COLUMBIA RIVER WATER MANAGEMENT GROUP
MEETING NO. 498

1. ATTENDANCE

The following met at 9:30 a.m., on Tuesday, January 12, 1999, in the Custom House, Portland, OR.

Members or Alternates Present

Roger Ross, Corps of Engineers, Chair
Nancy Stephan, Bonneville Power Admin
Ted Day, US Bureau of Reclamation
Tom Fero, National Weather Service-RFC
Ed Hubbard, U.S. Geological Survey
Dan Moore, Natural Resources Conservation Svc
Walter Boyle, Federal Energy Regulatory Comm

Others Present

Dušica Jevremović, Fish Passage Center
Dana Reedy, NW Power Pool
Nengjin Liu, Idaho Power
Russ George, Consultant
Jim Ruff, NW Power Planning Council
Jon Lea, Natural Resources Conservation Svc
Cathy Hlebechuk, Corps of Engineers, NWD-RCC
George Fong, Corps of Engineers, Portland Dist

Members Not Present or Represented

,National Marine Fisheries Svc
Doug McChesney, Washington Dept of Ecology
Jack Gakstatter, U.S. Environ'l Protection Agy
Bruce McCammon, U.S. Forest Service
Marvin Yoshinaka, U.S. Fish and Wildlife Service
Bill Brooks, Bureau of Land Management
B Ondrechen, Idaho Dpt Water Resources & Cons
Barry Norris, Oregon Dept of Water Resources
Mike Turnipseed, Nevada State Engineer
Gordon Fassett, Wyoming State Engineer
Jack Stults, Montana Dept of Natural Res & Cons

2. WEATHER SUMMARY

Late summer and early fall conditions were generally warm and drier than normal as reported by Tom Fero (http://www.nwrfc.noaa.gov/resources.shtml). In November weather patterns changed to a cooler and wetter regime. Despite a major arctic air outbreak across he region after mid-month, December trended toward above normal temperatures with frequent precipitation occasionally heavy, particularly within the second and last weeks of the month. Mean temperatures departed +0.67 °F (31-stations) from normal for the Pacific Northwest. Mean monthly station temperature departures ranged from -5.2°F to 7.5°F. Frequent Pacific frontal disturbances produced pronounced periods of warm locally heavy rains with snowmelt and sharp rises in streamflows focused mostly in western Washington and western Oregon basins. A second Pacific disturbance scoured out Arctic air around the Christmas holidays resulting in local freezing rain problems.

Monthly precipitation for December averaged 120% of normal for the Columbia Basin above Grand Coulee, 100% of normal for the Snake Basin above Ice Harbor, and 117% for the basin above The Dalles. In other key basins it was 124% (Kootenai), 97% (Clearwater), and 134% (Willamette).

3. SNOWPACK

This year starts off with a snowpack at 134% of its January 1 normal, according to Dan Moore (ftp://ftp.wcc.nrcs.usda.gov/support/snow/snowpack_charts/columbia_river/wy1999/colu9901.html). This is also equal to 58% of the normal seasonal peak snowpack that usually occurs about April 1. The North Cascades in Washington holds the highest snowpack, with 172% followed by the Yakima with 169%The Canadian portion is 122% and the Kootenay and Pend Oreille are 130% and the Clearwater of

Idaho is 144%. The smallest snowpacks are on the southern and eastern edges of Idaho and nre in the 80 and 90% ftp://162.79.124.23/support/snow/snowpack_maps/columbia_river/wy1999/cusn9901.gif .

4. STREAMFLOW

Ed Hubbard reported that streamflows throughout the Northwest generally were normal or above, the exception was the MF Flathead nr West Glacier, MT, which was well below normal (Enc 1). A series of high flow events occurred in the NW Oregon and SW Washington basins that resulted in very large increases in flows over previous months. An attachment to this enclosure contains the peak flows for some of the Oregon gages that had peak flows in December 1998. The Wilson River near Tillamook and the Siletz River near Siletz had peak flows and stages greater than during the great flood of February 1996.

Adjusted mean monthly streamflows for November and December for the Columbia River at The Dalles were 87,560 cfs and 106,900 cfs, respectively, and for the Willamette River at Salem the adjusted flows were 35,660 cfs and 74,140 cfs.

5. RUNOFF FORECASTS

Highlights of the Water Year 1999 runoff volume forecasts were presented by Tom Fero as detailed in http://www.nwrfc.noaa.gov/resources.shtml. The forecast at key sites include 109% of normal for the basin above Grand Coulee, 110% for the Snake Basin above Lower Granite, 110% for the Columbia Basin above The Dalles, 115% for Dworshak, 102% for Libby, 107% for Hungry Horse, and 112% for the Willamette.

Cathy Hlebechuk reported that the official Corps forecast for Dworshak Dam is 3520kaf (Apr-Jul) and can be found at http://www.nwd-wc.usace.army.mil/cafe/forecast/dwrf.txt and for Libby Dam its 6620 kaf (Apr-Aug) with details at http://www.nwd-wc.usace.army.mil/cafe/forecast/libjan99.prn .

6. SURFACE WATER SUPPLY INDEX

Oregon SWSI on 1 November and 1December indicated all regions of Oregon has normal or better supply of water (http://crystal.or.nrcs.usda.gov/snowsurveys/swsi1298.gif and http://crystal.or.nrcs.usda.gov/snowsurveys/swsi0199.gif).

7. RESERVOIR OPERATION

Reclamation projects generally have had good carryover from last year and are now drafting for this season flood control, according to Ted Day (Enc 2). **Jackson Lake** has been drafted to 70% of its capacity, **Cascade** is at 75%, **Prineville** is at 60%, and the **Boise system (Arrowrock, Anderson Ranch , and Lucky Peak**) is at 63%,

Active content available on December 31 at **Franklin D. Roosevelt Lake (**behind **Grand Coulee Dam)** was 4,220,610 af--81% of capacity. Active content of **Hungry Horse** was 2,157,600 af–72% of capacity.

Cathy Hlebechuk summarized the operation of the Corps' projects (Enc 3). **Libby** drafted slowly in November, the rate was increased in December and on December 31 the pool was at 2405.6 ft, 5.4 ft below its upper flood control rule curve. **Albeni Falls** was drafted until November 22 when it reached its minimum pool elevation. This is the third year of a three year winter test to encourage kokanee to spawn in cleaner gravels at higher elevations in the reservoir. **Dworshak** outflows were 1.3 kcfs (minimum flow) throughout November and December. The end of December pool elevation was 1533 ft. **Lower Monumental** and **Little Goose** are now operating in their normal operating pool levels to submerge fish ladder entrances at **Little Goose** and **Lower Granite** in order to facilitate adult passage. Flip lip construction at **Ice Harbor** is expected to be completed this winter. A major storm between Christmas and

New Years filled the **Willamette projects** to 33% of their capacity. The stored water has since been drafted.

At the middle Snake Projects, Brownlee and Hells Canyon operations are being adjusted to keep Oxbow, the intermediate project, from having to spill. Brownlee is at approximately 2069.8 ft according to Nengjin Liu.

8. POWER OPERATIONS

The power system was drafted from its AER to its ECC according to Dana Reedy.

9. OTHER

Fall chinook are currently spawning in the redds at Ives Island below Bonneville Dam, according to Dušica Jevremović. These appear to be opportunistic fish that do not need their natal waters to spawn but will spawn where the conditions feel right. See http://www.fpc.org/ivesislandmap.htm .

There are no new power projects application at FERC, only rehab work, according to Walt Boyle.

In checking on the status of the modified discharge procedures used in the past, Nancy Stephan said that although the University of Washington was sent a package of this work, the grad student that was contemplating this project bowed out of consideration and no one picked it up. She also contacted Michael Newsom who said that he felt confident of the usability of the spread sheet program for updating the modified flows. Nancy said that interested agencies should contact her about beginning to review the procedures and determine what data was needed to make the updated. The deadline for establishing the study group membership and to get started on the material review is the end of February.

10. NEXT MEETINGS

The next meeting, the annual forecast meeting, is scheduled for 9:30 a.m., in the Customs House, Room 118, on April 13.

Roger L. Ross
Secretary

Enclosures
1. Streamflow Summary
2. USBR Project Summary
3. Corps Project Summary

US GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, Oregon District
COMPARATIVE FLOW TABLE FOR NOVEMBER 1998

Station	Monthly mean discharge: Cubic feet per second	Monthly mean discharge: Percent of average	Change in discharge from previous month (percent)	Discharge near end of month: Cubic feet per second	Discharge near end of month: Date	Accumulated Runoff: Oct-Nov Percent of Average
John Day River at Service Creek, OR	750	112	+61	1,140	30	117
Wilson River nr Tillamook, OR	2,997	166	+787	2,880	30	146
Umpqua River nr Elkton, OR	14,120	175	+672	21,810	30	161
Columbia River at The Dalles, OR	87,560(a)	97	+31	109,000	30	88
Willamette River at Salem, OR	35,660(a)	135	+575	84,800	30	122
Chehalis River nr Grand Mound,	6,353	165	+1457	8,290	30	142
Skykomish River nr Gold Bar, WA	6,411	143	+298	3,780	30	117
Spokane River at Spokane, WA	2,691(a)	98	+88	4,490	30	96
Snake River at Heise, ID	3,977(a)	110	-8	4,570	30	109
Snake River at Weiser, ID	16,142	99	+8	20,100	30	98
Salmon River at White Bird, ID	5,475	103	+7	6,080	30	100
Clearwater River at Spalding, ID	6,389	115	+117	8,900	30	98
Clark Fork at St. Regis, MT	3,280	91	+4	3,370	30	89
MF Flathead River nr West Glacier, MT	474	41	+7	633	30	43

Percent of Average computed using 30-year base period, Water Years 1961-90
(a) adjusted for upstream storage 12/09/98 Encl 1

US GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, Oregon District
COMPARATIVE FLOW TABLE FOR DECEMBER 1998

Station	Monthly mean discharge: Cubic feet per second	Monthly mean discharge: Percent of average	Change in discharge from previous month (percent)	Discharge near end of month: Cubic feet per second	Discharge near end of month: Date	Accumulated Runoff Oct-Dec: Percent of Average
John Day River at Service Creek, OR	1,739	129	+132	6,090	31	124
Wilson River nr Tillamook, OR	4,777	188	+59	5,270	31	169
Umpqua River nr Elkton, OR	22,640	149	+60	24,720	31	154
Columbia River at The Dalles, OR	106,900(a)	115	+22	176,000	31	97
Willamette River at Salem, OR	74,140(a)	158	+108	134,000	31	143
Chehalis River nr Grand Mound,	10,770	174	+70	19,300	31	160
Skykomish River nr Gold Bar, WA	7,082	145	+10	13,500	31	129
Spokane River at Spokane, WA	5,562(a)	117	+107	6,370	31	107
Snake River at Heise, ID	3,371(a)	103	-15	3,380	31	107
Snake River at Weiser, ID	19,052	110	+18	12,300	31	102
Salmon River at White Bird, ID	5,048	105	-8	6,000	31	102
Clearwater River at Spalding, ID	6,945	119	+40	22,400	31	108
Clark Fork at St. Regis, MT	3,185	94	-3	4,620	31	90
MF Flathead River nr West Glacier, MT	614	71	+30	721	31	52

Percent of Average computed using 30-year base period, Water Years 1961-90
(a) adjusted for upstream storage 01/11/99

U.S. GEOLOGICAL SURVEY – OREGON DISTRICT

PROVISIONAL DATA, SUBJECT TO REVISION

River/Location	December 1998 Stage / Date Discharge / Interval	February 1996 Stage / Date Discharge	Peak of record Stage / Date Discharge
OREGON COASTAL BASINS			
Nehalen River Foss	18.94 ft 12/28 33,600 cfs / 5 yr	29.56 ft 2/8 70,300 cfs	February 1996
Wilson River Tillamook	19.59 ft 12/27 35,300 cfs / 50 yr	19.51 ft 2/8 35,000 cfs	1/20/72 36,000 cfs
Trask River Tillamook	21.32 ft 12/27 21,500 cfs	23.2 ft 2/8 25,800 cfs	New site as of 1996
Siletz River Siletz	24.70 ft 12/28 35,200 cfs / 50 yr	24.49 ft 2/7 34,700 cfs	December 1998
WILLAMETTE BASIN			
Tualatin River Dilley	17.99 ft 12/28 3,940 cfs / regulated	19.06 ft 2/8 10,100 cfs	19.34 ft 12/22/1964 17,100 cfs
Johnson Creek Sycamore	10.41 ft 12/28 950 cfs / 2 yr	14.28 ft 2/7 2,350 cfs	14.68 ft 12/22/1964 2,620 cfs
Clackamas River Estacada	22.36 ft 12/28 (NWS) 34,300 cfs / (reg)	27.57 ft 2/7 68,900 cfs	28.36 ft 12/22/1964 86,900 cfs
Sandy River Marmot	738.37 ft 12/28 22,900 cfs / 5 yr	750.4 ft 2/7 48,100 cfs	12/22/1964 61,400 cfs

Interval: Recurrence Interval (Exceedance Probability)
cfs: cubic feet per second

12/29/98 13:45

US Bureau of Reclamation, Pacific Northwest Region

Monthly Water Conditions Report

End-of-Month Reservoir Contents for November,1998:

STATION - CODE	ACTIVE CAPACITY	1999	% OF CAPACITY	AVG	%OF AVG
HGH-AF-HUNGRY HORSE DAM & R	2981.20	2245.77H	75	2355.55	95
CMO-AF-COMO DAM AND LAKE ON	35.10	2.92V	8	6.82	43
Yakima River Basin					
CLE-AF-CLE ELUM LAKE, WA	436.90	104.10V	24	192.60R	54
KAC-AF-KACHESS LAKE, WA	239.00	98.28V	41	146.10	67
KEE-AF-KEECHELUS LAKE, WA	157.80	44.78V	28	67.20	67
RIM-AF-TIETON DAM & RIMROCK	198.00	54.04V	27	87.30	62
BUM-AF-BUMPING LAKE, WA	33.70	16.97V	50	6.00R	283
Columbia Basin					
GCL-AF-GRAND COULEE DAM & F	5185.45	4493.43V	87	5046.70	89
BNK-AF-BANKS LAKE NR GRAND	715.00	686.71V	96	585.75	117
POT-AF-O'SULLIVAN DAM & POT	332.20	****	***	167.23	***
Okanogan River Basin					
CCR-AF-CONCONULLY DAM & RES	13.00	****	***	5.84	***
CCL-AF-SALMON LK DAM & CONC	10.50	****	***	8.18	***
Snake River Basin					
JCK-AF-JACKSON LAKE NEAR MO	847.00	580.78V	69	460.91	126
PAL-AF-PALISADES RESERVOIR	1200.00	996.11V	83	815.76	122
ISL-AF-ISLAND PARK RESERVOIR	135.20	116.11V	86	78.29	148
GRS-AF-GRASSY LAKE NR MORAN	15.20	12.34V	81	10.19	121
RIR-AF-RIRIE RESERVOIR NEAR	80.50	33.80V	42	29.68E	114
AMF-AF-AMERICAN FALLS RES A	1672.60	1232.16V	74	781.75	158
MIN-AF-MINIDOKA DAM & LAKE	95.20	31.86V	33	54.01	59
WOD-AF-LITTLE WOOD RESERVOIR	30.00	15.09V	50	10.50	144
Boise River Basin					
AND-AF-ANDERSON RANCH RES A	423.20	347.18V	82	280.13	124
ARK-AF-ARROWROCK RESERVOIR	286.60	133.52V	47	126.55	106
LUC-AF-LUCKY PEAK LAKE NEAR	264.40	78.80V	30	53.56	147
LOW-AF-LAKE LOWELL, ID	169.10	110.57V	65	103.40	107
Payette River Basin					
CSC-AF-CASCADE RESERVOIR AT	653.00	492.43V	75	370.25	133
DED-AF-DEADWOOD RESERVOIR N	161.90	122.35V	76	67.71	181
Weiser River Basin					
MAN-AF-MANN CR DAM & RES ON	11.10	2.23V	20	2.77E	80

Enc 2

STATION - CODE	ACTIVE CAPACITY	1999	% OF CAPACITY	AVG	%OF AVG
Clearwater River Basin					
RES-AF-LEWISTON ORCHARDS RE	3.00	0.79V	26	1.45E	54
SOL-AF-SOLDIERS MEADOW DAM,	2.37	****	***	0.58E	***
Owyhee River Basin					
OWY-AF-LAKE OWYHEE NEAR NYS	715.00	457.10V	64	370.37	123
WLD-AF-WILDHORSE RESERVOIR	71.50	53.03V	74	29.72	178
Malheur River Basin					
BEU-AF-AGENCY VALLEY DAM &	59.90	31.42V	52	14.93	210
BUL-AF-BULLY CREEK RESERVOIR	30.00	16.87V	56	8.82E	191
WAR-AF-WARM SPRINGS RESERVOIR	191.00	101.41V	53	66.51	152
Powder River Basin					
PHL-AF-MASON DAM & PHILLIPS	73.50	40.39V	55	34.79E	116
THF-AF-THIEF VALLEY RESERVOIR	17.40	8.12V	47	11.09E	73
Burnt River Basin					
UNY-AF-UNITY RESERVOIR NEAR	25.20	7.79V	31	7.23	108
Umatilla River Basin					
MCK-AF-MCKAY RESERVOIR NR P	66.26	9.60V	14	12.86	75
CLS-AF-COLD SPRINGS DAM & R	38.33	5.37V	14	7.95	68
Deschutes River Basin					
CRA-AF-CRANE PRAIRIE DAM &	55.30	38.47V	70	31.79	121
CRE-AF-CRESCENT LK DAM & LK	86.90	65.38V	75	43.81	149
WIC-AF-WICKIUP DAM & RES ON	200.00	152.32V	76	108.90	140
OCH-AF-OCHOCO DAM & RES ON	45.24	23.41V	52	17.52	134
PRV-AF-ARTHUR R BOWMAN DAM	152.80	91.86V	60	88.44	104
HAY-AF-HAYSTACK DAM & RES O	5.64	4.74V	84	4.68E	101
WAS-AF-WASCO DAM & CLEAR LAKE	11.90	1.69V	14	4.20	40
Rogue River Basin					
AGA-AF-AGATE DAM AND RES ON	4.70	2.73V	58	1.64E	166
EMI-AF-EMIGRANT DAM & LK ON	39.00	18.83V	48	14.12	133
FIS-AF-FISH LK NR LAKE CR,	7.90	5.56V	70	4.70E	118
FOR-AF-FOURMILE LAKE, OR	15.60	11.20V	72	6.32E	177
HPD-AF-HOWARD PRAIRIE DAM &	60.60	48.83V	81	39.07E	125
HYA-AF-HYATT DAM & RES NR A	16.00	11.27V	70	9.19E	123
Tualatin River Basin					
SCO-AF-SCOGGINS DAM AND HEN	53.60	30.71V	57	21.25E	145
TOTAL OF 49 RESERVOIRS	18073.41	13291.24	74	12700.83	105

AF is acre-feet. AVG is published 30-year average, 1961-1990. Please note that all data are ***PROVISIONAL*** and subject to revision. This report is updated monthly, after the 15th of each month.

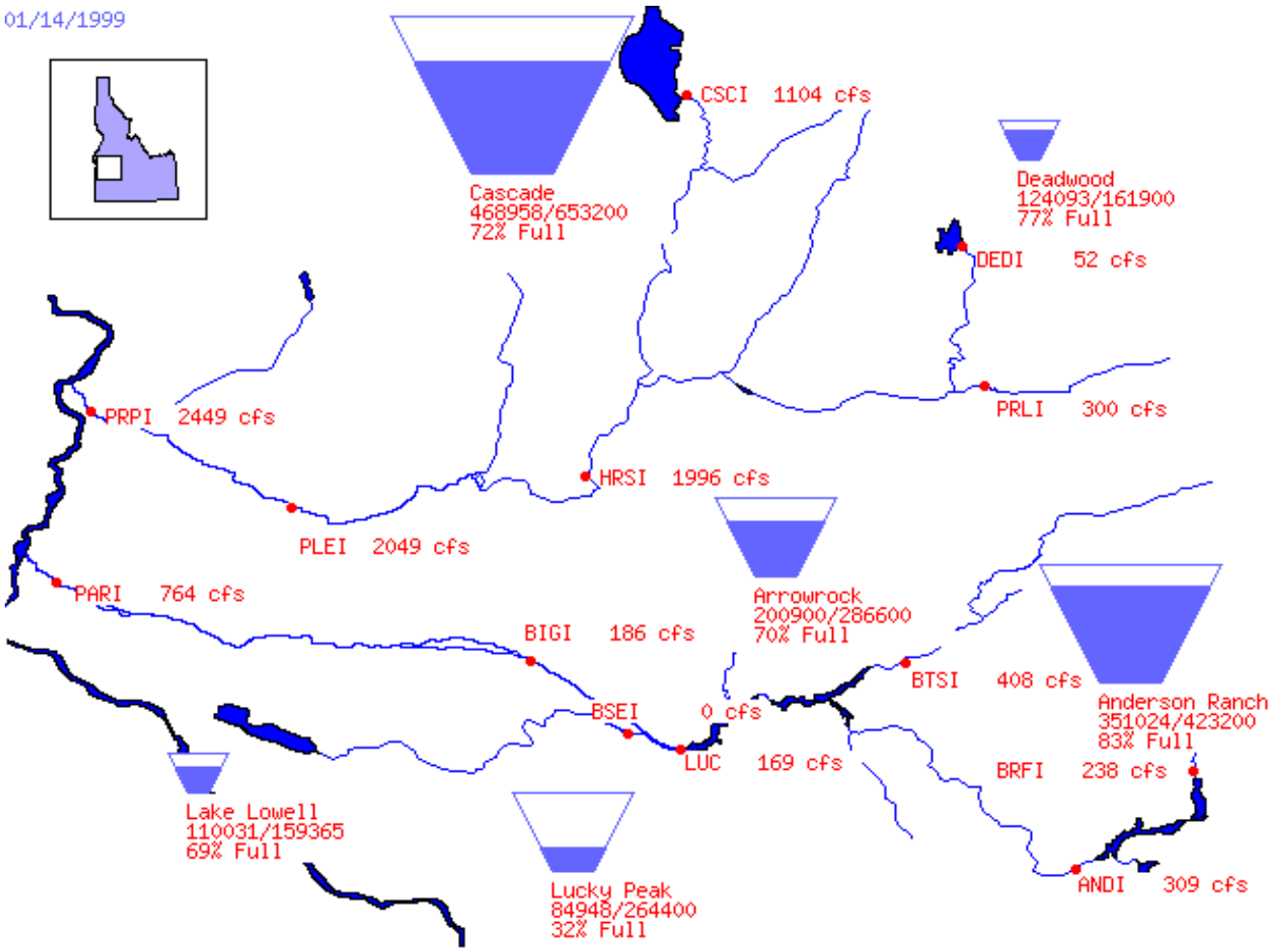
US Bureau of Reclamation
Pacific Northwest Region
End-of-Month Water Conditions

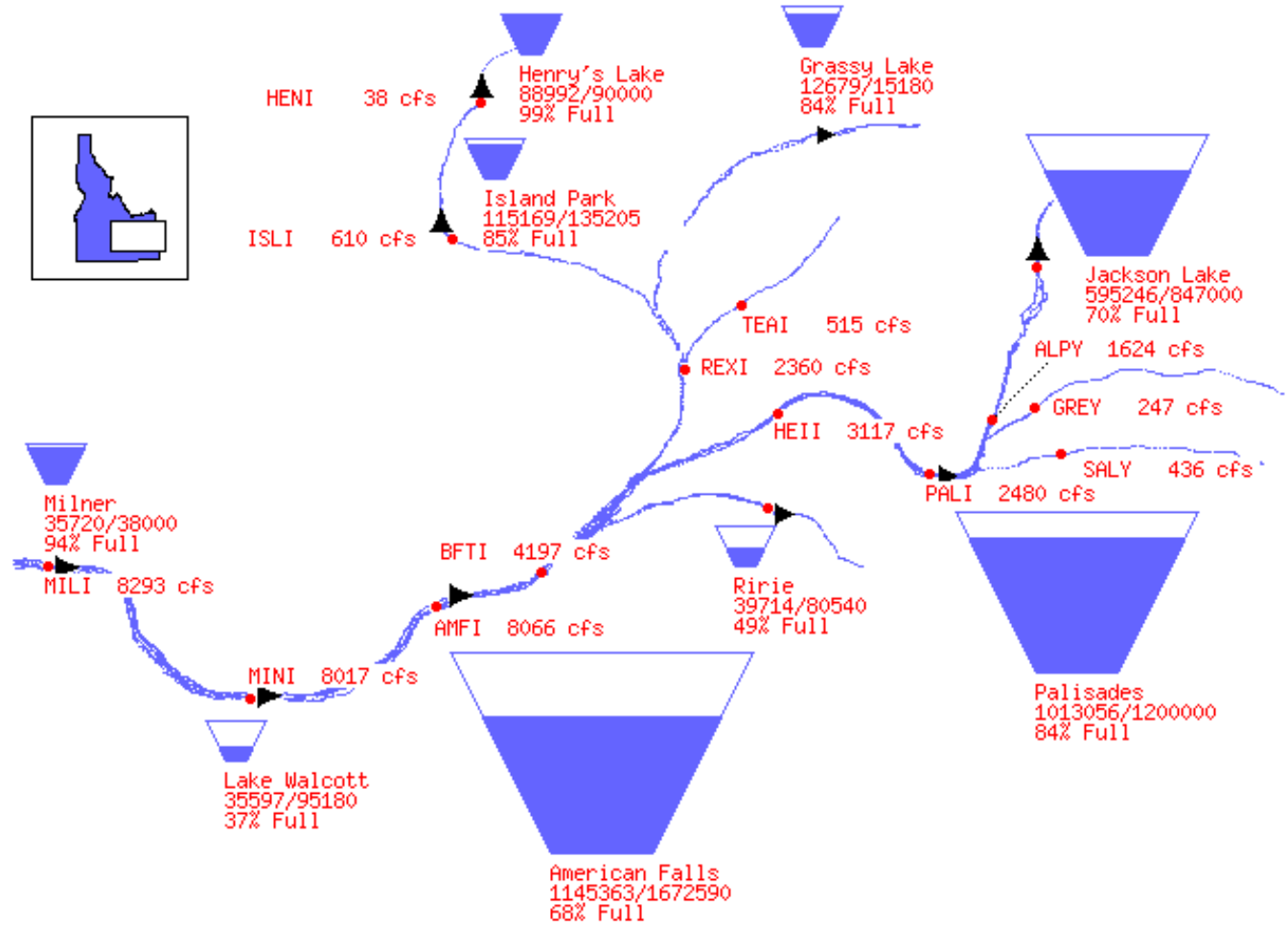
End-of-Month Reservoir Contents for *December1998*

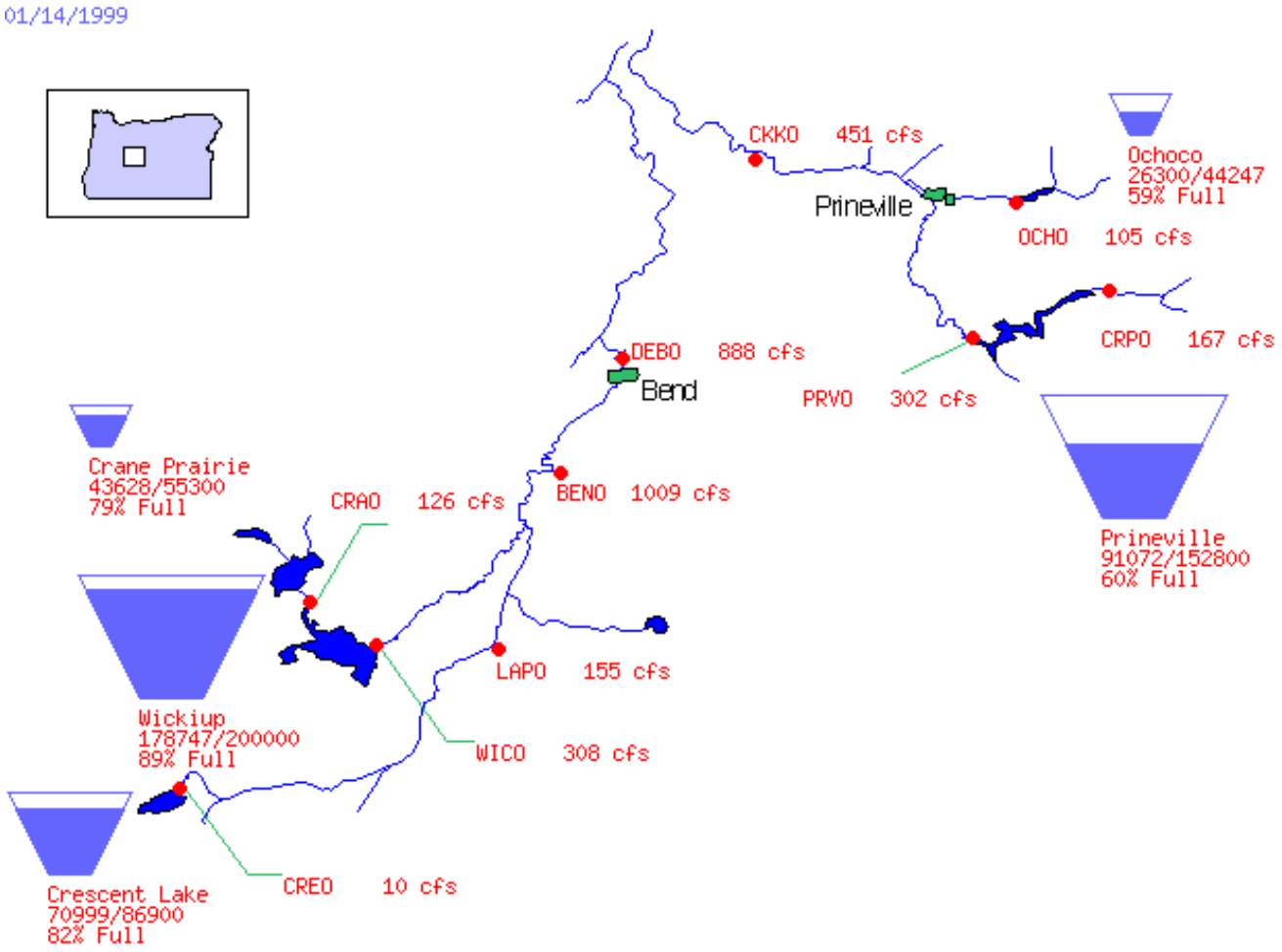
STATION - CODE	ACTIVE CAPACITY	1999	% OF CAPACITY	AVG	% OF AVG
HGH-AF-HUNGRY HORSE DAM & R	2981.20	2157.65H	72	2139.09	101
CMO-AF-COMO DAM AND LAKE ON	35.10	4.97V	14	8.79	57
Yakima River Basin					
CLE-AF-CLE ELUM LAKE, WA	436.90	142.74O	33	230.20R	62
KAC-AF-KACHESS LAKE, WA	239.00	123.33O	52	159.10	78
KEE-AF-KEECHELUS LAKE, WA	157.80	68.15O	43	83.00	82
RIM-AF-TIETON DAM & RIMROCK	198.00	81.28O	41	102.10	80
BUM-AF-BUMPING LAKE, WA	33.70	21.06O	62	6.20R	340
Columbia Basin					
GCL-AF-GRAND COULEE DAM & F	5185.45	4220.61V	81	4547.90	93
BNK-AF-BANKS LAKE NR GRAND	715.00	686.71V	96	592.58	116
POT-AF-O'SULLIVAN DAM & POT	332.20	****	***	208.01	***
Okanogan River Basin					
CCR-AF-CONCONULLY DAM & RES	13.00	****	***	6.36	***
CCL-AF-SALMON LK DAM & CONC	10.50	****	***	8.16	***
Snake River Basin					
JCK-AF-JACKSON LAKE NEAR MO	847.00	590.03V	70	470.20	125
PAL-AF-PALISADES RESERVOIR	1200.00	1007.28V	84	835.62	121
ISL-AF-ISLAND PARK RESERVOIR	135.20	114.59V	85	89.37	128
GRS-AF-GRASSY LAKE NR MORAN	15.20	12.58V	83	10.47	120
RIR-AF-RIRIE RESERVOIR NEAR	80.50	37.91V	47	31.60E	120
AMF-AF-AMERICAN FALLS RES A	1672.60	1173.03V	70	969.47	121
MIN-AF-MINIDOKA DAM & LAKE	95.20	34.86V	37	47.55	73
WOD-AF-LITTLE WOOD RESERVOIR	30.00	19.23V	64	13.32	144
Boise River Basin					
AND-AF-ANDERSON RANCH RES A	423.20	349.68O	83	265.51	132
ARK-AF-ARROWROCK RESERVOIR	286.60	176.81O	62	184.27	96
LUC-AF-LUCKY PEAK LAKE NEAR	264.40	85.08O	32	57.63	148
LOW-AF-LAKE LOWELL, ID	169.10	110.26O	65	109.94	100
Payette River Basin					
CSC-AF-CASCADE RESERVOIR AT	653.00	488.58O	75	370.33	132
DED-AF-DEADWOOD RESERVOIR N	161.90	123.81O	76	73.48	168
Weiser River Basin					
MAN-AF-MANN CR DAM & RES ON	11.10	3.91O	35	3.54E	110

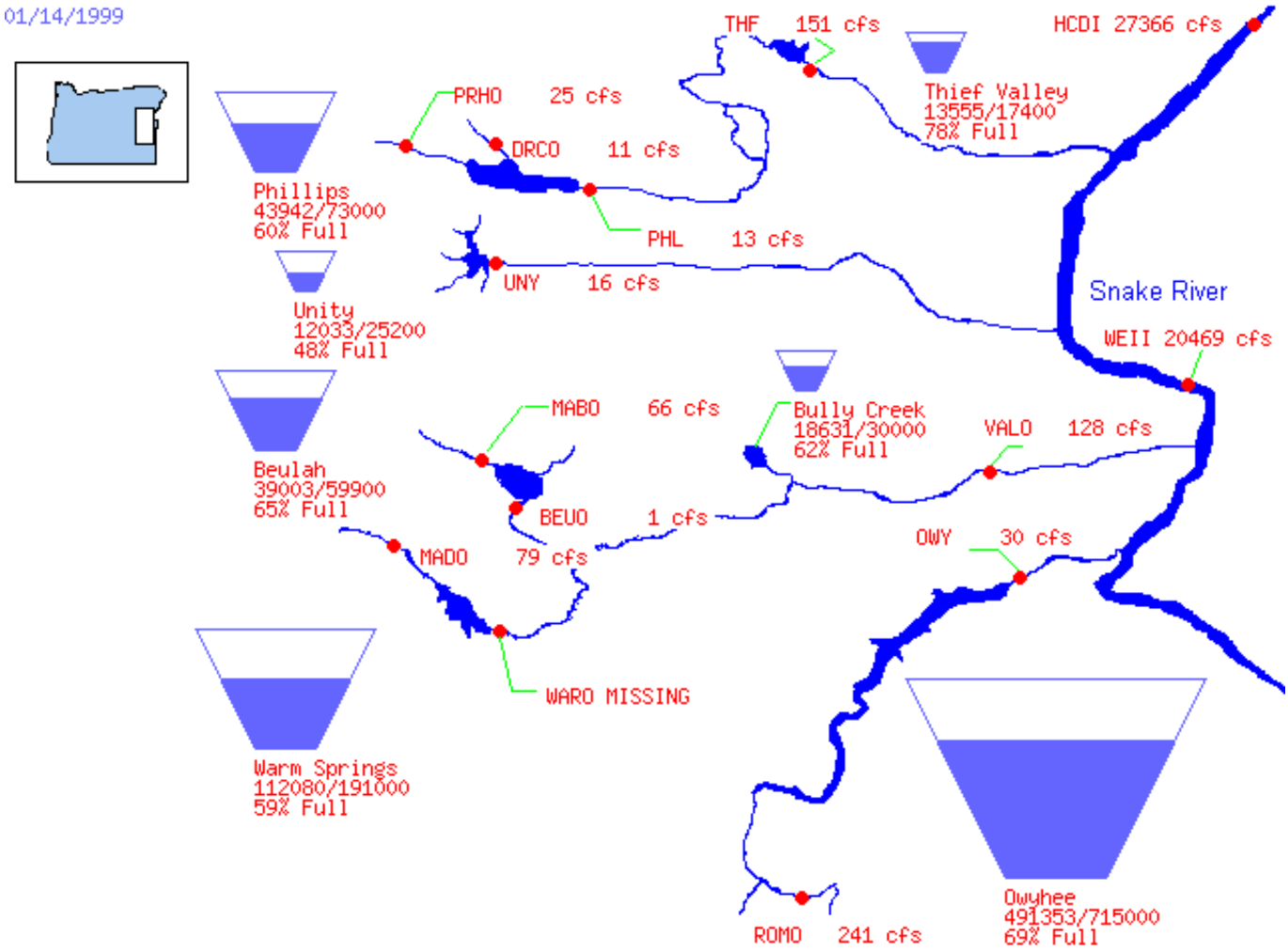
Clearwater River Basin					
RES-AF-LEWISTON ORCHARDS RE	3.00	0.79V	26	1.41E	56
SOL-AF-SOLDIERS MEADOW DAM,	2.37	1.29O	54	0.61E	211
Owyhee River Basin					
OWY-AF-LAKE OWYHEE NEAR NYS	715.00	480.27O	67	401.65	120
WLD-AF-WILDHORSE RESERVOIR	71.50	53.33V	75	30.45	175
Malheur River Basin					
BEU-AF-AGENCY VALLEY DAM &	59.90	36.50O	61	19.92	183
BUL-AF-BULLY CREEK RESERVOIR	30.00	17.95O	60	10.70E	168
WAR-AF-WARM SPRINGS RESERVOIR	191.00	108.11O	57	74.28	146
Powder River Basin					
PHL-AF-MASON DAM & PHILLIPS	73.50	42.65O	58	36.63E	116
THF-AF-THIEF VALLEY RESERVOIR	17.40	13.86O	80	14.99E	92
Burnt River Basin					
UNY-AF-UNITY RESERVOIR NEAR	25.20	10.40O	41	9.99	104
Umatilla River Basin					
MCK-AF-MCKAY RESERVOIR NR P	66.26	22.53V	34	20.85	108
CLS-AF-COLD SPRINGS DAM & R	38.33	12.13V	32	17.16	71
Deschutes River Basin					
CRA-AF-CRANE PRAIRIE DAM &	55.30	41.85I	76	37.35	112
CRE-AF-CRESCENT LK DAM & LK	86.90	69.78V	80	47.78	146
WIC-AF-WICKIUP DAM & RES ON	200.00	171.60I	86	134.95	127
OCH-AF-OCHOCO DAM & RES ON	45.24	25.89I	57	20.14	129
PRV-AF-ARTHUR R BOWMAN DAM	152.80	90.77I	59	91.20	100
HAY-AF-HAYSTACK DAM & RES O	5.64	4.74I	84	4.68E	101
WAS-AF-WASCO DAM & CLEAR LAKE	11.90	2.54V	21	4.50	56
Rogue River Basin					
AGA-AF-AGATE DAM AND RES ON	4.70	3.32V	71	2.51E	132
EMI-AF-EMIGRANT DAM & LK ON	39.00	19.72V	51	18.12	109
FIS-AF-FISH LK NR LAKE CR,	7.90	5.86I	74	5.07E	116
FOR-AF-FOURMILE LAKE, OR	15.60	12.11I	78	7.98E	152
HPD-AF-HOWARD PRAIRIE DAM &	60.60	48.58V	80	40.47E	120
HYA-AF-HYATT DAM & RES NR A	16.00	11.86V	74	10.34E	115
Tualatin River Basin					
SCO-AF-SCOGGINS DAM AND HEN	53.60	47.09I	88	26.79E	176
TOTAL OF 50 RESERVOIRS	18075.78	13189.66	73	12491.78	106

AF is acre-feet. AVG is published 30-year average, 1961-1990. Please note that all data are PROVISIONAL and subject to revision. This report is updated monthly, after the 15th of each month.


01/14/1999
CSCI 1104 cfs
Cascade
468958/653200
72% Full
Deadwood
124093/161900
77% Full
DEDI 52 cfs
PRPI 2449 cfs
PRLI 300 cfs
HRSI 1996 cfs
PLEI 2049 cfs
Arrowrock
200900/286600
70% Full
PARI 764 cfs
BIGI 186 cfs
BTSI 408 cfs
Anderson Ranch
351024/423200
83% Full
BSEI 0 cfs
LUC 169 cfs
BRFI 238 cfs
Lake Lowell
110031/159365
69% Full
Lucky Peak
84948/264400
32% Full
ANDI 309 cfs


01/14/1999
HENI 38 cfs
Henry's Lake
88992/90000
99% Full
Grassy Lake
12679/15180
84% Full
Island Park
115169/135205
85% Full
ISLI 610 cfs
Jackson Lake
595246/847000
70% Full
TEAI 515 cfs
REXI 2360 cfs
ALPY 1624 cfs
GREY 247 cfs
HEII 3117 cfs
SALY 436 cfs
PALI 2480 cfs
Milner
35720/38000
94% Full
MILI 8293 cfs
BFTI 4197 cfs
Ririe
39714/80540
49% Full
AMFI 8066 cfs
MINI 8017 cfs
Palisades
1013056/1200000
84% Full
Lake Walcott
35597/95180
37% Full
American Falls
1145363/1672590
68% Full


01/14/1999
CKKO 451 cfs
Prineville
Ochoco
26300/44247
59% Full
OCHO 105 cfs
CRPO 167 cfs
PRVO 302 cfs
Prineville
91072/152800
60% Full
DEBO 888 cfs
Bend
BENO 1009 cfs
Crane Prairie
43628/55300
79% Full
CRAO 126 cfs
LAPO 155 cfs
Wickiup
178747/200000
89% Full
WICO 308 cfs
Crescent Lake
70999/86900
82% Full
CREO 10 cfs


01/14/1999
THF 151 cfs
HCDI 27366 cfs
Thief Valley
13555/17400
78% Full
PRHO 25 cfs
DRCO 11 cfs
Phillips
43942/73000
60% Full
PHL 13 cfs
UNY 16 cfs
Snake River
Unity
12033/25200
48% Full
WEII 20469 cfs
MABO 66 cfs
Bully Creek
18631/30000
62% Full
VALO 128 cfs
Beulah
39003/59900
65% Full
BEUO 1 cfs
OWY 30 cfs
MADO 79 cfs
WARO MISSING
Warm Springs
112080/191000
59% Full
Owyhee
491353/715000
69% Full
ROMO 241 cfs

CORPS OF ENGINEERS, NORTH PACIFIC DIVISION
REPORT FOR JANUARY 1999 CRWMG MEETING

Libby.

The reservoir began November near elevation 2433.5 feet . Outflows were a flat 6 kcfs November 1 – 18 and were reduced to 4 kcfs through 31 November at the request of BPA. Flows were reduced at the rate of 1,000 cfs per day as coordinated with U.S.F.W.S. bulltrout constituents. The November inflow was 3.88 kcfs, 80 % of average. The end of November elevation was 2431.5 feet. Daily load shaping occurred on weekdays and weekend flows were a flat 10 kcfs between 1 - 18 December. The daily average outflow in December was 19.1 kcfs. The December inflow was 3.5 kcfs, 95 % of average. The end of December elevation was 2405.6', 5.4 feet below the upper flood control rule curve. The January final volume forecast for April – August was 6.6 MAF, 104% of normal. The target end of month flood control elevations for January and February are 2375.7' and 2345.4'.

Albeni Falls.

Albeni Falls started drafting for winter flood control September 8 and reached minimum pool 2055' on November 22. This is the third year of a 3 year winter test to keep Albeni Falls elevation higher than normal (2051' is normal) in the hopes this will encourage kokanee to spawn in cleaner gravels. The project operated 2055' – 2055.5' through December 31 and started operating 2055' – 2056 in January. Outflows averaged 16.8 kcfs and 15.2 kcfs in November and December, respectively.. The unregulated inflow to Lake Pend Oreille was 9.1 kcfs, 74% of average in November and 10.0 kcfs, 84% of average in December.

Dworshak.

Outflows were 1.3 kcfs (minimum flow) between September 1 and January 6. Outflows were increased on January 7 in response to the volume forecast. The end of November and December elevations were 1523.19' and 1533', respectively. Inflow in November was 2.62 kcfs, 92 % of average. Inflow in December was 3.7 kcfs, 116% of normal. The January final volume forecast for April – July was 3.5 MAF, 130% of normal. The target end of month flood control elevations for January and February are 1526.2' and 1491.5', respectively.

Lower Snake Projects.

Lower Granite November and December inflow was 29.4 kcfs, 99% and 39.1 kcfs, 118% of average, respectively. . Lower Granite was returned to normal operating range November 14 as juvenile fish numbers had dropped off. And is currently operating for flood control at Lewiston. Lower Monumental and Little Goose are operating in their normal pool levels Ice Harbor operating range is limited because of flip lip construction work which started in September and is expected to be completed in March. Goal is no spill and to maintain enough storage in reservoir to give the contractor at least 3 hours to vacate downstream work area before spilling Dredging below Lower Monumental Dam will be done this winter to take care of the navigation hazard. This will allow Ice Harbor to operate at MOP next spring. The January final volume forecast for April – July at Lower Granite was 23.8 Maf,

Willamette Basin Projects.

The Willamette projects began December by drafting water stored during the end of November. Cottage Grove, Dorena and Foster were at minimum conservation pool on 1 December, while all other projects were drafting. Another storm system that arrived during the first week of December stored more water in the reservoirs and pushed many streamflows back to bankful. By 13 December, most projects were back at their rule curves. The exception being Hills Creek, Lookout Point and Fern Ridge which required another week to reach their rule curves. On Saturday, 26 December, the projects were within 2% of the rule curve. A strong storm hit the Willamette on Sunday, 27 December, bringing as much as 5.1 inches of rain to some locations. All the projects were reduced to minimum outflows on 28 December. In spite of this, many streams reached bankful and flood stage. Goshen, Albany, Jefferson and Salem all reached or exceeded flood stage during the event. During the peak, the Willamette projects were 33% full. All projects started drafting by 30 December and reduced to 31.6% by 31 December.

Enc 3