

## **SYSTEM OPERATIONAL REQUEST: FWS #1**

**TO:**

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**FROM:** Christopher Swanson, State Supervisor, U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, on behalf of the Libby Biological Opinion Policy Group

**DATE:** May 10, 2021

**SUBJECT:** 2021 Libby Dam Releases for Sturgeon and Bull Trout Augmentation Flows

### **SPECIFICATIONS:**

Based on the U.S. Fish and Wildlife Service's (Service) July 24, 2020, Biological Opinion on Columbia River System Operations and Maintenance, and the U.S. Army Corps of Engineers (Corps) May final April-August volume runoff forecast of 5.19 million acre-feet (MAF) (Flow Plan Implementation Protocol Technical Team Final Flow Plan for 2021 Sturgeon Operations at Libby Dam, dated

May 7, 2021), we are within a Tier 2 operations year for Kootenai River white sturgeon. The minimum recommended release volume for sturgeon conservation in a Tier 2 year is 0.80 MAF and we recommend the following procedures for discharge of at least this minimum volume from Libby Dam.

The precise means that will be utilized to meet these objectives are dependent on real-time conditions and in-season water management. Given these uncertainties, the Technical Team has developed the following guidelines for sturgeon operations in 2021:

- The 2021 sturgeon flow augmentation operation at Libby Dam will consist of: a seven day period of steady flows of 9,000 cubic feet per second (cfs) (3,000 cfs above VarQ flows of 6,000 cfs) followed by a period of increasing flows (pre-peak) from 9,000 cfs to 25,000 cfs (powerhouse capacity) over two days following 2020 BO ramping rates; a period of powerhouse capacity (peak) flows for approximately 15 days; and a period of decreasing flows (post-peak) from 25,000 cfs to 7,000 cfs following 2020 BO ramping rates over approximately seven days.
  - Pre-Peak Flows: 13-14 May
  - Peak Flows: 14-28 May
  - Post Peak Flows: 29 May - 04 June
  
  - 30,000 cfs @ Bonners Ferry: 16-17 days
  - Bonners Ferry Stage  $\geq$  1,758' MSL: 10-11 days
  - Median Kootenai Max. Elevation 2451.83' (Full Pool = 2459.00')
- Selective Withdrawal System (SWS) gates at Libby Dam above elevation 2,326 feet mean sea level (MSL) will be installed immediately prior to, and during, the peak flow period, with the objective of passing the warmest water available in the forebay (surface and sub-surface) as it becomes available.
- Release of the warmest water possible from Libby Dam, in combination with lower volume of release, may allow the Kootenai River temperature to increase to appropriate temperatures at Bonners Ferry (9-10+°C) during the receding limb of the hydrograph to trigger spawning, supporting incubation and early larval development while stimulating primary production to support food web dynamics. The low water supply forecast through the late winter and early spring resulted in storage of cold thermal mass that will influence the ability to provide optimal discharge temperatures through late spring and early summer.
- After the sturgeon flow augmentation volume has been exhausted, decrease discharge at Libby Dam towards stable summer flows, following 2020 BO ramping rates, to no less than bull trout minimum flows (7,000 cfs in Tier 2).

Total number of days at peak discharge, as well as the commencement and shape of

the post-peak hydrograph, will depend on real time conditions and the shape of the inflow hydrographs.

Flood risk reduction operations supersede sturgeon flow augmentation, and dam managers will coordinate operations with regional sturgeon managers. The sturgeon augmentation discharge may be extended for additional days if the Corps elects to provide volume in excess of the minimum volume requirement in the 2020 BO to control the refill rate of Libby Dam.

Additional recommendations may be provided as water supply forecasts are updated in order to provide stable or gradually declining discharge through the end of August following ramping rates and minimum flow guidelines in the 2020 BO.

Projected full pool elevation for Kooconusa Reservoir is approximately 2,451.83' MSL in early August; the reservoir will remain above elevation 2,449' MSL through September

#### **JUSTIFICATION:**

The objective of the 2021 sturgeon flow augmentation operation in this SOR is to provide a period of peak river stage/flow during the spring freshet, and to concurrently provide a stable to rising thermograph in the river as the operation concludes. The peak Libby Dam discharge (25,000 cfs), timed to coincide with peak downstream tributary (local) run-off, is intended to provide: 1) cues for sturgeon to migrate further upstream from their staging areas, and then cues to spawn on the descending limb of the hydrograph (receding flow, warming water), with the overall goal of providing conditions that will enhance the likelihood for sturgeon to migrate to, and spawn over, rocky substrates that exist upstream of Bonners Ferry; and 2), connectivity to, and partial inundation of, Nimz Ranch, an off-channel Kootenai Tribe of Idaho-owned habitat downstream of Shorty's Island, for the purposes of allowing for spatially and temporally normative ecological processes in support of primary and secondary productivity for larval sturgeon and other species.

The operating parameters outlined in this SOR are intended to provide guidance on how to provide optimal conditions for Kootenai sturgeon migration, spawning, incubation, and rearing. Previous years' operations have shown that conditions at Libby Dam and in the Kootenai River basin can change rapidly. Recognizing this, the exact shape of the operation will need to be developed and modified in-season as more is known. The in-season coordination will occur via the Kootenai River Sturgeon Flow Plan Implementation Protocol Team with a final recommendation coordinated through the Action Agencies and the Technical Management Team.