SYSTEM OPERATIONAL REQUEST: #2008-MT-1

The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: Montana Fish Wildlife & Parks

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FROM: Jim Litchfield & Brian Marotz, State of Montana

DATE: May 1, 2008

SUBJECT: **Use Albeni Falls, Grand Coulee, and Libby to achieve a Minimum Weekly Flow Objective of 180 Kcfs at McNary Dam and Operate Libby & Hungry Horse for July through September consistent with the FCRPS Biological Opinion.**

Biological Objectives

There are two biological objective of this SOR. The first is to utilize Grand Coulee, Libby and Albeni Falls to maintain a weekly average flow at McNary of 180 kcfs in order to bridge the time between drafting storage reservoirs for flood control and when the spring freshet occurs. The second objective is to implement an operation from July through September at Libby and Hungry Horse dams that will provide habitat for ESA listed bull trout and provide improved environmental conditions for other resident fish that inhabit the reservoirs and the rivers above and below Libby and Horse dams while providing the flow augmentation called for in the NOAA FCRPS Biological Opinion.

Specifications

Use the following operations to achieve a minimum weekly flow objective of 180 Kcfs at McNary Dam until the 2008 spring freshet begins:

1. Pass inflows at Albeni Falls (Do not refill) until 2008 freshet begins.
2. Use a combination of Grand Coulee and Libby Dam to augment flows as necessary to meet the 180 Kcfs minimum flow objective at McNary Dam until the spring 2008 freshet begins.
3. Review this operation at TMT meetings until the freshet increases weekly average flows to more than 180 kcfs at McNary.

For the period from July through September operate Libby and Hungry Horse reservoirs to implement the 2008 NOAA Biological Opinion for the FCRPS as follows.

Hungry Horse

- Follow VARQ flood control procedures.
- Refill by about June 30 each year (exact date to be determined during in-season management).
- Draft during July-September to a draft limit of 3550 feet (10 feet from full) by September 30, except in the driest 20 percentile of water conditions limit draft to 3540 feet (20 feet from full) when needed to meet lower Columbia flow augmentation objectives, If don't refill to the draft limit pass inflows or operate to meet minimum flows in the South Fork and Flathead River at Columbia Falls.
- Provide even or gradually-declining flows during summer months (minimize double peak).
- Limit spill to avoid exceeding Montana State TDG standards of 110% to the extent possible.
- Limit outflow fluctuations by operating to ramping rates set in 2000 USFWS Biological Opinion to avoid stranding bull trout.

Libby

- Follow VARQ flood control procedures.
- Operate to provide tiered white sturgeon augmentation volumes to achieve habitat attributes for sturgeon spawning/recruitment consistent with the 2006 U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BiOp) in May, June and July; shaped by Kootenai White Sturgeon Recovery Team in coordination with Regional Forum TMT.
- To provide for summer flow augmentation, refill by early July (exact date to be determined in-season), determined by available water supply and shape and spring flow operations, while also avoiding involuntary spill and meeting flood control objectives.
- Provide even or gradually declining flows following sturgeon flows during the summer months (minimize double peak) as determined through TMT in-season management.
- Draft to 10 feet from full pool by the end of September (except in lowest 20th percentile water years, as measured at The Dalles, when draft will increase to 20 feet from full by end of September). If project fails to refill to draft limit, maintain minimum flow in the Kootenai River.
- Meet minimum flow requirements for bull trout from May 15 to September 30 as described in the USFWS 2006 Libby Biological Opinion and 4,000 cubic feet per second (cfs) in October through April for resident fish.

- Limit spill to avoid exceeding Montana State TDG standard of 110 %, when possible, and in a manner consistent with the Action Agencies' responsibilities for ESA-listed resident fish.
- Limit outflow fluctuations by operating to ramping rates set in the 2006 USFWS Biological Opinion to avoid stranding bull trout.

Justification

Present flows are considerably less than the Biological Opinion flow objectives. The Biological Opinion spring flow objective this year at Priest Rapids Dam is 135 Kcfs over the period from April 10th through June 30th, 2008. Over the spring period through April 28th, flows have averaged 124 Kcfs over the last week and just 96.8 Kcfs thus far over the spring season. The Biological Opinion spring flow objective this year at McNary Dam is 260 Kcfs over the same period, while flows have averaged 189.7 Kcfs over the last week and just 163.6 Kcfs thus far over the spring season.

To date, the 2008 spring runoff has been delayed due to cooler than normal temperatures. Even with the continued cool weather that has persisted this year, which continues to delay the runoff; the Grand Coulee Reservoir has been drafted to its April 30th flood control elevation of 1228.8 feet. The current planned operation at Grand Coulee Reservoir is to delay reaching the flood control elevation until May 4th. This planned operation when combined with expected reductions in the flows out of the Snake River will result in an estimated reduction in lower Columbia River flows of approximately 20 Kcfs.

At the same time that flows are predicted to decrease, juvenile fish numbers in the Mid and lower Columbia have been increasing. PIT tag detections at McNary Dam indicate that both Mid Columbia and Snake River stocks are passing into the lower River. Historic average passage timing would suggest that numbers will continue to increase.

The Salmon Managers would like to prevent flows from decreasing during this important part of the migration period. Given the present amount of water in the upriver reservoirs and the physical and cultural constraints of these reservoirs, the Salmon Mangers are proposing meeting a minimum flow of 180 Kcfs, which is approximately equal to the average flow that has occurred thus far his year. The proposal is to achieve this objective by passing inflows at Albeni Falls and augmenting Columbia River flows using Grand Coulee and Libby reservoirs as necessary until the 2008 spring freshet begins. The Salmon Managers propose using both, or a combination of, Grand Coulee and Libby reservoir within their respective physical constraints to minimize potential impacts to either reservoir.

Biological Justification for Libby & Hungry Horse Operations

Biological conditions for resident fish in Montana are dramatically improved by gradually ramping down river discharge, after the spring freshet, toward stable or gradually declining summer flows through September (extended into October if possible). Stable or gradually declining flows are especially important during the biologically productive summer/fall months. Montana's growing season is short; rivers become productive in late June, after the spring freshet, and remain productive until water temperature drops to 6 degrees C in October. Peak production occurs in three months, July through September.

River flows must remain above bull trout minimums to protect fish from the impacts of dewatering areas of critical habitat. Most productive riffle habitat is inundated when flows are 9 kcfs in the Kootenai and about 5.5 kcfs in the Flathead mainstem. Higher flows are slightly more productive but with diminished returns due to the channel morphology.

It is important to avoid short-term flow reductions. Short-term flow reductions dewater river substrate. When it is hot and dry (or freezing) the benthos (algae, insects etc.) dry out (or freeze) and die in just a few hours or days. It takes about a month and a half to become productive once a dewatered zone becomes wet again.

To preserve productive aquatic habitat it is important to minimize flow fluctuations caused by hydropower operations. For this reason it is important to remain within allowable ramping rates when changing outflows from either Libby or Hungry Horse. River morphology causes ramp rates to be more restrictive as flows approach minimum flow and less restrictive as stage approaches bank full. This is because the wetted perimeter changes rapidly at low flows, but at higher flows, wetted perimeter changes less rapidly as flows increase.

The operation proposed in this SOR and in the NOAA 2008 Biological Opinion for the FCRPS are designed to enhance the productivity of resident fish because the resulting summer/fall outflows from Libby and Hungry Horse dams will improve aquatic productivity during the critical summer months of July through September.