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MEMORANDUM

TO: Russ Kiefer, IDFG

FROM: David A. Benner, FPC

DATE: June 19, 2008

RE: Libby Summer Operation Scenarios 2008

In response to your request, we have estimated the reservoir elevations that could be expected at Libby Dam over the summer of 2008 under two differing operational scenarios. We have also compared the flow changes that could be expected at McNary Dam over the summer of 2008 under each of these scenarios and compared these flows to what is projected under a full 20 foot draft of Libby by the end of August.

For this analysis, we utilized the June 9, 2008 STP for estimated outflows from Libby under a 20-ft end of August draft and resulting flows at McNary Dam. We also used the June 9, 2008 STP inflows to Libby Dam over the months of July, August, and September to evaluate the reservoir elevations that could be expected under each operational scenario that was provided.

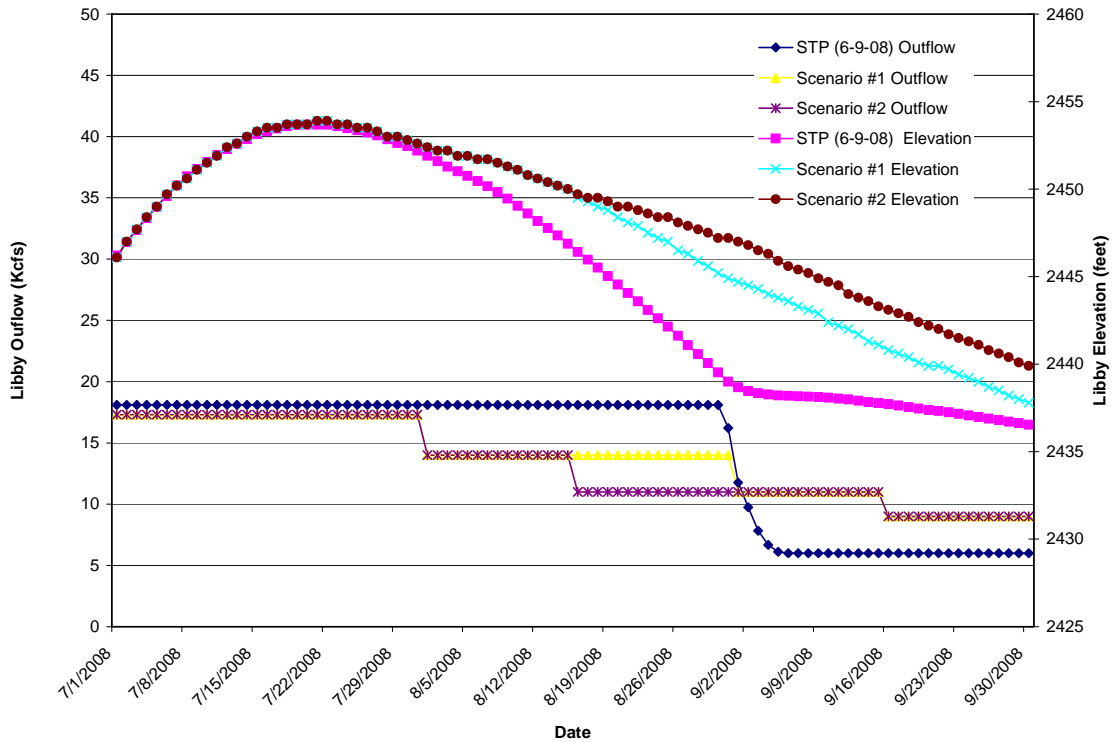
The two operational scenarios that were provided are as follows:

	Libby Dam Outflows				
	July Outflows (Kcfs)	August 1-15 Outflows (Kcfs)	August 16-31 Outflows (Kcfs)	September 1-15 Outflows (Kcfs)	September 16-30 Outflows (Kcfs)
Scenario #1	17.3	14	14	11	9
Scenario #2	17.3	14	11	11	9

To evaluate how far each of these flow scenarios would draft Libby reservoir, we used the 6-9-2008 STP and the June 30, 2008 midnight reservoir elevation as predicted by the 6-9-2008 STP (2445.4 feet). For each day beginning July 1st, 2008, we could estimate

the midnight elevation by using the outflow (according to each scenario) and the daily inflow from the STP. By converting the daily difference in outflow and inflow (in Kcfs) to a volume in Kaf, we could either add or subtract this volume (depending on if inflow was greater than outflow or visa versa) to the previous day's usable storage to yield a new usable storage, which would correspond to a new reservoir elevation.

The following figure shows 1. The outflows and reservoir elevations at Libby Dam predicted by the 6-9-08 STP 2. The reservoir elevations at Libby Dam predicted by this analysis under Scenario #1 outflows and 3. The reservoir elevations at Libby Dam predicted by this analysis under Scenario #2 outflows.



The elevation of Libby reservoir under each outflow scenario at the end of August and September is of particular importance. The following table displays the elevations of Libby reservoir on August 31st and September 30th for each of the STP operation, Scenario #1, and Scenario #2.

	August 31 st Libby Elevation	September 30 th Libby Elevation
STP (6-9-2008)	2439	2436.5
Scenario #1	2444.9	2437.8
Scenario #2	2447.2	2439.9

The above table shows that both Scenario #1 and Scenario #2 will lead to higher Libby reservoir elevations at the end of August and September. Under Scenario #1, Libby drafts to 2444.9 feet by the end of August, 5.9 feet higher than the STP operation. Under

Scenario #2, Libby only drafts to 2447.2 feet by the end of August, 8.2 feet above the STP operation. Both, outflow scenarios #1 and #2 also result in higher Libby elevations by the end of September, relative to the STP.

It should be pointed out that both operational scenarios (#1 and #2) will reduce outflows from Libby Dam over the Summer Flow Augmentation period in the lower Columbia River (July and August). The following table displays the July-August average outflows and the September average outflows under the STP (6-9-08) and each outflow Scenario.

	July-August Libby Outflow Average (Kcfs)	September Libby Outflow Average (Kcfs)
STP (6-9-2008)	18.1	6.4
Scenario #1	15.7	10.0
Scenario #2	14.9	10.0

Scenario #1 reduces outflows at Libby Dam over July and August by 2.4 Kcfs relative to the 6-9-8 STP. Scenario #2 reduces outflows at Libby Dam over July and August by 3.2 Kcfs relative to the 6-9-8 STP. In either Scenario #1 or #2, the reductions in outflow from Libby Dam (relative to the STP) would translate to similar reductions in river flow in the lower Columbia River. According the 6-9-08 STP, 2008 July-August flows are expected to average 185 Kcfs at McNary Dam, already below the 200 Kcfs Biological Opinion flow target at McNary Dam over July and August. By implementing either outflow Scenario #1 or #2 at Libby Dam, Columbia River flows would be reduced even further below the Biological Opinion flow target at McNary Dam.