State, and Tribal Fishery Agencies Joint Technical Staff

Columbia River Inter-Tribal Fish Commission
Nez Perce Tribe
Shoshone-Bannock Tribes
Idaho Department of Fish and Game
Washington Department of Fish and Wildlife

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Cindy Henriksen
Army Corps of Engineers
PO Box 2870
Portland, OR 97208-2870

John Wellschlager
BPA
PO Box 3621- PGPO
Portland, OR 97208-3621

Tony Norris
US Bureau of Reclamation
825 NE Multnomah, #1110
Portland, OR 97232

Dear Ms. Henriksen, Mr. Wellschlager, and Mr. Norris:

Planning for the 2005 migration season is underway. We are looking for ways to improve system operations and our decision tools that better meet the needs of ESA and non-ESA listed species and Biological Opinion objectives, while still fulfilling other societal benefits of the system. To this end, we offer the following observations, and recommendations.

Neither spring flow targets nor summer flow targets were met at McNary and Lower Granite in 2004. The agencies and tribes believe that the federal operators should make every effort to meet flow targets that are the foundation to achieve fish survival objectives and over all ESA recovery goals as outlined by the 2000 FCRPS Biological Opinion. We request that check-ins at points before and during the 2005 fish migration season occur between the federal operators and the fishery agencies and tribes to assure that meeting target flows is one of the highest priorities for operation of the FCRPS. We believe the current Regional Management Process provides sufficient opportunity for this communication. The following management recommendations illustrate operational modifications that should be considered by the federal operators as needed to help meet spring and summer flow targets.

As reservoir operations depend on water supply forecasts, which can vary widely due to natural variability, we believe greater caution should be used to avoid over-drafts. In 2004, there was concern by the salmon managers that the Federal Action Agencies wouldn't be able to meet the April 10th Upper Rule Curve (URC), as required in the 2000 Biological Opinion. The Climate Impacts Group (CIG) has developed new weather predictive tools that could be used by the Federal Action Agencies to better prevent or minimize the chance of over-drafting reservoirs. Hamlet et.al. (2003) has developed a "Refill to Least Flood Rule Curve" for Libby, using probabilistic streamflow forecasting, that should be explored. A one-year lead forecast

procedure developed by the CIG for the Columbia River at The Dalles should be considered and used in long-range operational planning (Hamlet and Lettenmaier, 2004).

Significant volumes of upper reservoir storage were evacuated in WY 2004 (December 25, 2003 through March 11, 2004) above what was needed to meet flood control or power system reliability needs before the salmon migrations began. For example 3.5 Ma F came out of the FCRPS in excess of what was required for lower Columbia chum winter operations. Despite being 20 feet below its upper rule curve (URC), Dworshak released 100 KaF of storage before the spring migration. As a result, the FCRPS projects missed their April 10th URCs by over 2 MaF (Table 1)—water that could have been used for spring migrants and to assure June 30 refill of storage water for summer flow augmentation. We understand that attractive power market prices may have been the main factor for these additional winter drafts above flood control needs; however, at the time the action agencies were deciding to make these power market drafts, climatologists were consistently predicting a dryer end to the winter snowpack season. We believe greater deference should be placed on long-term weather forecast as a decision tool before power market winter drafts are made that adversely affect meeting fish flow targets. Our concerns were outlined in a Salmon Managers Joint Technical memo dated April 6th, 2004, (http://www.fpc.org/fpc_docs/joint-technical/38-04.pdf).

The Salmon Managers proposed several adaptive management recommendations in 2004 to improve fish survival, and the majority were not implemented (Table 2). A request to conduct a test of the effectiveness of the RSW at Lower Granite to safely pass summer migrants went unanswered until it was too late to challenge the negative response. As a result, we have a Biological Opinion that depends very much on spillway weirs to increase fish survival rates, and no information on whether they will be effective for summer migrants. In addition, several Biological Opinion operations that the scientific information collected since 2000 increasingly supports, including spring and summer spill, and maintaining the McNary 1% turbine operational criteria, were either curtailed or eliminated.

As a result of not meeting the April 10th URCs, early spring flows in the Hanford Reach suffered, and juvenile stranding probability increased. The flow information in Tables 3a and 3b came from TMT presentations. The shading indicates a flow band excedence. Although there are 10 flow fluctuations per month, the magnitude of the flow fluctuation agreement excedence is greatest during April—exactly during the time when juveniles are most vulnerable to stranding and mortality. Daily flows were reduced on the weekend of April 17th and 18th, contrary to what the Action Agencies stated at TMT on April 14th. The Salmon Managers concerns over the early spring Hanford Reach operations were detailed in a joint technical memo dated April 20th, 2004 (http://www.fpc.org/fpc_docs/joint-technical/55-04.pdf).

References

Hamlet, A., Wood, A., Babu, S., McGuire, M., and D. Lettenmaier. 2003. New Tools and Resources for Streamflow Forecasting Applications. Conference: Climate and Water Resource Forecasts for the 2004 Water Year. Kelso, Washington.

(http://www.cses.washington.edu/cig/outreach/workshopfiles/kelso2003/Hamlet_Tools&Resources_Kelso03.pdf)

Hamlet, A., and D. Lettenmaier. 2004. 1-Year Lead Time Experimental Streamflow Forecasts for the Columbia River at The Dalles. University of Washington Climate Impacts Group, Seattle, Washington. (http://www.ce.washington.edu/~hamleaf/DallesForecast.html)

Table 1. WY 2004 Flood Control Operations.

	Flood Control Elevation (ft) 4/10/2004 (March Forecast)	Actual Elevation (ft) 4/10/2004	Difference in feet FC - Actual (feet)	Difference in Storage FC - Actual (KaF)
Libby	2443.0	2400.8	42.2	1635.3
Hungry Horse	3537.2	3520.4	16.8	366.8
Grand Coulee	1275.8	1268.4	7.4	538.8
GCL (shifted)	1272.2	1268.4	3.8	274.0
BRN	2055.1	2060.4	-5.3	-62.3
DWR (system)	1535.5	1544.7	-9.2	-127.9
DWR (local)	1554.1	1544.7	9.4	134.3

Table 2. Summary of WY 2004 System Operations Request and Implementation.

SOR	Date	Subject	Implemented?	Partially Implemented?
2004-1	16-Mar	McNary Turbine Operations	yes	
2004-2	30-Mar	L-Snake Spill and MOP		MOP-Yes; Spill delayed at LGS, IHR.
2004-3	12-Apr	L-Snake Spring Spill	no	
2004-4	12-Apr	L-Columbia Spring Spill	yes	
2004-5	14-Apr	Priest Rapids Spring flows		110 kcfs flows were weekly, not daily.
2004-6	22-Apr	L-Snake Spring Spill	no	
2004-7	4-May	Priest Rapids Spring flows		Weekend flows drop- fluctuations.
2004-8	5-May	Lower Granite Operations	no	
2004-9	7-May	Little Goose Operations	no	
2004-10	18-May	John Day, The Dalles Spill		COE didn't compensate for lost spill.
2004-11	18-May	MCN 1% Turbine Operations	no	
2004-12	25-May	Priest Rapids Spring flows	yes	
2004-13	15-Jun	McNary Spill Operations		BiOp MCN spill ended June 23rd.
2004-14	22-Jun	LIB (Flat) Summer Flows		Didn't draft to 2439 ft by Aug. 31.
2004-15	22-Jun	L-Columbia Summer Spill		BON 50 kcfs day (not 75 k), 15 days.
2004-16	29-Jun	DWR Early July Operations	yes	
2004-17	6-Jul	DWR Summer Operations	yes	
2004-18	24-Aug	DWR September Operations	yes	

Table 3a. Early Spring 2004 Hanford Reach Operations. Flow values are in kcfs.

Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Delta	Band	Delta-Band
1-Apr-04	74.5	71.1	89.3	80.1	18.2	30	
2-Apr-04	94.6	82.1	107.5	79.5	25.4	20	5.4
3-Apr-04	82.7	71.2	90.6	55	19.4	20	
4-Apr-04	71.7	70.5	73.5	55	3	20	
5-Apr-04	71.4	70.7	72.2	87.1	1.5	30	
6-Apr-04	71.4	70.7	72.2	82.4	1.5	30	
7-Apr-04	71.7	70.7	73.2	77.2	2.5	20	
8-Apr-04	71.9	70.4	82.6	70.6	12.2	20	
9-Apr-04	71.2	70.4	71.8	68.7	1.4	20	
10-Apr-04	71.6	70.7	72.7	59	2	20	
11-Apr-04	72.9	70.5	88.4	59	17.9	20	
12-Apr-04	73.6	70.9	85.7	79.3	14.8	20	
13-Apr-04	78	70.7	85.7	87.7	15	30	
14-Apr-04	106	71.3	130.5	100.6	59.2	30	29.2
15-Apr-04	101.8	79.8	110.2	92.7	30.4	30	0.4
16-Apr-04	103.7	87.4	122.8	99.6	35.4	30	5.4
17-Apr-04	93.1	71.6	123.2	78	51.6	20	31.6
18-Apr-04	97.3	78.7	121.2	78	42.5	20	22.5
19-Apr-04	124.9	79.8	183.6	105.9	103.8	30	73.8
20-Apr-04	149.1	145.5	152.9	129.9	7.4	40	
21-Apr-04	128.3	111.8	150.8	136.3	39	40	
22-Apr-04	104.7	82.4	126.1	126.6	43.7	40	3.7
23-Apr-04	106	90.2	113.8	101.4	23.6	30	
24-Apr-04	106.6	105.3	109.5	105	4.2	30	
25-Apr-04	105.8	104.1	107.3	105	3.2	30	
26-Apr-04	102.7	81	116	107.7	35	30	5
27-Apr-04	114.8	100.2	134.4	118	34.2	40	
28-Apr-04	126.6	110.6	151.9	119.4	41.3	40	1.3
29-Apr-04	117.7	109.2	122.5	113.3	13.3	40	
30-Apr-04	95.3	81.2	110	106.2	28.8	30	

Table 3b. Late Spring 2004 Hanford Reach Operations. Flow values are in kcfs.

Date	Ave.Q	Min.Q	Max.Q	Prog.Q	Delta	Band	Delta-Band
1-May-04	106.4	103.3	109.7	100	6.4	30	
2-May-04	108.2	100.6	129.4	100	28.8	30	
3-May-04	127.9	100.4	147.7	103.9	47.3	30	17.3
4-May-04	137.2	122.6	158.7	136.9	36.1	40	
5-May-04	125.3	99.6	138.3	126.4	38.7	40	
6-May-04	108.5	94.8	128	103.5	33.2	30	3.2
7-May-04	123.9	112.6	144.6	112.7	32	40	
8-May-04	117.9	102.5	145.1	111	42.6	40	2.6
9-May-04	107	105.4	110.1	111	4.7	40	
10-May-04	145.9	105.2	189.3	119.6	84.1	40	
11-May-04	157	138.5	187.8	149.1	49.3	60	
12-May-04	126.2	113.1	141.9	129.9	28.8	40	
13-May-04	128.4	112.8	149.3	128.2	36.5	40	
14-May-04	149.4	129.4	175.2	129.6	45.8	40	5.8
15-May-04	130	117.9	155.3	112	37.4	40	
16-May-04	138.1	119.9	154.7	112	34.8	40	
17-May-04	134.8	119	169.8	145.1	50.8	60	
18-May-04	138.9	115.3	159.2	136.6	43.9	40	3.9
19-May-04	145.1	119.1	161.7	138	42.6	40	2.6
20-May-04	136.2	125.1	156.9	139.2	31.8	40	
21-May-04	122	96.4	140.4	120.5	44	40	4
22-May-04	125.6	121	136.4	110	15.4	40	
23-May-04	123.5	120.3	127.5	110	7.2	40	
24-May-04	95.3	77.9	119.8	122.5	41.9	40	1.9
25-May-04	138.2	116.4	163	125.6	46.6	40	6.6
26-May-04	133.2	111.5	146.7	130.7	35.2	40	
27-May-04	144.6	112	155.7	127.5	43.7	40	3.7
28-May-04	139.1	125.1	154.1	142.3	29	60	
29-May-04	111.5	106	123	116	17	40	
30-May-04	125.3	116.3	145.3	116	29	40	
31-May-04	117.9	105.6	143.4	125.1	37.8	40	
1-Jun-04	137.9	112.2	147.9	104.9	35.7	30	5.7
2-Jun-04	110.5	96.5	133.3	115.6	36.8	40	
3-Jun-04	146.3	124.2	162.8	131.2	38.6	40	
4-Jun-04	158.6	145.5	174.9	147.7	29.4	60	
5-Jun-04	129.7	109.9	169.4	108	59.5	30	29.5
6-Jun-04	118.8	103.3	131.8	108	28.5	30	
7-Jun-04	120.9	108.9	131.7	151	22.8	60	
8-Jun-04	115.3	103.5	145.3	111.2	41.8	40	1.8
9-Jun-04	122.9	114.1	133.4	119.6	19.3	40	
10-Jun-04	150.7	133.6	179.6	120.5	46	40	6
11-Jun-04	171.5	160.7	180.3	151.4	19.6	60	
12-Jun-04	148.3	130.6	172.4	125	41.8	40	1.8

Sincerely,

Dave Statler, NPT

Cindy LeFleur, WDFW

Bob Heinith, CRITFC

Russ Kiefer, IDFG

Keith Kutchins, SBT