Colorado River Storage Project
Flaming Gorge Working Group
Meeting Minutes
March 19, 2020

Participation

This meeting was held Thursday, March 19, 2020 at 10:00 am. Due to current COVID-19 (Coronavirus) situation, the meeting was held via WebEx virtual meeting. Attendees are listed below.

Purpose of Meeting

The purpose of these working group meetings is to inform the public and other interested parties of Reclamation's current and future operational plans and to gather information from the public regarding specific resources associated with Flaming Gorge Reservoir and the river corridor below it. In addition, the meetings are used to coordinate activities and exchange information among agencies, water users, and other interested parties concerning the Green River.

General

Following some technical difficulties, Dale Hamilton (USBR) called the meeting to order at 10:50 a.m. and introduced the meeting agenda. To avoid audio feedback, attendees (listed below) introduced themselves via the chat function in the virtual meeting. Due to technical difficulties, George Weekley did not give his planned presentation and John Morton didn't join Nathaniel for the discussion of the damage to the Flaming Gorge selective withdrawal structure. Nathaniel Todea gave various presentations (discussed below).

Selective Withdrawal Structure (SWS) Damage – Nathaniel Todea

Nathaniel Todea, Hydraulic Engineer, U. S. Bureau of Reclamation

The selective withdrawal structure (SWS), installed in 1978, is a gated structure installed over the three intakes to the three turbine units. The structure allows for water to be released from a "selected" portion of the reservoir depth to influence the temperature of water released to the river downstream. The SWS is used to provide warmer water to the river for the benefit of the trout fishery and endangered fish.

Prior to the SWS, turbine-released water was approximately 43 degrees-Fahrenheit (6 degrees-Centigrade). With the SWS, the summer river temperature target is 59 degrees-Fahrenheit (15 degrees-Centigrade). Temperature regulation can be achieved with the upper SWS gates, the bottom gates have been effectively abandoned in place since 1987. To regulate temperatures, the upper gate is kept 60 feet below the reservoir water surface beginning April 15, 50 feet below the reservoir water surface beginning May 15, 40 feet below the water surface beginning June 15, and the gate is lowered to elevation 5913 feet from December 1 until April 15.

The turbine intakes are ~190 feet below the top of Flaming Gorge Dam. The bypass intake is ~300 feet below the top of the dam. Water temperatures in the reservoir vary with season and depth below the water surface.

In early August 2019, control wires for the lower SWS gate on Unit 1 grounded, which activated the hoist and raised the gate until significant damage to the gates and machinery were sustained. The SWS for

Unit 1 is currently not operable. Unit 1 still releases water, but colder water temperature releases are the consequences of the SWS no longer being operable. In August-September 2019, Unit 1 was in reserve status and generation was done using Units 2 and 3. In September 2019, Unit 2 scheduled maintenance was postponed to avoid using Unit 1 during critical temperature target period. In October 2019, Unit 3 maintenance was completed with Unit 2 being primarily used with Unit 1 used for discharge above the capacity of Unit 2. On December 2, Unit 2 and 3 SWS gates were placed in winter operations position and restrictions on use of Unit 1 were removed.

The plan is to use Unit 2 and Unit 3 during July through October. Units 2 and 3 will likely be able to achieve base-flow flow and temperature targets. If Unit 1 is needed as a result of Unit 2 or 3 going offline, it will be the last unit on and first unit off. Outages in the past have been infrequent and have only lasted for a few hours.

Update on analysis/modeling for Working Group proposal – Nathaniel Todea

Nathaniel Todea, Hydraulic Engineer, U. S. Bureau of Reclamation

Modeling was done to investigate the ability to lower the reservoir further prior to runoff to minimize or eliminate the use of the bypass for a wet hydrologic condition. Per the Environmental Impact Statement (EIS), the bypass is not typically needed for dry or moderately dry conditions, is expected to be used less than two weeks in average conditions, can be expected to be used for one to seven weeks for moderately wet conditions, and can be expected to be used for four to nine weeks in wet hydrologic conditions. Traditionally, the bypass was only used for wet and moderately wet conditions. Since the 2006 Record of Decision (ROD), the bypass has been used more frequently. Looking at wet hydrologic conditions, the bypass was used for nine days in 1983, 65 days in 1986, 33 days in 2011, and 68 days in 2017.

The wet years of 2011, 1983, 2017, and 1986 were analyzed. Runoff forecasts in both 2011 and 1983 were not in the wet hydrologic classification until late into the snow accumulation season—June and May, respectively. Runoff forecasts for 2017 and 1986 were more consistent and indicated a wet hydrologic classification in March and continued as wet throughout June. It is important to note that conditions can change throughout the snow accumulation season.

Looking at 2011, the water supply was difficult to forecast. From January thru May, the runoff forecast was in the Average above median hydrologic classification (1.2—1.66 million acre-feet). In June, the forecast jumped to the wet classification. In order to completely avoid using the bypass in 2011, the reservoir would have needed to be down to elevation 6021 feet on May 1, a full month before the June 1 forecast indicated a wet classification, and would have been within three feet of the top of the dam for over 40 days (definitely not a desired condition).

Looking at 2017, the water supply forecast was more consistent. It was forecasted to be a wet year beginning in March. To minimize the use of the bypass during peak runoff, partial bypass would have been needed early in the year, followed by full powerplant capacity releases for seven months. To keep from overfilling the reservoir while running at full powerplant releases, the pool elevation would have needed to be down to elevation ~6010 feet by early March, and 6019 feet by May 1. It would have required nearly perfect foresight as early as December to avoid use of the bypass during the runoff period.

The conclusions of the modeling appear to be that for wet hydrologic classification years, fully eliminating use of the bypass is not feasible. Some wet years, like 2011 and 1983, would need perfect foresight in early December to lower the reservoir far enough to eliminate the use of the bypass, however, it wasn't even apparent that 2011 and 1983 were wet years until around June. Other wet years, like 2017

and 1986, were forecasted to be wet years as early as March. But even then, the reservoir would need to be drawn down before the March forecast in order to achieve elevations below 6013 feet to avoid use of the bypass. There are many concerns with prioritizing elimination (or minimization) of the use of the bypass. The early releases could prevent the reservoir from filling if runoff forecasts decrease, leaving it up to as much as 550,000 acre-feet lower if the May 1 target was lowered to elevation 6013 feet, leaving it vulnerable to lower storage into dry years, lost power generation, noncompliance with ESA. Use of the bypass is crucial.

After a few comments from stakeholders, Dale Hamilton suggested, if the T Wright et al stakeholder group disagrees with the outcomes of this analysis, they could utilize the historic operational data provided online as well as upcoming forecasts and perform a separate analysis. Particularly, if the group could help Reclamation operators understand how to plan for a wet hydrological condition before this condition is known or even forecasted (as early as December of the prior year as would have been needed for the 2017 runoff period), this might help operators set a lower target elevation before the runoff season without risking the loss of hundreds of acre-feet of storage in the reservoir for that water year.

Operation Scenarios, Flaming Gorge Operation Plan – Nathaniel Todea

Nathaniel Todea, Hydraulic Engineer, U. S. Bureau of Reclamation

The Flaming Gorge Operation Plan is currently in draft form and is expected to be signed in early May after consideration of Flaming Gorge Technical Working Group proposal and stakeholder comments and input.

Given the current **average below median** hydrologic conditions, the current plan is:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (Reach 2 peak 18,600 cfs, sustained Reach 2 greater-than 14,000 cfs flow for 7—14 days)
- Spring post-peak (middle to late June): ramp down to ~1000 cfs (~1000 cfs/day bypass ramp-down, ~500 cfs/day powerplant ramp-down)
- Base-flow summer (about July 15 to Sep. 30): (Reach 2 target: 2000-2600 cfs) releases likely ~1600 cfs
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1500-2400 cfs) releases likely ~1100 cfs
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <3000 cfs) releases likely ~1850 cfs
- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target

Should conditions get drier, the Flaming Gorge Operation Plan also includes information for **moderately dry** hydrologic condition operations:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (Reach 2 peak greater-than 14,000 cfs, sustained Reach 2 greater-than 8,000 cfs flow fewer-than 14 days)
- Spring post-peak (middle to late June): ramp down to ~850 cfs (~1000 cfs/day bypass ramp-down, ~350 cfs/day powerplant ramp-down)
- Base-flow summer (early July to Sep. 30): (Reach 2 target: 1800-2000 cfs) releases likely <1800 cfs
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1100-1500 cfs) releases likely ~850 cfs
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <1875 cfs) releases likely ~1500 cfs

- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target

Should conditions get wetter, the Flaming Gorge Operation Plan also includes information for **average above median** hydrologic condition operations:

- Transition period (Mar. & Apr.): release between ~850 cfs and full powerplant capacity to achieve May 1 reservoir elevation target
- Spring peak (triggered by LTSP, typically ~late May): achieve Reach 2 LTSP targets (sustained Reach 2 greater-than 18,600 cfs flow for 7—14 days)
- Spring post-peak (middle to late June): ramp down to ~1200 cfs (~1000 cfs/day bypass ramp-down, ~500 cfs/day powerplant ramp-down)
- Base-flow summer (mid July to Sep. 30): (Reach 2 target: 2000-2600 cfs) releases likely ~1700 cfs
- Base-flow autumn (Oct. 1 to Nov. 30): (Reach 2 target: 1500-2000 cfs) releases likely ~1400 cfs
- Base-flow winter (Dec. 1 to Feb. 28): (Reach 2 target: <3000 cfs) releases likely ~2400 cfs
- Transition period (Mar. & Apr.): manage releases to achieve May 1 reservoir elevation target

Also included in the Flaming Gorge Operation Plan, in case conditions get much wetter, is information for **moderately wet** hydrologic conditions.

Currently, Flaming Gorge releases are at 1950 cfs to achieve a May 1 target pool elevation of 6027 feet and the state is planning to conduct a fishery assessment (electro fishing) on April 20 and 21.

Next Meetings

- Thursday, April 16, 2020 at 10:00 am via WebEx virtual meeting (due to COVID-19 conditions)
- (tentative) Thursday, August 20, 2020 in Vernal (may be changed to WebEx virtual meeting if COVID-19 conditions necessitate)

Attendees

Tyler Callantine	Dinosaur River Expeditions	Lisa Baldwin	NPS (Dinosaur NM)
Cody Perry	Friends of the Yampa	Brenda Alcorn	NWS (CBRFC)
Tim Gaylord	Holiday River Expeditions	George Weekley	USFWS
John Weisheit	Living Rivers	Tildon Jones	USFWS
Nicole Lavoie	OARS	Tom Chart	USFWS
Jordan Nielson	Trout Unlimited	Kevin McAbee	USFWS
Mark Fiorelli	Trout Unlimited	Don Anderson	USFWS
Brenda Milligan	Utah Guides and Outfitters	John Walrath	Wyoming Game and Fish
Sheri Griffith	Utah Guides and Outfitters	Chrystal Dean	WAPA
Matt Lucas	WRF Guides	Craig Ellsworth	WAPA
T. Wright Dickinson	Vermillion Ranch	Derek Fryer	WAPA
Jack Lytle	Daggett County	Kevin Garlick	UMPA
Boyd Kitchen	Utah State University	Andrew Dutson	Utah DWRi
Christy Leonard	Utah State University	Ryan Mosley	Utah DWR
Kevin Bestgen	Colorado State University	Matt Breen	Utah DWR
Ross Watkins	Uintah County	Trina Hedrick	Utah DWR
William Merkley	UWCD	Paul Thompson	DNR
Rob Billerbeck	NPS	Michelle Garrison	Colorado DNR
Melissa Trammell	NPS	Chris Curtis	USBR
Terry Fisk	NPS (Canyonlands NP)	Chris Watt	USBR

Dale Hamilton	USBR
Dave Speas	USBR
Gary Henrie	USBR
John Morton	USBR
Kathy Callister	USBR
Kent Kofford	USBR
Lee Traynham	USBR
Mark Delorey	USBR
Nathaniel Todea	USBR
Paul Davidson	USBR
Preston Feltrop	USBR
Rick Baxter	USBR
Ryan Christianson	USBR
Scott Elliott	USBR