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SYSTEM OPERATIONAL REQUEST: 2002 C-5

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FROM: Don Sampson, *Executive Director*

DATE: May 2nd, 2002

SUBJECT: **May 2002 Flows for Hanford Reach, Lower Snake, and Lower Columbia**

The Columbia River Inter-Tribal Fish Commission, on behalf of its member tribes the Nez Perce Tribe, the Yakama Nation, the Confederated Tribes of the Umatilla Reservation, and the Confederated Tribes of the Warm Springs Reservation, requests the following hydrosystem operations.

SPECIFICATIONS:

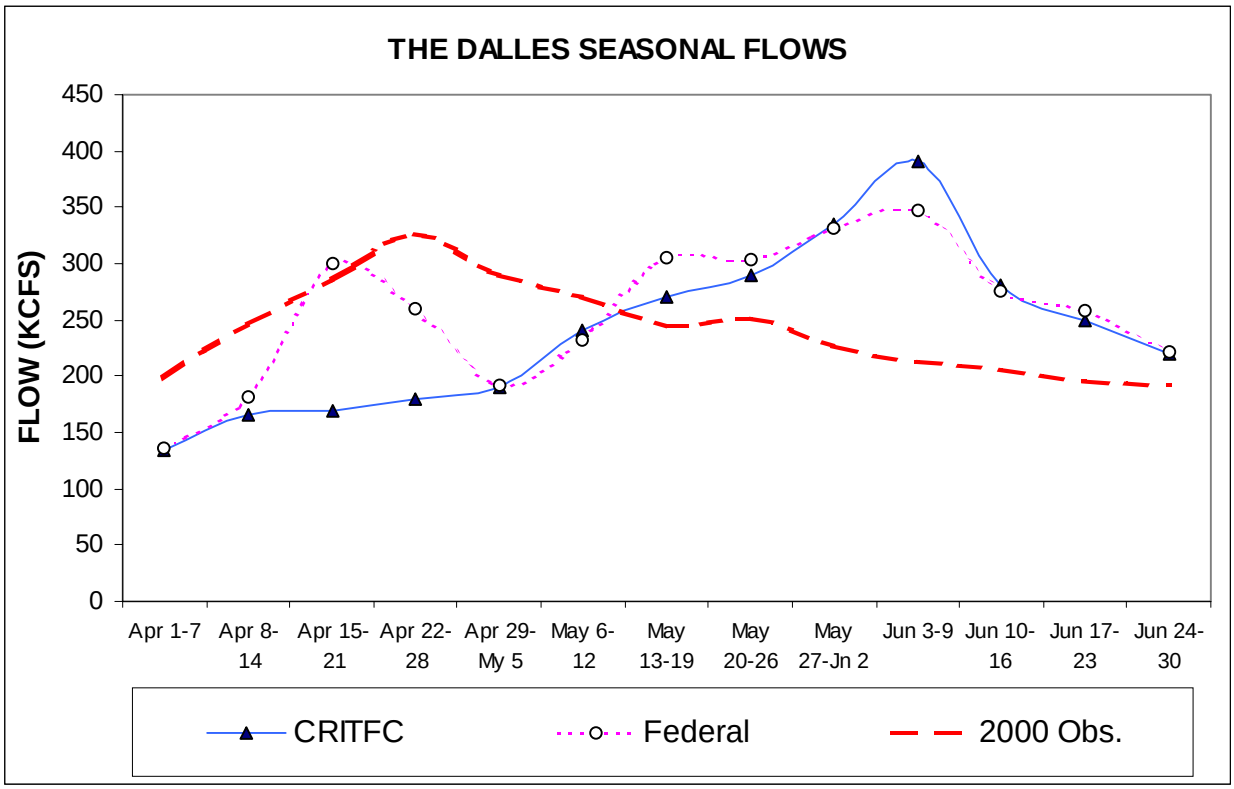
Assume initial pool elevations relative to Sunday, April 21, 2002. Operate appropriate reservoirs to meet BiOp flow targets at McNary Dam (260 kcfs) and Priest Rapids (135 Kcfs) as well as meeting the criteria for Hanford Reach flows. Any flow reduction should be accompanied by an appropriate fluctuation rate to reduce stranding in the Hanford Reach as well as reducing the risk of slope failure due to rapid flow fluctuations. At the current flow rates of ~130 Kcfs at Priest Rapids that would be a band of no more than 10 kcfs change in 24 hours, which would equate to a change of no more than approximately 1.2 feet.

Current SSARR runs show a dramatic reduction in flows at McNary from 220 kcfs on May 5 to a low of 136 kcfs on May 12 and last through May 15, which would have negative impacts on juvenile outmigrants, adult salmon migrants, water quality, Hanford Reach stranding, and the Zone 6 tribal treaty fisheries, which is currently in progress. Refer to attachments for calculations on potential operations to mitigate for the predicated low flows.

JUSTIFICATION:

The requested operation will generate steady to increasing flows, mimicking a normative, natural peaking hydrograph in the lower Columbia as compared to the proposed federal operations (see figure below). Current forecasted flow projections suggest a sharp drop in early May. This dramatic drop would have negative impacts to adult salmon migrants, water quality, juvenile migrants, and the Zone 6 tribal treaty fisheries.

About 80% of all the adult spring chinook salmon and steelhead kelts for the 2002 migration will be in the mainstem Columbia during the requested operations. The Columbia Basin Fish and Wildlife Authority has noted that adults are attracted to fast flowing water and that high flows favor upstream migration (CBFWA 1991). Migration delays to adult fish from reduced flows can contribute to reproductive failure (CBFWA 1991). Low flows also increase the frequency that adult fishways are operated out of criteria.



Further it is our understanding that Banks Lake can be operated up to 5 feet below full. Current elevation is ~2.1 feet below full. Thus, Reclamation's current pumping into Banks Lake could be reduced to help increase flows below Grand Coulee. Current elevation of Grand Coulee is 1244. We propose using additional storage by drawing down Grand Coulee to ~msl 1238 to meet the flow targets in the lower river at Priest Rapids and McNary Dam or until natural flows increase to meet the BiOp flow targets. The current SSARR shows a freshet occurring mid to late May and continuing into June. We would propose to use a portion of this water to back fill any additional storage we use now to meet BiOp flow targets. Considering the time of year with respects to cooler temperatures and lack of people for recreation, it would appear that this would

be the best time of year to have lower pool elevations if meeting downstream flow targets requires additional drafting of Lake Roosevelt.

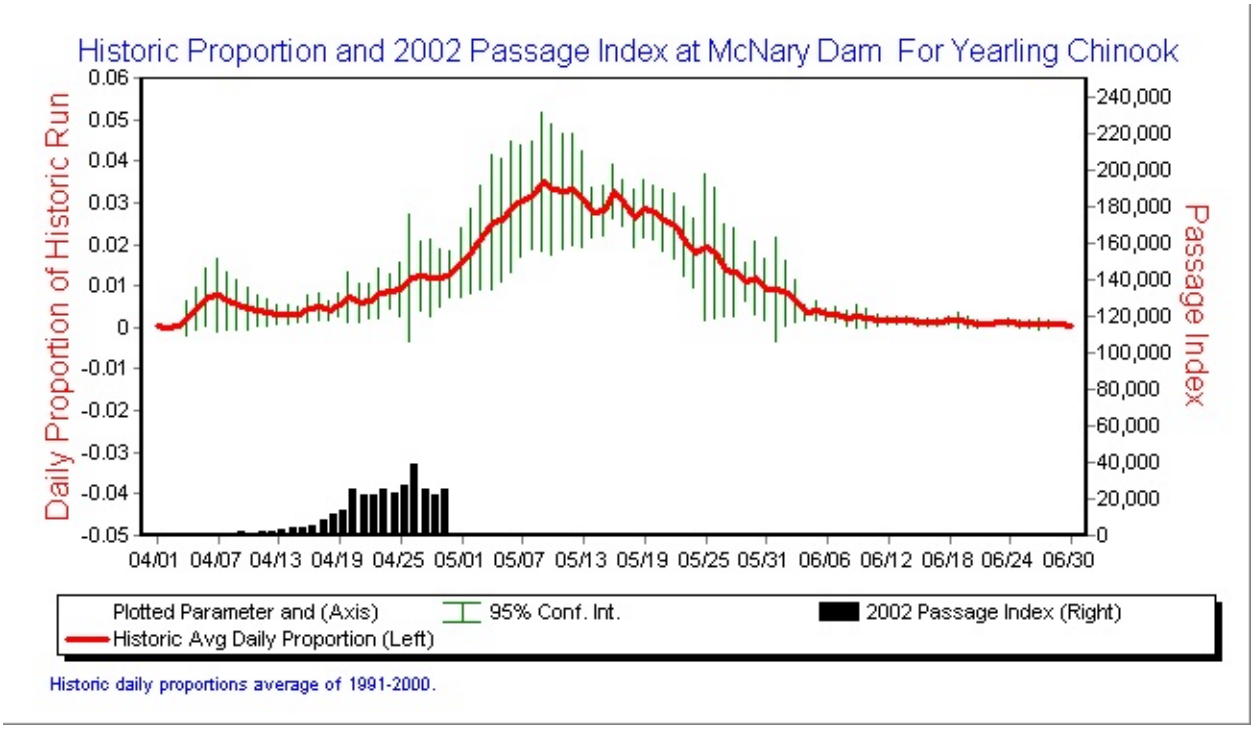
Current vs. Historic Fish Data:

The following discussion of historic versus present fish passage emphasizes the following points:

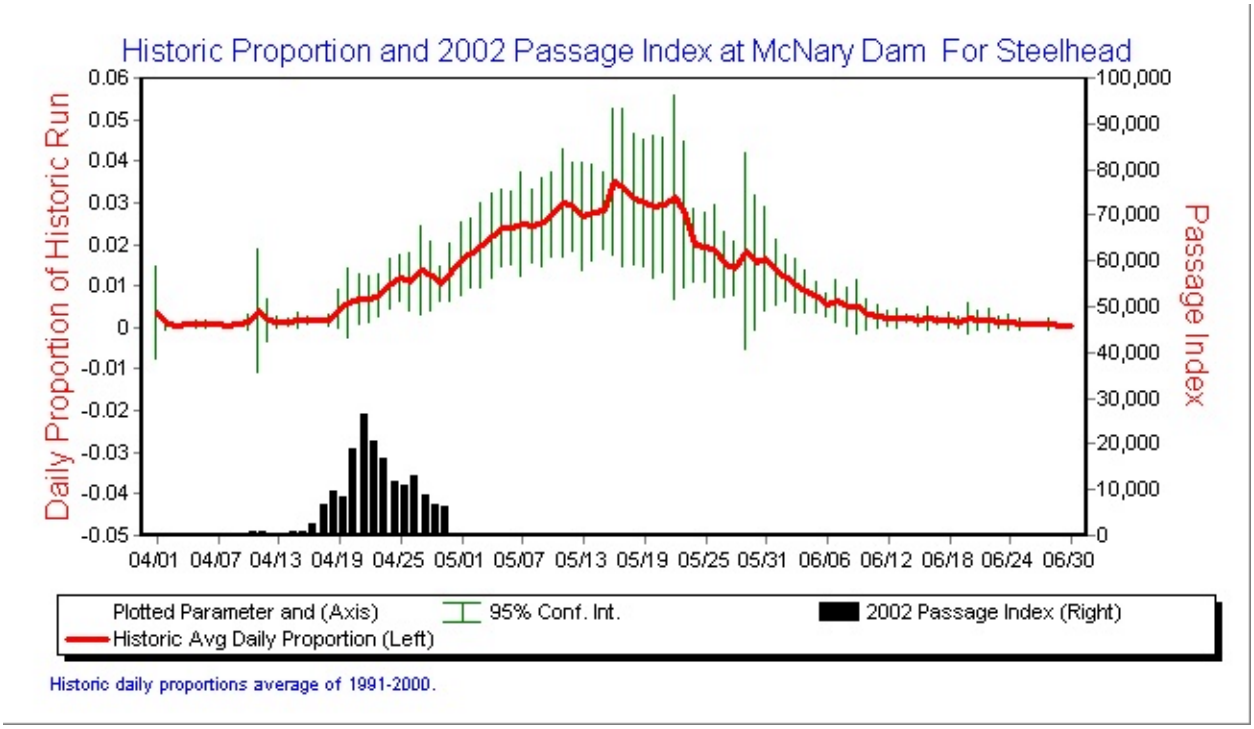
- The historic timing curve shows a rapid increase in rate of passage beginning May 1 and continuing increase the first ten days of May.

- Presently the passage of chinook is not increasing and the passage rate of steelhead is declining.

In the following plot we see that the largest numbers of yearling chinook smolts pass McNary Dam during the month of May. The historic average timing curve shows a rapid increase in rate of passage (steeper increasing slope) beginning May 1 and lasting the first 10 days of May. Coinciding with this increasing passage has been the general pattern of increasing flows during May. The past nine days in April of 2002 have seen a fairly flat passage of yearling chinook at McNary Dam. During this time flows have been decreasing from 300 kcfs to around ~200 kcfs. This drop in flow appears to have suppressed the normal increase in yearling chinook smolt passage that should typically occur at this time. If flows continue to be below average for early May, then the normal increasing passage of yearling chinook during May will also most likely be delayed. PIT tagged wild chinook from the Yakima and Walla Walla River basins have been detected at McNary Dam since April 4. PIT tagged wild chinook from the Snake River basin have been mostly (97%) detected at McNary Dam since April 20 (see attached table).



In the following plot we see that the largest numbers of steelhead smolts also pass McNary Dam during the month of May. The historic average timing curve shows a rapid increase in rate of passage (steeper increasing slope) beginning May 1 and lasting the first 10 days of May. Coinciding with this increasing passage has been the general pattern of increasing flows during May. But unlike the flat passage of yearling chinook during the past nine days in April 2002, we see a decreasing passage of steelhead. During this time flows have been decreasing from 300 kcfs to around 200 kcfs. This drop in flow appears to have done more than just suppress the normal increase in steelhead smolt passage; it appears to have caused passage of steelhead to drop. This is a sign that flows currently are too low to adequately move steelhead through the hydro system. If flows continue to be below average for early May, then the normal increasing passage of steelhead during May could be delayed enough to cause reduced in-river survival in 2002. PIT tagged wild steelhead from the Yakima River and Snake River basins have been the most consistent groups detected at McNary Dam since mid-April (see attached table).



In addition detection of PIT tagged steelhead and Chinook juveniles at McNary Dam show that wild and hatchery Chinook and steelhead originating throughout the Snake River Basin and the Yakima River basin are passing the project. Yakima River stocks are maintaining a strong presence at McNary Dam.

If this SOR can not be meet we request a written explanations from the federal operators.

Attachements:

1. Grand Coulee

Flows are projected to drastically decrease at Grand Coulee, directly influencing the spring flow targets at Priest Rapids and McNary. Essentially, Grand Coulee contains water available to supplement flows in the lower Columbia River. According to calculations, it appears that a total volume of 600 Kaf of water would be involved if Grand Coulee were to pass inflows and draft approximately 30 Kcfs of water for ten days. Assuming the current (4-30-02) elevation to be 1245 feet AMSL (useable storage = 1978 Kaf), a 600 Kaf draft would lower the reservoir to approximately 1235 feet AMSL (useable storage = 1378 Kaf). According to the latest flow projections, McNary flows may decrease as low as 136 to 178 Kcfs between May 7th and May 15th, 2002. A 30 Kcfs increase from Grand Coulee would drastically assist flows at McNary.

However, some issues have arisen concerning the pumping of water into Banks Lake if Grand Coulee were to decline below 1240 feet AMSL. The full pool elevation at Banks Lake is 1570 feet AMSL and current irrigation outflows are approximately 7000 cfs. Also, it is known that the BOR is authorized to operate Banks Lake five feet below the full pool elevation. As of 4-29-02, the elevation of Banks Lake was 1267.9 feet AMSL, leaving 2.9 feet of water available before reaching the level five feet below full pool. Additionally, according to personnel at the Grand Coulee Power Office, one-foot of reservoir water is equivalent to 24,000 acre-feet of water, therefore with 2.9 feet of available water, a volume of 69,600 acre-feet is currently available for irrigational uses if inputs from Grand Coulee were to stop. At a current rate of output of 7,000 cfs, the 2.9 feet of available water would last approximately five days. It should be pointed out that that the pumps at Grand Coulee will continue to be operable for inputs to Banks Lake below an elevation of 1240 feet AMSL, therefore, the five day supply of water would act essentially as a water supply “cushion. It may also be advisable, if possible, to limit irrigational uses from Banks Lake over the anticipated low flow period.

At any rate, the 600 Kaf of water used now from Grand Coulee could be made up in a period of less than a week during the spring freshet and still meet flow objectives at Priest Rapids and Grand Coulee.

2. Brownlee

The Brownlee reservoir ended April at 2062.1 feet AMSL; its end of April flood control target was 2064.4 feet AMSL. Over the past several days, Brownlee has been refilling. The Brownlee reservoir would decrease approximately 1 foot per day if the reservoir were to pass inflows and draft 5 Kcfs of water during the project low flow period. It should be pointed out that the April Mid-month water supply forecast predicted only 61% of the average runoff at Brownlee. However, it is anticipated that the relatively minor volume of water potentially used from Brownlee could be made up in a short period after the onset of the spring freshet. At any rate, water released from Brownlee would provide further assistance to flow targets at McNary.