15.5	15.0	15.0	15.5	15.0	15.0	16.0	15.0	15.5
7	12.0	12.0	12.0	15.5	15.0	15.0	16.0	15.0	15.5	16.0	15.0	15.5
8	12.5	11.5	12.0	15.5	15.0	15.5	16.0	15.0	15.5	21.0	11.5	17.5
9	12.5	12.0	12.0	16.0	14.5	15.5	16.0	15.0	15.5	20.5	20.0	20.0
10	12.5	12.0	12.5	15.5	15.0	15.5	16.0	14.0	15.0	20.5	13.0	18.0
11	12.5	12.0	12.5	16.0	15.0	15.5	15.0	14.0	14.5	15.5	14.0	15.0
12	12.5	12.0	12.0	16.0	15.0	15.5	15.0	14.5	15.0	16.0	15.0	15.5
13	12.5	12.0	12.0	16.0	15.0	15.5	15.5	14.0	14.5	16.0	15.0	15.5
14	13.0	12.0	12.5	16.0	15.0	15.5	15.0	14.5	14.5	16.0	15.0	15.5
15	13.0	12.0	12.5	16.0	15.0	15.5	15.0	14.5	14.5	16.0	15.0	15.5
16	13.0	12.5	12.5	16.0	15.5	16.0	15.5	14.5	15.0	16.0	15.0	15.5
17	13.0	12.5	12.5	16.0	14.5	15.5	15.5	14.5	15.0	16.0	15.0	15.5
18	13.0	12.0	12.5	16.0	15.0	15.5	15.5	15.0	15.0	15.5	15.0	15.0
19	13.0	12.5	13.0	16.0	15.0	15.5	15.5	14.5	15.0	16.0	15.0	15.5
20	13.5	10.5	12.5	16.0	15.5	16.0	15.5	14.0	14.5	16.0	15.0	15.5
21	14.0	13.0	13.5	16.0	15.5	16.0	15.5	14.5	15.0	16.0	10.5	14.0
22	14.0	13.5	14.0	16.5	14.0	15.0	15.5	14.5	15.0	15.0	12.5	14.0
23	14.0	13.5	14.0	15.0	14.0	14.5	15.5	14.5	15.0	13.5	12.5	12.5
24	14.5	14.0	14.0	15.0	14.0	14.5	15.5	14.5	15.0	13.0	12.0	12.5
25	14.5	14.0	14.0	15.5	14.0	14.5	15.5	15.0	15.0	13.0	12.5	12.5
26	14.5	14.0	14.0	15.5	14.5	15.0	15.5	14.5	15.0	13.0	11.5	12.5
27	14.5	14.0	14.0	16.0	14.5	15.0	15.5	14.5	15.0	13.0	12.5	12.5
28	14.5	14.0	14.5	16.0	15.0	15.5	16.0	15.0	15.0	13.0	12.5	13.0
29	---	---	---	16.0	15.0	15.5	15.5	15.0	15.0	13.5	13.0	13.0
30	---	---	---	16.0	15.0	15.5	15.5	15.0	15.5	13.0	12.0	12.5
31	---	---	---	16.5	14.0	15.5	15.5	15.0	15.5	---	---	---
MONTH	---	---	---	---	---	---	16.0	14.0	15.0	21.0	10.5	14.9

ROGUE RIVER BASIN

393

14362250 STAR GULCH NEAR RUCH, OR

LOCATION.--Lat 42°09'15", long 123°04'27", in NE 1/4 NE 1/4 sec.29, T.39 S., R.3 W., Jackson County, Hydrologic Unit 17100309, Bureau of Land Management land, on left bank 1.0 mi downstream from Benson Gulch, 6.0 mi southwest of Ruch, and at mile 1.1.

DRAINAGE AREA.--16.0 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,667.04 ft above sea level.

REMARKS.--Records good.

AVERAGE DISCHARGE.--14 years (water years 1984-97), 4.76 ft³/s, 3,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Jan. 1, 1997, gage height, 5.43 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 8	2400	208	3.36	Jan. 27	1530	43	2.01
Jan. 1	0600	*1,050	*5.43				

Minimum discharge, 0.27 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.36	1.3	2.6	621	26	16	7.6	5.9	3.4	2.8	1.1	.85
2	.38	1.3	2.6	363	25	20	7.3	5.7	3.4	2.6	e1.1	.84
3	.38	1.2	2.4	235	23	20	7.3	5.5	3.8	2.4	e1.1	.87
4	.41	1.3	4.9	156	21	20	7.3	5.4	4.0	2.3	e1.0	.86
5	.46	1.3	25	107	20	20	7.1	5.3	3.8	2.1	e1.0	.89
6	.48	1.3	17	76	20	20	7.0	5.1	3.5	2.1	e1.0	.95
7	.47	1.3	51	60	20	20	6.8	5.0	3.5	2.1	e.97	.82
8	.43	1.3	161	50	20	20	6.7	4.9	3.4	2.0	e.95	.78
9	.39	1.4	161	43	20	20	6.5	4.8	3.3	2.0	e.93	.80
10	.37	1.4	108	41	20	19	6.2	4.7	3.2	2.1	e.94	.95
11	.41	1.4	82	36	20	18	6.2	4.6	3.1	2.0	e.91	1.1
12	.46	1.4	60	34	20	17	6.2	4.4	3.2	2.0	e.91	1.0
13	.53	1.4	44	28	20	16	6.2	4.3	3.6	1.9	e.91	.92
14	.68	1.5	33	25	20	16	6.0	4.3	3.2	1.6	e.89	.97
15	.72	1.6	24	25	20	16	5.9	4.2	3.0	1.5	e.87	1.0
16	.69	1.6	18	22	20	15	5.7	4.1	2.9	1.5	e.85	1.1
17	.69	1.7	14	21	20	14	5.7	4.0	2.8	1.5	e.86	1.2
18	1.2	8.1	12	21	19	12	5.8	3.9	2.8	1.5	e.88	1.1
19	1.4	e6.0	10	21	19	12	5.8	3.8	2.7	1.5	e.90	1.1
20	1.1	e3.9	11	21	18	11	6.9	3.8	2.7	1.3	e.99	.97
21	1.1	e3.6	14	21	18	11	6.9	3.7	2.7	1.2	e1.1	.89
22	1.1	e3.1	14	21	17	11	7.1	3.7	2.7	1.2	.92	.83
23	1.2	2.8	13	21	17	10	9.3	4.4	2.6	1.2	.97	.80
24	1.6	2.4	13	20	16	10	8.6	4.1	2.6	1.2	1.3	.76
25	2.3	2.1	19	24	16	9.8	7.9	3.8	2.5	1.1	1.1	.72
26	1.8	1.8	42	40	16	9.6	7.3	3.8	2.5	1.1	1.1	.71
27	1.2	1.6	64	42	16	9.2	6.9	3.8	2.5	1.0	1.2	.78
28	1.2	2.3	57	41	15	8.6	6.6	4.0	2.6	1.0	1.1	.82
29	3.1	2.2	86	36	---	8.0	6.4	3.8	2.8	1.2	1.0	.81
30	1.8	2.1	164	33	---	8.1	6.3	3.6	3.1	1.3	.94	.75
31	1.4	---	241	29	---	7.9	---	3.4	---	1.1	.90	---
TOTAL	29.81	65.7	1570.5	2334	542	445.2	203.5	135.8	91.9	51.4	30.69	26.94
MEAN	.96	2.19	50.7	75.3	19.4	14.4	6.78	4.38	3.06	1.66	.99	.90
MAX	3.1	8.1	241	621	26	20	9.3	5.9	4.0	2.8	1.3	1.2
MIN	.36	1.2	2.4	20	15	7.9	5.7	3.4	2.5	1.0	.85	.71
AC-FT	59	130	3120	4630	1080	883	404	269	182	102	61	53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1997, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	.67	2.94	8.88	12.7	10.3	9.77	6.16	2.98	1.56	.85	.47	.45			
MAX	1.98	18.0	50.7	75.3	40.2	26.6	19.6	7.31	3.41	3.14	2.16	2.00			
(WY)	1984	1985	1997	1997	1996	1995	1995	1996	1996	1983	1983	1983			
MIN	.021	.23	.87	1.13	1.58	.95	1.00	.22	.012	.000	.000	.000			
(WY)	1993	1993	1990	1992	1992	1992	1994	1992	1992	1994	1988	1991			

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1983 - 1997
ANNUAL TOTAL	4858.79	5527.44	
ANNUAL MEAN	13.3	15.1	4.76
HIGHEST ANNUAL MEAN			15.1
LOWEST ANNUAL MEAN			.60
HIGHEST DAILY MEAN	241	621	621
LOWEST DAILY MEAN	.34	.36	.00
ANNUAL SEVEN-DAY MINIMUM	.38	.42	.00
ANNUAL RUNOFF (AC-FT)	9640	10960	3450
10 PERCENT EXCEEDS	36	25	11
50 PERCENT EXCEEDS	4.4	3.7	1.3
90 PERCENT EXCEEDS	.48	.88	.05

e Estimated

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR

LOCATION.--Lat 42°14'30", long 123°08'20", in NE 1/4 sec.26, T.38 S., R.4 W., Jackson County, Hydrologic Unit 17100309, on left bank 0.9 mi downstream from Keeler Creek, 1.8 mi southeast of Applegate, and at mile 26.7.

DRAINAGE AREA.--483 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

RECORDS.--WSP 1738: Drainage area. WSP 1935: 1953(M). WDR OR-76-1: 1956(M), 1965(M).

GAGE.--Water-stage recorder. Datum of gage is 1,285.33 ft above sea level. Prior to Dec. 23, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Many diversions for irrigation upstream from station. McDonald Creek Canal diverts from McDonald Creek upstream from station for irrigation in Bear Creek basin. Thompson Creek Irrigation Association ditch diverts upstream from station for irrigation in Thompson Creek basin. Fowler-Keeler and Berryman ditches divert upstream from station for irrigation downstream. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1939-80), 548 ft³/s, 397,000 acre-ft/yr.
16 years (water years 1982-97), 533 ft³/s, 386,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,200 ft³/s Jan. 15, 1974, gage height, 20.41 ft, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements of flow at gage heights 18.00 ft and 19.57 ft; minimum discharge, 4.6 ft³/s Sept. 22-25, 1979. Minimum since first filling of Applegate Lake, 65 ft³/s Aug. 2, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 20, 1927, reached a stage of 18.7 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,700 ft³/s Jan. 1, gage height, 17.90 ft; minimum discharge, 152 ft³/s Sept. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	427	443	440	24400	2140	351	289	872	428	282	e249	240
2	432	304	533	24200	1410	464	283	833	413	273	e249	243
3	434	282	580	15300	1140	445	284	753	296	e265	e249	257
4	433	281	509	13200	911	429	282	713	299	e270	e249	248
5	432	279	960	11900	806	407	278	620	303	e275	e249	254
6	432	279	899	7690	793	378	275	561	291	e280	246	256
7	423	271	1570	5280	829	371	264	614	280	e290	244	256
8	423	205	4210	6140	777	363	249	632	278	288	240	214
9	423	240	8330	5800	673	355	245	637	272	287	241	158
10	424	241	7110	5110	617	351	243	714	267	289	242	160
11	424	241	7290	2760	583	349	242	740	269	285	243	245
12	431	241	7790	2260	577	342	241	775	269	283	241	262
13	440	243	7230	1260	570	332	241	686	278	287	243	260
14	437	247	5330	1080	518	308	242	675	259	287	240	268
15	434	245	2950	1580	390	309	238	678	253	286	239	269
16	429	243	2070	1530	385	313	239	686	252	287	240	267
17	431	241	1910	1460	400	312	237	674	249	286	239	270
18	460	495	1720	1340	385	300	244	544	246	287	246	272
19	458	1070	1300	1450	384	298	263	468	245	284	244	279
20	447	1710	1150	1440	375	317	395	464	244	285	249	329
21	441	1860	1210	1450	372	311	1060	407	250	281	247	369
22	441	1790	1140	1420	366	304	e1370	415	247	276	245	376
23	443	1510	1040	1370	360	299	e1050	431	240	260	248	417
24	470	558	1000	1090	353	292	e735	462	240	260	257	466
25	481	421	1260	1170	350	292	621	441	240	254	251	523
26	459	402	1400	1690	350	293	528	434	237	243	252	563
27	448	352	2000	1580	360	290	548	433	245	245	253	557
28	463	340	1940	1990	352	292	539	433	257	242	252	550
29	491	388	2450	1850	---	287	533	431	266	242	252	550
30	461	418	6840	1530	---	300	682	432	295	244	246	551
31	447	---	11100	1710	---	296	---	434	---	246	245	---
TOTAL	13719	15840	95261	152030	17526	10350	12940	18092	8208	8449	7630	9929
MEAN	443	528	3073	4904	626	334	431	584	274	273	246	331
MAX	491	1860	11100	24400	2140	464	1370	872	428	290	257	563
MIN	423	205	440	1080	350	287	237	407	237	242	239	158
AC-FT	27210	31420	189000	301600	34760	20530	25670	35890	16280	16760	15130	19690

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1997, BY WATER YEAR (WY)

	342	455	816	875	832	700	577	728	431	212	186	252
MEAN	342	455	816	875	832	700	577	728	431	212	186	252
MAX	507	1261	3077	4904	2553	1892	1304	1705	1237	370	308	425
(WY)	1983	1985	1982	1997	1983	1995	1982	1983	1983	1983	1995	1983
MIN	218	195	149	142	148	142	139	160	120	86.5	74.5	83.8
(WY)	1982	1988	1995	1991	1992	1992	1992	1992	1992	1992	1992	1992

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1982 - 1997
ANNUAL TOTAL	359968	369974	
ANNUAL MEAN	984	1014	533
HIGHEST ANNUAL MEAN			1072
LOWEST ANNUAL MEAN			153
HIGHEST DAILY MEAN	11100	24400	24400
LOWEST DAILY MEAN	187	158	153
ANNUAL SEVEN-DAY MINIMUM	190	220	71
ANNUAL RUNOFF (AC-FT)	714000	733800	386000
10 PERCENT EXCEEDS	1930	1620	1140
50 PERCENT EXCEEDS	526	375	274
90 PERCENT EXCEEDS	241	243	139

e Estimated

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 28.0°C July 29, 30, Aug. 3, 4, 1974; minimum, 0.0°C on several days during winter periods most years. Maximum since full operation of Applegate Lake, 25.5°C July 5, 1984, July 16, 19, 27, 1992; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.0°C July 20; minimum recorded, 2.5°C Jan. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	12.0	14.0	11.0	9.0	10.0	9.0	7.0	8.0	9.0	8.5	8.5
2	16.0	12.0	14.0	10.5	8.5	9.5	8.0	6.0	7.0	8.5	7.5	8.0
3	15.5	12.5	14.0	11.0	9.0	10.0	8.0	7.0	7.5	8.0	7.0	7.5
4	15.5	12.5	14.0	11.0	9.5	10.0	8.0	6.5	7.0	7.0	7.0	7.0
5	16.0	13.0	14.5	10.0	8.5	9.0	8.0	7.0	7.5	7.0	6.5	7.0
6	15.5	12.5	14.5	10.0	8.0	9.0	7.5	6.5	7.0	6.5	6.5	6.5
7	15.5	12.0	14.0	11.0	9.0	10.0	7.5	6.5	7.0	6.5	6.0	6.0
8	15.0	12.0	13.5	10.0	8.0	9.0	8.0	7.5	8.0	6.5	6.0	6.0
9	14.0	11.0	13.0	10.0	8.0	8.5	8.0	7.5	7.5	6.5	5.5	6.0
10	13.5	11.0	12.5	9.5	8.0	9.0	7.5	7.5	7.5	---	---	---
11	13.5	10.5	12.0	11.0	9.0	9.5	7.5	7.0	7.5	---	---	---
12	13.5	11.5	12.5	10.5	9.0	9.5	7.5	7.5	7.5	---	---	---
13	13.5	11.5	12.5	11.0	9.5	10.0	7.5	7.0	7.5	4.5	3.0	4.0
14	13.0	10.0	11.5	9.5	9.0	9.5	7.5	6.5	7.0	4.5	2.5	3.5
15	13.0	11.5	12.0	10.5	9.0	9.5	7.0	6.5	6.5	5.0	3.5	4.0
16	12.0	10.0	11.0	9.0	8.0	8.5	6.5	6.0	6.5	5.5	3.5	4.5
17	12.0	9.5	11.0	10.0	8.5	9.5	6.5	5.5	6.0	6.0	5.0	5.5
18	12.0	9.0	10.0	10.0	9.5	9.5	6.5	5.5	6.0	6.0	4.5	5.0
19	10.0	8.5	9.0	11.0	9.5	10.5	6.0	5.0	5.5	6.0	4.5	5.0
20	10.0	8.0	9.0	9.5	9.0	9.5	6.0	5.5	5.5	6.0	4.5	5.0
21	9.5	7.0	8.5	9.5	9.0	9.0	6.0	5.0	5.5	5.5	4.5	5.0
22	10.5	9.0	9.5	9.5	8.5	9.0	6.0	5.5	5.5	5.5	4.0	4.5
23	10.5	9.0	10.0	9.5	8.5	9.0	6.5	5.5	6.0	5.0	3.0	4.5
24	11.0	9.5	10.0	10.0	9.0	9.0	7.0	5.5	6.0	5.0	3.5	4.5
25	9.5	8.5	9.0	9.5	8.0	8.5	7.0	6.0	6.5	6.0	4.5	5.0
26	10.5	8.5	9.5	8.0	6.5	7.5	8.0	6.5	7.5	6.0	5.0	5.5
27	10.0	7.5	9.0	9.0	7.5	8.0	7.5	6.5	7.0	5.5	5.0	5.5
28	10.5	8.0	9.5	8.5	7.5	8.0	7.5	7.0	7.0	6.0	5.0	5.5
29	10.5	9.5	10.0	8.0	7.5	8.0	8.5	7.0	7.5	6.5	5.0	5.5
30	11.5	10.0	10.5	9.0	7.5	8.5	8.0	7.0	7.5	6.5	5.5	6.0
31	11.5	9.5	10.5	---	---	---	8.5	7.5	8.0	7.0	5.5	6.5
MONTH	16.0	7.0	11.4	11.0	6.5	9.1	9.0	5.0	6.9	---	---	---

ROGUE RIVER BASIN

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.0	6.0	6.0	7.5	5.5	6.5	10.0	6.0	7.5	12.0	7.5	9.5
2	7.0	6.0	6.5	7.0	6.0	6.5	10.5	5.0	8.0	12.0	7.0	9.5
3	6.5	5.5	6.0	7.5	5.0	6.0	12.0	6.0	9.0	12.0	9.0	10.0
4	7.5	6.0	6.5	8.0	5.5	6.5	12.0	7.0	9.5	12.5	7.5	10.0
5	7.0	5.0	6.0	8.0	5.0	6.5	11.5	6.0	8.5	14.0	8.0	10.5
6	6.0	4.5	5.5	8.5	6.0	7.5	9.0	6.5	8.0	14.0	8.5	11.0
7	7.0	6.0	6.0	8.5	7.0	8.0	11.0	7.0	9.0	14.5	8.0	11.0
8	7.0	5.5	6.0	9.5	6.5	8.0	10.5	8.0	9.5	15.0	9.0	12.0
9	6.5	5.5	6.0	9.5	6.5	8.0	12.0	7.0	9.0	15.0	9.5	12.0
10	7.5	6.0	6.5	10.5	7.5	9.0	12.5	8.0	10.0	15.0	9.5	12.0
11	7.5	6.0	6.5	10.5	7.5	9.0	12.5	7.0	9.5	16.5	10.5	13.5
12	7.5	5.5	6.5	9.0	6.5	7.5	12.5	9.0	10.5	16.0	11.0	13.5
13	7.0	4.5	5.5	8.5	5.5	7.0	11.0	9.5	10.0	16.5	10.5	13.0
14	8.0	5.0	6.0	9.0	6.0	7.5	12.0	8.5	10.0	16.0	11.0	13.5
15	7.5	4.5	6.0	11.0	7.5	9.0	15.0	9.0	12.0	17.0	11.5	14.0
16	8.5	5.0	7.0	10.0	8.5	9.0	13.5	10.5	12.0	16.0	11.0	13.5
17	9.0	7.0	7.5	10.0	7.0	8.5	15.5	9.5	12.5	17.0	11.0	14.0
18	8.0	6.0	7.0	10.5	7.0	9.0	13.5	11.0	12.0	17.5	11.5	14.0
19	8.5	7.0	7.5	11.0	9.0	10.0	13.0	10.0	11.5	17.5	11.5	14.5
20	7.5	4.5	6.0	11.5	9.5	10.5	13.0	10.0	12.0	16.5	11.0	13.5
21	7.5	5.5	6.0	11.5	8.0	10.0	11.0	8.0	9.0	16.5	10.0	13.5
22	7.5	4.5	6.0	11.5	7.5	9.5	9.0	7.5	8.0	14.0	10.5	12.5
23	7.5	4.0	5.5	11.5	8.0	10.0	10.0	7.0	8.5	14.5	11.0	12.5
24	7.5	4.0	5.5	13.0	9.0	11.0	12.0	7.0	9.0	15.0	11.0	13.0
25	7.0	4.5	6.0	13.0	9.0	11.0	13.5	7.5	10.5	16.0	10.5	13.0
26	8.5	6.5	7.5	12.5	9.5	11.0	14.5	9.0	11.5	14.0	10.5	12.5
27	7.5	6.5	7.0	11.0	8.5	9.5	13.0	9.5	11.5	15.5	11.5	13.5
28	8.0	5.0	6.5	11.5	7.5	9.5	10.5	8.5	9.5	15.0	12.5	13.5
29	---	---	---	11.0	6.5	8.5	12.5	8.5	10.5	17.0	12.0	14.5
30	---	---	---	---	---	---	12.5	8.5	10.5	19.5	12.5	16.0
31	---	---	---	---	---	---	---	---	---	17.5	13.0	15.5
MONTH	9.0	4.0	6.3	---	---	---	15.5	5.0	9.9	19.5	7.0	12.7

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	17.5	12.5	15.0	18.0	14.0	16.0	---	---	---	20.5	15.5	18.0
2	18.0	12.5	15.0	21.0	14.0	17.5	---	---	---	20.5	16.0	18.0
3	15.5	13.5	14.5	---	---	---	---	---	---	20.5	16.0	18.5
4	17.0	12.5	14.5	---	---	---	---	---	---	20.5	16.0	18.0
5	18.0	12.5	15.0	21.5	16.5	19.0	---	---	---	18.5	16.0	17.0
6	18.5	12.5	15.5	21.5	15.5	18.5	22.5	17.0	19.5	20.0	15.0	17.5
7	16.0	13.0	14.0	22.0	15.5	18.5	22.0	16.5	19.5	20.0	15.0	17.5
8	18.0	12.0	15.0	21.5	16.0	18.5	21.5	16.0	19.0	19.0	15.5	17.5
9	19.0	13.5	16.0	21.5	16.0	19.0	21.5	15.5	18.5	18.5	16.0	17.0
10	19.0	14.0	16.5	20.5	15.5	17.5	22.0	16.0	19.0	20.5	17.0	18.5
11	18.0	14.0	16.0	20.5	14.5	17.5	21.5	16.0	18.5	19.0	17.0	18.0
12	16.5	13.5	14.5	21.5	14.5	18.0	21.5	15.5	18.5	20.0	16.0	17.5
13	16.0	12.0	14.0	22.0	15.0	18.5	21.0	15.5	18.5	18.5	14.5	16.5
14	19.5	13.0	16.0	22.0	16.0	19.0	21.5	15.5	18.5	17.5	15.5	16.5
15	20.5	14.0	17.0	22.5	16.5	19.5	21.0	15.5	18.5	16.5	14.5	15.5
16	21.0	15.0	18.0	22.0	16.5	19.0	21.0	15.5	18.0	18.0	14.0	16.0
17	20.0	15.5	17.5	20.5	16.0	18.5	21.0	15.5	18.5	17.5	15.0	16.0
18	20.5	15.0	17.5	21.5	15.5	18.5	21.0	15.5	18.5	16.0	13.0	14.5
19	20.5	14.5	17.5	22.5	15.5	19.0	21.5	16.0	18.5	18.0	13.0	15.5
20	20.0	14.0	17.0	23.0	16.5	20.0	19.5	17.0	18.0	18.5	13.0	15.5
21	18.5	13.5	16.0	22.5	17.0	20.0	21.0	16.0	18.5	18.5	13.5	16.0
22	19.5	13.5	16.0	22.5	16.0	19.5	20.5	15.5	18.0	18.0	13.0	15.5
23	19.5	14.5	17.0	22.0	16.0	19.0	20.0	15.5	18.0	17.0	13.0	15.0
24	20.0	14.0	16.0	22.0	15.5	18.5	20.0	16.0	18.0	16.5	12.5	14.5
25	20.5	14.0	18.5	21.5	15.5	18.5	18.5	16.0	17.5	16.0	12.5	14.0
26	20.0	15.0	17.5	21.5	15.5	18.5	17.5	16.0	16.5	15.0	12.5	13.5
27	20.0	14.5	17.0	22.0	16.0	19.0	19.5	15.5	17.5	15.5	11.0	13.5
28	17.5	14.5	16.0	22.0	16.5	19.5	19.0	15.5	17.0	16.0	11.5	13.5
29	18.0	14.0	16.0	19.5	17.0	18.0	20.5	16.0	18.0	16.5	12.0	14.0
30	16.5	13.5	15.5	22.0	16.0	19.0	20.5	15.5	18.0	15.5	12.5	14.0
31	---	---	---	22.5	17.0	19.5	20.0	15.5	18.0	---	---	---
MONTH	21.0	12.0	16.0	---	---	---	---	---	---	20.5	11.0	16.1

14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR

LOCATION.--Lat 42°21'15", long 123°24'20", in SE 1/4 NE 1/4 sec.16, T.37 S., R.6 W., Josephine County, Hydrologic Unit 17100309, on left bank 0.3 mi downstream from Jackson Creek, 3.6 mi southeast of Wilderville, and at mile 7.6.

DRAINAGE AREA.--698 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to September 1955, September 1978 to current year.

REVISED RECORDS.--WSP 1318: 1943. WSP 1738: 1951, 1953, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 947.18 ft above sea level (Corps of Engineers bench mark). Prior to Sept. 1, 1978, nonrecording gage at site 1,100 ft upstream at datum 2.36 ft higher.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Many diversions for irrigation upstream from station. Wilderville ditch diverts up to 16 ft³/s 0.3 mi upstream and at the mouth of Jackson Creek. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--19 years (water years 1939-55, 1979, 1980), 717 ft³/s, 519,500 acre-ft/yr.
16 years (water years 1982-97), 741 ft³/s, 537,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,500 ft³/s Jan. 18, 1953, gage height, 18.3 ft, from floodmark, site and datum then in use, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.78 ft³/s Aug. 22-24, 1979. Minimum since first filling of Applegate Lake, 34 ft³/s Aug. 4, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1955, reached a stage of 20.3 ft, from floodmark, former site and datum, discharge, 66,500 ft³/s, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow.

Flood of February 1927 reached a stage of 22 ft at former site, from local resident. Floods of Dec. 22, 1964, and Jan. 15, 1974, are known to have exceeded the December 1955 flood.

No flow was observed at present site during the late summer of 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 44,000 ft³/s Jan. 2, gage height, 19.38 ft; minimum discharge, 188 ft³/s Sept. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	346	453	683	36500	2960	659	499	1020	518	326	223	251
2	352	384	717	35300	2230	1190	481	1030	508	313	225	251
3	356	320	758	20700	1810	1130	475	930	428	306	236	285
4	360	313	1110	15500	1530	1000	468	888	387	315	240	281
5	364	308	3430	e14000	1340	914	459	813	381	307	232	276
6	365	306	2550	e10500	1270	853	452	727	368	304	221	270
7	363	304	4130	e7000	1310	832	446	745	347	313	218	272
8	359	262	11800	7440	1290	799	418	763	340	299	212	271
9	353	262	13100	6830	1150	759	411	758	330	301	211	203
10	363	269	10200	6150	1120	730	400	793	316	301	218	192
11	370	268	9000	3810	1040	716	392	818	311	302	216	228
12	376	266	8730	2460	1010	690	389	885	327	297	213	300
13	386	269	8360	1910	981	656	386	793	351	305	213	304
14	387	271	6580	1550	909	624	386	766	330	314	224	317
15	389	270	3750	1840	794	611	377	754	305	300	211	329
16	389	270	2620	1880	745	634	371	765	294	284	208	333
17	388	268	2220	1840	761	700	366	749	281	290	210	338
18	445	985	2020	1690	728	635	369	686	276	e285	209	346
19	465	2180	1640	1740	779	609	401	560	269	e280	210	339
20	441	2010	1570	1740	772	612	565	543	263	e275	216	366
21	431	1810	2170	1940	747	602	1100	502	260	e270	226	419
22	425	1660	1990	1950	721	578	1640	459	268	264	219	428
23	435	1480	1980	1780	693	561	1910	496	269	250	223	454
24	449	861	1740	1520	665	541	1450	543	261	251	249	495
25	508	583	2190	2010	647	529	1020	522	251	248	262	543
26	484	551	2960	3010	637	525	853	511	247	228	248	589
27	465	495	4820	2670	646	515	817	517	247	224	255	593
28	460	516	4300	2930	636	517	791	528	263	228	260	582
29	540	542	5360	2780	---	499	772	530	286	225	271	579
30	491	561	8870	2270	---	512	819	517	330	233	262	583
31	474	---	16500	2380	---	517	---	514	---	226	256	---
TOTAL	12779	19297	147848	205620	29921	21249	19683	21425	9612	8664	7097	11017
MEAN	412	643	4769	6633	1069	685	656	691	320	279	229	367
MAX	540	2180	16500	36500	2960	1190	1910	1030	518	326	271	593
MIN	346	262	683	1520	636	499	366	459	247	224	208	192
AC-FT	25350	38280	293300	407800	59350	42150	39040	42500	19070	17190	14080	21850

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1997, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	368	632	1302	1383	1365	1106	873	812	466	202	167	250				
MAX	569	2099	4769	6633	4241	2715	2177	1916	1333	390	290	482				
(WY)	1984	1985	1997	1997	1983	1983	1982	1983	1983	1983	1995	1983				
MIN	253	239	196	209	263	230	173	166	98.4	53.5	39.3	66.0				
(WY)	1995	1988	1991	1991	1994	1994	1994	1992	1992	1994	1992	1992				

SUMMARY STATISTICS

	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS 1982 - 1997
ANNUAL TOTAL	518993	514212	
ANNUAL MEAN	1418	1409	741
HIGHEST ANNUAL MEAN			1546
LOWEST ANNUAL MEAN			192
HIGHEST DAILY MEAN	16500	Dec 31	36500 Jan 1 1997
LOWEST DAILY MEAN	179	Aug 2	35 Jul 20 1994
ANNUAL SEVEN-DAY MINIMUM	182	Jul 23	37 Jul 31 1992
ANNUAL RUNOFF (AC-FT)	1029000		537000
10 PERCENT EXCEEDS	3090		1650
50 PERCENT EXCEEDS	798		344
90 PERCENT EXCEEDS	233		142

e Estimated

ROGUE RIVER BASIN

14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1978 to current year.

INSTRUMENTATION.--Temperature recorder since September 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 29.0°C June 22, 1992; minimum, 0.0°C Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.0°C Aug. 5, 6, but may have been higher during period of missing record July 9-22; minimum, 3.5°C Jan. 14.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	14.0	15.5	10.5	9.5	10.0	9.0	7.5	8.5	9.5	8.5	9.0
2	16.0	13.5	15.0	10.0	9.5	9.5	7.5	7.0	7.5	8.5	8.0	8.0
3	16.5	14.5	15.5	11.0	9.0	10.0	8.5	7.5	8.0	8.0	7.0	7.5
4	16.0	14.0	15.5	11.0	10.0	10.5	9.0	7.5	8.0	7.0	6.5	7.0
5	16.5	14.0	15.5	10.0	8.5	9.0	9.0	8.5	8.5	---	---	---
6	17.0	14.5	15.5	9.5	7.5	9.0	8.5	7.5	8.0	---	---	---
7	16.5	14.0	15.5	10.5	8.5	9.5	8.5	8.0	8.0	---	---	---
8	16.5	14.0	15.5	10.0	9.0	9.5	8.5	8.5	8.5	7.0	6.0	6.0
9	16.0	14.0	15.0	9.5	9.0	9.0	8.5	8.0	8.5	6.5	6.0	6.0
10	15.5	13.0	14.5	9.5	8.5	9.0	8.5	8.0	8.5	6.5	5.5	6.0
11	15.0	13.0	14.0	10.5	9.0	9.5	8.0	7.5	8.0	6.0	5.5	5.5
12	15.0	13.0	14.0	11.0	9.5	10.5	8.5	7.5	8.0	6.0	5.0	5.5
13	14.5	13.0	13.5	11.5	10.5	11.0	8.0	7.5	8.0	5.0	4.0	4.5
14	13.5	11.5	12.5	10.5	10.0	10.0	7.5	7.0	7.5	4.5	3.5	4.0
15	14.0	12.5	13.0	10.5	9.5	10.0	7.0	6.5	7.0	5.0	4.0	4.5
16	13.0	11.0	12.0	10.0	9.0	9.0	7.0	6.5	6.5	5.5	4.5	5.0
17	12.5	10.5	11.5	10.0	8.5	9.0	7.0	6.5	6.5	7.0	5.5	6.0
18	12.5	11.0	12.0	11.0	9.5	10.5	6.5	6.0	6.0	6.5	6.0	6.5
19	11.0	10.0	10.5	11.5	10.5	11.0	6.5	5.5	6.0	6.5	6.5	6.5
20	11.0	9.5	10.0	10.5	9.5	9.5	6.5	6.0	6.5	7.0	6.5	6.5
21	10.0	8.5	9.5	9.5	9.0	9.5	6.0	5.5	6.0	6.5	6.0	6.0
22	11.0	10.0	10.5	10.0	9.5	9.5	6.5	6.0	6.5	6.0	5.5	6.0
23	12.0	11.0	11.5	9.5	9.0	9.5	7.0	6.0	6.5	6.0	5.0	5.5
24	12.0	11.0	11.5	10.5	9.5	10.0	7.5	7.0	7.0	5.5	5.0	5.5
25	11.0	10.0	10.0	10.0	8.5	9.5	8.0	7.5	8.0	6.5	5.5	5.5
26	10.5	9.5	10.0	9.0	8.0	8.5	8.5	8.0	8.5	7.0	6.0	6.5
27	---	---	---	9.5	8.0	9.0	8.5	8.0	8.0	7.0	6.0	6.5
28	---	---	---	9.5	9.0	9.0	8.5	8.0	8.5	7.5	6.5	7.0
29	10.5	9.5	10.0	9.0	8.5	8.5	9.5	8.5	9.0	7.5	6.0	6.5
30	11.0	9.5	10.5	9.5	8.5	9.0	9.0	8.0	8.5	7.5	6.5	7.0
31	11.0	10.0	10.5	---	---	---	9.5	8.5	9.0	8.5	7.0	7.5
MONTH	---	---	---	11.5	7.5	9.6	9.5	5.5	7.7	---	---	---

ROGUE RIVER BASIN

399

14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	7.5	6.5	7.0	8.0	6.5	7.5	10.0	8.0	9.0	12.5	10.5	11.5
2	7.0	6.0	6.5	7.5	6.5	7.0	11.0	7.5	9.0	12.5	10.0	11.5
3	6.5	6.0	6.0	7.5	5.5	6.5	11.5	8.5	10.0	12.5	11.5	12.0
4	7.5	6.5	7.0	8.0	6.0	7.0	12.0	9.5	11.0	13.5	10.5	12.0
5	7.0	6.0	6.5	8.5	6.0	7.0	12.0	9.0	10.5	14.5	11.5	12.5
6	6.0	5.0	5.5	9.5	7.5	8.0	11.0	9.0	9.5	15.0	12.0	13.5
7	7.0	6.0	6.5	9.0	8.0	8.5	11.5	8.5	10.0	15.5	12.0	13.5
8	7.5	6.5	7.0	10.0	7.5	9.0	11.5	10.0	10.5	16.0	13.0	14.5
9	7.0	6.0	6.5	10.0	8.0	9.0	11.5	8.5	10.0	16.5	14.0	15.0
10	7.5	6.5	7.0	10.0	9.0	9.5	13.0	10.0	11.5	16.0	14.0	15.0
11	8.0	7.0	7.5	10.0	9.0	9.5	13.0	10.0	11.5	17.5	14.5	15.5
12	7.5	6.5	7.0	9.5	8.0	9.0	13.5	11.5	12.5	16.0	12.5	14.0
13	7.0	5.5	6.5	9.0	6.5	8.0	13.5	11.5	12.0	15.0	12.5	14.0
14	8.0	6.0	7.0	9.0	7.0	8.0	12.5	10.5	11.5	15.5	12.5	14.0
15	7.5	6.0	7.0	10.5	8.0	9.5	15.0	11.0	13.0	15.5	13.5	14.5
16	8.0	6.5	7.0	10.5	9.5	10.0	14.5	13.0	14.0	16.0	13.5	15.0
17	9.5	8.0	8.5	11.0	8.0	9.5	16.0	13.0	14.5	17.0	13.5	15.0
18	9.0	7.5	8.0	11.5	8.5	10.0	15.5	13.5	14.5	17.5	14.5	16.0
19	9.0	7.5	8.5	12.0	10.0	11.0	14.0	12.5	13.0	18.0	15.0	16.5
20	8.0	6.5	7.0	12.0	10.5	11.5	14.5	12.5	13.5	17.5	14.5	16.5
21	7.5	6.5	7.0	12.5	9.0	11.0	13.5	11.0	12.0	17.0	14.0	15.5
22	8.0	6.0	7.0	12.5	9.5	11.0	12.0	9.5	10.5	16.0	14.0	15.0
23	7.5	5.5	6.5	12.5	9.5	11.0	11.0	9.0	10.0	16.0	13.5	14.5
24	8.0	5.5	6.5	13.5	10.5	12.0	12.0	9.0	10.5	16.5	14.0	15.0
25	7.5	6.0	6.5	14.0	11.0	12.5	13.5	10.0	11.5	17.0	13.5	15.5
26	8.5	7.0	8.0	13.5	11.0	12.0	15.0	11.5	13.0	16.5	14.5	15.5
27	8.5	7.0	7.5	12.0	10.5	11.5	15.0	12.5	13.5	17.5	14.5	16.0
28	8.0	6.0	7.5	12.0	9.5	11.0	13.5	11.5	12.0	17.5	15.5	16.5
29	---	---	---	11.0	9.0	10.0	13.5	10.5	12.0	19.0	15.0	17.0
30	---	---	---	10.5	9.0	9.5	13.0	11.5	12.5	21.0	17.0	19.0
31	---	---	---	9.5	8.0	9.0	---	---	---	20.0	17.5	19.0
MONTH	9.5	5.0	7.0	14.0	5.5	9.5	16.0	7.5	11.6	21.0	10.0	14.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	19.5	16.5	18.0	19.5	16.0	18.0	23.5	20.0	22.0	21.5	19.0	20.5
2	19.0	16.0	17.5	21.5	17.0	19.5	24.0	20.5	22.0	22.0	19.0	20.5
3	18.5	16.5	17.0	22.5	18.5	20.5	24.0	20.5	22.0	22.0	19.5	21.0
4	17.5	15.0	16.5	23.0	19.5	21.5	24.5	20.5	22.5	22.0	19.5	21.0
5	19.0	16.0	17.5	23.0	20.0	21.5	25.0	21.5	23.0	21.0	19.5	20.0
6	20.0	16.5	18.5	22.5	19.0	21.0	25.0	22.0	23.5	21.0	18.0	19.5
7	19.5	16.5	17.5	23.0	19.0	21.0	24.5	21.5	23.0	21.0	18.0	19.5
8	19.0	14.5	16.5	22.5	19.5	21.0	24.0	20.5	22.5	20.5	18.5	19.5
9	21.0	16.5	18.5	---	---	---	23.0	19.5	21.5	19.5	18.0	18.5
10	21.5	18.0	20.0	---	---	---	23.5	20.0	22.0	20.0	17.5	18.5
11	20.5	18.5	19.0	---	---	---	24.0	20.5	22.5	20.5	18.5	19.5
12	18.5	16.5	17.5	---	---	---	24.0	20.5	22.5	20.5	18.5	19.5
13	18.0	15.5	17.0	---	---	---	24.0	21.0	22.5	19.5	17.5	18.5
14	20.5	16.0	18.0	---	---	---	24.5	21.0	22.5	19.0	17.5	18.5
15	22.0	18.0	20.0	---	---	---	24.0	21.0	22.5	18.5	16.5	17.5
16	23.0	19.5	21.5	---	---	---	23.5	20.0	22.0	17.5	15.5	17.0
17	22.5	20.0	21.0	---	---	---	23.5	20.0	22.0	18.0	16.5	17.5
18	22.5	19.0	20.5	---	---	---	23.5	20.0	22.0	17.0	15.0	16.0
19	22.0	19.0	20.5	---	---	---	23.5	20.5	22.0	17.5	14.5	16.0
20	22.0	18.0	20.0	---	---	---	22.5	20.5	21.5	18.0	15.5	17.0
21	20.5	18.0	19.0	---	---	---	23.0	19.5	21.0	18.5	15.5	17.5
22	20.0	16.5	18.5	---	---	---	23.0	20.0	21.5	18.5	16.0	17.5
23	21.0	17.5	19.0	24.0	20.0	22.0	22.5	19.5	21.0	19.0	16.5	18.0
24	21.5	17.5	19.5	23.5	20.0	22.0	21.5	19.5	20.5	18.5	16.0	17.5
25	22.0	18.5	20.5	23.5	20.0	21.5	21.0	19.0	20.0	18.0	15.5	16.5
26	22.0	19.0	20.5	23.5	19.5	21.5	20.5	18.5	19.5	17.0	15.5	16.0
27	21.0	18.5	19.5	23.5	20.0	21.5	20.5	18.0	19.5	16.0	13.5	15.0
28	20.0	18.0	19.0	24.5	20.5	22.5	20.5	19.0	19.5	16.5	13.5	15.0
29	19.0	16.5	17.5	23.0	20.5	21.5	21.5	18.5	20.0	17.0	14.5	16.0
30	18.5	17.0	18.0	23.0	19.0	21.0	21.5	19.0	20.0	17.0	15.0	16.0
31	---	---	---	23.5	20.0	22.0	21.5	18.5	20.0	---	---	---
MONTH	23.0	14.5	18.8	---	---	---	25.0	18.0	21.6	22.0	13.5	18.0

ROGUE RIVER BASIN

14372300 ROGUE RIVER NEAR AGNESS, OR

LOCATION.--Lat 42°34'50", long 124°03'30", in NE 1/4 NW 1/4 sec.6, T.35 S., R.11 W., Curry County, Hydrologic Unit 17100310, on left bank 0.8 mi upstream from Shasta Costa Creek, 1.5 mi north of Agness, 2.6 mi upstream from Illinois River, and at mile 29.7.

DRAINAGE AREA.--3,939 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 113.81 ft above sea level (levels by U.S. Bureau of Public Roads).

REMARKS.--Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040), since December 1980 by Applegate Lake (station 14361900), slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation and mining.

AVERAGE DISCHARGE.--37 years (water years 1961-97), 5,945 ft³/s, 4,307,000 acre-ft/yr.
20 years (water years 1978-97), 5,486 ft³/s, 3,974,000 acre-ft/yr (since operation began at Lost Creek Lake).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 290,000 ft³/s Dec. 23, 1964, from slope-area measurement; maximum gage height, 68.03 ft Dec. 23, 1964, from floodmark (backwater from Illinois River); minimum discharge, 608 ft³/s July 9, 10, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 241,000 ft³/s Jan. 2, gage height, 39.60 ft; minimum discharge, 1,400 ft³/s Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1740	2820	12600	155000	e19000	6040	5750	9050	4340	4310	2280	2660
2	1680	2740	14100	194000	e16000	10800	5170	9210	4280	4100	2340	2620
3	1700	3530	12900	99500	e15000	13800	4650	7810	4260	3780	2350	2650
4	1720	3520	15600	61500	13000	11100	4540	7600	4290	3530	2350	2750
5	1740	3490	38000	48600	11200	9480	4180	7770	4730	3480	2320	2660
6	1760	3510	28800	40400	9720	8720	3990	7440	4450	3410	2250	2650
7	1750	3490	25600	34300	9210	8280	3960	6840	4180	3370	2220	2660
8	1760	3470	109000	32300	10600	7950	3930	6210	4060	3250	2200	2660
9	1730	3410	113000	30200	9410	7530	3950	5750	4050	3090	2210	2650
10	1710	3330	69800	29300	8620	7420	4000	5420	4090	2920	2230	2800
11	1710	2960	60300	24800	8010	7520	3860	5440	4090	2980	e2300	2800
12	1750	2740	48300	23800	7630	7410	3700	5620	4250	2940	e2400	2820
13	1860	2590	42700	20800	7530	7140	3580	5860	4330	2910	e2700	2830
14	1900	2370	37200	17900	6980	6760	3560	5890	4370	2910	e2500	2750
15	2010	2410	28900	15700	6520	6660	3560	5780	4240	2850	e2500	2860
16	1990	2630	23700	11600	5990	7010	3470	5580	4150	2850	2470	2930
17	2060	2690	20900	9970	6030	8400	3390	5160	4070	2840	2480	3180
18	2460	17800	18800	9540	6420	8170	3530	5130	3980	2820	2480	2980
19	2810	36600	16200	9270	7140	7440	e4000	4700	3960	2600	2520	2760
20	2580	28200	13300	9030	7630	7010	5620	4510	4020	2610	2550	2470
21	2370	14900	16500	9880	7100	6940	8530	4380	3990	2630	2750	2280
22	2320	12100	18000	11900	6600	6660	12000	4040	3940	2560	2780	2170
23	2310	10800	16800	10600	6130	6350	13700	3740	3980	2370	2700	2110
24	2510	9880	16300	9600	5720	6110	14300	4180	3930	e2300	2720	2110
25	3540	9370	18500	12000	5410	5910	11000	4660	3920	2300	2920	2120
26	3620	8580	33100	25400	5230	5900	8870	4360	3870	2290	2960	2160
27	3110	8290	41800	22800	5430	5950	7850	4240	3840	2290	2910	2190
28	2810	9660	41900	e20000	6210	5870	7470	4390	3750	2280	2920	2200
29	3290	12000	48100	e17000	---	5940	7450	4670	3720	2280	2760	2200
30	3770	11100	58100	e15000	---	6050	7760	4520	3920	2270	2700	2190
31	3360	---	101000	e16000	---	6090	---	4400	---	2260	2660	---
TOTAL	71430	240980	1159800	1047690	239470	232410	181320	174350	123050	89380	78430	76870
MEAN	2304	8033	37410	33800	8553	7497	6044	5624	4102	2883	2530	2562
MAX	3770	36600	113000	194000	19000	13800	14300	9210	4730	4310	2960	3180
MIN	1680	2370	12600	9030	5230	5870	3390	3740	3720	2260	2200	2110
AC-FT	141700	478000	2300000	2078000	475000	461000	359600	345800	244100	177300	155600	152500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1997, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
MEAN	1978	4693	10030	9728	9838	7862	6648	5072	3415	2394	2278	2123								
MAX	3497	16650	37410	33800	30280	17750	15090	8905	6292	3446	3371	3187								
(WY)	1983	1985	1997	1997	1983	1983	1982	1996	1993	1984	1984	1983								
MIN	1421	1386	2124	2839	3071	2048	2083	2124	1821	1212	1671	1346								
(WY)	1989	1988	1990	1992	1988	1992	1994	1992	1992	1994	1994	1980								

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1978 - 1997

ANNUAL TOTAL	3821820	3715180		
ANNUAL MEAN	10440	10180		
HIGHEST ANNUAL MEAN			5486	
LOWEST ANNUAL MEAN			10180	1997
HIGHEST DAILY MEAN	113000	Dec 9	194000	Jan 2 1997
LOWEST DAILY MEAN	1680	Oct 2	1680	Oct 2 1979
ANNUAL SEVEN-DAY MINIMUM	1730	Oct 1	1730	Oct 8 1979
ANNUAL RUNOFF (AC-FT)	7581000		7369000	3974000
10 PERCENT EXCEEDS	23900		20300	11200
50 PERCENT EXCEEDS	6280		4290	3020
90 PERCENT EXCEEDS	2070		2280	1690

e Estimated

ROGUE RIVER BASIN

401

14372300 ROGUE RIVER NEAR AGNESS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to September 1987, January 1995 to current year.

INSTRUMENTATION.--Temperature recorder from October 1960 to September 1987, January 1995 to September 1995.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.5°C on several days in 1962, Aug. 3, 6, 9-11, 1977; minimum, 1.0°C Jan. 22-25, 1962, Dec. 9-16, 1972, Jan. 9, 10, 1977, Jan. 1-3, 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.5°C Aug. 6-8, but may have been higher during periods of missing record; minimum, 4.0°C Jan. 14, 15.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.5	15.5	16.5	10.0	9.5	10.0	9.5	8.5	9.0	10.0	9.5	9.5
2	17.0	15.5	16.0	10.0	9.0	9.5	9.0	8.0	8.5	10.0	9.5	9.5
3	17.0	15.5	16.5	9.5	9.0	9.0	8.0	8.0	8.0	9.5	8.5	9.0
4	17.0	16.0	16.5	9.5	9.0	9.0	9.0	8.0	8.5	8.5	7.0	7.5
5	17.5	16.0	17.0	9.5	9.0	9.5	9.0	8.5	9.0	7.0	6.5	7.0
6	17.5	16.0	16.5	9.5	8.5	9.0	9.0	8.5	8.5	7.0	6.0	6.5
7	17.0	15.0	16.0	9.5	8.5	9.0	9.0	8.0	8.5	6.5	6.0	6.0
8	17.0	15.5	16.0	9.5	9.0	9.5	9.0	8.5	9.0	6.5	6.0	6.0
9	17.0	15.0	16.0	10.0	9.0	9.5	9.0	9.0	9.0	6.5	6.0	6.5
10	16.5	15.5	16.0	9.5	9.0	9.0	9.0	9.0	9.0	6.5	6.0	6.5
11	16.0	15.5	15.5	9.5	9.0	9.0	9.0	8.5	8.5	6.5	6.0	6.5
12	15.5	15.0	15.0	9.5	9.0	9.5	8.5	8.5	8.5	6.0	6.0	6.0
13	15.5	14.5	15.0	10.5	9.5	10.0	8.5	8.0	8.5	6.0	4.5	5.5
14	15.0	14.0	14.5	10.5	10.0	10.5	8.5	7.5	8.0	4.5	4.0	4.5
15	14.5	13.5	14.0	10.5	10.0	10.0	7.5	7.0	7.0	4.5	4.0	4.5
16	14.0	13.0	13.5	10.0	9.5	10.0	7.0	6.5	7.0	5.0	4.5	4.5
17	13.0	12.0	12.5	9.5	9.5	9.5	7.0	6.5	6.5	6.0	5.0	5.5
18	12.5	11.5	12.0	11.5	9.5	10.5	6.5	6.0	6.5	7.0	6.0	6.5
19	12.0	11.0	11.5	11.5	11.0	11.0	6.5	6.0	6.0	7.5	7.0	7.0
20	11.5	10.5	11.0	11.0	10.5	10.5	6.5	6.0	6.0	7.5	7.0	7.0
21	11.0	10.0	10.5	10.5	10.0	10.0	6.5	5.5	6.0	7.5	6.0	7.0
22	11.0	10.0	10.5	10.0	9.5	10.0	6.0	5.5	5.5	7.0	5.5	6.0
23	11.0	10.0	10.5	10.5	10.0	10.0	6.5	6.0	6.0	6.0	5.5	5.5
24	11.5	10.5	11.0	10.5	10.0	10.0	7.5	6.5	7.0	5.5	5.0	5.5
25	11.5	11.0	11.0	10.0	9.5	10.0	8.0	7.5	7.5	6.0	5.0	5.5
26	11.0	10.5	10.5	9.5	9.5	9.5	8.5	8.0	8.0	7.5	5.5	6.5
27	10.5	9.5	10.0	9.5	9.0	9.0	8.5	8.0	8.5	8.0	7.0	7.5
28	10.0	9.5	9.5	9.0	9.0	9.0	8.5	8.0	8.5	8.0	7.5	8.0
29	9.5	9.0	9.5	9.0	9.0	9.0	9.0	8.5	9.0	8.5	8.0	8.5
30	10.0	9.0	9.5	9.5	8.5	9.0	9.5	8.5	9.0	8.5	8.0	8.5
31	10.0	9.0	9.5	---	---	---	9.5	9.0	9.0	9.0	8.0	8.5
MONTH	17.5	9.0	13.2	11.5	8.5	9.6	9.5	5.5	7.9	10.0	4.0	6.7

ROGUE RIVER BASIN

14372300 ROGUE RIVER NEAR AGNESS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	9.0	8.5	8.5	8.0	7.5	7.5	9.0	8.0	8.5	13.0	11.5	12.0
2	8.5	7.5	8.0	7.5	7.0	7.5	9.5	7.5	8.5	12.0	11.0	11.5
3	7.5	7.0	7.0	7.0	7.0	7.0	10.0	8.0	9.0	12.5	11.0	12.0
4	7.0	6.5	7.0	7.5	6.5	7.0	10.5	9.0	10.0	13.5	11.5	12.5
5	7.5	7.0	7.0	7.0	6.5	7.0	11.0	9.5	10.0	13.0	12.0	12.5
6	7.0	6.5	7.0	8.0	7.0	7.5	10.5	9.5	10.0	14.5	12.0	13.5
7	6.5	6.5	6.5	9.0	7.5	8.5	10.5	9.5	10.0	15.0	13.0	13.5
8	7.5	6.5	7.0	9.5	8.5	8.5	11.0	10.0	10.5	15.5	13.0	14.0
9	7.5	7.0	7.0	9.5	8.5	9.0	11.5	10.0	10.5	17.0	13.5	15.0
10	8.0	7.0	7.5	10.0	9.0	9.5	11.5	10.0	11.0	17.5	14.5	16.0
11	8.0	7.0	7.5	10.0	9.0	9.5	11.5	10.0	11.0	18.0	15.0	16.5
12	8.0	7.0	7.5	10.0	8.5	9.5	12.0	11.0	11.5	18.5	16.0	17.0
13	7.5	7.0	7.5	9.5	8.0	8.5	12.0	11.5	11.5	18.5	16.0	17.0
14	8.0	7.0	7.0	9.0	8.0	8.0	12.5	11.5	12.0	18.5	16.0	17.0
15	8.0	7.0	7.5	9.0	8.0	8.5	13.5	11.5	12.5	18.5	16.0	17.0
16	8.0	7.5	8.0	9.5	8.5	9.0	13.5	12.0	12.5	18.5	16.0	17.0
17	8.5	8.0	8.0	10.0	9.0	9.5	15.0	13.0	14.0	19.0	16.0	17.5
18	9.0	8.0	8.5	10.0	9.0	9.5	14.5	13.5	14.0	19.0	16.5	17.5
19	9.0	8.0	8.5	10.5	9.5	10.0	14.0	13.0	13.5	19.0	16.5	17.5
20	8.5	7.5	8.0	12.0	10.5	11.0	13.5	12.5	13.0	18.5	16.0	17.5
21	8.0	7.0	7.5	11.5	10.0	10.5	13.0	12.0	12.5	18.0	16.0	17.0
22	8.0	7.0	7.5	11.5	10.0	10.5	12.5	11.0	11.5	17.0	15.5	16.0
23	7.5	6.5	7.0	11.5	9.5	10.5	11.5	10.5	11.0	16.5	15.0	15.5
24	7.5	6.5	7.0	12.0	10.0	11.0	11.5	10.5	11.0	15.5	14.5	15.0
25	7.5	6.5	7.0	12.5	10.5	11.5	12.0	11.0	11.5	16.0	14.0	15.0
26	8.0	7.0	7.5	12.5	11.0	11.5	13.0	12.0	12.5	15.5	14.5	15.0
27	8.0	7.5	7.5	12.0	10.5	11.5	14.5	12.5	13.5	16.0	14.5	15.5
28	8.5	7.5	8.0	11.5	10.0	10.5	14.0	12.5	13.5	16.0	15.5	16.0
29	---	---	---	11.0	9.5	10.0	13.0	12.0	12.5	17.0	15.0	16.0
30	---	---	---	10.0	9.5	10.0	12.5	11.5	12.0	18.5	15.5	17.0
31	---	---	---	9.5	8.5	9.0	---	---	---	18.5	17.0	17.5
MONTH	9.0	6.5	7.5	12.5	6.5	9.3	15.0	7.5	11.5	19.0	11.0	15.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18.0	17.0	17.5	17.0	15.0	16.0	22.5	20.5	21.5	21.0	19.0	20.0
2	18.0	16.0	17.0	18.0	15.5	16.5	23.0	20.5	21.0	21.0	19.0	20.0
3	17.5	16.0	16.5	19.0	16.0	17.5	23.5	21.0	22.0	21.0	19.5	20.0
4	16.5	15.5	16.0	20.0	18.0	19.0	24.0	21.5	22.5	21.5	20.0	20.5
5	16.5	14.5	15.5	20.5	19.0	20.0	24.0	21.5	22.5	21.0	19.0	20.0
6	18.0	14.5	16.0	21.5	20.0	20.5	24.5	22.0	23.0	20.5	18.5	19.5
7	18.0	16.0	17.0	21.5	19.5	20.5	24.5	22.0	23.0	20.0	18.0	19.0
8	17.5	15.5	16.5	20.5	19.5	20.0	24.5	22.0	23.0	19.0	18.0	18.5
9	17.5	15.5	16.5	20.0	19.0	20.0	24.0	21.5	22.5	18.5	17.5	18.0
10	18.5	16.0	17.0	20.0	18.5	19.0	23.5	21.0	22.0	18.0	17.5	17.5
11	18.0	17.0	17.5	19.5	17.5	18.5	---	---	---	18.0	17.0	17.0
12	17.0	16.0	16.5	19.5	17.5	18.5	---	---	---	18.0	16.5	17.0
13	17.0	15.0	16.0	21.5	18.0	19.0	---	---	---	17.0	16.5	17.0
14	17.0	15.0	16.0	21.5	19.0	20.0	---	---	---	17.5	16.0	16.5
15	18.0	15.5	17.0	22.0	19.5	20.5	---	---	---	16.5	16.0	16.0
16	19.5	16.5	18.0	22.5	20.0	21.0	23.0	20.5	21.5	16.0	15.5	15.5
17	19.0	17.5	18.5	21.0	19.5	20.5	22.5	20.5	21.5	16.0	15.5	15.5
18	19.5	17.5	18.5	21.5	19.0	20.0	22.5	21.0	21.5	16.5	15.0	15.5
19	19.0	17.0	18.0	22.0	19.0	20.0	22.5	20.5	21.5	16.5	15.0	15.5
20	18.5	16.5	18.0	23.0	20.0	21.0	22.5	20.0	21.0	16.5	15.0	15.5
21	18.5	16.5	17.5	23.0	21.0	22.0	22.0	20.0	20.5	17.0	15.5	16.0
22	17.0	16.0	16.5	23.5	21.0	22.0	21.5	19.5	20.5	18.0	15.5	16.5
23	17.0	15.0	16.0	23.5	21.5	22.0	21.0	19.5	20.0	19.0	16.5	17.5
24	17.5	15.0	16.5	---	---	---	21.0	19.5	20.0	19.0	16.5	18.0
25	18.0	16.0	17.0	---	---	---	20.5	19.5	20.0	18.5	17.0	18.0
26	18.0	16.0	17.5	---	---	---	20.0	19.0	19.5	18.5	17.0	18.0
27	18.0	16.5	17.5	---	---	---	20.0	18.5	19.0	18.0	16.5	17.0
28	18.0	16.0	16.5	---	---	---	18.5	18.0	18.0	17.0	15.5	16.0
29	16.5	15.5	16.0	---	---	---	20.0	18.0	19.0	17.0	15.5	16.0
30	16.0	15.5	15.5	---	---	---	21.0	18.5	19.5	16.5	15.5	16.0
31	---	---	---	---	---	---	21.0	19.0	20.0	---	---	---
MONTH	19.5	14.5	16.9	---	---	---	---	---	---	21.5	15.0	17.4

14377100 ILLINOIS RIVER NEAR KERBY, OR

LOCATION.--Lat 42°13'55", long 123°39'45", in SE 1/4 SE 1/4 sec.29, T.38 S., R.8 W., Josephine County, Hydrologic Unit 17100311, Siskiyou National Forest, on right bank 1.6 mi upstream from Josephine Creek, 2.5 mi northwest of Kerby, and at mile 50.3.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,198.8 ft above sea level. Prior to Jan. 28, 1965, water-stage recorder, and Jan. 28 to Sept. 30, 1965, nonrecording gage 700 ft downstream at datum 2.99 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Several observations of water temperature were obtained during the year.

AVERAGE DISCHARGE.--36 years (water years 1962-97), 1,262 ft³/s, 45.13 in/yr, 914,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92,200 ft³/s Dec. 22, 1964, gage height, 45.28 ft, from floodmark, site and datum then in use, from rating curve extended above 30,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 12 ft³/s Aug. 24, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 18	2000	23,000	24.03	Jan. 1	1030	*37,400	*30.75
Dec. 8	1530	27,900	26.52				

Minimum daily discharge, 43 ft³/s Aug. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	309	2980	33000	5320	971	809	1570	316	180	e66	e52
2	59	267	e2330	22300	3660	2820	762	1320	e280	167	e64	e50
3	58	240	2450	e12900	2910	2640	725	1250	e370	158	e62	e54
4	58	220	5870	e7640	2630	2200	703	1130	484	148	e60	e52
5	58	207	11900	e5480	2280	1890	674	1030	418	141	e60	e56
6	60	201	7140	e4240	2000	1950	650	942	385	133	e58	e60
7	60	194	12600	e3440	2050	2020	629	855	347	125	e56	e58
8	58	188	27000	e2880	1980	1920	616	797	327	122	e54	e70
9	57	180	20000	e2520	1840	1730	600	756	308	113	e52	e100
10	55	174	13500	e2180	1770	1620	572	713	291	114	e52	e140
11	55	169	11000	e1950	1620	1630	553	670	271	113	e50	e200
12	56	163	e8840	e1770	1550	1600	542	642	276	109	e50	e160
13	61	163	e8140	e1620	1450	1450	536	604	307	109	e48	e120
14	66	175	e5650	e1450	1380	1320	531	564	279	113	e46	e120
15	69	176	e3740	e1370	1280	1270	536	531	262	96	e45	e130
16	68	177	e2860	e1260	1180	1570	525	494	243	87	e43	e140
17	73	176	e2380	1460	1280	2700	529	464	229	89	e45	156
18	130	9470	e2090	e1370	1190	1990	547	446	211	82	e48	246
19	282	13300	e1780	1270	1860	1750	866	415	199	86	e52	154
20	206	6010	e2000	e1500	2110	1700	3450	392	186	94	e56	129
21	163	2960	e2500	e2500	1780	1530	3150	380	177	86	e60	113
22	149	2560	e2300	e2200	1580	1340	3380	371	173	71	e56	93
23	198	1800	e3000	e1900	1400	1210	4280	407	164	69	e60	87
24	240	1550	3480	e1700	1250	1100	3230	423	161	67	e75	81
25	619	1550	4330	4830	1140	1050	2400	379	164	68	e66	78
26	560	1200	9440	8160	1070	1030	1930	357	148	69	e66	76
27	361	984	11600	5060	1040	964	1670	367	134	65	e70	78
28	290	1370	8850	7120	986	907	1450	363	139	61	e65	80
29	559	1410	13300	4670	---	817	1370	370	155	63	e62	78
30	501	1230	15600	3380	---	822	1540	322	172	e68	e59	75
31	376	---	19700	4310	---	865	---	308	---	e75	e55	---
TOTAL	5664	48773	248350	157430	51586	48376	39755	19632	7576	3141	1761	3086
MEAN	183	1626	8011	5078	1842	1561	1325	633	253	101	56.8	103
MAX	619	13300	27000	33000	5320	2820	4280	1570	484	180	75	246
MIN	55	163	1780	1260	986	817	525	308	134	61	43	50
AC-FT	11230	96740	492600	312300	102300	95950	78850	38940	15030	6230	3490	6120
CFSM	.48	4.28	21.1	13.4	4.85	4.11	3.49	1.67	.66	.27	.15	.27
IN.	.55	4.77	24.31	15.41	5.05	4.74	3.89	1.92	.74	.31	.17	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1997, BY WATER YEAR (WY)

MEAN	224	1459	2688	2901	2489	2339	1620	911	365	97.3	47.1	66.2
MAX	1771	6344	9242	7184	6686	4867	4518	2439	1214	280	116	358
(WY)	1963	1974	1965	1970	1986	1983	1982	1963	1993	1983	1976	1978
MIN	25.0	82.4	115	236	358	508	433	315	82.7	36.5	19.0	15.5
(WY)	1988	1988	1977	1977	1977	1988	1977	1992	1992	1987	1992	1992

SUMMARY STATISTICS

FOR 1996 CALENDAR YEAR

FOR 1997 WATER YEAR

WATER YEARS 1962 - 1997

ANNUAL TOTAL	820245	635130	
ANNUAL MEAN	2241	1740	1262
HIGHEST ANNUAL MEAN			2372
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	27000	Dec 8	33000
LOWEST DAILY MEAN	36	Sep 3	43
ANNUAL SEVEN-DAY MINIMUM	37	Aug 31	46
ANNUAL RUNOFF (AC-FT)	1627000		1260000
ANNUAL RUNOFF (CFSM)	5.90		4.58
ANNUAL RUNOFF (INCHES)	80.30		62.18
10 PERCENT EXCEEDS	5720		3690
50 PERCENT EXCEEDS	1200		501
90 PERCENT EXCEEDS	57		60

e Estimated

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 above sea level, from topographic map.

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

AVERAGE DISCHARGE.--28 years (water years 1970-97), 2,268 ft³/s, 113.70 in/yr, 1,643,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft³/s Nov. 19, 1996, gage height, 28.56 ft; minimum discharge, 42 ft³/s Oct. 14, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 32.25 ft, from high-water mark on bridge pier, discharge, 85,400 ft³/s, from rating curve extended above 45,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 19	--	*76,100	*28.56	Dec. 6	1300	23,600	13.43
Dec. 4	2400	30,600	15.51	Jan. 1	--	45,800	19.92

Minimum discharge, 69 ft³/s Oct. 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	404	9420	e33000	11800	1400	995	2520	1160	270	e130	e90
2	76	346	5600	e26000	7210	4220	932	2170	806	250	e120	e88
3	75	306	7070	e17000	4700	3100	884	2210	847	233	e120	e86
4	75	276	13700	e9600	4210	2680	843	1950	1220	222	e120	e84
5	76	252	20500	e6400	3310	2450	806	1720	991	215	e110	e80
6	75	235	13400	e4500	2860	2770	766	1530	818	209	e110	e78
7	75	235	e22000	e3500	2510	2920	849	1360	706	203	e100	e76
8	73	220	e34000	2990	2190	2720	817	1230	631	195	e96	e74
9	71	207	e27000	3160	1970	2390	769	1130	573	192	e90	e72
10	70	197	e20000	2690	1800	2190	722	1040	530	192	e90	e78
11	70	189	e17000	2570	1670	2300	685	957	503	184	e90	e90
12	79	212	e14000	2340	1620	2130	660	880	487	178	e90	e82
13	186	304	e13000	2130	1470	1870	648	808	466	171	e90	e84
14	184	340	e11000	1970	1370	1700	693	749	436	166	e86	e250
15	133	347	e8000	1830	1290	1720	659	699	411	162	e84	e500
16	109	348	e6300	1760	1250	4010	668	650	387	158	e82	e760
17	101	382	e3700	2700	1450	6420	696	609	371	156	e80	e1100
18	727	e22000	e3200	2420	1350	4030	749	573	363	154	e82	e800
19	891	e57000	e2600	2120	2730	3120	2170	540	342	150	e84	e450
20	497	19200	e2900	2570	2770	2680	12000	512	328	145	e86	e350
21	324	11600	e4200	3950	2170	2260	6800	484	319	144	e96	e310
22	305	10200	e4500	3240	1880	2010	6740	464	316	e140	e92	e270
23	359	7850	e5200	2880	1650	1760	7450	461	299	e140	e88	e230
24	831	7500	e7300	2830	1480	1560	5980	461	287	e140	e90	e190
25	1600	7040	e9200	7910	1350	1390	4450	428	276	e130	e90	e170
26	1310	5480	e21000	14800	1260	1270	3410	415	267	e130	e150	e150
27	690	4590	e21000	9330	1290	1170	2660	524	259	e130	e220	e160
28	523	5230	e16000	14200	1180	1120	2250	521	253	e130	e140	e140
29	799	4740	e24000	9500	---	1010	2380	580	260	e130	e110	e130
30	670	5180	e23000	6230	---	1050	2660	486	256	e130	e100	e120
31	502	---	e24000	11700	---	1070	---	885	---	e130	e96	---
TOTAL	11632	172410	413790	217820	71790	72490	72791	29546	15168	5279	3212	7142
MEAN	375	5747	13350	7026	2564	2338	2426	953	506	170	104	238
MAX	1600	57000	34000	33000	11800	6420	12000	2520	1220	270	220	1100
MIN	70	189	2600	1760	1180	1010	648	415	253	130	80	72
AC-FT	23070	342000	820800	432000	142400	143800	144400	58600	30090	10470	6370	14170
CFSM	1.38	21.2	49.3	25.9	9.46	8.63	8.95	3.52	1.87	.63	.38	.88
IN.	1.60	23.67	56.80	29.90	9.85	9.95	9.99	4.06	2.08	.72	.44	.98

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1997, BY WATER YEAR (WY)

MEAN	553	3255	5216	5083	4469	3930	2468	1216	613	198	119	206
MAX	2540	10230	13350	13150	11500	7041	6956	3495	2121	442	310	1531
(WY)	1982	1974	1997	1970	1986	1989	1982	1996	1993	1983	1983	1978
MIN	48.3	107	121	479	619	859	674	430	221	121	69.2	54.9
(WY)	1988	1994	1977	1977	1977	1988	1977	1973	1992	1973	1987	1987

SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1970 - 1997

ANNUAL TOTAL	1416410	1093070	2268
ANNUAL MEAN	3870	2995	3911
HIGHEST ANNUAL MEAN			1982
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	57000	57000	Nov 19 1996
LOWEST DAILY MEAN	70	70	Oct 10 1991
ANNUAL SEVEN-DAY MINIMUM	73	73	Oct 5 1974
ANNUAL RUNOFF (AC-FT)	2809000	2168000	1643000
ANNUAL RUNOFF (CFSM)	14.3	11.1	8.37
ANNUAL RUNOFF (INCHES)	194.43	150.05	113.70
10 PERCENT EXCEEDS	11200	7950	5980
50 PERCENT EXCEEDS	1190	760	767
90 PERCENT EXCEEDS	88	90	83

e Estimated

CHEMICAL QUALITY OF PRECIPITATION

405

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR

LOCATION.--Lat 43°07'01", Long 121°04'00", in NE 1/4 SW 1/4 sec.21, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, at Silver Lake Ranger Station, 0.5 mi south of State Highway 31, and 1 mi southwest of town of Silver Lake.

PERIOD OF RECORD.--August 1983 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Data from September 2 through September 30 was not available for publication at this time and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. Samples are collected by Silver Lake Ranger Station personnel and analyzed by the Illinois State Water Survey Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION, FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE, FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE, LAB ATM DEP WET TOT (US/CM) (83156)	PH, FIELD ATM DEP WET TOT (UNITS) (83106)	PH, LAB ATM DEP WET TOT (UNITS) (83107)	CALCIUM, ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM, ATM DEP WET DIS (MG/L) (83002)
OCT 1996							
01-08	.00	--	--	--	--	--	--
OCT 08-15	.03	--	2.8	--	5.3	.05	.012
OCT 15-22	E.27	4.1	2.4	5.1	5.4	.02	.004
OCT 22-29	E.20	4.2	2.7	5.1	5.3	.01	.003
OCT 29-NOV 05	.06	--	9.0	--	4.9	.06	.018
NOV 05-12	<.01	--	--	--	--	--	--
NOV 12-19	.71	2.9	1.7	5.3	5.4	.01	<.003
NOV 19-26	.43	3.0	2.3	5.3	5.4	<.01	.003
NOV 26-DEC 03	.19	3.1	2.0	5.3	5.5	.01	.003
DEC 03-10	1.94	3.1	1.8	5.4	5.4	<.01	<.003
DEC 10-17	.22	3.5	2.4	5.3	5.5	<.01	.003
DEC 17-24	.12	4.4	2.4	5.3	5.5	.01	<.003
DEC 24-31	1.29	2.9	1.9	5.3	5.4	<.01	<.003
DEC 31 1996- JAN 07 1997	1.52	3.1	2.0	5.2	5.3	<.01	<.003
JAN 07-14	<.01	--	--	--	--	--	--
JAN 14-21	.11	2.9	2.2	5.4	5.4	.02	.003
JAN 21-28	.40	2.9	2.0	5.3	5.4	<.01	<.003
JAN 28-FEB 04	.15	3.1	2.6	5.4	5.4	.02	<.003
FEB 04-11	.71	3.1	2.6	5.2	5.3	<.01	<.003
FEB 11-18	.07	9.6	7.9	4.8	4.8	.01	.006
FEB 18-25	.13	3.1	2.2	5.3	5.4	.01	.004
FEB 25-MAR 04	.26	3.9	2.6	5.2	5.3	.01	.003
MAR 04-11	<.01	--	--	--	--	--	--
MAR 11-18	.06	6.8	1.5	4.9	5.6	.02	.004
MAR 18-25	.00	--	--	--	--	--	--
MAR 25-APR 01	.03	--	3.8	--	5.3	.04	.009
APR 01-08	.00	--	--	--	--	--	--
APR 08-15	.02	--	4.1	--	5.7	.11	.019
APR 15-22	.42	5.0	3.2	5.2	5.4	.10	.011
APR 22-29	.15	6.5	2.8	4.8	5.3	.03	.006
APR 29-MAY 06	.01	--	8.0	--	5.2	--	--
MAY 06-13	.01	--	--	--	--	--	--
MAY 13-20	<.01	--	--	--	--	--	--
MAY 20-27	.28	6.4	3.6	4.9	5.4	.06	.012
MAY 27-JUN 03	.38	5.2	4.8	5.0	5.1	.07	.013

E - Estimated.

CHEMICAL QUALITY OF PRECIPITATION

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER-QUALITY DATA

DATE	SODIUM, ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM, ATM DEP WET DIS (MG/L) (83120)	SULFATE, ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE, ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON., ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE, ATM DEP WET DIS AS NO3 (MG/L) (83071)
OCT 1996						
01-08	--	--	--	--	--	--
OCT 08-15	.095	.040	.15	.15	<.02	.04
OCT 15-22	.025	.009	.06	.05	<.02	.11
OCT 22-29	.024	.009	.10	.05	.02	.20
OCT 29-NOV 05	.076	.037	.59	.21	.20	1.18
NOV 05-12	--	--	--	--	--	--
NOV 12-19	.018	.004	.03	<.03	<.02	.05
NOV 19-26	.039	.005	.04	.04	.05	.13
NOV 26-DEC 03	.039	.009	.05	.05	.04	.11
DEC 03-10	.021	<.003	<.03	.04	<.02	.12
DEC 10-17	.027	.004	.04	.04	<.02	.13
DEC 17-24	.051	.004	.05	.09	<.02	.15
DEC 24-31	.017	<.003	<.03	.04	<.02	.08
DEC 31 1996- JAN 07 1997	.016	<.003	.03	.03	<.02	.11
JAN 07-14	--	--	--	--	--	--
JAN 14-21	.043	.010	<.03	.09	.02	.09
JAN 21-28	.013	<.003	<.03	.03	<.02	.08
JAN 28-FEB 04	.026	.003	.06	.05	.05	.23
FEB 04-11	.007	.004	.06	<.03	<.02	.11
FEB 11-18	.056	.006	.13	.07	.20	.72
FEB 18-25	.059	.005	.04	.08	<.02	.14
FEB 25-MAR 04	.017	<.003	.04	.03	<.02	.13
MAR 04-11	--	--	--	--	--	--
MAR 11-18	.045	.004	.05	.05	<.02	.09
MAR 18-25	--	--	--	--	--	--
MAR 25-APR 01	.059	.041	.08	.12	<.02	.63
APR 01-08	--	--	--	--	--	--
APR 08-15	.132	.056	.47	.14	<.09	.24
APR 15-22	.029	.003	.23	.04	.09	.38
APR 22-29	.029	.003	.08	.06	<.02	.18
APR 29-MAY 06	--	--	--	--	--	--
MAY 06-13	--	--	--	--	--	--
MAY 13-20	--	--	--	--	--	--
MAY 20-27	.041	.024	.12	.06	<.02	.14
MAY 27-JUN 03	.025	.033	.20	.06	<.02	.32

CHEMICAL QUALITY OF PRECIPITATION

407

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION, FOR	SPEC. CONDUCT- TANCE, FIELD	SPEC. CONDUCT- TANCE, LAB	PH, FIELD	PH, LAB	CALCIUM,	MAG- NESIUM,
	DEFINED	ATM DEP	ATM DEP	ATM DEP	ATM DEP	ATM DEP	ATM DEP
	PERIOD (IN) (00193)	WET TOT (US/CM) (83154)	WET TOT (US/CM) (83156)	WET TOT (UNITS) (83106)	WET TOT (UNITS) (83107)	WET DIS (MG/L) (82932)	WET DIS (MG/L) (83002)
JUN 1997							
03-10	1.03	3.6	3.3	5.2	5.2	.01	.004
JUN							
10-17	.84	5.3	4.2	4.9	5.2	.05	.020
JUN							
17-24	.00	--	--	--	--	--	--
JUN 24-							
JUL 01	.04	7.8	4.3	4.8	5.2	.05	.012
JUL							
01-08	.00	--	--	--	--	--	--
JUL							
08-15	<.01	--	--	--	--	--	--
JUL							
15-22	.80	8.6	9.3	4.8	4.7	.03	.007
JUL							
22-29	.03	--	--	--	--	--	--
JUL 29-							
AUG 05	.30	9.4	9.5	4.8	4.8	.06	.013
AUG							
05-12	.00	--	--	--	--	--	--
AUG							
12-19	.00	--	--	--	--	--	--
AUG							
19-26	.09	8.3	8.4	4.9	4.9	.10	.019
AUG 26-							
SEP 02	<.01	--	--	--	--	--	--

DATE	SODIUM, ATM DEP	POTAS- SIUM, ATM DEP	SULFATE, ATM DEP	CHLO- RIDE, ATM DEP	NI- TROGEN AMMON., ATM DEP	NI- TROGEN NITRATE, ATM DEP
	WET DIS	WET DIS	WET DIS	WET DIS	WET DIS	WET DIS
	(MG/L) (83138)	(MG/L) (83120)	AS SO4 (MG/L) (83160)	(MG/L) (82944)	AS NH4 (MG/L) (83047)	AS NO3 (MG/L) (83071)
JUN 1997						
03-10	.022	.024	.11	.03	<.02	.16
JUN						
10-17	.043	.116	.32	.05	<.02	.03
JUN						
17-24	--	--	--	--	--	--
JUN 24-						
JUL 01	.107	.040	.11	.21	<.02	.11
JUL						
01-08	--	--	--	--	--	--
JUL						
08-15	--	--	--	--	--	--
JUL						
15-22	.032	.013	.40	.06	.04	.73
JUL						
22-29	--	--	--	--	--	--
JUL 29-						
AUG 05	.068	.015	.50	.09	.18	.94
AUG						
05-12	--	--	--	--	--	--
AUG						
12-19	--	--	--	--	--	--
AUG						
19-26	.083	.035	.38	.09	.11	1.02
AUG 26-						
SEP 02	--	--	--	--	--	--

CHEMICAL QUALITY OF PRECIPITATION

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR

LOCATION.--Lat 45°26'55", long 122°08'45", in SE 1/4 SE 1/2 sec.26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of town of Bull Run, and approximately 20 mi east of Portland.

PERIOD OF RECORD.--June 1980 to September 1981 (event sampling), September 1981 to November 1981 (weekly composite), July 1982 to current year (weekly composite).

INSTRUMENTATION.--A bulk-type plastic double cylinder with receiving funnel directing deposition to inner cylinder was used for the period of record June 1980 to September 1981. The wet-deposition sample collector is an Aerochem Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Data from September 9 through September 30 was not available for publication at this time and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. The sample collector is located in the restricted access area of the city of Portland's Bull Run River Watershed. Samples are collected by Bull Run Headworks Water Quality Laboratory personnel and analyzed by the Illinois Supply Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION, FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE, FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE, LAB ATM DEP WET TOT (US/CM) (83156)	PH, FIELD ATM DEP WET TOT (UNITS) (83106)	PH, LAB ATM DEP WET TOT (UNITS) (83107)	CALCIUM, ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM, ATM DEP WET DIS (MG/L) (83002)
OCT 1996							
01-08	1.00	4.1	4.3	5.3	5.3	.03	.007
OCT 08-15	2.87	7.4	5.8	5.3	5.3	.03	.038
OCT 15-22	4.30	5.0	4.8	E4.5	5.3	.02	.028
OCT 22-29	E4.20	3.9	4.1	5.2	5.3	.02	.019
OCT 29-NOV 05	.72	12.4	14.5	4.8	4.8	.06	.082
NOV 05-12	.76	7.0	8.3	5.1	5.1	.06	.051
NOV 12-19	6.85	4.3	4.5	5.3	5.3	<.01	.024
NOV 19-26	3.36	3.5	2.8	5.3	5.3	.01	.007
NOV 26-DEC 03	4.10	12.3	12.2	5.2	5.3	.05	.152
DEC 03-10	6.33	4.0	5.2	5.3	5.5	.02	.034
DEC 10-17	1.90	5.6	6.8	5.3	5.2	.03	.059
DEC 17-24	E3.30	5.7	5.5	5.2	5.2	.02	.045
DEC 24-31	E8.25	3.7	3.0	5.3	5.3	.01	.013
DEC 31 1996- JAN 07 1997	E3.68	5.3	5.5	5.2	5.3	.02	.046
JAN 07-14	1.50	--	--	--	--	--	--
JAN 14-21	E2.85	--	--	--	--	--	--
JAN 21-28	E.95	--	--	--	--	--	--
JAN 28-FEB 04	5.45	3.2	3.1	5.2	5.3	<.01	.008
FEB 04-11	.02	--	5.1	--	5.1	<.05	<.016
FEB 11-18	1.72	9.0	9.6	5.6	5.4	.06	.100
FEB 18-25	1.90	7.4	8.4	5.3	5.5	.05	.100
FEB 25-MAR 04	4.19	5.1	5.5	5.3	5.2	.02	.036
MAR 04-11	4.75	5.4	5.3	5.2	5.2	.03	.031
MAR 11-18	3.32	5.0	5.1	5.2	5.1	.02	.030
MAR 18-25	1.28	4.1	4.1	5.1	5.2	.02	.009
MAR 25-APR 01	2.02	11.1	12.1	5.2	5.3	.06	.123
APR 01-08	1.04	6.6	6.4	5.3	5.7	.06	.032
APR 08-15	2.08	4.4	4.5	5.4	5.4	.07	.025
APR 15-22	2.28	4.4	3.8	5.2	5.3	.05	.016
APR 22-29	2.88	4.8	5.2	5.3	5.3	.04	.035
APR 29-MAY 06	1.57	16.6	17.3	4.8	4.9	.09	.147
MAY 06-13	.03	--	--	--	--	--	--
MAY 13-20	E.20	12.5	13.6	4.7	4.6	.17	.030
MAY 20-27	E1.25	7.2	6.7	4.9	5.0	.03	.018
MAY 27-JUN 03	E2.17	5.0	3.2	5.3	5.2	.02	.008

E - Estimated.

CHEMICAL QUALITY OF PRECIPITATION

409

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER-QUALITY DATA

DATE	SODIUM, ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM, ATM DEP WET DIS (MG/L) (83120)	SULFATE, ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE, ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON., ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE, ATM DEP WET DIS AS NO3 (MG/L) (83071)
OCT 1996						
01-08	.045	.027	.16	.08	.09	.34
OCT						
08-15	.372	.021	.22	.66	.09	.24
OCT						
15-22	.259	.016	.21	.45	.05	.18
OCT						
22-29	.188	.017	.20	.31	<.02	.20
OCT 29-						
NOV 05	.691	.039	1.00	1.24	.18	.59
NOV						
05-12	.442	.022	.38	.77	.06	.36
NOV						
12-19	.224	.012	.19	.38	<.02	.17
NOV						
19-26	.077	.003	.09	.12	<.02	.15
NOV 26-						
DEC 03	1.19	.050	.51	2.44	.06	.17
DEC						
03-10	.327	.012	.14	.58	<.02	.08
DEC						
10-17	.537	.022	.24	.96	<.02	.28
DEC						
17-24	.392	.018	.21	.70	<.02	.20
DEC						
24-31	.122	.006	.08	.22	<.02	.08
DEC 31 1996-						
JAN 07 1997	.421	.032	.20	.73	<.02	.15
JAN						
07-14	--	--	--	--	--	--
JAN						
14-21	--	--	--	--	--	--
JAN						
21-28	--	--	--	--	--	--
JAN 28-						
FEB 04	.093	.006	.10	.16	<.02	.17
FEB						
04-11	.257	.021	.21	.42	<.10	.63
FEB						
11-18	.881	.040	.46	1.51	.16	.42
FEB						
18-25	.885	.038	.32	1.58	.02	.14
FEB 25-						
MAR 04	.317	.013	.24	.55	.03	.26
MAR						
04-11	.249	.019	.32	.44	.06	.20
MAR						
11-18	.269	.017	.23	.46	<.02	.18
MAR						
18-25	.056	.022	.20	.10	<.02	.28
MAR 25-						
APR 01	1.03	.045	.80	1.84	.22	.37
APR						
01-08	.232	.016	.62	.37	.39	.71
APR						
08-15	.164	.015	.28	.28	.08	.35
APR						
15-22	.096	.029	.26	.16	.05	.26
APR						
22-29	.294	.028	.30	.49	.11	.32
APR 29-						
MAY 06	1.62	.084	1.40	2.16	.35	.78
MAY						
06-13	--	--	--	--	--	--
MAY						
13-20	.103	.024	.75	.18	.19	1.39
MAY						
20-27	.151	.011	.45	.21	.16	.61
MAY 27-						
JUN 03	.057	.009	.14	.07	.04	.27

CHEMICAL QUALITY OF PRECIPITATION

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION, FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE, FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE, LAB ATM DEP WET TOT (US/CM) (83156)	PH, FIELD ATM DEP WET TOT (UNITS) (83106)	PH, LAB ATM DEP WET TOT (UNITS) (83107)	CALCIUM, ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM, ATM DEP WET DIS (MG/L) (83002)
JUN 1997							
03-10	.78	6.6	8.0	5.0	5.1	.03	.045
JUN 10-17	E.08	6.6	7.2	5.0	5.1	.07	.019
JUN 17-24	1.14	6.4	6.7	5.2	5.2	.04	.043
JUN 24- JUL 01	2.20	6.9	6.6	4.9	5.0	.02	.011
JUL 01-08	.15	7.6	7.8	5.1	4.9	.04	.015
JUL 08-15	E1.94	4.2	4.5	5.4	5.4	.02	.023
JUL 15-22	.010	--	40.0	--	4.6	.52	.173
JUL 22-29	.000	--	--	--	--	--	--
JUL 29- AUG 05	.000	--	--	--	--	--	--
AUG 05-12	.000	--	--	--	--	--	--
AUG 12-19	.000	--	--	--	--	--	--
AUG 19-26	1.35	5.8	7.0	5.0	5.0	.03	.009
AUG 26- SEP 02	.36	5.4	5.8	5.1	5.0	.03	.014
SEP 02-09	.04	--	--	--	--	--	--

DATE	SODIUM, ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM, ATM DEP WET DIS (MG/L) (83120)	SULFATE, ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE, ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON., ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE, ATM DEP WET DIS AS NO3 (MG/L) (83071)
JUN 1997						
03-10	.410	.027	.37	.67	.07	.40
JUN 10-17	.145	.010	.32	.27	.06	.62
JUN 17-24	.331	.023	.43	.55	.19	.47
JUN 24- JUL 01	.092	.007	.46	.15	.15	.53
JUL 01-08	.115	.058	.46	.21	.07	.61
JUL 08-15	.228	.015	.33	.36	.12	.26
JUL 15-22	1.25	.190	3.23	1.79	1.3	6.17
JUL 22-29	--	--	--	--	--	--
JUL 29- AUG 05	--	--	--	--	--	--
AUG 05-12	--	--	--	--	--	--
AUG 12-19	--	--	--	--	--	--
AUG 19-26	.056	.016	.37	.08	.10	.70
AUG 26- SEP 02	.104	.020	.24	.16	.06	.62
SEP 02-09	--	--	--	--	--	--

E - Estimated.

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 1997

Station name and number	Location and drainage area	Period of record	Date	Water year 1997 maximum		Date	Period of record maximum	
				Gage height (ft)	Dis- charge (ft ³ /s)		Gage height (ft)	Dis- charge (ft ³ /s)

NESTUCCA RIVER BASIN

Walker Creek near Fairdale (14302850)	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, at culvert, 5.3 mi southwest of Fairdale, and at mile 0.5. Drainage area is 2.72 mi ² .	1992-97	12-24-96	5.10	277	2-08-96	unknown	450
---	--	---------	----------	------	-----	---------	---------	-----

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

Discharge measurements made at miscellaneous sites during water year 1997

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
KLAMATH RIVER BASIN						
Keno Power Canal	Link River	Lat 42°13'16", long 121°47'35", in SW 1/4 NW 1/4 sec.32 T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, 600 ft downstream from Link River gage, and 1,200 ft upstream from Main Street Bridge	3,810	1961-96	11- 8-96 3-28-97 5-19-97	no flow no flow 247
COLUMBIA RIVER MAIN STEM						
Columbia River below McNary Dam	Pacific Ocean	Lat 45°55'47", long 119°19'56", Benton County, --- WA/Umatilla County, OR, Hydrologic Unit 17070101, 1.8 mi below McNary Dam, at Umatilla, and at mile 290.2.	---	---	6-27-97	365,000
Columbia River below John Day Dam	.....do.....	Lat 45°41'50", long 120°45'20", Klicitat County, WA/Sherman County, OR, Hydrologic Unit 17050105, 3.4 mi downstream from John Day Dam, at Rufus, and at mile 212.2.	---	---	5-29-97 6-26-97	442,000 362,000
14128870 Columbia River below Bonneville Dam	.....do.....	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.	239,900 (approx)	---	5-23-97	494,000
SANDY RIVER BASIN						
14138700 Bull Run River at Upper Flume, near Brightwood	Sandy River	Lat 45°27'54", long 121°51'16", in NE 1/4 SW 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 0.6 mi downstream from outlet structure, at Bull Run Lake, and 9.7 mi northeast of Brightwood.	---	1992-96	10-24-96 12-17-96 4- 1-97 7-14-97	4.0 14 35 10
Bull Run River 1,000 ft downstream from Lower Flume, near Brightwood	.....do.....	Lat 45°28'20", long 121°52'07", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,000 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	1994, 1996	9-10-97	20
Bull Run River 1,200 ft downstream from Lower Flume, near Brightwood	.....do.....	Lat 45°28'21", long 121°52'09", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,200 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	1994, 1996	9- 8-97	17
Bull Run River 1,400 ft downstream from Lower Flume, near Brightwood	.....do.....	Lat 45°28'23", long 121°52'11", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,400 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	1994, 1996	9- 8-97	17
Bull Run River 2,100 ft downstream from Lower Flume, near Brightwood	.....do.....	Lat 45°28'25", long 121°52'20", in NE 1/4 NW 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 2,100 ft downstream from Lower Flume, 1.6 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	---	9- 8-97	19
Bull Run River 2,600 ft downstream from Lower Flume,	.....do.....	Lat 45°28'28", long 121°52'25", in NE 1/4 NW 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 2,600 ft downstream from Lower flume, 1.7 mi downstream from outlet structure, at Bull Run Lake, and 9.4 mi northeast of Brightwood.	---	1994	9- 8-97	17
Bull Run River 4,100 ft downstream from Lower Flume, near Brightwood	.....do.....	Lat 45°28'34", long 121°52'43", in SW 1/4 SW 1/4 sec. 18, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 4,100 ft downstream from outlet structure, at Bull Run Lake, and 9.4 mi northeast of Brightwood.	---	1994	9- 8-97	29
WILLAMETTE RIVER BASIN						
14159000 McKenzie River at McKenzie Bridge	Willamette River	Lat 44°10'27", long 122°09'27", Lane County, --- Hydrologic Unit 17090004, at McKenzie Bridge.	---	1910-94	8-13-97	1,550
14159100 Horse Creek nr McKenzie Bridge	McKenzie River	Lat 44°09'45", long 122°09'13", Lane County Hydrologic Unit 17090004, 1.0 mi southeast of McKenzie Bridge, and at mile 3.4.	---	1962-69, 1977, 1987	8-13-97	396

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1997--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
SF McKenzie River blw Ridge Creek, abv Cougar Lake, nr Rainbow	McKenzie River	Lat 44°03'30", long 122°13'13", T.17 S., R.5 E (unsurveyd), Lane County, Hydrologic Unit 17090004, in Willamette National Forest, 0.1 mi downstream from Ridge Creek, 7.2 mi south of Rainbow, 8.2 mi southeast of town of Blue River, and at mile 9.6.	---	---	2- 5-97	1,140
Willamette River at I-5, near Wilsonville	Columbia River	Lat 45°17'38", long 122°47'04", Clackamas County, Hydrologic Unit 17090007, in Wilsonville, at Seely Ditch, and at mile 39.0.	---	1993, 1996	10- 3-96 3-11-97	13,300 70,500
14207740 Willamette River abv Falls at Oregon City	.....do.....	Lat 45°20'55", long 122°37'08", in SW 1/4 SW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, 1.6 mi downstream from Tualatin River, and at mile 26.8.	---	1996	10- 4-96 3-11-97	14,500 91,700
14208000 Clackamas River at Big Bottom	Willamette River	Lat 45°01'00", long 121°55'10", in NW 1/4 SE 1/4 sec.26, T.6 S., R.7 E., Clackamas County, Mount Hood National Forest, on right bank at lower end of Big Bottom, 0.5 mi downstream from Pot Creek, 28 mi southeast of Estacada, and at mile 65.1.	136		4-11-97	615
Johnson Creek	.....do.....	Lat 45°27'49", long 122°34'40", Multnomah County, Hydrologic Unit 17090012, at 82nd Avenue, and at mile 5.4.	---	1987-90	9-30-97	4.8
Johnson Creek	.....do.....	Lat 45°27'43", long 122°36'55", Multnomah County, Hydrologic Unit 17090012, at 45th Avenue, and at mile 2.8.		1988	9-30-97	6.1
Crystal Springs Creek	Johnson Creek	Lat 45°28'56", long 122°38'00", Multnomah County, Hydrologic Unit 17090012, on Reed College Campus, 0.1 mi downstream from Reed Lake, and at mile 1.8.	---	---	9-30-97	6.3
Crystal Springs Creek	.....do.....	Lat 45°28'27", long 122°38'27", Multnomah County, Hydrologic Unit 17090012, at Bybee Street, and at mile 1.0.	---	1977, 1987	9-30-97	20
Crystal Springs Creek	.....do.....	Lat 45°27'39", long 122°38'30", Multnomah County, Hydrologic Unit 17090012, at mouth.	---	1987-90	7-15-97 9-30-97	19 20
NESTUCCA RIVER BASIN						
14302850 Walker Creek	Nestucca River	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3S., R.6 W., Yamhill County, Hydrologic Unit 17100203 5.3 mi southwest of Fairdale, and at mile 0.5.	2.72	1991-96	12-10-96 2-12-97 4- 9-97 9- 4-97	76 18 6.7 0.54

THIS PAGE IS INTENTIONALLY BLANK

Page	Page
Access to USGS Water Data	19
Alsea River, near Tidewater	312
Annie Spring near Crater Lake	45
Applegate Lake near Copper	389
Applegate River, near Applegate	394-396
near Copper	390-392
near Wilderville	397-399
Balm Fork near Heppner	92
Bear Creek (Grande Ronde River basin) at Wallowa	76
near Wallowa	75
Bear Creek (Rogue River basin) at Medford	384
below Ashland Creek, at Ashland	383
Beaver Creek below Quartz Creek, near Simnasho	116
Big Butte Creek, near McLeod	360-362
Blazed Alder Creek near Rhododendron	141
Blue River, at Blue River	204-206
below Tidbits Creek, near Blue River	201
Blue River Lake near Blue River	203
Bull Creek near Wilhoit	244
Bull Run Lake near Brightwood	136
Bull Run Reservoir Number One near Bull Run	156
Bull Run Reservoir Number Two near Bull Run	163, 408-410
Bull Run River, at Lower Flume, near Brightwood	137-140
near Bull Run	164
near Multnomah Falls	143-145
North Fork, near Multnomah Falls	151-155
South Fork, near Bull Run	158-162
Burnt River near Hereford	62
Calapooya Creek near Oakland	342
Cedar Creek near Brightwood	157
Chemical quality of precipitation	405-410
Chetco River near Brookings	404
Clackamas River, above Three Lynx Creek	282
at Estacada	284
Clearwater River above Trap Creek, near Toketee Falls	330
Columbia River, at Beaver Army Terminal	295-303
at Stevenson, WA	123, 124
at The Dalles	121
at Warrendale	128-133
below Bonneville Dam	126, 127, 412
below Priest Rapids Dam, WA	51
Columbia Slough at Portland	293
Cooperation	2
Coquille River, South Fork, at Powers	347
Cottage Grove Lake near Cottage Grove	186
Cottonwood Creek near Mission	85
Cougar Lake near Rainbow	197
Cow Creek, above Galesville Reservoir, near Azalea	317
near Azalea	319-321
near Riddle	323
West Fork, near Glendale	322
Crater Lake near Crater Lake	39-41
Crooked River, below Opal Springs, near Culver	106
Deer Creek, South Fork, near Dixonville (Umpqua River) ...	326
Definition of terms	19-28
Deschutes River at Moody, near Biggs	118
near Culver	105
near Madras	111
Detroit Lake near Detroit	220
Discharge at partial-record stations and	
miscellaneous sites	412, 413
Discontinued Surface-Water or Stage only Stations ...	xiii-xxii
Discontinued Surface-Water Quality Stations	xxiii-xxvi
Donner und Blitzen River near Frenchglen	37
Dorena Lake near Cottage Grove	189
Eagle Creek above Skull Creek, near New Bridge	66
Elk Creek, (Rogue River)	
below Alco Creek, near Trail	369-371
near Cascade Gorge	366-369
West Branch, near Trail	372-374
near Trail	375-377
Elk Creek, (South Umpqua River) near Drew	316
Elk Creek, (Umpqua River) near Elkhead	344
Elk River above Anvil Creek, near Port Orford	348
Explanation of the records	6-19
Fairview Creek at Glisan Street, near Gresham	292
Fall Creek, below Winberry Creek, near Fall Creek	181-183
near Lowell	179
Fall Creek Lake near Lowell	180
Fanno Creek at 56th Avenue	264
Fern Ridge Lake near Elmira	213
Fir Creek near Brightwood	147-150
Fish Creek at Big Camas Ranger Station, near	
Toketee Falls (Umpqua River)	331
Fish Creek near Three Lynx (Willamette River)	283
Foster Lake at Foster	229
Gaging station records	37-404
Galesville Reservoir near Azalea	318
Gassy Creek near Nonpareil	341
Grande Ronde River at Troy	79
Green Peter Lake near Foster	228
Haskins Creek below Reservoir, near McMinnville	243
Haskins Creek Reservoir near McMinnville	242
Henry Hagg Lake near Gaston	257
Hills Creek Lake near Oakridge	170
Hood River at Tucker Bridge, near Hood River	122
Illinois River near Kerby	403
Imnaha River at Imnaha	69
Introduction	1
Jefferson Creek near Camp Sherman	107
Joe Ney Creek, diversion from	346
John Day River, at Blue Mountain Hot Springs	97
at Service Creek	101
near John Day	98
Middle Fork, at Ritter	99
North Fork, at Monument	100
Johnson Creek, at Milwaukie	286
at Sycamore	285
Klamath River, at Keno	48
below Iron Gate Dam, CA	50
below John C. Boyle Powerplant, near Keno	49
Klamath River Basin, discharge measurements	
at miscellaneous sites in	412
Lake Billy Chinook near Metolius	110
Lakes and Reservoirs:	
Applegate Lake near Copper	389
Billy Chinook, Lake, near Metolius	110
Blue River Lake near Blue River	203
Bull Run Lake near Brightwood	136
Bull Run Reservoir Number One near Bull Ru	156
Bull Run Reservoir Number Two near Bull Run	163, 408-410
Cottage Grove Lake near Cottage Grove	186
Cougar Lake near Rainbow	197
Crater Lake near Crater Lake	39-41
Detroit Lake near Detroit	220
Dorena Lake near Cottage Grove	189
Fall Creek Lake near Lowell	180
Fern Ridge Lake near Elmira	213
Foster Lake at Foster	229
Galesville Reservoir near Azalea	318
Green Peter Lake near Foster	228
Haskins Creek Reservoir near McMinnville	242
Henry Hagg Lake near Gaston	257
Hills Creek Lake near Oakridge	170
Lemolo Lake near Toketee Falls	328
Lookout Point Lake near Lowell	175
Lost Creek Lake near McLeod	357
Lower Pony Creek Reservoir at Coos Bay	346
McGuire Lake near Fairdale	307
Smith River Reservoir near Belknap Springs	195
Timothy Lake near Government Camp	279
Upper Klamath Lake near Klamath Falls	46
Upper Pony Creek Reservoir near Coos Bay	346
Willow Creek Lake at Heppner	93
Lebanon Santiam Canal near Lebanon	235
Lemolo Lake near Toketee Falls	328
Link River at Klamath Falls	47
Little Abiqua Creek near Scotts Mills	245-248
Little North Santiam River near Mehama	224
Little Sandy River near Bull Run	165
Lobster Creek, East Fork, near Alsea	311
Long Tom River, at Monroe	215
near Alvadore	214
near Noti	212

Page	Page
Lookingglass Creek at Brockway	324
Lookingglass Creek near Looking Glass	70
Lookout Creek near Blue River	202
Lookout Point Lake near Lowell	175
Lost Creek Lake near McLeod	357
Lostine River at Baker Road, near Lostine	74
at Caudle Lane, at Lostine	73
near Lostine	72
Lower Pony Creek Reservoir at Coos Bay	346
Lower Pony Creek Reservoir, diversion from	346
Luckiamute River near Suver	239
Malheur River below Nevada Dam, near Vale	59
below Warm Springs Reservoir, near Riverside	57
North Fork, at Beulah	58
McGuire Lake near Fairdale	307
McKay Creek, North Fork, near Pilot Rock	89
McKenzie River, at Outlet of Clear Lake	193
below Trail Bridge Dam, near Belknap Springs	196
below Leaburg Dam	208
near Vida	207
near Waltherville	209
South Fork, near Rainbow	198-200
Meacham Creek at Gibbon	83
Metolius River near Grandview	109
Mill Creek near Badger Butte, near Warm Springs	115
Minam River at Minam	78
Mohawk River near Springfield	210
Moonshine Creek near Mission	84
Nehalem River near Foss	304
Nestucca River near Fairdale	308
Nestucca River Basin, discharge measurements at miscellaneous sites in	413
North Santiam River, at Mehama	225
at Niagara	221-223
below Boulder Creek, near Detroit	219
North Umpqua River, above Copeland Creek, near Toketee Falls	332
above Rock Creek, near Glide	334-339
at Winchester	340
below Lemolo Lake, near Toketee Falls	329
Oak Grove Fork, above Powerplant Intake	281
near Government Camp	280
Owyhee River, below Owyhee Dam	54
near Rome	53
Patawa Creek at West Reservation Boundary, near Pendleton	87,88
Pony Creek at Coos Bay	346
Powder River, at Baker City	64
below Thief Valley Reservoir, near North Powder	65
near Sumpter	63
Publications on Techniques of Water-Resources Investigations	29-32
Pudding River at Aurora	253-256
Quartzville Creek near Cascadia	227
Rogue River, above Prospect	351
at Dodge Bridge, near Eagle Point	380-382
at Grants Pass	388
at McLeod	358,359
at Raygold, near Central Point	385-387
at Trail	378,379
below Prospect	352-354
near Agness	400-402
near McLeod	363-365
South Fork, near Prospect	355
Row River, above Pitcher Creek, near Dorena	188
near Cottage Grove	190
Sandy River Basin, discharge measurements at miscellaneous sites in	412
Sandy River, below Bull Run River, near Bull Run	166
near Marmot	135
Santiam River at Jefferson	237
Schafer Creek near LaComb	236
Scoggins Creek below Henry Hagg Lake, near Gaston	258
Shitike Creek at Peters Pasture, near Warm Springs	112
near Warm Springs	113
Siletz River at Siletz	310
Silver Lake Ranger Station (precipitation gage)	405-407
Smith River above Smith River Reservoir, near Belknap Springs	194
Smith River Reservoir near Belknap Springs	195
Snake River at Hells Canyon Dam	67
at Johnson Bar, ID	68
at Nyssa	55,56
South Santiam River, at Waterloo	234
below Cascadia	226
near Foster	231-233
South Umpqua River, at Tiller	315
near Brockway	325
South Yamhill River at McMinnville	241
Special networks and programs	5
Sprague River, near Chiloquin	43
North Fork, at Powerplant, near Bly	42
Star Gulch near Ruch	393
Steamboat Creek near Glide	333
Summary of hydrologic conditions	2-4
Timothy Lake near Government Camp	279
Trask River above Cedar Creek, near Tillamook	306
Tualatin River, at Oswego Dam, near West Linn	267-274
at river mile 24.5, near Scholls	260-263
at West Linn	275
near Dilley	259
Tucca Creek near Blaine	309
Unified Sewerage Agency (USA) Durham Wastewater Treatment Facility	265,266
Umatilla River, above Meacham Creek, near Gibbon	82
at West Reservation boundary, near Pendleton	86
near Umatilla	90
Umpqua River near Elkton	343
Upper Klamath Lake near Klamath Falls	46
Upper Pony Creek Reservoir near Coos Bay	346
Walker Creek near Fairdale	411
Wallowa River above Cross Country Canal, near Enterprise	71
below Water Canyon, near Wallowa	77
Warm Springs River near Kahneeta Hot Springs	117
near Simnasho	114
Whitewater River near Camp Sherman	108
Wiley Creek near Foster	230
Willamette River, above Falls, at Oregon City	276,413
at Albany	216
at Harrisburg	211
at Portland	287-291
at Salem	240
below Falls, at Oregon City	277,278
Coast Fork, below Cottage Grove Dam	187
near Goshen	191
Middle Fork, above Salt Creek, near Oakridge	171-173
at Jasper	184
below North Fork, near Oakridge	174
near Dexter	176-178
near Oakridge	169
Willamette River Basin, discharge measurements at miscellaneous sites in	412,413
Williamson River, below Sprague River, near Chiloquin	44
Willow Creek above Willow Creek Lake, near Heppner	91
at Heppner	94
Willow Creek Lake at Heppner	93
Wilson River near Tillamook	305
Zollner Creek near Mount Angel	249-252

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

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

U.S. DEPARTMENT OF THE INTERIOR
U.S. Geological Survey
10615 SE Cherry Blossom Drive
Portland, OR 97216

USGS LIBRARY - RESTON

3 1818 00454170