FISH PASSAGE CENTER

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MEMORANDUM

TO: Rob Lothrop, CRITFC
Bill Tweit, WDFW

Michele DeHart

FROM: Michele DeHart

DATE: April 6, 2004

RE: Transportation of fall chinook smolts and related fall chinook migration and tag data concerning summer spill for fish passage

In response to your request for smolt to adult return rates on transported fall chinook the Fish Passage Center staff reviewed and analyzed the available PIT tag data. We calculated smolt-to-adult returns for transported and non-transported fall chinook from the Snake and Columbia rivers. This analysis of transported versus in-river migrating smolt-to-adult returns is preliminary; NOAA Fisheries staff will conduct the official analysis.

Our review resulted in several observations about fall chinook migrations, in addition to the smolt-to-adult returns, that relate directly to the present discussions regarding summer spill for fish passage. Thus far all of the discussions surrounding summer spill have centered on the BPA SIMPAS model analysis of average conditions with point estimates of juvenile passage data. The data we reviewed, such as actual adult return PIT tag data was not recognized or considered.

We have summarized our conclusions below, followed by a detailed discussion of each point. These data suggest that the benefits of summer spill for fish passage have been underestimated in deliberations thus far and that a decision to eliminate summer spill carries a significant risk of being in error, particularly in regard to impact on returning adults and assumptions regarding the benefits of the transportation. In accord with our normal FPC procedures, copies of this memorandum responding to your data request have been circulated to other CBFWA members and posted on the FPC web site.

- Smolt-to-adult return rates for transported fall chinook indicate that a spread the risk policy such as that implemented for spring chinook should be considered for fall chinook. The adult return data indicates that the best returns occurred when spill occurred at McNary throughout the summer period. The fall chinook SARs on transported fish are disappointing and may not achieve the recovery goals

assumed in the 2000 BIOP. This will affect the analysis of impacts of the summer spill program modifications because a spread the risk policy will result in a larger proportion of Snake River fall chinook migrating in-river. The SIMPAS analysis conducted to date did not examine the impacts of discontinuing summer spill with the implementation of a spread the risk policy for transportation.

- PIT tagged adult fall chinook actual returns from 1994 through 2001, that were detected as juveniles, indicate that a large proportion of the fall chinook that survived to return as adults migrated, as juveniles, past Ice Harbor in late July and August and past McNary in August. This indicates that the SIMPAS predictions of impact on adult returns should be regarded with caution because the juvenile passage distribution assumed in BPA's analysis does not reflect actual adult return data and does not provide a robust basis for decisions. Spill may be much more important to adult returns than inferred from juvenile modeling data.
- Review of the data and research results indicates that there is a flow survival and flow travel time relationship for fall chinook. Analysis of alternative management scenarios and mitigation offsets have not considered or utilized this information. Low flow conditions will shift the passage distribution to later in the migration. SIMPAS analysis of average conditions does not capture this effect because it does not vary flow nor does it relate flow to passage distribution. Elimination of spill in August as discussed by BPA will affect a larger proportion of the migration in low flow years than estimated with their model.
- Our review of the data shows that a comprehensive system wide life cycle monitoring program is needed for fall chinook. We have developed an outline of a PIT tagging monitoring program that would assist the agencies and tribes in deliberations of mitigation and protection hydrosystem actions needed for fall chinook.

Fall chinook smolt-to-adult returns

Smolt-to-Adult return rates (SARs) of subyearling fall chinook for comparing in-river versus transportation migration routes based on available regional PIT tag data.

The PIT tag data available for subyearling fall chinook originating in the Snake River basin above Lower Granite Dam consists of wild fall chinook PIT tagged in the mainstem Snake and Clearwater river above Lewiston and hatchery fall chinook PIT tagged for the supplementation releases made at and near the Pittsburg Landing, Captain Johns Rapids, and Big Canyon Creek acclimation ponds over the years 1995 to 2001. Typically, over 95% of the PIT tagged subyearling fall chinook are hatchery fish. Because the goals of these PIT tag studies required keeping the fish in-river, there were low numbers of PIT tagged subyearling chinook routed to transportation until 2001 when NMFS began a multi-year transport evaluation.

Until the NMFS transportation study, most PIT tagged subyearling fall chinook in the Snake River basin have been purposely returned-to-river for in-river survival estimation. Only PIT tagged fish arriving the transportation sites during the standard timed subsamples were being transported. Consequently, prior to 2001 the sample size for this group was very small. Therefore, for this analysis all PIT tagged smolt detected in the raceways or sample rooms, regardless of prior detection at an upstream dam, were combined to create the transportation category. Fish first-time detected at Little Goose Dam and either transported at Little Goose or

returned to river and then transported at Lower Monumental Dam were converted to Lower Granite Dam equivalents by dividing by the CJS survival estimate (derived from the Cormack Jolly Seber Model) between Lower Granite tailrace and Little Goose tailrace. Likewise for first-time detected fish at Lower Monumental Dam, the smolt numbers transported were expressed in Lower Granite Dam equivalents. The sum of all PIT tagged smolts from the four transportation sites expressed in Lower Granite Dam equivalents determined the initial juvenile sample size used in the development of smolt to adult return rates.

The in-river PIT tagged subyearling fall chinook with first-time detections at Lower Granite, Little Goose, Lower Monumental, or McNary dams were each divided by the reach survival component to create the total smolts in Lower Granite Dam equivalents. Because the number of PIT tagged smolts with a detection at a transportation site is a known count, and the number of PIT tagged smolts transported or returned-to-river at each sites is a known count, the only estimation required is the expansion to Lower Granite equivalent and this is done similarly for both in-river and transported fish. This make the comparison of the transported category termed T in Figure 1 and the in-river category termed C1 in Figure 1 the most direct comparison between the two modes of migration through the hydro system. With the exception of one year (1998) the SARs for the in-river fish exceeded the survival of transported fish. While this trend was consistent among years, the low sample sizes for transported fish prior to 2001 must be considered. The most conservative conclusion from the present data is that there appears little difference between PIT tagged subyearling chinook transported or bypassed at collector dams.

The in-river PIT tagged subyearling fall chinook that most closely relates to the untagged population is termed C0 in Table 1. This group must be estimated by first determining the population at Lower Granite Dam and then subtracting off all first-time detected fish at Lower Granite, Little Goose, Lower Monumental, and McNary dams, with numbers from each site divided by the appropriate survival component to create a result in Lower Granite Dam equivalents. The highest SAR for the C0 category occurred for migration year 1999 which had no PIT tagged fish overwintering until the following year. The very high flows of 1999 that extended into the mid-July of that year, and associated spill, may have allowed many subyearling chinook to pass undetected that year under good in-river conditions. The SAR of C0 category subyearling fall chinook appears to be higher than the SAR of either transported or bypassed subyearling migrants for the seven years of samples. A caveat to the above conclusion is a methodological issue with the C0 inriver group, which may require additional resolution. We found a possible discrepancy between CJS estimates of collection efficiency, and FGEs reported in the 2000 FCRPS BiOp, which may affect numbers of smolts in the C0 group. The bypass FGE in Table D-2 of the 2000 FCRPS BiOp is 53% at Lower Granite Dam. With any spill at Lower Granite Dam during the last month of the spring spill program, ending June 20, the effective collection efficiency for subyearling chinook for the season would tend to be somewhat lower than the 53% FGE level. However, the CJS model for the aggregate subyearling chinook was greater than 53% in 4 of the 7 years investigated (0.66 in 1995; 0.63 in 1996; 0.41 in 1997; 0.47 in 1998; 0.43 in 1999; 0.56 in 2000; and 0.68 in 2001). This may lead to a bias in C0 estimated numbers of smolts being too low, and therefore, the SARs being too high. However, even if one were to double the C0 smolt, the SAR of C0 category subyearling fall chinook would still appear to be higher than the SARs of the other two categories in each year.

PIT tag detections systems in the Snake River end operation on October 31, and begin again the next spring. Consequently, fish passing during this period are not detected. However, for fall chinook smolts that overwintered and were detected only during the following year at one

or more dams as a yearling, the SARs were over 1% in all cases where large enough smolt numbers were present to provide some adult returns (Table 2). Although these SARs are higher than that of their subyearling chinook counterpart, it is difficult to make a direct comparison because the number of smolts overwintering cannot be expanded to Lower Granite equivalents due to the lack of an overwintering estimate of survival. It appears that even after consideration of these holdover migrants little difference may still exist between transport and in-river survival during the following year since the raw SARs shown in Table 2 are fairly similar between categories.

NMFS began a transportation study at McNary Dam in 2001, but also had large numbers of PIT tagged subyearling fall chinook released in 1999 and 2000 for facility survival studies (Table 3). These latter PIT tagged fish were released in the gatewell for the test group and in the tailrace for the control group. Since most gatewell fish were return-to-river, there were only limited numbers of smolts transported. The SARs of the transported smolts were less than that of the in-river migrants, but these results may simply imply that no real difference occurs between the two categories. The partial returns of the full transportation study began in 2001, show that the SARs of the transported and in-river smolts, based on returning jacks and 2-salt adults, are the same. However, 3 and 4-year ocean fish from the 2001 outmigration are yet to return so complete SARs are not possible. But these trends are suggesting that transportation is likely not showing any benefit over in-river migration routes.

So in summary our preliminary review of fall chinook PIT tag data is not showing a benefit from transportation over in-river migration. Given this information it may prove more advantageous to the migrating fall chinook to adopt a spread the risk policy for fall chinook (similar to spring chinook) and adopt improved in-river migration strategies.

Table 1. Smolt-to-adult survival rates (SARs) from LGR-to-LGR for PIT tagged hatchery and wild subyearling fall chinook released in the mainstem Snake and Clearwater rivers above Lewiston, Idaho, within three categories of outmigration status.

Subyearling fall chinook migration year 1995
(includes 90 smolts partially outmigrating in 1996)

category	smolts	adults	SAR
C0	296	24	8.11%
C1	5,021	45	0.90%
T	1,338	10	0.75%
LGR pop.	category#	%categories in pop.	
7,049	6,655	94.4%	

Subyearling fall chinook migration year 1996
(includes 217 smolts partially outmigrating in 1997)

category	smolts	adults	SAR
C0	794	23	2.90%
C1	9,060	46	0.51%
T	1,105	4	0.36%
LGR pop.	category#	%categories in pop.	
11,232	10,959	97.6%	

Subyearling fall chinook migration year 1997
(includes 607 smolts partially outmigrating in 1998)

category	smolts	adults	SAR
C0	4,453	21	0.47%
C1	37,754	55	0.15%
T	2,831	4	0.14%
LGR pop.	category#	%categories in pop.	
45,803	45,038	98.3%	

Subyearling fall chinook migration year 1998
(includes 490 smolts partially outmigrating in 1999)

category	smolts	adults	SAR
C0	3,270	31	0.95%
C1	44,801	83	0.19%
T	2,174	9	0.41%
LGR pop.	category#	%categories in pop.	
50,400	50,245	99.7%	

Subyearling fall chinook migration year 1999
(no smolts outmigrated in 2000)

category	smolts	adults	SAR
C0	2,479	210	8.47%
C1	19,155	254	1.33%
T	2,428	21	0.86%
LGR pop.	category#	%categories in pop.	
24,280	24,062	99.1%	

Subyearling fall chinook migration year 2000
(includes 223 smolts partially outmigrating in 2001)

category	smolts	adults	SAR
C0	423	10	2.36%
C1	5,391	35	0.65%
T	919	6	0.65%
LGR pop.	category#	%categories in pop.	
6,832	6,733	98.6%	

Subyearling fall chinook migration year 2001
(only jacks and 2-salt available, approx 50% of return)
(includes 247 smolts partially outmigrating in 2002)

category	smolts	adults	SAR
C0	2,737	59	2.16%
C1	11,992	40	0.33%
T	30,596	57	0.19%
LGR pop.	category#	%categories in pop.	
45,621	45,325	99.4%	

Legend for categories (CJS survival estimates are used to convert smolt numbers to LGR equivalents)

C0	Undetected at 4 transport sites, but surviving to MCN tailrace
C1	Detected at one or more of 4 transport sites
T	Transported at one of 4 transport sites regardless of prior detection upstream

Table 2. Smolt-to-adult survival rates (SARs) for fall chinook completely holding over to migrate as yearlings for PIT tagged hatchery and wild subyearling fall chinook released in the mainstem Snake and Clearwater rivers above Lewiston, Idaho, within two categories of outmigration status.

Migration year 1995 fall chinook completely outmigrating in 1996 (66 smolts detected)

category	smolts	adults	SAR
C	54	0	0.0%
T	12	0	0.0%

Migration year 1996 fall chinook completely outmigrating in 1997 (436 smolts detected)

category	smolts	adults	SAR
C	375	5	1.3%
T	61	1	1.6%

Migration year 1997 fall chinook completely outmigrating in 1998 (814 smolts detected)

category	smolts	adults	SAR
C	733	9	1.2%
T	81	0	0.0%

Migration year 1998 fall chinook completely outmigrating in 1999 (862 smolts detected)

category	smolts	adults	SAR
C	817	27	3.3%
T	45	2	4.4%

Migration year 1999 fall chinook had no outmigrants detected in 2000 due to detection of old 400 kHz PIT tags.

Migration year 2000 fall chinook completely outmigrating in 2001 (504 smolts detected)

category	smolts	adults	SAR
C	467	8	1.7%
T	37	0	0.0%

Migration year 2001 fall chinook completely outmigrating in 2002 (1,049 smolts detected) (only jacks and 2-salt available, approx 50% of return)

category	smolts	adults	SAR
C	1,017	48	4.7%
T	32	2	6.3%

Legend for categories (no survival estimates available to convert smolt numbers of fish totally outmigrating as yearlings to LGR equivalents as subyearlings)

C	Detected at any of 7 dams with PIT tag detection capability totally in the year following the migration year
T	Transported at one of 4 transport sites regardless of prior detection upstream in the year following the migration year

Table 3. Smolt-to-adult survival rates (SARs) from McNary-to-Bonneville Dam for subyearling fall chinook PIT tagged and released from McNary Dam within two categories of outmigration status.

Subyearling fall chinook migration year 1999
(tagged fish released for gatewell or tailrace location)

Category	smolts	adults	SAR
C	45,880	83	0.18%
T	2,224	2	0.09%

Subyearling fall chinook migration year 2000
(tagged fish released for gatewell or tailrace location)

category	smolts	adults	SAR
C	48,862	257	0.53%
T	608	0	0.00%

Subyearling fall chinook migration year 2001
(tagged fish released for barge or river location)
(only jacks and 2-salt available, approx 50% of return)

category	smolts	adults	SAR
C	38,594	29	0.08%
T	23,196	18	0.08%

Legend for categories

C	McNary tailrace or river routed PIT tagged smolts
T	Gatewell fish detected on raceway/sample room routes on transportation days or fish routed to barge routed and not subsequently detected at a downstream dam

The importance of spill for fish passage in August
Fall chinook adult returns, migration timing as juveniles

Most of the analyses that have been conducted to date exploring the impact of eliminating spill in July and August have been based on a single set of conditions in the SIMPAS model using point estimates of juvenile data and average juvenile passage distribution data. We considered the available empirical data. We reviewed all of the adult PIT tagged fall chinook that were detected in the hydrosystem as juveniles and determined when they were observed in the hydrosystem as juveniles. This was done in order to understand the importance of spill for fish passage in August at Ice Harbor and in the Lower Columbia River.

The following tables show the proportion of adult PIT tagged fall chinook returns, which passed McNary and Lower Granite Dam in August versus July as juveniles. These tables show that a significant proportion of returning adults may pass the projects in August. In addition, with an average 15-day travel time from Lower Granite to Ice Harbor, the returning adult, juvenile data indicates that a large proportion of Snake River juvenile fall chinook that survive to adult pass through the lower Columbia River in August.

The adult data raises serious questions about the reliance upon the SIMPAS juvenile model analysis to predict impacts of changing summer spill for fish passage from the BiOp operations when the empirical data seems to suggest a more dramatic potential effect of terminating spill.

Table 4. Juvenile Passage Timing, at Lower Granite Dam of PIT tagged fall chinook, which survived to return as adults (see separately attached plots)

Year Juvenile Migration	Transported 6/20-7/31	Transported 8/1-8/31	In-River 6/20-7/31	In-River 8/1-8/31
1995	16.67%	16.67%	16.67%	36.67%
1996	0.00%	50.00%	12.20%	43.90%
1997	50.00%	0.00%	45.95%	21.62%
1998	80.00%	0.00%	38.00%	28.00%
1999	26.32%	68.42%	30.98%	26.63%
2000	0.00%	33.33%	39.13%	21.74%
2001	33.33%	17.95%	44.83%	31.03%

Table 5. Juvenile Passage Timing, at McNary Dam of PIT tagged fall chinook, which survived to return as adults (see separately attached plots)

Year Juvenile Migration	Transported 7/1-7/31	Transported 8/1-8/31	In-River 7/1-7/31	In-River 8/1-8/31
1995	0.00%	0.00%	10.53%	10.53%
1996	0.00%	0.00%	0.00%	50.00%
1997	0.00%	0.00%	38.46%	46.15%
1998	0.00%	50.00%	53.85%	46.15%
1999	0.00%	100.00%	17.07%	70.73%
2000	0.00%	0.00%	37.50%	37.50%
2001	50.00%	0.00%	16.67%	16.67%

The above data indicates that a significant proportion of returning adults may pass projects in August as juveniles. From the Table below, it is interesting to note that during years when a high percentage of returning adults passed McNary Dam as juveniles during August, spill and flow levels during August were also high in the Lower Columbia River. For example, in 1999, 70.73% of returning PIT tagged adults passed McNary dam in August as juveniles. Spill during August of 1999 was high across all Lower Columbia Projects (see table below), and McNary spilled throughout all of August. August flows were the highest (on average) between the years of 1995 and 2001 at McNary Dam.

	Bonneville August Spill Volume (Kaf)	The Dalles August Spill Volume (Kaf)	John Day August Spill Volume (Kaf)	McNary August Spill Volume (Kaf)	McNary August Average Flow (Kcfs)
1995	5059	4670	253	0	138.2
1996	5594	6143	2350	2072	183.3
1997	6563	7621	2533	2862	198.4
1998	5276	4096	2659	317	142.1
1999	5403	7876	3678	3382	208.5
2000	5464	3351	3067	320	140.4
2001	2396	2025	0	0	96.8

Flow and passage distribution and predicted impacts

Elimination of summer spill could be especially detrimental to fall chinook during low flow years, when the subyearling migration is shifted later into the summer. Because BPA did not analyze this scenario, their estimated adult impacts would be underestimated. Juvenile fall chinook passage data shows that passage distribution is affected by flow. The agencies and tribes recent comments on the BPA summer spill analysis (State, Federal and Tribal Fishery Agencies Joint Technical Staff Memorandum, 2/20/04) illustrated the shift in passage timing relative to migration flow level. The BPA summer spill analysis using SIMPAS was done only for average flow conditions. However, the SIMPAS predicted impacts of eliminating summer spill will be highly influenced by the passage timing distribution utilized in the analysis. The following analysis utilizing the SIMPAS model incorporates a passage distribution that could be expected based upon historical data under low flow conditions. This illustrates the range of potential adult impacts that could be expected.

1) Reach Survival Estimates Using SIMPAS

Reach	BiOp Operation	No Spill Operation	Difference
IHR to Bon	26.4%	15.9%	**12.0%**
MCN to Bon	30.0%	19.8%	**11.6%**
JDA to Bon	44.6%	32.0%	**13.0%**
Tda to Bon	69.4%	56.2%	**14.0%**
Bon to Tailrace	82.4%	74.6%	**8.2%**

In our analysis a 4% increase in pool mortality is assumed. The 2000 BiOp assumed a 5% percent increase in pool survival if the RSW and other aggressive non-breach options were implemented. Therefore if spill, a primary route of passage, is removed it should result in a 4% increase especially under low flow conditions that occur in August. BPA in their SIMPAS analysis assumed 1% at JDA and IHR and 0.5% at Bonn and TDA, and no change at McNary. Other differences are sluiceway guidance at Bonneville Powerhouse II; we used 33% based on radio tag data, while 46% was used by BPA based on hydro acoustic, research results; we decreased survival through the sluiceway when no spill was present from 98% to 96.5%; nighttime spill at Bonneville was set at 125 kcfs in the BPA analysis where as we set it at closer to 145 kcfs; also we used NMFS information of 89% survival fro McNary bypass, BPA used 97%. We also included the assumption that transported fish survival is a constant through both operations. There are small changes in numbers throughout the model depending on which recent reports were used to update parameters.

2) Population Estimates for ESA Listed Fish Only

For estimating impacts to ESA listed fish, we assumed that 1.1 million fish collected at LWG and 50.9% are wild and that the FGE is .534. This results in a starting population at LWG of 1.05 million juveniles.

Using SIMPAS, fish were routed through the collection systems and removed for transportation, resulting in an estimated 8% of the juveniles survival to IHR with a spill operation and 7.0% under a no spill operation. This results in an estimated population between 83,535 and 80,713 would be the extreme difference on population respectively, depending on run timing of those fish.

3) Juvenile Run Time Estimate for Snake River Fish

Using migration timing data from the FPC, the range of SARs is 8% to 43%. (Attachment 1) With the assistance of FPC an estimate of between 8% and 25% of fish would still be above Bonneville after August 1. (Also Attachment 1)

4) Overall Impact to ESA Listed Fish

Using the above numbers and assuming an SAR of .1 (Bowes, 2004) the potential range of adult equivalent mortalities is **46 - 192 adults**. A portion of this number are fish that are passed McNary but have not passed Bonneville dam before August 1. BPA did not account for these fish, nor did they account for extra mortality for transported fish. For additional information on SAR assumptions refer to Bowes, 2004. Adult impacts due to fallback through turbines and bypass systems versus fallbacking through spillways have also not been incorporated into this analysis. Assuming that BPA correctly estimated that adult return for listed Snake River Species to be 2396 then a range of 46 to 192 listed adults would equate to a percent of 1.2% to 8% of this population.

Lastly Option C, which is now the federal proposal, includes a spill evaluation at Bonneville Dam of testing 50 kcfs spill 24 hours versus the BiOp operation. This equates to roughly a 1.8% survival reduction for Bonneville passage. No analysis on this impact to inriver migrants has been completed.

Recommended system wide fall chinook life cycle smolt-to-adult return monitoring program.

Our review shows that there is inadequate fall chinook smolt to adult return and life cycle data available to assess recovery and assessment of hydrosystem measures. We have proposed a marking program that encompasses stocks throughout the Columbia Basin. The rationale is to monitor survival rates to assess, protection, recovery, restoration measures.

Our review of the available PIT tag data on fall chinook surviving to adult and review of the juvenile data which was utilized to model predicted impact on adult returns of fall chinook clearly show that a systemwide smolt to adult return life-cycle evaluation program needs to be put into place in 2004. The following is an outline for a proposed fall chinook evaluation.

The evaluation is proposed over a six year time period, evaluating the Biological opinion flow and spill measures against the Bonneville Power Administration no spill measures including no summer spill in the Snake River and no spill for fish passage in August in the lower Columbia River. PIT tagging efforts need to be in place in 2004 to evaluate and monitor the action agencies no summer spill operation for 2004 through 2006. Then, when transmission issues are resolved, implementation of BiOp summer spill and flow measures and, in addition, spill at the Snake River Projects, and at McNary will be evaluated in 2007 through 2009.

Objectives:

- Estimates of smolt-to-adult return rates for transported versus in river migrating fall chinook during the action agencies no spill option.
- Estimates of smolt-to-adult return rates for transported versus in-river migrating fall chinook during the BiOp summer flow, spill, with spill at the Snake River projects and McNary Dam, evaluation period.
- Juvenile fall chinook reach survival estimates throughout both periods.
- Juvenile fall chinook passage distribution and passage timing at Snake River and Lower Columbia River projects for both evaluation periods.

Approximate numbers of PIT tagged Chinook Salmon Required to Estimate Juvenile to Adult Survival in the Snake/Columbia River Basin.

PIT tag quotas vary depending on where fishes are released or captured tagged and released in the basin. Normally, the further upstream or distance traveled in the river system will relate to greater mortality by the time it reaches the sampling site. In addition, subyearling chinook are more vulnerable to predation and other factors that tend to reduce juvenile survival through the hydrosystem. Tables are listed below for the different reaches that have hatcheries or wild salmon groups where representative groups of fish could be PIT tagged in the Columbia River basin.

From McNary Dam to Bonneville Dam, marking subyearling fall chinook (URBs) would require that an estimate could be completed at Bonneville Dam where possible. The key elements would be survival as juvenile fish to Bonneville and return as adult fish back to Bonneville Dam. Survival to adult fish would vary by year, but numbers normally be considered from 0.5% to 2% as a base return. Since there is no transportation involved, there is no requirement to achieve a minimum/maximum number of fish going the different routes of passage at a dam. The Bonneville and John Day Dam estimate for detection at the respective

sampling site is set at 28% and 32%. The collection efficiency of the bypass system is simply the (1-spill proportion) times FGE, given the assumption of a 1:1 spill effectiveness.

Marking sites tentatively considered in this section of river are: Umatilla River hatchery and acclimation ponds, Klickitat Hatchery and Little White Salmon Hatchery. For wild subyearling fall chinook, the Deschutes River and John Day River would provide groups to assess survival from the upper end of this Reach to the Bonneville pool release groups.

Table. Estimated Number of PIT tagged fall chinook required to complete SARs for the Individual River basins (McNary Dam to Bonneville Dam Reach)

Hatchery	**# Juvenile chin PIT tagged**	**# Juvenile Chin at Bonneville Dam**
Umatilla	35,000	10,500
Thornhollow Pond (Umat)	35,000	10,500
Total Umatilla	**70,000**	**21,000**
Klickitat	50,000	20,000
Little White Salmon	40,000	20,000
Wild Fall Chinook		
Deschutes R	50,000	20,000
John Day R	Potential mark group	20,300

Note that SARs for the individual groups should equal about 200 adult fish per release area spread among 1 to 4 adult return years. In initial years the Wild fall chinook would be marked to assess migration timing to assure that they arrive at the dams when spill and best passage conditions exist in the hydro-system.

PIT tag quota for two major release groups of subyearling fall chinook from the Mid-Columbia or Hanford Reach have been calculated in past years to achieve detection rates at McNary Dam to achieve transportation/inriver groups of test fish. The hatchery of choice would be Priest Rapids Hatchery with the wild component from Hanford Reach. These groups will provide transport and inriver survival through the hydrosystem.

Table. Estimated number of subyearling fall chinook required to calculate SARS for the individual release groups of hatchery and wild fall chinook in the Mid-Columbia River. [Priest Rapids and Hanford Reach]

	# of Chin-PIT tagged	**# Inriver below McNary Dam**	**# of Trans. Required**
Hatchery Chinook			
Priest Rapids	150,000	43,000	43,000
Wild Chinook			
Hanford Reach	185,000	33,700	52,000

With no transportation required for these two groups, i.e., fish were placed directly back to the river at McNary Dam, about 80,000 fish from each release group (Priest Rapids and Hanford) could be PIT tagged to achieve SARs for the inriver migrants.

Table. Estimated number of subyearling fall chinook required to calculate SARS for the individual release groups of hatchery fall chinook in the Snake River Basin Recommended offset for elimination of spill

Hatchery	# of Chin-PIT tagged	# Inriver below LGR Dam	# of Trans. Required
Snake/Clearwater Acclim Ponds	350,000	80,000	32,000

These groups of subyearling fall chinook would be used to evaluate smolt-to-adult survival rates (SARs) for transported and inriver migrants. In addition, this will provide information on inriver survival and timing through the hydrosystem.

CC: FPAC
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Attachment 1

McNary Percent passage data is presented in Table 1. Also included is the proportion of fish in transit between McNary and Bonneville dams if spill were shut off either July 15 or August 1. We calculated wild origin subyearling chinook timing based on PIT-tag detections at McNary. Then used an average of 8 days travel time McNary to Bonneville Dam. Looking back at McNary to those fish that passed 8 days prior to the proposed shut off date provided the begin percent passage. Subtracting the begin percent from the end percent (the percent passage on the shutoff date) yielded the percent in transit. To calculate percent in transit between McNary and John Day and John Day and Bonneville I would recommend apportioning half of the in transit percentage to each reach.

Using passage timing of Wild Origin subyearling chinook in the Snake River basin we used Lower Monumental detections to develop passage timing expressed as a percent of all annual detections (excluding holdover fish). We then moved back 3 d at Lower Monumental to extrapolate the data for IHR (Table 2). In other words, a passage percentage of 11% at Ice Harbor on 7/15 would have passed Lower Monumental on 7/12 or 3 days earlier based on assumed 3 day travel time.

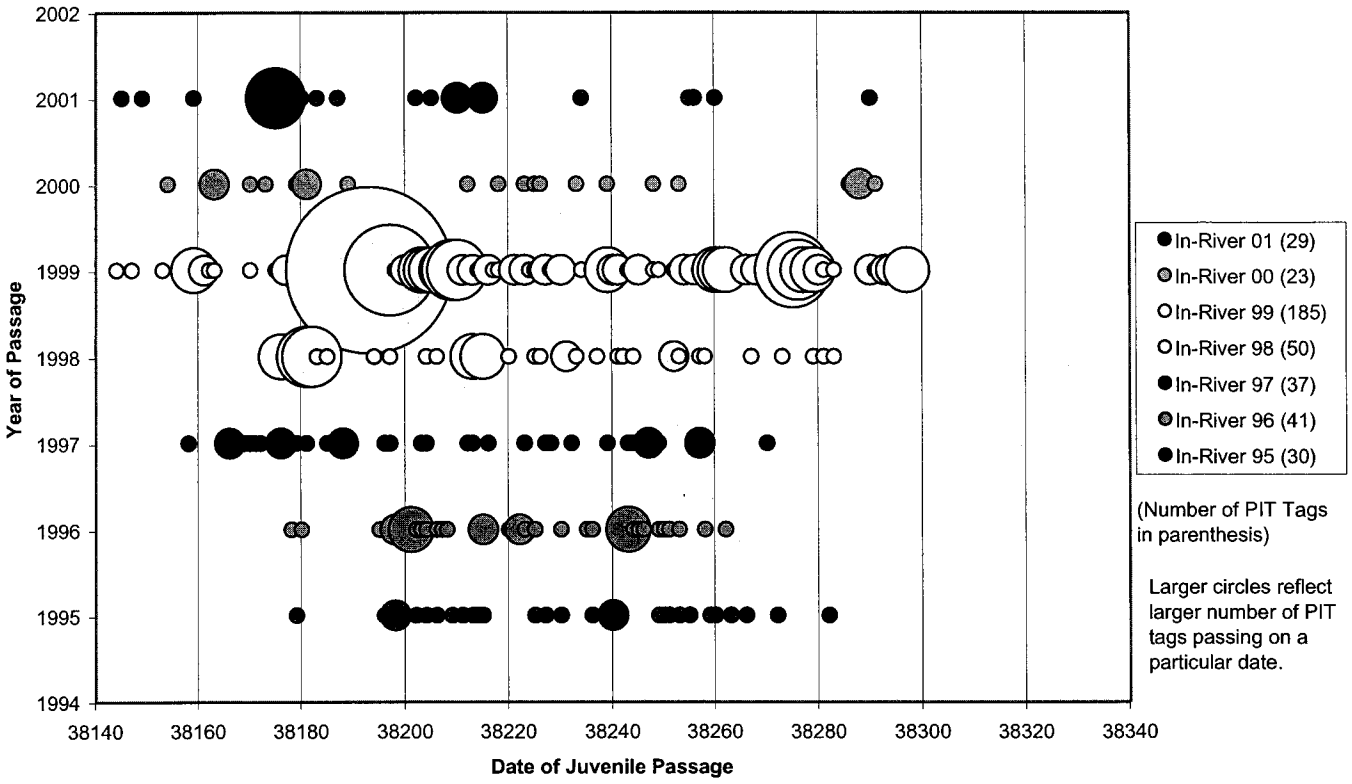
Table 1. Percent of Snake Origin Wild Subyearling chinook affected by End of Spill Operations in Lower Columbia.

	McNary Passage Percent		Percent Pop In Transit (between MCN and BON) at End of Spill	
Date	**7/15**	**8/1**	**If 7/15**	**If 8/1**
1998	41%	87%	13	25
1999	41%	60%	7	8
2000	79%	92%	13	8
2001	10%	57%	1	23
2002	52%	94%	22	16
2003	56%	85%	10	11

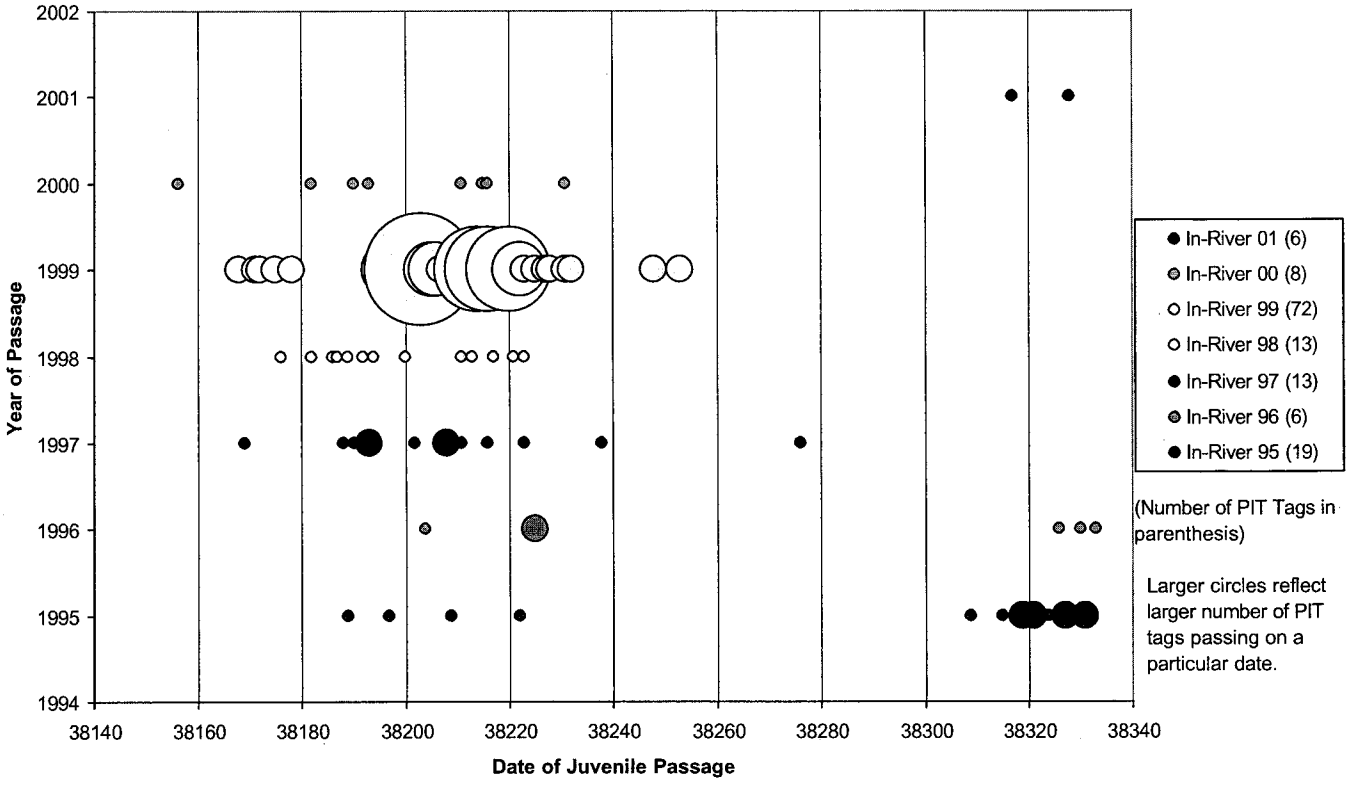
Table 2. Passage Timing at Ice Harbor dams for Wild Subyearling chinook based on 3-day Travel Time from LMN to IHR.

Date	**7/15**	**8/1**
1994	11%	41%
1995	5%	36%
1996	16%	53%
1997	44%	56%
1998	17%	82%
1999	47%	69%
2000	64%	76%
2001	7%	64%
2002	30%	89%
2003	55%	80%

Juvenile Passage Timing at Lower Granite Dam for In-River Fall Chinook that Survived to Adulthood (1995-2001)



Juvenile Passage Timing at McNary Dam for In-River Fall Chinook that Survived to Adulthood (1995-2001)



Attachment D

Attachment D

FISH PASSAGE CENTER

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MEMORANDUM

TO: Rob Lothrop, CRITFC

Michele DeHart

FROM: Michele DeHart

DATE: December 17, 2003

RE: Summary of Documented Benefits of Spill

In response to your request of December 11, 2003, the Fish Passage Center staff prepared the following summary of information addressing the benefits of spill for fish passage. The benefits of spill for fish passage are well established and accepted throughout the scientific community. There is substantial data and literature documenting the direct and indirect benefits of spill for fish passage. In some river reaches and some time periods, such as the lower Columbia River during the summer migration period, spill for fish passage is the only protection measure that has been provided consistently. For some stocks of salmonids such as Klickitat River, Umatilla River and other lower river tributaries spill is the only passage protection measure provided.

Juvenile Passage; Spill; and Total Dissolved Gas

Background

When fish approach a hydroelectric project they can either enter the powerhouse or continue migrating downstream by passing over the spillway. Upon entering the powerhouse fish either pass through a turbine unit or are mechanically collected and bypassed downstream without passing through the turbines. Employing the use of spill for juvenile migrants has long been used as an effective management tool for improving passage survival of migrating juvenile salmon at mainstem hydroelectric projects. Routing smolts through spillways at hydroelectric projects in the Columbia and Snake rivers is generally considered to be the safest passage strategy, when compared to the passage survival through bypass systems and turbine routes.

Prior to 1993 when the first Biological Opinion was issued, spill was used as mitigation at hydroelectric projects to enhance project survival for juvenile salmonids. Historically, spill occurred operationally, when project capacity or system generation needs were exceeded. As the hydrosystem was developed it became more efficient through such actions as the construction of

the DC and AC Intertie transmission lines. As a consequence the occurrence of spill declined, accelerating the disagreements between operators and regulators and the fishery agencies regarding the provision of spill. In December of 1988 a 10-year spill program was developed for implementation of spill at projects that were not equipped with adequate bypass systems to achieve a fish passage efficiency goal. (Fish Spill Memorandum of Agreement).

As fish stocks continued to decline and were listed under the Endangered Species Act, it became clear that the negotiated contracts were not aggressive enough to recover endangered stocks. This lead to the modification of spill programs under the different versions of the Biological Opinion. At the same time that spill was identified as a key element in the recovery of listed stocks, the need to meet the objectives of the Clean Water Act was also identified. Spill causes increased levels of total dissolved gas that could increase mortality and eliminate the benefits associated with the implementation of an aggressive spill program. Therefore, subsequent implementation of a spill program has been within the confines of the "risk" associated with increased levels of total dissolved gas

Decreasing Migration Delays and Predation

Spill and Decreases in Delay associated with Project Passage

Spill is an effective tool in decreasing the amount of delay experienced by fish in forebays and tailraces of dams where predator populations and predation rates are highest. Beamesderfer and Rieman (1991) found that forebay populations of northern pikeminnow (*Ptychocheilus oregonensis*) and smallmouth bass (*Micropterus dolomieui*) were present in substantial numbers in the forebay of John Day Dam. Poe et al. (1991) reported that the diet of northern pikeminnow in the forebay of John Day Dam was 66% salmonid smolts. This suggests that delay of outmigrants in the forebay could reduce survival due to increased predation, and project operations such as daytime spill that decrease forebay residence time could increase survival. In addition, spill was also shown to be an important factor in reducing forebay delay in studies conducted by Snelling and Schreck (1994).

Hansel et al., (1999) showed that in general, yearling chinook salmon and steelhead that arrived in the forebay when no spill occurred tended to delay. Yearling chinook salmon and steelhead that arrived at night, concurrent with spill, passed the dam more readily. Residence times of yearling chinook salmon were markedly reduced with respect to daytime spill, whereas steelhead residence times decreased only slightly in the presence of daytime spill. When daytime spill went from 0 to 30% yearling chinook salmon residence time dropped from 8.5 h to 0.8 h in 1999 and 9.0 h to 2.4 h in 2000, while yearling steelhead residence time decreased from 11.4 to 11.3 h in 1999 and 11.4 to 9.4 h in 2000. Data collected in 1999 and 2000 suggest that hatchery steelhead (>200 mm) may delay in the John Day Dam forebay longer than wild steelhead (<200 mm). (NOAA, 2000)

Dispersal of Predators

Spill establishes a large flow net with increased velocity that disperses predators from the forebay and tailrace areas thus reducing the potential for predator/prey interactions (Faler et al.,

1988). The concept of developing spill patterns at FCRPS dams specifically for fish passage was first addressed systematically in the 1960s to facilitate adult salmon passage into the adult fish collection systems. Junge (1967) observed improved adult salmonid passage under intermediate to large spill volumes if four or five gates at each end of the spillway were at low volume settings. At large dams this resulted in a tapered spill pattern near each end and a flat spill pattern across the central portion of the spillway. At smaller dams this produced a "crowned" pattern across the entire spillway tailrace, with the highest discharge in the middle bays. The success of adult salmon passage was evaluated by comparing ladder passage counts associated with various spill patterns. The spill patterns developed that appeared best for adult passage conflict with what is thought today to be best for juvenile passage (high shoreline velocities), since Junge kept near-shore velocities low to facilitate adult migration and passage into fishway entrances located along shorelines (NOAA 2000). Smolt residence time in spillway tailraces is likely influenced by spill volume and pattern. High spill volume and water velocity push water and presumably juvenile salmonids out of the immediate tailrace, and help redistribute piscivorous predators (northern pikeminnow) away from the immediate spillway tailrace, reducing potential predation opportunities (Faler et al. 1988).

Shively et al. (1996) found that ambient river flow velocities of at least 1 m/s were necessary to keep northern pikeminnow from holding in areas near bypass outfalls, and that the degree by which water velocity eliminated northern pikeminnow holding increased as outfall distance from shore and water depth increased. Hansel et al. (1993) found that hydraulic cover such as eddies and backwaters at velocities below this threshold were preferred northern pikeminnow feeding habitats, particularly when near primary smolt outmigration paths. Spill patterns that facilitate rapid juvenile egress from the spillway stilling basin through the tailrace likely increase juvenile survival. Current spill patterns are developed to increase the survival of juvenile fish through tailraces, by emphasizing minimizing hydraulic cover and maintaining high water velocities near spillway shorelines. To not interfere with daytime adult passage, these juvenile spill patterns are often employed during nighttime hours only (COE, 1999d; NOAA 2000).

Spillway Survival

Whitney et al. (1997) reviewed 13 estimates of spill mortality for salmonids (3 steelhead and 10 salmon) published through 1995 and concluded that 0 to 2% is the most likely mortality range for standard spillbays. They also pointed out that local conditions, such as back eddies or other situations that may favor the presence of predators, may lead to higher spill mortality.

Some point estimates for mortality in spillbays with spill deflectors are higher than estimates for spillbays without deflectors. For example, the highest estimates of survival for yearling chinook salmon and steelhead at Snake River dams were obtained from spillbays without flow deflectors, ranging from 98.4 to 100% (Muir et al. 1995b, 1996, 1998). Although lower survival estimates were obtained from spillbays with flow deflectors (ranging from 92.7 to 100%) (Iwamoto et al. 1994; Muir et al. 1995b, 1998), differences in survival between the two types of spillbays compared pairwise were not significant at Little Goose (steelhead), or Lower Monumental Dams (yearling chinook salmon) (NOAA, 2000).

A number of methodologies have been used to estimate spillway survival at lower Columbia River dams, including identification of test fish by fin clips (Holmes 1952), freeze brands (Johnsen and Dawley 1974, Raymond and Sims 1980), coded-wire tags and freeze brands (Ledgerwood et al. 1990), balloon tags (Normandeau Associates Inc. et al. 1996a, b).

At Bonneville Dam, Holmes (1952) estimated that subyearling chinook salmon survival through the spillway was 96 to 97%, depending on how the data were analyzed. Johnsen and Dawley (1974) compared the survival of subyearling chinook salmon passing through spillbays with and without flow deflectors, and found that relative survival was 87 and 96%, respectively, and that these differences were not statistically different. Ledgerwood et al. (1990) found that survival of subyearling chinook through spillbay 5 was not significantly different than for fish released downstream. Based on the balloon-tag methodology, the calculated survival probabilities for deflector and non-deflector spillways were both 1.0 at Bonneville Dam, however, fish passing through a spillbay without a spill deflector displayed a slightly higher injury rate (Normandeau et al. 1996a; NOAA 2000).

Spill and Total Dissolved Gas

Spilling water can cause high dissolved gas to concentrate by entrainment of air in the form of bubbles as it passes over the spillway and plunges to the tailrace. The air is forced into solution, causing the water to become "supersaturated" at ambient atmospheric pressure with respect to dissolved gas. Water that is supersaturated with respect to dissolved gases may cause gas bubbles to form in the bodies of fish and other aquatic animals under certain conditions that impair their ability to function, or in extreme situations may lead to death. Consequently, spill management must recognize the tradeoff between survival benefits and the detrimental effects of high total dissolved gas levels.

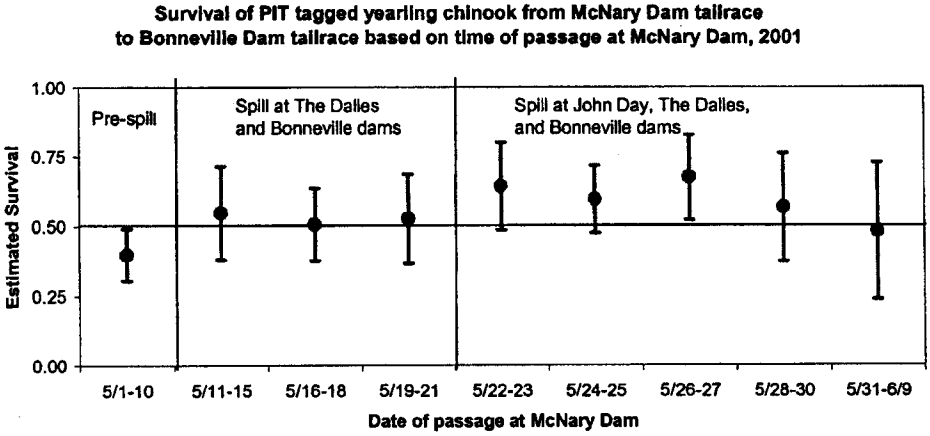
The "Spill and 1995 Risk Management" report was developed by the region's fishery agencies and tribes document and provided part of the biological justification for the implementation of the 1995 Biological Opinion spill program. The document reviewed all available studies and quantified the trade-off between the increase in salmon survival associated with an increase in spill passage, against the potential fish mortality that might be incurred from increased levels of total dissolved gas (TDG). The assessment concluded that the benefits of spill passage outweighed the risk up to TDG levels between 120 to 125%. The annual voluntary spill program has been implemented within these constraints since that time.

In 2000 the NMFS included Appendix E in their Biological Opinion. This appendix was meant to serve as the justification and risk assessment for the spill program included in the 2000 Biological Opinion. The appendix addresses the 120% dissolved gas ceiling and builds on the findings of the 1995 document with information collected subsequently. The NMFS also uses the SIMPAS model as a means of quantifying an amount of system survival attributable to the 120% TDG spill program. The NMFS concludes, "the risk associated with a managed spill program to the 120% total dissolved gas (TDG) level is warranted by the projected 4% to 6% increase in system survival of juvenile salmonids. Recent research and biological monitoring results support the findings of the 1995 report, which predicted that the TDG in the 120% to 125% range, coupled with vertical distribution fish passage information indicating that most fish

migrate at depths providing some gas compensation, would not cause juvenile or adult salmon mortalities exceeding the expected benefits of spillway passage. NMFS finds little evidence that this expected survival improvement would be reduced by the mortality related to gas bubble trauma (GBT). NMFS also concludes that physical and biological monitoring of GBT signs can continue to be used to indicate dissolved gas exposure in adult and juvenile salmon migrants."

System-wide Evidence for Spill Survival Benefits

Analysis of smolt survival in the lower Columbia River index reach in 2001 was performed with the year split into periods of passage at McNary Dam (FPC, 2001). The McNary Dam passage distribution of PIT tagged yearling chinook was split into nine multi-day blocks with at least 10,000 PIT tagged smolts per block. A plot of the estimated survival from McNary Dam tailrace to Bonneville Dam tailrace shows evidence of shifts in estimated survival for yearling chinook smolts passing McNary Dam in the May 1-10, May 11-21, and May 22-June 9 periods (Figure 44). One likely explanation of this apparent grouping of the survival data was that spill in the lower Columbia River index reach did not begin at The Dalles and Bonneville dams until May 16 or at John Day Dam until May 25.

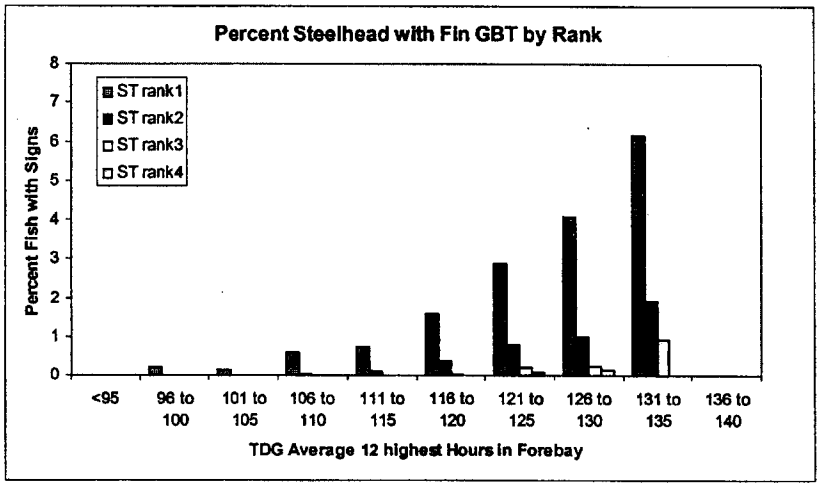


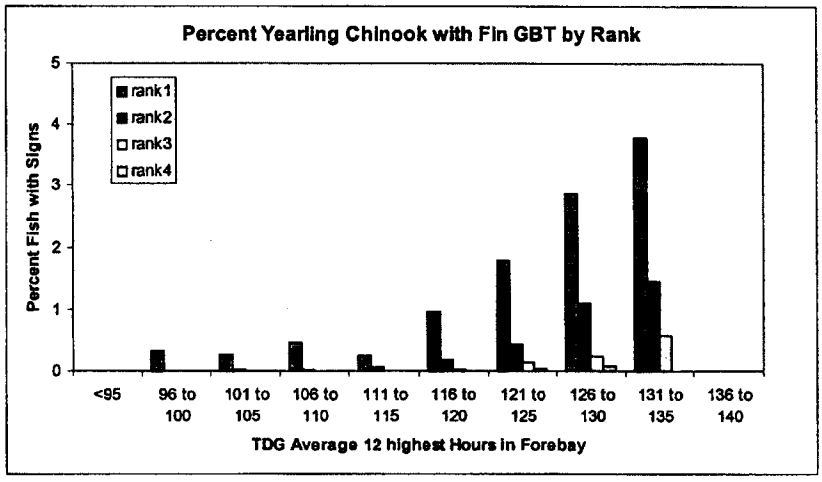
Analyses conducted by Muir et al. (2001) reconfirmed the findings of numerous earlier studies by demonstrating that spillway survival of smolts exceeds that incurred through both turbines and collector/bypass systems at dams on the Snake River.

Evidence for the Appropriateness of the Current Total Dissolved Gas Standards

The effects of elevated dissolved gas on migrating juvenile and adult salmon due to voluntary spill have been monitored each year of spill program implementation. Based on seven years of data from the biological monitoring program, the average incidence of gas bubble disease signs has been low, although the state-allowed maximum TDG due to spill was 120 percent in the tailrace and 115 percent in forebays during periods of voluntary spill. A high percentage of the spill that did occur in some years was involuntary, and often resulted in dissolved gas levels above the 120% waiver. The following graphs depict the incidence and severity of signs of GBT in fish collected for observation over the seven years, grouped in 5

percent TDG levels. Increases in the incidence of signs were observed with increases in the levels of TDG. The severity of signs also increased, but not until dissolved gas levels were above the 120 to 125% level.





These data suggest that total dissolved gas concentrations above 125% may have had a negative impact on survival. These high total dissolved gas measurements are a function of uncontrolled spill that occurred in the hydrosystem because of flow in excess of the hydraulic capacity of the project, or due to spill in excess of generation needs. They are not caused by the implementation of the Biological Opinion Spill Program.

Summary

All of the information collected to-date of survival and the benefits associated with spill indicate that spill provides a significant benefit to juvenile survival at levels up to 125% in the tailrace of the dam.

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Attachment E

State, Federal and Tribal Fishery Agencies Joint Technical Staff

US Fish and Wildlife Service

Columbia River Inter-Tribal Fish Commission

Idaho Department of Fish and Game

Oregon Department of Fish and Wildlife

National Marine Fisheries Service

Washington Department of Fish and Wildlife

June 13, 2003

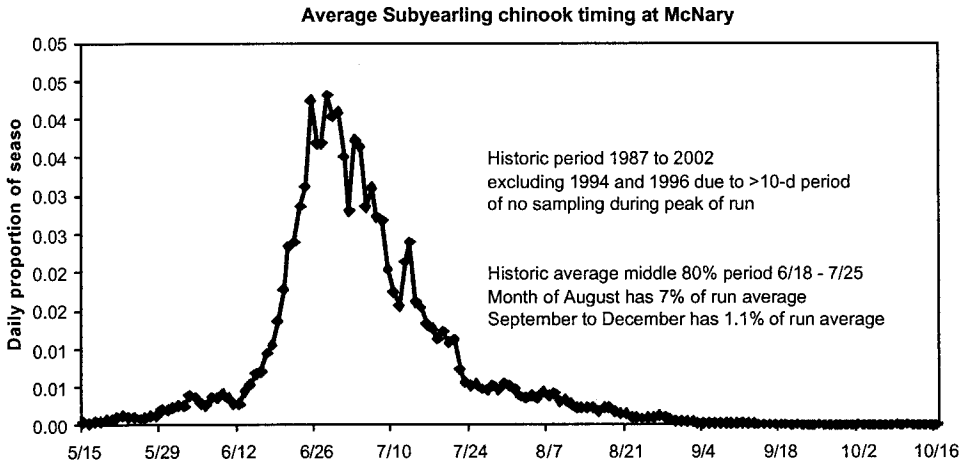
Mr. Doug Marker
Northwest Power and Conservation Council
851 SW Sixth Ave., Suite 1100
Portland, OR 97204

Dear Mr. Marker:

We have reviewed a recent analysis developed by Northwest Power and Conservation Council (Council) staff that addresses the question of the hydrosystem cost versus benefit of spill during the summer months. As our agencies have responsibility for salmon management in the Columbia Basin, our comments will focus on fish passage timing and the benefits of spill during the summer months. The graphs contained in the Council staff analysis are plots of passage indices and spill versus date. The passage indices used in the analysis include a combination of both hatchery and wild fish, and show that most of the fish pass through the lower Columbia River during July and, therefore, Council staff concludes that any changes to the summer spill program should be made in August.

We have reviewed the Smolt Monitoring Program passage data for the past thirteen years to determine the average proportions of combined hatchery and wild subyearling migrants present in the lower Columbia River during August. Based on the monitoring data approximately 7% of subyearling chinook migrants pass the McNary hydropower project during August (Figure 1).

Figure 1. Average subyearling chinook timing at McNary Dam.



However, plotting combined hatchery and wild chinook passage indices for subyearling chinook at the various spill sites does not present a complete picture and is a shortcoming of the analysis conducted by the Council staff. Different stocks of subyearling migrants, especially wild subyearlings, can display significantly different passage timing strategies. Hatchery releases and abundant stocks dominate the combined passage indices, whereas jeopardized stocks (with their low abundance) are underrepresented when displayed in this fashion.

The NOAA Fisheries recognized this phenomenon when they established planning dates for the provision of protection measures in the 1995 Biological Opinion. The 1995 Biological Opinion states that "Dates at which 95% of wild PIT-tagged subyearling chinook passed Lower Granite Dam were August 28, July 3, August 23 and September 1 in 1991, 1992, 1993 and 1994, respectively. Migration of juvenile fall chinook salmon to dams further downstream extends longer for fish not transported from Lower Granite Dam. The primary migration period for juvenile fall chinook salmon is defined as June 21 to August 31 in the Snake River and July 1 to August 31 in the lower Columbia River." These were the primary passage dates used to protect the majority of ESA listed wild fall chinook migrating from the Snake River through the lower Snake River and through Columbia River hydrosystem.

The Biological Opinion's August 31 date of the 95% passage for the subyearling fall chinook migrating from above Lower Granite Dam is conservative based on the more recent monitoring data (Table 1). There is some variability in the 95% passage date (ranging from August 16 to October 11) but it is not as extreme as observed in the earlier data set used by NOAA Fisheries. In part, this is a reflection of the more consistent sampling at Lower Granite Dam and marking above the project, but it is mainly a result of the improved survival shown for fish migrating in August due to improved summer flows and spill provided under the Biological Opinion beginning in 1995. Historically in low flow years (e.g. 1992), prior to the 1995 Biological Opinion, flows were extremely low during August and subyearling survival was low. This caused the passage indices to be truncated skewing the distribution towards an artificial earlier passage timing. The following table (Table 1) shows the 95% passage date at Lower

Granite Dam for the run at large, and for the wild PIT tagged population. In some cases the 95% passage dates do not correlate well for the wild PIT tagged fish and the population at large because of variations in PIT tagged fish sample size, as well as the timing and segment of the wild population marked.

Table 1. The 95% passage date at Lower Granite Dam for the run at large (hatchery and wild combined) and the wild PIT tagged fish.

YEAR	95% Passage Date Run at Large	95% Passage Date wild PIT Tagged Fish
1995	Oct 11	Sept 14*
1996	Sept 20	Aug 27
1997	Sept 23	Sept 14
1998	Sept 26	Aug 15
1999	Sept 22	Aug 15
2000	Sept 08	Sept 14*
2001	Aug 16	Aug 18
2002	Aug 31	July 28

*Last date category actual date may be later

As seen from Table 1 the 95% passage date often occurs late in September for the run at large and wild PIT tagged fish. With the exception of 2001 when the poor migration conditions likely truncated the population due to higher mortality rates, the August 31 planning date has not been adequate to protect 95% of the summer migrants. Thus the August 31 planning date represents a compromise where most of the fish are considered to be past Lower Granite Dam.

The salmon managers also expanded the analysis conducted by the Council staff by considering the passage timing of individual groups of subyearling fall chinook at the lower Columbia River hydropower projects. Available information is limited due to the relatively low abundance of these stocks and few numbers of fish marked. However, based on the PIT tag recaptures the following information is being provided: the Snake River Basin wild fall chinook passage timing at McNary Dam (Figure 2); the Hanford reach wild fall chinook passage timing at John Day Dam (Figure 3); and, the Yakima River Basin wild fall chinook passage timing at John Day Dam (Figure 4). We believe that these graphs more accurately reflect the passage of stocks of concern, which may be masked in a graph depicting the overall passage indices such as presented by the Council staff.

Figure 2. Snake River Basin wild fall chinook passage timing at McNary Dam.

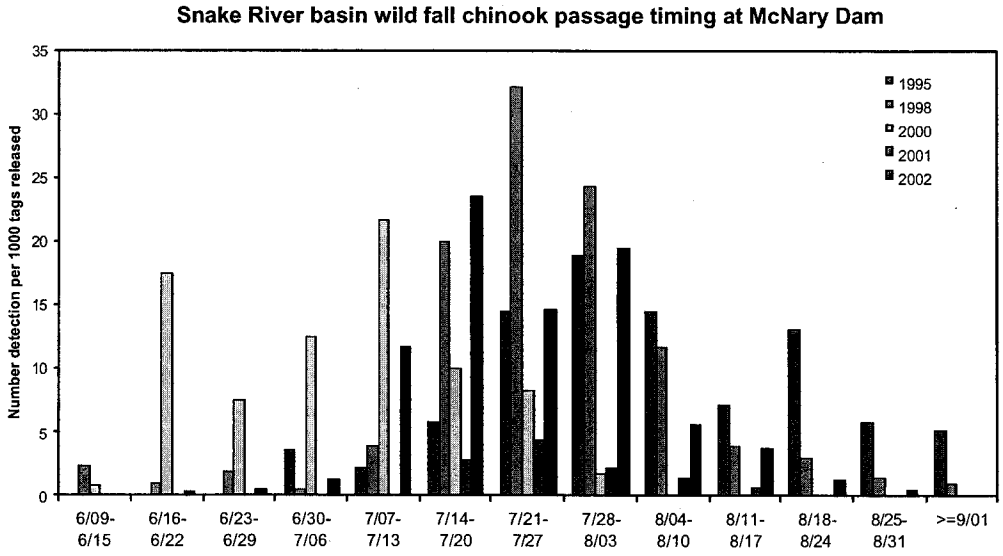


Figure 3. Yakima River Basin wild fall chinook passage timing at John Day Dam.

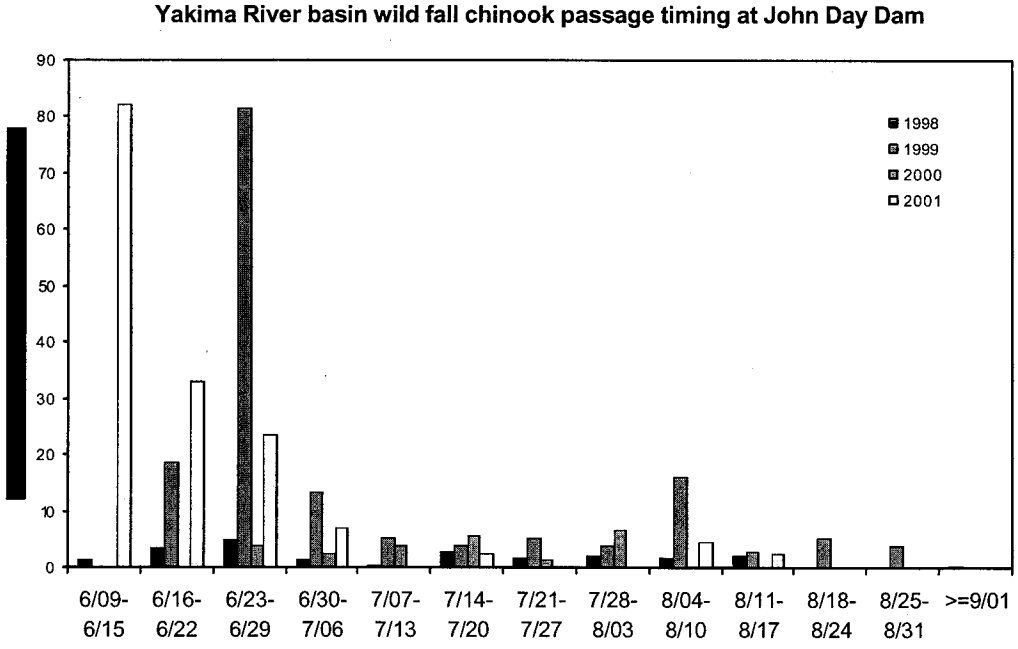


Figure 4. Hanford Reach wild fall chinook passage timing at John Day Dam.

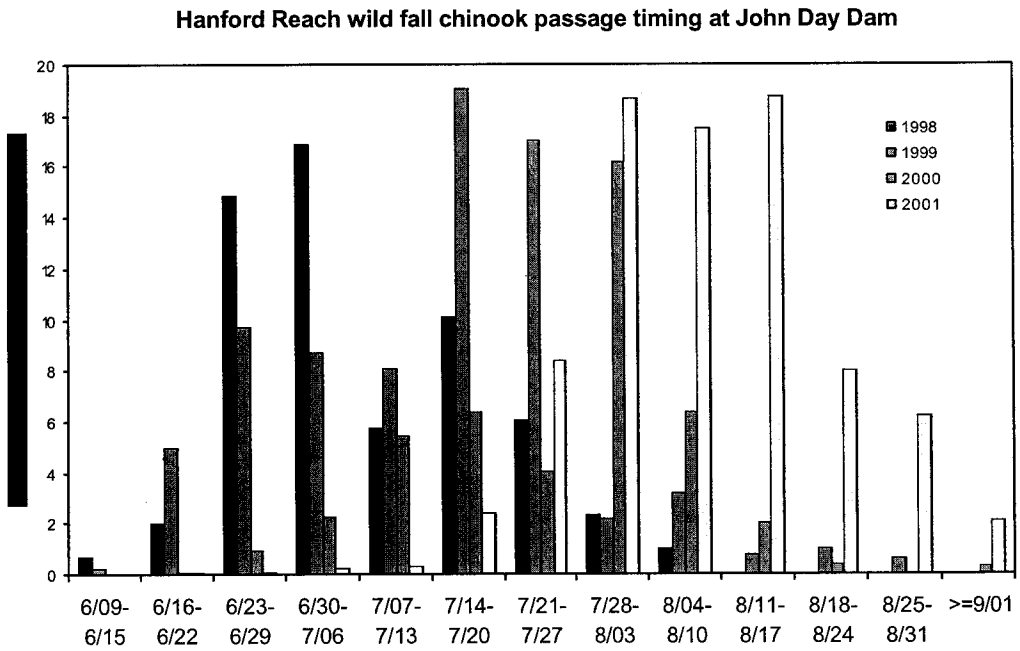


Table 2. Summary of proportions of individual groups of subyearling migrants passing through the lower Columbia during August.

Percentage of Subyearling Chinook Migrants Observed during August			
Year	**Snake River Wild***	**Yakima River Wild****	**Hanford Reach Wild****
1995	48.8		
1998	19.6	19.6	2.3
1999		20.0	9.2
2000	7.8	20.8	44.7
2001	21.4	4.5	66.7
2002	19.1		

* Observed at McNary Dam
** Observed at John Day Dam

As can be seen from both the graphs and Table 2, significant proportions of individual groups of subyearling migrants can and do pass into and through the Lower Columbia River during the month of August. Consequently, it is not advisable to use passage indices for the run-at-large to justify curtailing mitigation measures, such as spill. An analysis using only the total run-at-large may seem to indicate that the impacts of changing spill would only be imposed on a small portion of the run, whereas when specific groups of fish are considered, the impacts would be more significant. The need to protect most portions, unique life histories and genetic characteristics of the run was the foundation which led to the dates for providing spill protection that were specified in the Biological Opinion.

Moreover, summer spill is an essential element of providing improved inriver passage conditions, and it should be continued while the evaluation of juvenile fish transportation for summer migrants is being conducted. This becomes even more significant when the delayed mortality factor, i.e. the difference in mortality between transported and non-transported fish, or "D" value, is applied to the fish that are transported. The current information on "D" for subyearling fall chinook indicates that the survival of inriver fish is important to the overall survival of fall chinook.

The Council staff analysis did not evaluate the effect of adult passage past the projects in the absence of spill. Fallback estimates for adult fall Chinook from the 1998 radio telemetry indicated that a significant percentage of fish fall back throughout the system (Table 3).

Table 3. Fallback Rates of Fall Chinook in 1998 from Radio Tracking Studies by University of Idaho.

	Bonn	**TDA**	**JDA**	**MCN**	**IHR**	**LMN**	**LGS**	**LGR**
Rate	5%	10%	5%	2%	7%	2%	NA*	NA*

*Too few fish for statistical analysis

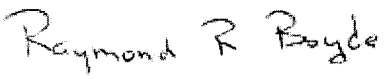
The mortality rate for fish that fall back varies greatly depending on the route of passage. Mortality through the spillway has been estimated to be approximately 2-3%, while bypass systems and turbines have much higher morality. Mortality from falling back through the turbines was particularly high with estimates of 22% and 41% for adult summer steelhead at Foster, Wagner and Ingram dams (1973). Buchanan and Moring (1986) reported a 51% mortality for adult steelhead at Foster Dam. Liscom and Stuehrenburg (1985) noted adult summer steelhead suffered a 46% turbine mortality when they were subjected to passage at Lower Monumental Dam. Mortality rates for falling back through bypass systems have not been studied extensively, but bypass systems have been shown to have much higher rates of mortality than spillways. In addition, adult salmonids have been noted with significant injuries after passing through gatewells and orifices. This is not surprising since juvenile bypass systems were not designed for adult passage. Without spill at hydropower projects the mortality rate associated with falling back will likely increase, since the remaining routes of passage have significantly higher mortality than the spillway. A comprehensive analysis to determine the impact of reduced spill should include impacts to adult salmonids, as well as the impacts to juvenile salmonids.

We hope that you find this information helpful when considering any potential recommendations for modifications to the Biological Opinion summer spill program. We urge the Council and staff to coordinate any proposed changes in summer spill or research needs with the region's federal, state and tribal salmon managers through the Regional Forum process. We offer to work closely with the Council and its staff on the specifics of actions that will meet the intent and performance standards of the National Marine Fisheries Service 2000 Biological Opinion, as well as the intent of the Council's Mainstem amendments to the fullest extent possible.

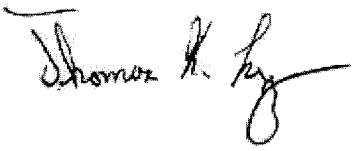
Sincerely,

David Wills, USFWS

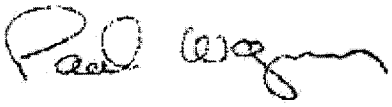
Steve Pettit, IDFG



Ron Boyce, ODFW



Tom Lorz, CRITFC



Paul Wagner, NMFS

Shane Scott, WDFW

Attachment F

COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

729 N.E. Oregon, Suite 200, Portland, Oregon 97232

Telephone (503) 238-0667
Fax (503) 235-4228

July 23, 2003

Steven Wright
Regional Administrator
Bonneville Power Administration
P.O. Box 3621, R-A
Portland, Oregon 97208

RE: Summer Spill at Federal Columbia River Power System Dams

Dear Mr. Wright:

At the direction of and on behalf of the member tribes of the Columbia River Inter-Tribal Fish Commission, I am responding to Bonneville's interest in restoring tribal fisheries programs from Northwest Power Act Fish and Wildlife Program cuts and other actions in exchange for eliminating spill during August at Lower Columbia River and Ice Harbor Dams. I am pleased that Bonneville sought to consider the views of the Commission in responding to proposals from its customers and others who have requested elimination of a vital salmon protection measure. Given the present circumstances where Bonneville support of tribal and basin salmon recovery programs has been undermined by Bonneville's poor financial condition, we find the proposal to eliminate spill the second half of August to be unacceptable.

Impacted Salmon Stocks

Careful review of the proposed action indicates that the following salmon stocks would be affected by curtailing spill during the second half of August:

- Deschutes River fall chinook*
- Klickitat River fall chinook
- Yakima River fall chinook
- Mid-Columbia summer chinook*
- Priest Rapids Hatchery fall chinook
- Upper Columbia Steelhead
- Mid-Columbia fall chinook
- Umatilla River fall chinook
- Marion Drain fall chinook
- Hanford Reach fall chinook*
- Snake River fall chinook
- Snake River Steelhead

* Denotes indicator for U.S.-Canada Pacific Salmon Treaty chinook management.

We have assessed the probable impacts to the naturally spawning component of Hanford Reach fall chinook using the best information available to the Commission. The resulting increase in direct and indirect mortality would reduce returns by 16,000 to 26,000 adults for this stock alone. For Deschutes fall chinook, we expect that direct

mortality to that portion of the stock that has yet to pass The Dalles and Bonneville Dams would increase by about 12%. Other stocks originating higher in the Columbia system would be subject to greater impacts.[1]

Preliminary Smolt to Adult (SAR) data has indicated that late migrating fall chinook have a significantly higher SAR than early migrants. Thus, a small impact to this portion of the juvenile run would relate to a disproportional impact to the adult returns if the high SAR return rates for these late migrants proves out. The range of affected adults could be much larger.

In addition to impacts to juvenile salmon we have also calculated a preliminary estimate between spill and no spill on adult fall chinook and steelhead that fallback at mainstem dams. Without spill, fallback adults have in general only two routes of passage, screen systems that were not designed for adult passage and turbines. Screen passage has been shown to cause high rates of visible bruises (39% Wagner and Hilson 1991) and turbine passage has been shown to cause high rates of direct mortality (40-60% various researchers in Wagner and Hilson 1991). While spill mortality has not been directly tested, radio telemetry studies indicate that most adults that fallback through spill reascend the dam through the fishways. With a no spill condition, we estimate that about 1484 adults over that of a spill condition would be lost primarily through turbine and screen bypass passage.

At Bonneville's request, we have considered a broad range of salmon restoration actions that might be available to improve the survival of the affected stocks. These include changes in river management at other times of the year (e.g., increased spill and reduced power peaking), habitat improvement actions, increases in artificial propagation, and other actions, such as restoration of tribal law enforcement programs. Even if the tribes found such arrangements to be acceptable and they do not, it would be nearly impossible to successfully implement the broad array of actions necessary to alleviate the reductions in survival to all stocks affected by spill curtailment. Our concern is underscored by Bonneville's poor track record in providing offsets for changes in river operations for salmon that occurred in 2001. Moreover, Bonneville's current unwillingness to uphold its contractual commitments for salmon mitigation projects has resulted in litigation by the Yakama Nation against Bonneville and has compromised the effectiveness of actions by each of the tribes.

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[1] We have reviewed the NWPPC's staff presentation entitled "Fish and Energy Impacts Resulting from Reductions in Summer Bypass Spill" and we find the biological analysis contained therein to be deeply flawed. For example, the analysis treats upper Columbia fall chinook as a single stock of salmon. While far from being the case, this broad aggregation of affected populations, among other things, overlooks the indicator stocks for which U.S. and Canadian salmon fisheries are managed. *See* U.S. Canada Pacific Salmon Treaty, Annex IV, Chapter 3, Attachment I. We are troubled that the NWPPC's staff analysis is disconnected from fundamental U.S. obligations like the Pacific Salmon Treaty. Moreover, the NWPPC staff analysis failed to heed the biological advice of the fishery managers described in the joint USFWS, NMFS, IDFG, ODFW, WDFW, CRITFC, June 13 letter addressing the staff's biological analyses.

More importantly, the foregoing salmon restoration actions are needed to address existing federal hydro system impacts resulting from existing operations, even without the reductions in protection levels that would result from spill curtailment. While the tribes' fishery projects have been impacted by Bonneville defunding, Bonneville is now offering funding to restore some of these programs in exchange for eliminating a critical mainstem operation that is significant to juvenile and adult salmon survival.[2] These actions are not interchangeable - they must both be implemented if Columbia Basin salmon are to be restored to levels that will provide for sustainable, harvestable runs.

Impacts to Bonneville Finances

According to Bonneville staff, elimination of spill in the second half of August at Ice Harbor, John Day, The Dalles, and Bonneville dams would result in a financial savings to Bonneville of $15-25 million, not considering any salmon mitigation measures. Under the recently adopted Safety Net Cost Recovery Adjustment Clause (SN CRAC) rate schedule, Bonneville would use these reductions to lower the rate increase that it has projected.

Based on current projections, Bonneville will increase rates through its SN CRAC adjustment procedures about 5 percent. Notably, this rate increase is not brought about by increases in fish and wildlife costs. Bonneville's current fish and wildlife costs and its anticipated revenues (including August spill regime) were fully recognized in Bonneville's May 2001 rate decision, wherein Bonneville also retained the same base rate that it had charged since 1996. The upcoming rate increase and Bonneville's rate increases in October 2001 are largely based on Bonneville's over-subscription of the federal power system and Bonneville's failure to control its own internal costs.

The upcoming rate increase is likely to amount to about $1 per month for an average residential consumer that buys power from a utility that receives all of its electricity from Bonneville. Customers of utilities that buy only a portion of their power from Bonneville would pay less. The reductions in salmon protection that Bonneville is seeking might reduce its upcoming rate increase from 5 percent to about 4 percent, if Bonneville expends no resources on offsetting the biological impacts of eliminating spill.

While no one likes to see rate increases, Bonneville must not risk vital tribal treaty resources to avoid a 20-cent per month increase on residential electric bills. This is especially troubling since Bonneville has not measured any economic effects from the 47 percent rate increase that it imposed in October of 2001—there has been no measured reduction in demand for Bonneville's electricity supply as a result of those rate increases.

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[2] These projects are essential to fulfill the "aggressive non-breach" salmon recovery option called for by the 2000 FCRPS Biological Opinion. While on remand to NOAA Fisheries, the federal court is overseeing the efforts of the government and other parties to cure the defects in the Opinion. The court appears to clearly understand the difference between having a plan and having financial and other commitments that assure implementation of a plan. Notably, Bonneville funding of tribal law enforcement was ongoing in 2000 and was part of the FCRPS BiOp's environmental baseline.

What Bonneville's customers are seeking is a direct transfer of resources from the salmon and beneficiaries of healthy salmon runs to themselves. The tradeoffs are clear, for the benefit of Bonneville customers who have enjoyed decades of extraordinarily low cost power supplies, salmon mitigation programs would be sacrificed.[3] We believe that the Northwest Power Act was intended to cure the Northwest's insatiable demand for low cost electricity through conservation programs and a requirement that fish receive equitable treatment with the other purposes for which the Columbia River dams are operated. Are irrigation water deliveries, flood control operations, or navigation lockage being sacrificed to reduce the size of Bonneville's SN CRAC rate increase? No. Is it equitable that salmon should be sacrificed to accommodate Bonneville's over-subscription and cost control failures? No.

Unfortunately, Bonneville has already cut fish and wildlife to minimize electricity rates. Bonneville could have funded the fish and wildlife actions called for by fish and wildlife managers in the Provincial Review and kept the total rate increase to less than $3 per month for the average consumer. Instead, Bonneville decided to minimize the rate increase and is not fully funding the actions that are needed to implement the FCRPS Biological Opinions and the Columbia River Basin Fish and Wildlife Program. Based on the information described in our testimony in the SN-03 rate proceeding, we believe that a minimum of an additional $100 million per year is needed to implement these actions.[4]

Evaluation of Spill Effectiveness

The tribes have long supported spill as the best passage route for juvenile salmon.[5] Spill and flow establish vital normative conditions for juvenile and adult salmon passage and habitat in the mainstem Columbia and Snake Rivers. While the flow and spill measures called for by the 2000 FCRPS Biological Opinion are inadequate to recover salmon, they are certainly much better than no spill at all.[6]

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[3] This type of tradeoff was thoroughly reviewed and criticized in a report entitled Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs and Shoshone Bannock Tribes April 1999 Meyer Resources, Inc, http://www.critfc.org/legal/circum.htm. The report notes how the construction and operation of the Corps' FCRPS dams has resulted in a tremendous transfer of wealth from the tribes and their fishing based economies to those non-Indian economies that have flourished with the shift in the productive capacity of the river from fisheries to energy, irrigation, and navigation.

[4] For the benefit of those cc'd on this letter, the Yakama Nation and CRITFC testimony in the rate proceeding can be found at www.critfc.org. Notably Bonneville struck those portions of the tribal testimony dealing with river operations and fish and wildlife funding as being outside the scope of its rate proceedings.

[5] NOAA Fisheries and the CBFWA fishery managers have repeatedly supported spill as the best passage route for salmon survival.

[6] The tribes' 1995 anadromous fish restoration plan, *Wy-Kan-Ush-Mi Wa-Kish-Wit* (Spirit of the Salmon), called for summer spill at all mainstem dams into September. Spill is critical to protect substantial portions of remaining summer chinook migrants that are ESA-listed and also those from the Hanford Reach and Mic-Columbia that support tribal, Alaska and international fisheries under the *U.S.-Canada Salmon Treaty*. There are numerous fall chinook stocks in the lower river that support tribal treaty and non-treaty fisheries.

The Council's recently adopted amendments to the mainstem sections of its Fish and Wildlife Program call for an evaluation of spill effectiveness. In our view, the critical Lower Snake River summer spill and salmon transportation test is scheduled for 2005 in the 2000 FCRPS Biological Opinion is just such a test. Study methodology for that test has been in development for over five years. In contrast, we have seen no proposed study methodology associated with the proposal to curtail August spill in 2003. Curtailing August spill in the absence of regionally acceptable study methodology will not yield useful biological information. Rather than curtailing spill in 2003, we urge Bonneville to assure that the financial resources will be available to provide for the Snake River summer spill test and maintain and expand spill at all FCRPS hydro projects to increase salmon survival.

The Commission has offered Bonneville many sound recommendations for alternatives to increase certainty for critical salmon measures.[7] Bonneville has not accepted these recommendations, and continues to propose only short-term actions, such as eliminating salmon spill and defunding tribal fisheries programs. In taking these actions, Bonneville continues to implement a policy that forces tribes to bear more and more of a disproportionate share of the conservation burden.

While salmon recovery is at the crossroads, we call on you and your agency to step up to the plate now. Bonneville must restore funding to critical tribal and non-tribal salmon recovery programs, provide certainty for spill, flow and other mainstem passage operations, and look to the future by diversifying the region's energy portfolio. Any less of an effort will surely call into question the credibility of Bonneville, and the federal government with respect to salmon recovery.

Sincerely,

Olney Patt, Jr.

Olney Patt, Jr.
Executive Director.

cc: BG William Grisoli, ACOE
Stan Speaks, BIA
Bob Lohn, NOAA Fisheries
J. William McDonald, BuRec
Judi Danielson, NWPPC
Fred Disheroon, DOJ

[7] Our rate case testimony is replete with such recommendations.

Attachment G

Adult Fallback Mortality Estimates with No Spill

	August Adults	Fallback rate	Adults fallback	Screen passage (0.5)	Turbine Pass(0.5)	Screen Mort(0.10)	Turbine Mort(0.5)	Total Mort
John Day								
chinook	37086	0						
steelhead	158933	0.0694	11030	5515	5515	552	2758	3310
TDA								
chinook	63943	0.096	6139	3070	3070	307	1535	1842
steelhead	109283	0.062	6776	3388	3388	339	1694	2033
Bonneville								
chinook	149283	0.039	5822	2911	2911	291	1456	1747
steelhead	226307	0.043	9731	4866	4866	487	2433	2920
							Total Adult Morts	**11852**

Assumptions:
Fallback rates from 2001 radio-telemetry data from U of Idaho reports for no spill periods during August or Sept-October (no spill period) if spill was provided during August 2001

August 2002 adult passage information from Corps' 2002 Annual Fish Passage Report

Chinook includes summer and fall chinook adults and jacks
Steelhead includes adult wild and hatchery

Turbine mortality from Foster Dam studies in NMFS 2000 BiOp

Screen mortality assumes that about 0.25 of fish that suffer from 41% visible injuries from Wagner and Hilson 1991 are mortalities- fish do not spawn successfully.

Attachment H

November 3, 2003

MEMO FOR: FPAC

FROM: Gary Fredricks

SUBJECT: Bonneville Operations for 2004

There are several decisions we need to make for research and operations at Bonneville in 2004. Currently, research is scheduled to investigate passage and survival through all routes of passage at the project except the powerhouse two turbines. The main questions to be addressed include passage efficiency and survival through the new corner collector, the spillway and the powerhouse one ice and trash sluiceway. Other questions include effects of spill deflector elevation on survival and effects of powerhouse two gatewell modifications on FGE.

These research objectives bring up many questions that need to be addressed by the fisheries managers, including:

1. What spill operation should we evaluate?
2. Will this be a one or two treatment test?
3. What species of test fish?
4. Should the spill pattern be adjusted to reduce potential adult passage delays?
5. What dates should the corner collector operate? With and without spill?
6. What should the powerhouse unit priorities be at both powerhouses?
7. How many second powerhouse TIE's should be removed?
8. What PH1 sluiceway gates should be operated?
9. Should spill and PH1 operation be used to minimize fallback from the Bradford Island exit?
10. Should we have separate spring and summer operations?
11. Should the STS's at powerhouse one be installed for any of the spring season?
12. What is the Spring Creek Hatchery release operation?

I'm offering the following thoughts for FPAC discussion on each question:

1. Spill Operations. There are five general potential operations that I have heard people discuss:
1) gas cap 24 hours (~140 kcfs);
2) gas cap night, new adult cap (~110-120 kcfs) day;
3) new adult day cap 24 hours;
4) gas cap night, old adult day cap (i.e. no change from BiOp); and
5) 50 kcfs spill 24 hours.

I believe 24 hour gas cap would be difficult to support due to adult passage concerns and limited juvenile benefits. The adult passage data presented at the October 27, SRWG meeting clearly show a tailrace delay of adults when spill levels go above 120 to 125 kcfs. Also, hydroacoustic data from 2002 indicate little increase in FPE for spill levels above the 110 to 120 kcfs range.

BPA's 24 hour 50 kcfs proposal would also be difficult to support because of high risk to juvenile passage including marginal spillway tailrace conditions, excessive PH1 operation and unknown corner collector efficiency and survival. This leaves the three middle options, all of which have some merit. Operating only at the current BiOp level ignores the latest radio tag data which indicates that the 75 kcfs daytime cap no longer has a basis, particularly when most of the powerhouse flow is through the second powerhouse. The gas cap night, new day cap option would provide the highest overall amount of voluntary spill while minimizing operation of PH1. The final option of a constant adult cap spill level provides some compromise to the increasing pressures of reducing spill while maintaining high spill (and fish) passage efficiency at this project. The 2002 hydroacoustic data indicate that spill efficiency and FPE both increase with increasing spill volume up to about 150 kcfs although the rate of FPE increase is low between 110 and 150 kcfs. Without more specific information on corner collector efficiency and its effect on project FPE and spill efficiency, the best recommendation seems to be gas cap night, and new adult cap of 115 kcfs during the day.

2. Test Treatments. Currently, the plan is to operate the project under one spill condition for the entire passage season. However, an evaluation that compares the base BiOp operation against a new spill operation would provide the best assessment of a new long-term operation with the corner collector. There are other reasons for a two treatment test. In several of the scenarios in #1 above, the spill varies between night and day but not from day to day. To get a better idea of how the new corner collector efficiency reacts to different spill operations, you would need operations that are different for the same daily periods, e.g., two different day operations and/or two different night operations. Including the BiOp level gives a greater range of spill levels for corner collector efficiency evaluation. The main downside of two treatments is the increased cost. Currently both the John Day and the Bonneville survival studies are above the SCT cut line, I would suggest dropping the John Day studies if a two treatment test was deemed necessary at Bonneville.

3. Test Fish. Currently, the plans are to tag steelhead, yearling and subyearling chinook. However, if another treatment group is needed the cost of the study will increase substantially. The current price tag is $5.3 million. Adding another treatment would increase the cost by about $750,000 for each species. A way to keep this cost increase lower would be to only test chinook. Our main concern with steelhead is entrance efficiency, particularly through the corner collector and sluiceway. Passage survival for steelhead typically doesn't differ that much from chinook. All of our previous studies have included chinook but not always steelhead. Even if we do not test passage of steelhead, we will be able to compare hydroacoustic passage efficiencies with chinook. If we see large differences, then steelhead could be added to tests in another year.

4. Spill Pattern. The current pattern was developed just prior to the 2002 passage season after the endbay spill deflectors were installed. We tried to minimize near shore eddies to reduce the available holding areas for predators. In doing so, we recognized that our shoreline flow velocities were quite high and may cause a problem for adult migrants. Now that we have seen that this problem seems to exist, at least at the 115+ kcfs spill levels, we may want to take a second look at the spill patterns. A flattening of the patterns at the higher spill levels may provide better adult entrance conditions. Juvenile egress conditions would be worse, but this is a

subjective assessment, the impact may not be very significant particularly at these higher spill levels.

5. Corner Collector Operation. At a minimum the collector should operate throughout the spill season and during the Spring Creek release. When designing the collector outfall we took advantage of the "push" of the spill flow to keep the collector flow in mid-channel. Without spill, a percentage of the collector flow eddies up into the spillway channel and most of the rest of the flow moves downstream too close to the Bradford Island shoreline. The Corps has recommended a spill vs. no spill summer test of the collector. I think this is too risky. If any no spill tests are to be done, they should be done outside the regular spill season. Another consideration might be fallback of adults after the spill season. For those fish that want to fallback, the sluiceway would probably provide a better route than the PH2 turbines or bypass.

6. Powerhouse unit priorities. The unit priorities are in the Fish Passage Plan, the general trend is to operate end units before middle units for adult attraction and juvenile outfall egress (PH1) reasons. Recent hydroacoustic FGE data (Ploskey et. al 2002) has indicated that FGE is much better for middle units at powerhouse two. It should be noted however that changing powerhouse unit operations might have a negative effect on the corner collector efficiency (as well as on adult passage). Also, we really don't know how the horizontal distribution of fish or FGE might change with the corner collector operating. I suggest we leave this one alone for the year at PH2. PH1 priority depends on what we do with JBS operation (#11 below).

7. Powerhouse two TIE's. The turbine intake extensions were put in place to counteract the tendency for the forebay flow to eddy to the south (and north). This eddying action was thought to be a cause of poor FGE at this powerhouse and they were proven effective at increasing FGE, at least for the spring passage season. However, this eddying action is also what causes fish to pass near the corner collector entrance. Currently, the plan is to remove TIE's from units 11 through 14 in the spring (all TIE's are currently removed in the summer). There was some discussion at the October 27 SRWG meeting about possibly removing additional TIE's. The benefit of removing these from more northerly units may have some beneficial effect on the corner collector efficiency due to the way flow moves into this forebay. This action would however, have the tendency to reduce FGE in the units which tend to have higher FGE in the first place. I suggest we stick with the original plan unless some model work shows a clear potential to improve forebay hydraulics in a way we think is conducive to sluiceway guidance. We should suggest that the Corps investigate this with the ERDC forebay model before any changes are made.

8. Powerhouse One Sluiceway Operation. Currently, chain gates 10C and 7A are open during the passage season. Hydroacoustic data (Ploskey et al, 2002, pers. com. 2003) indicated that there is little passage into chain gate 10C and very high passage through 7A. I recommend we ask the Corps for a complete hydraulic evaluation of the sluiceway, similar to the analysis done for The Dalles Dam sluiceway. This will tell us the hydraulic consequence of opening different gates. Combining this with horizontal and vertical fish distribution data for the forebay should identify an appropriate gate to open in place of 10C. Ploskey (2002) recommends a gate open at unit 5 or 6 and perhaps at unit 2 depending on hydraulic capacity of the sluiceway. Kelt passage

may be best at unit 1 or 2 according to kelt passage information (Wertheimer pers. com).

9. Minimizing Powerhouse one operation. It is clear for juvenile and adult studies that powerhouse one operation should be minimized for best fish passage and survival. Adult studies have shown that adult fallback increases as PH1 operation increases. Fallback seems to increase when PH1 flow approaches 50-60 kcfs (Clugston pers. com, but he indicated we need to check further on this). Juvenile R/T data from 2002 indicates that overall PH1 survival is 8 to 10% lower than survival through either the spillway or PH2 (Counihan et al. 2003). The capacities (in kcfs) of the various major flow routes at this project are; PH1 = 100, PH2 = 140, TDG cap spill ~ 140, old adult spill cap = 75, and new adult spill cap = 110-120. Hydraulic capacity of the project without PH1 is 250 with a 110 kcfs spill cap to 290 kcfs with a 140 kcfs spill cap.

10. Separate Spring and Summer Ops. This is really a John Day vs. Bonneville dam decision since BPA has said that if we change John Day Dam summer spill to 30% 24 hours, their transmission limitations would not allow a change for more day spill at Bonneville Dam. They say summer operations between these projects must remain megawatt neutral until transmission line changes are made. Given this, a 30/30 operation at John Day means BiOp operation at Bonneville Dam. It appears we need to decide which is more important for overall subyearling survival, 30%, 24 hour spill at John Day or higher day spill at Bonneville Dam. I am still working on this one. Regarding spring operations; BPA indicated there is no limitation on Bonneville spring spill from a power transmission perspective (and given there is no proposal to change daytime operations at John Day).

11. Powerhouse One STS's. The Corps is recommending that the powerhouse one screens and JBS not be used during the spring. These screens are currently in during the spring and removed during the summer. The reason for this recommendation is the poor JBS survival noted in 2002 survival study. That spring chinook R/T study (Counihan et al. Draft 2002 report) indicated a 91% (+/-8) survival for the PH1 JBS and a 101% (+/-3) survival for the MGR turbines. These treatment groups had a common control group released below the PH2 JBS outfall. The MGR units include unit 1 and 3-6 (five of the ten units). While we might not like the absolute values of these estimates or the wide confidence interval for the JBS estimate, the fact remains that they should be comparable in a relative sense and bypass survival appears to be worse than turbine survival. Another consideration is that sluiceway passage of juveniles is high at this powerhouse. The 2002 hydroacoustic estimates indicate that 33% of all spring migrants passing PH1 pass the sluiceway. Since PH1 FPE was 58%, subtracting the sluiceway efficiency indicates the bypass was passing only about 25% of the powerhouse passage. A final consideration is adult fallback, however this has been low through either powerhouse at this project.

12. Spring Creek Hatchery Release. Defer to Dave Wills.

Attachment I

UMATILLA INDIAN RESERVATION • SHOSHONE-BANNOCK TRIBES • WASHINGTON FISH & WILDLIFE • SALISH KOOTENAI TRIBES • NATIONAL MARINE FISHERIES SERVICE • YAKAMA INDIAN NATION • IDAHO FISH & GAME • WARM SPRINGS RESERVATION • BURNS-PAIUTE • KOOTENAI TRIBE • SPOKANE TRIBE • MONTANA FISH, WILDLIFE & PARKS • COLVILLE RESERVATION • OREGON FISH & WILDLIFE • NEZ PERCE TRIBE • KALISPEL TRIBE • U.S. FISH & WILDLIFE • SHOSHONE-PAIUTE TRIBE • COEUR D' ALENE TRIBE

COLUMBIA BASIN FISH & WILDLIFE AUTHORITY

March 26, 2004

Judi Danielson, Chair
Northwest Power and Conservation Council
851 SW 6th Ave., Suite 1100
Portland, OR 97204-1348

Dear Judi:

The Columbia Basin Fish and Wildlife Authority (CBFWA) would like your support and assistance in encouraging Bonneville Power Administration (BPA) to fully fund the Northwest Power and Conservation Council's (Council) Fish and Wildlife Program (Program) budgets for Fiscal Year (FY) 2004 through 2006. By our calculations, BPA needs to replace approximately $10-15 million in FY 2004 of the $81 million cut in FY 2003 in order to accomplish this purpose.

As you are aware, the Fish and Wildlife Program is one of very few programs within BPA that has been historically under budget. Although we support program cuts BPA has sought throughout their agency to improve cost efficiency and meet the demands of the current rate agreement, nowhere within BPA have the funding cuts been as severe as within the Fish and Wildlife Program (Program). In the past year BPA has taken the following actions to reduce funding for the Program:

- Cut over $40 million from the Program by eliminating carry-over funding from previous years.
- Cut $11 million in Program funding by changing from an Obligations based planning budget to an Accruals based planning budget.
- Cut nearly $30 million by imposing a strict interpretation of a Capital funding policy. Although BPA argues that $36 million in borrowing authority is available each year for fish and wildlife projects, the application of their stringent funding criteria resulted in only $6.8 million of fish and wildlife related capital projects actually being funded.

As the Council and fish and wildlife managers work to absorb these tremendous reductions to the Program, BPA is now proposing to cut an additional $15 million from the Program budgets. This current Program reduction is a direct result of BPA's fiscal management processes and inconsistent accounting rules. In effect, BPA paid for FY 2002 and earlier obligations with FY 2003 funds.

In FY 2003, when Steve Wright asked the Council to balance the Program budget to an average of $139 million annually for the remainder of the rate case, the Council abided this request and cut over $40 million from the FY 2003 Program. Later in the fiscal year the Council reviewed the actual expenditures and identified approximately $15 million of FY 2003 savings that could be used to support deferred tasks in FY 2004. This action supported the Council budget of $154 million in FY 2004, but retained the $139 million average as requested by Mr. Wright. However, at the close of FY 2003, BPA identified approximately $10 million of FY 2002 and previous work that they insisted must be paid from the existing allocated FY 2003 budget. These are

invoices for work that had been billed to BPA prior to the Council budget exercise, but not included in the supporting material when the Council allocated the FY 2003 budget. In addition, another $3-5 million worth of capital projects were funded within the $139 million in FY 2003 as well as projects BPA funded without regional review and approval. These categories of projects were not identified by BPA as a potential impact to the Council's budget balancing effort until it was too late for the Council to manage.

The continued demands on the Program funding are placing the fish and wildlife protection, enhancement, and restoration efforts in the Columbia River Basin in significant jeopardy. The decrease in funding and the significant increase in the process necessary to manage the reductions have seriously compromised project implementation. In addition, continued reduction in fish and wildlife funding will certainly compromise the relationships with local stakeholders that have been fostered over the past two years as the Council concludes its subbasin planning effort.

The Members of the Columbia Basin Fish and Wildlife Authority request your assistance in encouraging BPA to keep the Council's FY 2004 budget whole in FY 2004 and to maintain the $139 million funding level in FY 2005 and FY 2006 through whatever means are available and appropriate to fully support the Council's original rolling province review recommendations.

Sincerely,

Warren Seyler, Chair
Columbia Basin Fish and Wildlife Authority

cc: Council
Governors
Steve Wright and Therese Lamb, BPA
Members
MMG
PPC
Northwest Irrigation Utilities
Pacific Northwest Generating Cooperative
Pacific Northwest Utilities Conference Committee

Attachment J

UMATILLA INDIAN RESERVATION • SHOSHONE-BANNOCK TRIBES • WASHINGTON FISH & WILDLIFE • SALISH KOOTENAI TRIBES • NATIONAL MARINE FISHERIES SERVICE • YAKAMA INDIAN NATION • IDAHO FISH & GAME • WARM SPRINGS RESERVATION • BURNS-PAIUTE • KOOTENAI TRIBE • SPOKANE TRIBE • MONTANA FISH, WILDLIFE & PARKS • COLVILLE RESERVATION • OREGON FISH & WILDLIFE • NEZ PERCE TRIBE • KALISPEL TRIBE • U.S. FISH & WILDLIFE • SHOSHONE-PAIUTE TRIBE • COEUR D' ALENE TRIBE

COLUMBIA BASIN FISH & WILDLIFE AUTHORITY

March 25, 2004

TO: MMG

FROM: CBFWA staff

SUBJECT: Comments on BPA Response to Biological Opinion Check-in comments

Attached is the March 23rd response from the Bonneville Power Administration (BPA) to the letter from Columbia Basin Fish and Wildlife Authority (CBFWA) to the Action Agencies (dated February 3, 2004), which raised concerns about the level of actual funding for implementation of the NOAA Fisheries 2000 Biological Opinion. In the Action Agencies 2003 BiOp Check-in Report, BPA reported that they were spending nearly $175 million for BiOp implementation ($139M in Expense plus $36M in Capital) in the Integrated Program. The CBFWA letter noted that spending in FY 2002 and FY 2003 was actually significantly less (approximately $60 million).

The March 23, 2004 response by BPA confirmed our contention that reporting on BiOp spending had been significantly over-stated. BPA reports that actual spending on actions for the BiOp over the past three years has averaged less than $90 million per year (little more than 50% of the figure reported in the 2003 Check-In Report). Although we still have concerns on some of the details, the numbers reported by BPA in their response are consistent with our most recent updated calculations as generated by the development of the 2004 CBFWA Annual Report. We are confident that the overall spending reported by BPA is within 5-10% of our current estimates; however, we are pursuing access to BPA's BiOp data to fully understand their calculations. The final BiOp numbers will be verified and included in the final 2004 CBFWA Annual Report.

The question still remains, however, as to why BPA continues to include the full cost of their overhead as BiOp implementation. They have now confirmed that only approximately 65% of their funding in the Integrated Program is for BiOp implementation (total actual spending in FY 2002 and FY 2003 has been about $145 million per year), yet they claim 100% of their overhead in that category. It is also disappointing that BPA failed to acknowledge our contention that their earlier cost figures were substantially over-stated ($90M actual versus $175M reported).

In summary it appears that the CBFWA letter achieved its objective of getting BPA to provide more accurate Fish and Wildlife Program costs; however, it appears that BPA is still resisting full accountability of their actual BiOp expenditures.

H:\work\consent\BiOpCheckinActionAgencies\BPAActionAgenciesResponseMemo.doc

2501 SW First Avenue, Suite 200
Portland, Oregon 97201
503/229-0191 Fax 229-0443
www.cbfwf.org

Attachment K

UMATILLA INDIAN RESERVATION • SHOSHONE-BANNOCK TRIBES • WASHINGTON FISH & WILDLIFE • SALISH KOOTENAI TRIBES • NATIONAL MARINE FISHERIES SERVICE • YAKAMA INDIAN NATION • IDAHO FISH & GAME • WARM SPRINGS RESERVATION • BURNS-PAIUTE • KOOTENAI TRIBE • SPOKANE TRIBE • MONTANA FISH, WILDLIFE & PARKS • COLVILLE RESERVATION • OREGON FISH & WILDLIFE • NEZ PERCE TRIBE • KALISPEL TRIBE • U.S. FISH & WILDLIFE • SHOSHONE-PAIUTE TRIBE • COEUR D' ALENE TRIBE

COLUMBIA BASIN FISH & WILDLIFE AUTHORITY

February 3, 2004

Stephen J. Wright
Administrator & CEO
Bonneville Power Administration - MG
905 NE 11th Ave.
Portland, OR 97208-3621

Brigadier General William Grisoli
U.S. Army Corps of Engineers
Northwestern Division
P.O. Box 2870
Portland, OR 97208

J. William McDonald
Regional Director
U.S. Bureau of Reclamation
1150 N. Curtis Road, Suite 100
Boise, ID 83706-1234

Dear Sirs,

The fish and wildlife managers of the Columbia River Basin provide the following comments on the "ESA 2003 Check-In Report for the Federal Columbia River Power System." Our comments are based on the Columbia Basin Fish and Wildlife Authority (CBFWA) analysis of the Bonneville Power Administration's (BPA) annual funding for projects addressing RPA action items in the Fish and Wildlife Program since the adoption of the 2000 FCRPS Biological Opinion (BiOp). We believe that the BPA has significantly over-estimated its actual financial contribution to the Action Agencies' efforts towards habitat restoration and offsite actions.

In the Check-In report, the Action Agencies state that:

> **"2003 Check-In for the Federal Columbia River Power System (Report 1-3)**
> **3.3 BPA Funding for Hydro and Offsite Actions**
> When the MOA expired and the Integrated Program began in December 2001, BPA began spending an average of $139 million annually in expenses and made $36 million available for capital expenditures on direct fish and wildlife activities or projects. The 39 percent increase in expense in this category above the MOA period ($100 million) was intended primarily to implement offsite BiOp actions above and beyond those already being implemented under the Council's Fish and Wildlife Program when the BiOp was issued. "

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Portland, Oregon 97201
503/229-0191 Fax 229-0443
www.cbfwf.org

Our analysis indicates that BPA has funded RPA actions totaling $57.7 million in Expense and $1.4 million in Capital in 2002 and $59.6 million in Expense and $3.4 million in Capital in 2003. These are projects identified by the NOAA Fisheries during the Rolling Province Review as being consistent with the BiOp. We should note until only recently BPA has been unable to make actual project specific expenditures available.

Based on our analysis, the Action Agencies reporting of expenditures in the Expense category of the Fish and Wildlife Program is not supported by the financial data. The report states that an additional $39 million annually (39% of $100 million) "was intended primarily to implement offsite BiOp actions above and beyond those already being implemented under the Council's Fish and Wildlife Program when the BiOp was issued." Our analysis of actual FY 2003 expenditures in the Expense category reveals that only $19.7 million consisted of projects initiated between FY 2001 and FY 2003 (new actions since the BiOp was adopted), and only $8.3 million of those projects addressed RPA actions as identified by the NOAA Fisheries. In FY 2002, only $6 million of all projects funded were for projects initiated in FY 2001 or FY 2002, with less than $3 million of those projects addressing RPA actions.

The apparent discrepancy between the level of Capital spending reported and actual expenditures is another significant concern. In FY 2002 the BPA expended less than $8 million (out of $36 million available) on projects that met its Capital definition for the entire Fish and Wildlife Program with only $1.4 million in projects that addressed RPA actions in the BiOp. Again in FY 2003 the BPA expended less than $12 million (out of $36 million available) on projects that met its definition of Capital in the Fish and Wildlife Program, with only $3.4 million in projects addressing RPA actions in the FCRPS BiOp. No new BiOp capital projects were initiated in either FY 2001 or FY 2003.

Clearly, a significant effort to implement additional actions in response to the 2000 BiOp has not been undertaken. Any evaluation of off-site actions funded by the BPA at this point is based on projects that were already in place prior to the release of the 2000 BiOp. While an argument that these ongoing projects have been modified to address current BiOp needs can be made, all ongoing projects have been level funded for the past three years based on the Council's Rolling Province Review recommendations as driven by BPA's recent decision to cap fish and wildlife funding. It should be noted that additional new projects that met the NOAA Fisheries criteria as BiOp actions were available for funding during this time. This also demonstrates the difficulty in meeting BPA's diverse obligations by funding their BiOp efforts wholly within the existing Fish and Wildlife Program.

Using this analysis as an indicator, the CBFWA Members are concerned that the Action Agencies are significantly overstating the current accomplishments under the FCRPS Biological Opinion(s). We believe this analysis reveals a lack of urgency in addressing the offsite mitigation required to meet the intent of the 2000 NOAA Biological Opinion to protect and restore listed salmon in the Columbia River Basin.

Our two Members representing Federal regulatory agencies on the Columbia River, the NOAA Fisheries and U.S. Fish and Wildlife Service, have abstained from participation in the development and approval of these comments.

Sincerely,

Warren Seyler, STI, Chair
Columbia Basin Fish & Wildlife Authority

cc: Therese Lamb, BPA
Council Members
CBFWA Members

Attachment L

COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION
729 NE Oregon, Suite 200, Portland, Oregon 97232
Telephone 503 238 0667
Fax 503 235 4228

Memorandum

Date: December 12, 2003
To: Jim Ruff, NOAA Fisheries; Witt Anderson, Corps of Engineers
From: Tom Lorz and Bob Heinith, CRITFC

Subject: **Comments and Recommendations on Ice Harbor 2004 Operations and Removable Spillway Weir.**

- The Region first needs to be assured that there really is a problem with spillway survival at Ice Harbor. It is uncertain whether the current fish survival results are an artifact of the study design or execution, such as release mechanism or other fish handling procedures. We are unaware of any completed review comparing reach survival data with project specific data for Ice Harbor. If a spillway survival problem exists, we should be able to detect it in the reach survival data.

- Nevertheless, if it is assumed that the measured spillway survival values are due to a mechanism involving the dam and not an artifact of the study itself, there still needs to be a better understand of what is causing the mortality. Several hypotheses have been tested and discarded. In 2003, a bulk spill strategy was tested. Preliminary study information indicates that survival improved to the ~96% level with ~98.5% FPE. We need to verify these results for spring conditions. If these levels of survival continue to be observed during the 2004 spring migration and can be reliably considered as baseline data, the question becomes what survival improvements can be achieved by the removable spillway weir (RSW). It is unlikely that the RSW will increase FPE. And, since we are not sure what is the cause of the mortality if it exists, just placing an RSW at IHR cannot be relied upon to improve survival past the 96% level.

- The current hypothesis for the lower than expected spillway survival at Ice Harbor relates to nape depth at the spillway ogee and interactions with the deflector. The RSW by itself will likely not address this issue. Bulk spill has greater nape depth than the current BiOp spill and thus may explain the increase in survival witnessed in 2003. However, ranges of flows through the RSW will be less than bulk spill and the water through the RSW will be released in an overflow style, which will likely generate a nape depth less than bulk spill. This configuration needs to be verified. If nape depth on the RSW is less than the bulk spill, we are creating a situation that moves away from an operation known to increase spillway survival. This gets back to CRITFC's assessment that a better understanding of the mortality mechanism is critical to insure whatever changes we make

are likely to improve survival. Regional research discussions indicate that an additional year of study to better understand the mechanism and then design and/or fix the problem should be contemplated. CRITFC recommends a more cautious approach to insure the best structure is designed and installed to assure that direct survival through the structure and over the spillway is equivalent or better as bulk spill. In addition, a comparative test for indirect mortality should be designed and tested.

- The bulk spill test is a crude surrogate for an RSW operation and it seems prudent to test this concept for the spring migrants to insure the survival benefits witnessed in summer 2003 translate to the spring fish. If the benefits of bulk spill continue with fish survival at a relatively high rate, it does not seem to us reasonable for the region to continue consideration of an RSW at Ice Harbor or other dams until we complete comprehensive fish impact testing of the Lower Granite RSW. We question what survival benefits the proposed Ice Harbor RSW would provide the region and whether the region should consider RSWs at other projects.

- A great deal of regional technical discussion has taken place describing the benefits of the Lower Granite RSW and while preliminary information looks promising we are still cautious. We only have two years of guidance information and one year of survival information. The one year of survival data was not statistically different than BiOp spill, but the trend indicated an improvement. The RSW needs to be fully tested for summer migrants.

- Of the Snake River projects, Ice Harbor is the most unique. The spillway deflectors at Ice Harbor are much higher than Lower Granite, and the tailrace is much shallower than Lower Granite. Both of these conditions may play a critical role in understanding the spillway survival issues we are trying to address at Ice Harbor. An RSW will not correct either of these conditions. The RSW testing at Lower Granite continues to make sense since the objective there is to increase FPE by increasing SPE. However, the RSW at Ice Harbor will likely not improve FPE over current conditions. Instead, installing a RSW is an attempt to improve spillway survival over the existing condition and CRITFC remains uncertain how the RSW will accomplish that.

- By continuing with the fast track of the Ice Harbor RSW the region will be committing at least $7 million of 2005 budget, possibly more depending on study requirements. This is a large commitment of extremely limited CRFMP funds when other critical needs that the tribes have long advocated for, such as temperature improvements at passage facilities, and lamprey research and passage facilities have suffered from lack of funding.

- If the RSW is built and installed, any additional needed improvements in Snake River juvenile survivals (e.g. SARs for spring chinook and sockeye) will need to be seriously considered and may be limited by the operation of the RSW. Further, if the spillway deflectors need to be lowered, it is unclear what would be the impact to total dissolved gas production.

- The spillway at Ice Harbor is integral to improving project juvenile fish survival. Direct turbine survival for sub-yearlings is estimated at ~88%, and the survival through the whole bypass system from forebay to gatewell to outfall remains uncertain. Screen guidance is in the 50-60% for sub-yearlings. Therefore the spillway remains a critical passage route at Ice Harbor. Rushing into RSW installation at Ice Harbor before the fish mortality mechanism is clearly identified and understood could confound our ability to focus resources to the specific problem at hand while increasing the time it takes to modify the spillway to improve survival and recovery of listed stocks. A relative survival study comparing bulk spill, screen bypass and turbine passage would establish an important baseline for consideration of RSW installation or other passage solutions.

Attachment M

ATNI Resolution #04-007

2004 Winter Conference
Portland, Oregon
RESOLUTION #04 -007

"OPPOSING THE ELIMINATION OR REDUCTION OF THE SUMMER SPILL PROGRAM THAT BENEFITS MIGRATING SALMON AND OTHER ANADROMOUS FISH IN THE COLUMBIA AND SNAKE RIVERS"

PREAMBLE

We, the members of the Affiliated Tribes of Northwest Indians of the United States, invoking the divine blessing of the Creator upon our efforts and purposes, in order to preserve for ourselves and our descendants rights secured under Indian Treaties and benefits to which we are entitled under the laws and constitution of the United States and several states, to enlighten the public toward a better understanding of the Indian people, to preserve Indian cultural values, and otherwise promote the welfare of the Indian people, do hereby establish and submit the following resolution:

WHEREAS, the Affiliated Tribes of Northwest Indians (ATNI) are representatives of and advocates for national, regional, and specific Tribal concerns; and

WHEREAS, the Affiliated Tribes of Northwest Indians is a regional organization comprised of American Indians in the states of Washington, Idaho, Oregon, Montana, Nevada, Northern California, and Alaska; and

WHEREAS, the health, safety, welfare, education, economic and employment opportunity, and preservation of cultural and natural resources are primary goals and objectives of Affiliated Tribes of Northwest Indians; and

WHEREAS, since time immemorial, our economy, culture, religion and way of life have been centered around our fishing, hunting and gathering resources, and the lands and waters on which they depend, and yet their health and well-being have suffered greatly as a result of many harmful non-Indian activities and actions; and

WHEREAS, the loss and diminishment of many of these resources has in turn caused substantial harm to tribal people and communities and has impacted our inherent tribal sovereignty, which is based in part on the free exercise of our rights to fish, hunt and gather, and the United States has a duty, based on treaties, executive orders, the federal trust responsibility and numerous court opinions, to ensure that those rights are honored; and

WHEREAS, among the many resources that have been destroyed and degraded by the development and operation of the Columbia River hydropower system are various populations of salmon, lamprey, sturgeon, resident fish and wildlife, to such an extent that numerous such species have gone extinct or are currently listed under the federal Endangered Species Act (ESA); and

WHEREAS, the U.S. Army Corps of Engineers (USACE) and the Bonneville Power Administration (BPA) have legal obligations, under the National Historic Preservation Act and other statutes, to identify and protect archaeological and cultural resource areas impacted by the operation of the Federal Columbia River Power

System through identification, enforcement and education, particularly in light of the Lewis and Clark memorial events; and

WHEREAS, one of the primary specific factors in the loss and diminishment of fish populations has been the construction and operation of the federal hydrosystem in the Columbia Basin, which harms fish basin-wide by detrimentally altering their essential riverine habitat and by killing, injuring and disorienting those that pass through either dam turbines or extended-length screen systems; and

WHEREAS, in addition to directly and indirectly harming migrating fish populations, the federal hydrosystem has created reservoirs and affected riverine systems in the upper portion of the Columbia River Basin that have frequently been managed in ways that negatively impact many treaty and trust resources, including cultural and natural resources in both rivers and reservoirs; and

WHEREAS, the safest means of fish passage around dams is by controlled spill, a point on which there is virtually unanimous scientific agreement (including that of NOAA Fisheries); and

WHEREAS, four Columbia River treaty tribes fought hard for more than two decades to finally succeed in securing the summer spill program to protect outmigrating salmon and to improve survival and reproduction of lamprey and sturgeon; and

WHEREAS, additional political entities and other organizations, such as the State of Alaska and the Alaska Trollers Association, are concerned about healthy fish populations and habitat and the many benefits they provide, and, as such, are in substantial agreement with the tribal position in support of the continuation of the summer spill program; and

WHEREAS, federal agencies, led by BPA, have been engaged in a vague, unwritten yet aggressive campaign to eliminate spill during the summer based on claims that it is unjustifiably "expensive," again inequitably blaming fish recovery measures for so-called "foregone revenues" lost while consistently failing to note or address revenues foregone from water devoted to irrigation, navigation and other non-Indian economic activities; and

WHEREAS, the United States District Court for the District of Oregon has ruled that the FCRPS Biological Opinion—even with its provision for summer spill—nevertheless violates the ESA and fails to ensure adequate protection for ESA-listed fish, and BPA's proposal to curtail summer spill is therefore a step in the wrong direction, providing even less protection than that of a federal recovery plan already deemed legally insufficient; and

WHEREAS, eliminating or significantly reducing summer spill in 2004 will result in the loss of tens of thousands of fish (adult equivalents), which includes about 15% of the returning fall chinook, thus impacting tribal ocean and Columbia River fisheries, and BPA and the other federal agencies have yet to accurately and specifically determine or describe how to mitigate for this loss of salmon, lamprey and sturgeon; and

WHEREAS, the Deschutes fall chinook are an indicator stock under the Pacific Salmon Treaty and will be substantially impacted such that ocean fisheries management will be significantly affected; and

WHEREAS, the late portion of the juvenile summer salmon run through the lower Columbia River dams contributes most of the larger and older adults to harvest and to the spawning grounds, thereby ensuring stock resiliency in the face of poor environmental conditions such that curtailing summer spill would select against important stock life history diversity, and thus there are serious doubts about whether it is even possible to mitigate for curtailing summer spill; and

WHEREAS, BPA appears to be proposing, or has expressed support for, certain measures that it has already adopted or supported in the past, as so-called "offsets" for curtailing spill, thus effectively "double counting" its claimed commitments to fish and wildlife recovery; and

WHEREAS, BPA now offers to support the "Vernita Bar plus" operations as a spill "offset" if summer spill is reduced, even though BPA was supporting these operations before it proposed reducing summer spill; and

WHEREAS, it is not necessary to draw water from the upper reaches of the Columbia River Basin in order to implement the summer spill program, and

WHEREAS, the Columbia River tribes support implementation of a natural flow regime, including a lesser, stable rate and level of reservoir drawdown for the entire Columbia River Basin including Libby, Hungry Horse, and Grand Coulee reservoirs; and

WHEREAS, BPA similarly appears to be willing to continue to fund certain tribal law enforcement activities if tribes agree to reduce spill or, at a minimum, agree to negotiate possible reductions, even though BPA is already obligated, and has committed, to adequately fund tribal law enforcement that benefits fish and wildlife populations; and

WHEREAS, BPA's claimed "offsets" do not come close to providing the same in-kind benefits as spill, they remain vague and unspecified as to where they will occur, when they will occur, what benefits they will provide, and when those benefits will accrue; and

WHEREAS, among the "offsets" that BPA has suggested is to further reduce tribal fisheries harvest to "mitigate" for the fish that will be killed by curtailing summer spill, a proposal which the tribes find insulting, outrageous, unjust, and unacceptable; and

WHEREAS, BPA has in the past failed to honor it commitments to "offsets" to mitigate for its actions that have killed fish, as was the case during BPA's alleged financial "crisis" in 2001, when summer spill was reduced at BPA's instigation and $25 million in "offsets" were identified, an amount that grossly underestimated that which was necessary to fully and properly mitigate for halting spill that year, and BPA then compounded this travesty by spending only about half of this amount, calling into serious question BPA's integrity and willingness to honestly fulfill any promises regarding "offsets" or mitigation; and

WHEREAS, ATNI Resolution #03-31, dated February 13, 2003, supported the transfer of implementing authority and contracting functions of the Fish and Wildlife Program from BPA to another entity based on an obvious conflict of interest, which is clearly demonstrated by BPA's current efforts to undermine and undercut the Program in order to increase it revenues from the sale of power; and

WHEREAS, BPA's financial health appears to have substantially improved compared to what BPA has asserted in the past, and thus the primary motivation for its zeal to curtail summer spill this year appears to be greed and the desire to maximize its power revenues at the expense of fish and other resources in which the tribes retain sacred rights and interests; and

WHEREAS, the loss of thousands of salmon will inevitably lead to the further erosion of tribal fishing rights and the ability to freely exercise them; now

THEREFORE BE IT RESOLVED, that the Affiliated Tribes of Northwest Indians supports implementation of the summer spill program to pass anadromous fish, including but not limited to controlled spill at Bonneville, The Dalles, John Day, and Ice Harbor dams; and

BE IT FURTHER RESOLVED, that BPA, U.S. Bureau of Reclamation (BOR) and USACE must address their failure to meet their obligations under the National Historic Preservation Act by providing adequate funds to protect archaeological and cultural resource areas from looting, erosion and human impacts including surveys, law enforcement and public education; and

BE IT FINALLY RESOLVED, that the Affiliated Tribes of Northwest Indians supports management of the upper Basin reservoirs and rivers so as to avoid harmful impacts to treaty and trust resources, including cultural and natural resources, and that BPA, BOR and USACE manage the Federal Columbia River Power System to implement the summer spill program while not impacting in any way upper Basin reservoir levels and river flows that support those treaty and trust resources especially in light of the BPA's erroneous "lost revenue" arguments that call for more water out of upper reservoirs if the summer spill program is maintained.

CERTIFICATION

The foregoing resolution was adopted at the 2004 Winter Conference of the Affiliated Tribes of Northwest Indians, held at the Embassy Suites Hotel Portland Airport in Portland, Oregon on February 12, 2004 with a quorum present.