

## APPENDIX 7

### Operation-related BiOp Provisions

(Draft 4/5/1999)

NOTE FOR REVIEWERS: REMAINING ISSUES ARE IN RED  
Comments of Brian Marotz, Montana, Fish, Wildlife & Parks are in BLUE.

I also highlighted some text to illustrate why the Integrated Rule Curves (IRCs) meet the intent of the Endangered Species Program, and to describe their practical implications.

GENERAL: I found it odd that there were no specific implications for endangered Kootenai white sturgeon (Libby is the only dam that can be reconfigured to aid this species) and the threatened bull trout (Libby and Hungry Horse Reservoirs contain some of the strongest remaining meta-populations of bull trout, westslope cutthroat and interior redband).

The 1995 BiOp and the 1998 Supplemental BiOp give general direction to the in-season management process for making decisions about in-season operations in the migration corridor that will provide levels of flow, spill, and supporting operations expected to provide survival benefits to listed fish. Pertinent operation-related provisions of the 1995 BiOp, supplemented or modified in the 1998 Supplemental BiOp, are summarized below. Practical implications of those provisions on the TMT are also outlined in this section.

1995 BiOp.

Page 95. "The COE, BPA and BOR shall operate the FCRPS during the fall and winter months, in a manner that provides the following levels of confidence of refill to April 20 flood control elevations, while meeting the project and system minimum flow and flood control requirements prior to April 20: 85% at Grand Coulee beginning January 1, and 90% at Albeni Falls "

Page 96: "The operations for anadromous fish [should] not place at risk other portions of the Columbia Basin ecosystem and the resident fish and wildlife that rely on the reservoirs."

The legal determination of Montana vs. USACE and BOR (1999) [Ask Tim Hall, Montana, for proper citation] is consistent with this direction. Once the *seasonal average* flow target has been met, Federal operators must implement the IRCs to the greatest extent practicable. This strategy reduces the chance that resident fish and wildlife are not placed at risk by the operations for anadromous fish. The Independent Scientific Advisory Board (ISAB) determined that the prevailing operation harms resident fish in and below Libby and Hungry Horse Reservoirs (including the endangered Kootenai River white sturgeon, threatened bull trout, petitioned westslope cutthroat and species of special concern, interior redband, burbot, and torrent and spoonhead sculpins). The ISAB also noted that the IRCs are consistent with their Normative River Concept, and provide a tool to decision makers to balance the needs of native fish and wildlife throughout the Columbia Basin.

Page 101: "The TMT shall coordinate with Idaho Power Company (IPC) for the provision of additional stored water for flow augmentation from Brownlee Reservoir if necessary to meet the flow objectives at Lower Granite."

Page 101: "TMT shall advise the operating agencies on dam and reservoir

operations to optimize passage conditions for juvenile and adult anadromous salmonids."

Page 102. "In general, the [water management] plan should attempt to conserve water for flow augmentation in July and August, unless doing so would result in significant departures from spring flow objectives. To achieve the conservation of water for summer flows, the plan should generally include operation of all Columbia River reservoirs to refill by June 30, with gradual releases to the draft limits through July and August.

Note: The 1999 IRC operation provided to Jim Ruff (NPPC) and Cinthia Henriksen (ACOE) demonstrate enhanced, stable flows during in the Kootenai and Flathead Rivers during spring and summer to benefit anadromous migrations, while simultaneously providing naturalized river conditions below Libby and Hungry Horse Dams. The IRCs also improve reservoir elevations during the biologically productive summer months.

Page 102: " During the migration season, the TMT shall guide the use of water in the Snake and Columbia Rivers with the goal of creating hydrographic conditions that provide the greatest survivals for listed Snake River salmon, taking into account needs of other anadromous fish in the Basin."

Note: The Normative River Concept (ISAB) is intended to provide naturalized conditions in all free flowing river reaches, so the above directions would logically consider headwater biota as well as anadromous species.

In-season adjustments will be made if and when allowed in the BiOp. Some examples of cases and conditions where the TMT was explicitly given in-season flexibility include the following:

- \* Adjust reservoir draft for flood control (page 95): "Flood control elevations in the Columbia River reservoirs above the confluence with the Snake River may need to be adjusted if flood control is shifted from Snake River reservoirs."
- \* Additional stored water for flow augmentation from Brownlee and shaping of Upper Snake water (page 101): "NMFS and Idaho Power Company will cooperate on a study of Idaho Power Company operations, including shaping of Upper Snake water, and consider adjustments to [the Brownlee] operation."
- \* Shift flood control space requirement from Brownlee (page 101): "The TMT may recommend that the COE shift system flood control from Brownlee Reservoir to reservoirs in the Columbia River above the confluence with the Snake River."
- \* Exceed summer reservoir drafts (page 102): the TMT may recommend lower summer reservoir elevations if necessary to meet flow objectives depending on the circumstances of the runoff and the salmon migration (e.g., a low water year that is one in a series of low water years and an outmigrating population of fish that represents a strong year class). In general, lower summer reservoir elevations will only be recommended when the upper rule curve goals were not met on April 20 at Grand Coulee and Albeni Falls, or when The Dalles April-August unregulated runoff is expected to be less than 65 maf, determined as of June 30."

The above operation decisions must consider potential benefits compared to potential impacts.

- \* Adjust actual start/end dates of flow augmentation season (page 103):  
"Actual timing of flow augmentation will be determined in-season by the TMT."
- \* Schedule spill at collector projects (page 105): "The COE, during the juvenile spring/summer chinook migration season ..... shall spill at all projects, including collector projects.... except under [pre-specified] low flow conditions."

1998 Supplemental BiOp

Spring Flow Objective for the Mid-Columbia River (new provision)

Page III-2: "... Data ... support the designation of a mid-Columbia flow objective for steelhead of 135 kcfs at Priest Rapids. This flow objective and the supporting rationale are further described in Appendix A"

Page III-2. " The 1995 FCRPS Biological Opinion and this Supplemental FCRPS Biological Opinion give general direction to the in-season management process on the factors to take into account in making decisions about in-season operations that will result in levels of flow expected to provide the greatest survival benefits to listed fish. **The biological opinions do not require seasonal average flow objectives to be met on a weekly basis, nor do they suggest that flow augmentation can be stopped or diminished once a seasonal average has been met.**"

This direction is ambiguous and does not aid in decision making. Nonetheless, the Montana Ruling directs federal operators upon meeting the seasonal average flow target (not weekly or daily), to implement the IRCs to the greatest extent practicable.

Page III-3. "In the event that operations of the FCRPS are inconsistent with these measures, **the Action Agencies will seek and consider offsetting measures to eliminate or minimize potential adverse effects.** Where possible, additional measures will provide survival benefits in-place, in-kind, and in timely manner."

The above direction should consider the Columbia Watershed as a whole, including resident fish species in the headwaters.

Page III-5. "The actual timing of flow augmentation and refill, and the degree to which the refill objective is met will be determined by the TMT, The TMT will give consideration to stock status, fish migration characteristics, and river conditions. **The timing of operations to refill reservoirs may vary with the volume of reservoir inflow.**

The timing of reservoir refill, and the shape of the refill trajectory, should be used to normalize the flows in the subbasins (and mainstem as a result) and improve refill probability. The VARQ flood control strategy is critical to balancing the needs of resident and anadromous fish species and wildlife.

Page III-5: "The TMT, in recommending the shaping of flows in the mid-Columbia, should consider the desire to improve flows at Priest Rapids during the period April 10 through June 30, the desire to refill storage projects, the timing and magnitude of the juvenile migration, water

temperatures, spill and total dissolved gas levels, and adult fish passage and other requirements to improve the survival of listed fish. The TMT may consider and implement flows lower than the objective during the early part of the steelhead migration when relatively few fish are present, primarily in low-flow years. The TMT may provide flows greater than the objective on a weekly basis during key points in the migration, while acknowledging that flows may be lower later in the steelhead migration as necessary to reserve water for flow augmentation for summer migrants."

System Spill (modified from the 1985 BiOp)

Page III-11. "... the planning dates are April 3 (modified from the April 10 planning date specified in 1995 RPA Measure 2) to June 20 and June 21 to August 31 for spring and summer, respectively in the Snake River..."

Page C-1. "The spill program prescribed in 1995 RPA Measure 2 was developed to meet a fish passage efficiency (FPE) target of 80% at all dams where transport was not possible or when transport was not a priority.... In practice, however, spill necessary to reach the 80% FPE level (and therefore survival levels) could not be provided at some projects due to the requirement to control total dissolved gas (TDG) levels to within acceptable limits (Table A-1)." New spill levels are provided in Table III-2, page III-12. Minimum powerhouse flows for system reliability are also identified in Appendix C, pages C-9 through C-14.

Flood Control Shifts and Snake River Flow Augmentation

Pages III-4 and 5. "Flood control operations will continue to include the ability to implement flood control shifts from Dworshak and Brownlee Reservoirs to Grand Coulee Reservoir in years when runoff conditions permit. This operation transfers system flood control from the Snake River to Grand Coulee, thereby increasing April flows in the lower Snake River when juvenile fish are migrating."

Practical Implications

Based on the BiOp provisions listed above, a few practical implications emerge that affect implementation of the flow objectives, flood control shift, reservoir refill, and spill for-fish-passage.

The BiOp flow objectives are expressed as seasonal and the biological opinions do not require seasonal average flow objectives to be met on a weekly basis [BOYCE: nor do they require that flow augmentation cease once seasonal objectives are met]. . This statement is true, showing the ambiguity of the direction in this area. The Montana ruling provides the federal operators with more direction (seasonal, not weekly or daily targets...).

However, the TMT will review hydrologic conditions and the status of the migrations on a weekly basis. Provided that flow augmentation water as identified in the BiOp is available, and absent safety concerns, physical constraints, or conflicting legal requirements, [This has been demonstrated] the TMT will therefore attempt to shape flow augmentation water to the fish migrations [BOYCE: to meet these flow objectives ] Marotz: Please delete this suggested edit as per the Montana ruling.

on a

week-by-week basis. **The circumstances shown above may cause the TMT to recommend a weekly flow higher or lower than the seasonal objective. [ODFW, COE].** This appears to be evident. By implementing IRCs on all storage reservoirs, wet subbasins can provide naturalized flows, while dry subbasins provide less water to protect other listed or petitioned stocks and associated biota. The operational tool affixes forecasting error and basin-specific hydrologic limits to each storage project. Operating curves can be developed for other reservoirs initially, based on hydrology alone, then amended with empirical data. Purposeful delay of water as it flows downstream (water routing) can coordinate the delivery of water, at appropriate times, to improve environmental conditions for multiple species, basin wide.

The TMT needs to re-evaluate potential flood control shifts each year, based on the April-July runoff volume forecast. Normally, a temporary shift of the Dworshak system flood control requirements to Grand Coulee is only worthwhile if the Dworshak April-July inflow forecast is 3.2 maf or less, and if space is available at Grand Coulee. A potential flood control transfer from Brownlee to Grand Coulee is also based on similar runoff and storage space considerations. Any flood control shift, which varies from year to year and from month to month, will need to be requested and coordinated through the TMT.

**Idaho recommends flood control "shifts" should also consider timing, not just transferring flood control requirements totally to another project. Rather than reaching full flood control requirement prior to the onset of smolt migration, shift some of the flood control draft to coincide with initial smolt migration occurring in April. TMT should have the ability to manage these flood control operations within the constraints of acceptable flood control risks. [Ed Bowles]**

The VARQ flood control operation provides flexibility to operate above the IRCs during below average water years so that river flows can be augmented without impacting reservoir refill probability. This is possible because reservoir elevations can remain higher prior to runoff due to reduced flood storage requirements. Because less space is evacuated, more of the inflow volume can be safely passed downstream to augment flows, while surface elevations at the project intersect, then follow the refill curve.

The actual timing of flow augmentation and reservoir refill will be determined by the TMT, **with due consideration given to fish migration status, river conditions and relevant implications (e.g. economics, other affected species, recreation, etc.).** The Libby and Hungry Horse models provide a tool to assess such tradeoffs.

The levels of the weekly flow requests may be higher or lower than the seasonal average objective, consistent with a June 30 refill objective. The TMT will weigh the biological benefits of flows above the seasonal flow objective against the biological benefits to listed salmon that would occur when this water could otherwise be used. During the juvenile migration season (April 20 -August 31), McNary average daily outflow on weekends will be managed to be no less than 80% of the preceding week's average weekday outflow to minimize daily fluctuations.

Actual spill levels will be determined each year in the Water Management Plan developed through the Regional Forum. They need to be adjusted based on real-time total dissolved gas levels generated and on periodically updated minimum powerhouse flow requirements for system reliability. The

actual dates of spill will be determined based on in-season monitoring information.