

Flaming Gorge Working Group

Meeting Minutes

March 21, 2024

Participation

This meeting was held Thursday, March 21, 2024, from 10:00 am to 12:00pm MT, at the Utah Division of Wildlife Resources in Vernal, Utah and via Microsoft Teams virtual meeting. Attendees are listed on last page.

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.

Alex Pivarnik from the Bureau of Reclamation – Welcome, Purpose and Agenda

This is the first Flaming Gorge Working Group meeting for 2024 for the Operating Plan Process. The second meeting will be April 17th at 10am MT in Vernal, Utah at the Uintah Conference Center. [See the above for the Purpose of the Meeting].

Brenda Alcorn from the Colorado Basin River Forecast Center

Brenda discussed the Water Year 2024 Weather Review, Current Snow Conditions, 2024 Forecasts, and upcoming weather.

The 'Water Year to Date Precipitation, October 1 – March 19, 2024' was presented showing shaded areas contributing most to runoff. The Upper Green water year precipitation is near average overall. November and December were not great, especially November. That's an important thing to note because we can really get a good start on snowpack building in those months and we, kind of, missed out. Thankfully, February was really pretty good which got us back to a near normal overall. In the Yampa River Basin, November was bad for the whole area, but they have been doing okay from December on. The Yampa River Basin water year precipitation is slightly above average at this point of the season.

When we talk about current snow conditions, when you're looking the Upper Green as it goes into the Flaming Gorge, the very northern part of the basin, especially the Wind Rivers, is a little low on precipitation. That's really the most important contributor to our runoff. The north slope of the Uintas is looking pretty good. It's a little above average but that is not a great volume of water compared to the north. For the 'Green above Flaming Gorge Model Group SWE Plot' graph, the model group goes off of 25 significant areas of equal weights between 7500 – 13,800 feet and as of 3/19/24 we are sitting at 97%. For the 'Wind Rivers Model Group SWE Plot' graph, as of 3/19/24, we are sitting at 81%.

The snow in the Green River basin above Flaming Gorge is near normal at this time. Conditions are best in the areas below Fontenelle Reservoir.

Snow in the Wind River Range, an important contributor to the total unregulated volume for Flaming Gorge, is below normal. It is not unusual for this area to accumulate snow into May.

In the Yampa River Basin, the snow conditions are doing much better there. The 'Yampa Basin Model SWE Plot' graph goes off of 24 significant areas of equal weights between 7000 – 12,000 feet and as of

3/19/24 it is sitting at 114%. Another graph shown went off of a single segment of 'Elk – Milner, Nr' and divided it into different elevation zones. The highest elevation runs from 9500 – 11,200', which shows a near median. When we look at the 8000 – 9500', that is where we are above. That slow start in November hurt the upper elevations. Conditions (as % median) are better in lower elevations vs. higher elevations (>9500').

Given the current conditions, the 'March 19 Water Supply Volume Raw Model Guidance' shows Fontenelle at 80%, Flaming Gorge at 85% and Yampa-Deerlodge at 111%.

The 'Water Supply Forecast Evolution: Flaming Gorge Inflow' graph basically shows that we have a 50% chance of exceeding 840 KAF/87% avg and a 50% chance of **NOT** exceeding 840 KAF. We have seen a steady increase in forecast volume since February 1, 2024, but it is still below normal. We have a 20% chance the April-July runoff will fall outside the forecast 10%-90% range depending on the weather.

The 'Water Supply Forecast Evolution: Yampa River – Deerlodge' graph showing Deerlodge doing better since we started the season not too much below average. Now we are slightly above average with that forecast. With the latest model guidance, there is 10% chance of getting 1.76 million acre per feet and 90% chance we will get, at least, 1 million acre per feet. There is a 70% chance of at least getting average volume.

The primary sources of forecast error are Future Weather and Model States. Future weather is the largest source for error with the uncertainty in precipitation and temperature forecasts and the extreme dry/wet events that result in larger errors. We can rarely forecast in advance. The other source of forecast error is Model States. Is the model representative of reality? SNOTELs and satellite images are used to verify snow and extensive analysis of soil moisture is done in the fall.

We have had recent changes and some issues with our website so if you have problems or can't find something, reach out to us. This year we are doing something a little different with their Peak Flow Forecast. We used to make official Peak Flow forecasts at the beginning of the month or middle of the month, etc. Now, like our water supply and evolution plots, you can get the latest model guidance every day. The Daily issued is minimal upstream regulation. You can find Yampa-Deerlodge on that one. The forecasts issues ~2 times/month have significant upstream regulation (reservoirs/diversions) and require forecaster interaction and agency coordination. You can find Green-Jensen and Green-Green River on that one. If you select one of the dots on their Peak Flow Forecast maps [either Daily Points or Special Points] it will open up to a dashboard page showing Peak Flow data such as Model Run Date, Flood Flow, Average Peak, etc.

For the Yampa River-Deerlodge, the Mean Daily Flow (cfs) 50% Exceedance Probability is 15,479. The forecast is for the mean daily peak based on snowmelt. Instantaneous peaks will be higher. Rain on snow could cause higher peaks. The time of peak is highly dependent on spring weather. The long lead outlook will typically give similar range to normal time of peak. At this time, we are expecting an above average peak flow but most likely remaining below flood level. As flows increase and time of peak nears, the 10 day forecast hydrograph is a better source of information. Average peak is 121%. Normal time peak is anywhere between May 13th and June 6th, in general.

The Green River near Jensen requires coordination. It is updated twice a month. The latest was updated on March 19th. The Peak Flow forecast flood flow is 24100 cfs. Currently the 50% forecast is for 18500 cfs. This forecast is based on preliminary Reclamation reservoir operation plans for Flaming Gorge as well as long lead peak flow forecasts for the Yampa River.

A Probabilistic Peak Flow forecast for impacts of spring weather, the CBRFC Ensemble Streamflow Prediction [ESP] Model goes off of current snow/soil/streamflow conditions with 30 future weather [precipitation/temperature] scenarios based on 30 year history [1991-2020] for 30 possible hydrographs.

The 10 day Streamflow Forecasts are updated daily at about 10am. They include: 7 days of forecast precipitation, 10 days of forecast temperature, any known upstream reservoir release plans and any known

upstream diversions.

Future Weather indicated the precipitation received mainly from March 24-26th, 2024 with a possible ½” – 1 ½” in the mountainous areas. As of 3/20/24, looking into next week indications of increase chance of above normal precipitation and below average temperatures. Weather models continue to have an active pattern so expect to see some wet and dry days. We do NOT want to see a big, dry, hot period! Hopefully for our April 1st forecast we will see if this pans out and hopefully remain steady.

Tildon Jones – Colorado River Recovery

Tildon gave an update on the Flow request for 2024 from the Recovery Program. He gave a background on the fish recovery program and why they have put in the request for this year.

There are four species of fish that are listed as either endangered or threatened under the Endangered Species Act: the Colorado Pikeminnow, Humpback Chub, Razorback Sucker and the Bonytail. Each are considered warm water fish and also called big river fish. You will not find them up in the smaller tributaries.

The Humpback Chub was originally listed as endangered in the 60’s and recently been reclassified as threatened due to the progress we have made in the recovery effort. Their numbers have increased in the Grand Canyon. This fish could be 19” long and can live up to 30 years in the wild. They benefit from the flows we manage. This fish can also be found in Desolation Canyon of the Green River.

The Bonytail has been listed as endangered since 1980. It is a close relative of the Humpback Chub. It can be 20” long and live for decades, sometimes 50 years. This species is stocked from hatcheries in Utah and Colorado. This species almost disappeared but the last few individuals were brought in. All of the Bonytail that we currently stock come from these original fish. There is still a lot of research on what their habitats are and what they need. There is emerging evidence that they like flood plains.

The Colorado Pikeminnow has been listed as endangered since 1973 and is the largest minnow species found in North America or native to North America. It would have been the top predator native to the Colorado River Basin historically and could have reached up to 5 feet in length living over 50 years. They are known for making long distance spawning migrations.

The Razorback Sucker has been listed as endangered since 1991 and is being proposed to be reclassified as threatened because of some of the gains we have made in conserving the species. This is one of the larger sucker species in North America. They can weigh up to 13 pounds and 3-feet long and also known for long distance migration. These fish use flood plain wetland habitats. We do have hatchery programs in Utah and Colorado.

There are ‘Three Species’ fish that are not listed as endangered or threatened but they are native fish and are of conservation concern in the states of Colorado and Utah: Roundtail Chub, Bluehead sucker and Flannelmouth sucker. They are found throughout the basin and a lot more tributaries, so they are more widespread.

Some important habitats for these fish are back water habitats, river, off channel floodplain wetlands and cobble bars. A lot of our experiments are related to producing or improving these habitats for the fish’s life history.

Graph showing a typical flow pattern across the whole year showing floodplain access, channel maintenance, substrate cleansing, sand transport, migration cues, spawning and emergence and with the warmer months the early growth and preparation for juveniles’ survival for upcoming winter.

Some of the reasons these fish are listed as threatened or endangered or why we are worried about them are large dams that block those migrations, patterns of peak and base flows, water usage and depletion,

barriers and entrainment, and nonnative fish (especially those with teeth). Our native fish do not have defensive mechanisms to protect against nonnative fish.

To address these threats and to recover these species we have the Upper Colorado River Endangered Fish and Recovery Program which partners with a number of agencies.

We do that with a variety of actions: flow management, research and monitoring, stock fish, habitat development projects, conduct outreach, and nonnative fish control regarding the threats just mentioned.

Instream flow management occurs throughout the Upper Basin. For the Duchesne River Reservoirs, the cooperators are CUWCD and BOR. For the Elkhead Reservoir [Yampa River], the coordinators are CRWCD, City of Craig and TriState Power. For the Upper Colorado Reservoirs, the cooperators are CRWCD, East Slope Water Users, West Slope Water Users, BOR, and Grand Valley irrigators. For the Aspinall Unit (Gunnison River), the cooperator is BOR. For the Navajo Reservoir (San Juan River), the cooperator is BOR. For the Flaming Gorge Reservoir (Green River), the cooperator is BOR.

The Recovery Program's 2024 Flow Request priorities are: 1) Flow spike experiment to reduce smallmouth bass reproduction, 2) Experimental summer base flows to benefit Colorado Pikeminnow juveniles, and 3) Larval-triggered spring peak flows for Razorback Sucker nursery habitat.

The three focal nonnative invasive predators are the Northern pike, Smallmouth bass, and the Walleye. These fish escaped from reservoir sources and established populations in river habitats.

We have a two-tiered strategy: 1) Rivers: native fish recovery areas – remove smallmouth bass, northern pike, and walleye in 600+ miles and 2) Reservoirs: compatible angling – 6 of 7 reservoirs screened: Red Fleet, Starvation, Elkhead Reservoir, others in Colorado.

Problematic species flow spike: Smallmouth bass build nests in calm, warmer water, timing closely linked to temperature and flow, males guard fry on nest, eggs and larvae susceptible to increased river currents.

Flow spike: timing mid-June into mid-July?, 3 day duration at powerplant flow (~4,600 cfs). Compared to 2022 USGS Green River near Greensdale, Utah discharge data, 2024 could be different timing.

Base flows for Colorado pikeminnow: goal is to improve survival and recruitment of young Colorado pikeminnow. Timing: reach base flows by the time CPM emerge (average July 3), improved numbers of juveniles at flows 1700 – 3000 cfs at Jensen, historically CPM larvae start drifting out of the Yampa River mid-June – mid/late July (avg. July 3), FGTWG will work with USBR to provide a Reach 2 base flow in the preferred range when larvae are present through September, dam release dependent on Yampa flows and available water.

Larval trigger spring flow: 81% of years 1st larvae observed between May 15 to June 4, other years either very warm/dry (earlier) or cold/wet (later). Managed wetlands: Stewart Lake, Stirrup, Johnson Bottom, Sheppard Bottom and Old Charley Wash. Unmanaged: Leota Bottom, Above Brennan, Bonanza Bridge and Wyasket.

Hydrology & Forecasted Operations – Mike Callahan from the Bureau of Reclamation

Mike Callahan was over Fontenelle but is now over Flaming Gorge whereas Nathaniel Todea is moving over to Aspinall Unit in Colorado.

Flaming Gorge and the 1956 Colorado River Storage Project Act (CRSP) – Authorized construction of Flaming Gorge Dam and other projects for: allowing Upper Basin states to utilize their 1922 Colorado River Compact apportionments, regulating flow of Colorado River (and its main tributaries), storing water for beneficial consumptive use, reclamation of arid and semi-arid lands, flood control, and hydroelectric power generation.

Operational background information – Geographic scope: 1) Reach 1, Flaming Gorge Dam to Yampa River Confluence, 2) Yampa River Confluence to White River confluence, and 3) White River confluence to confluence of Green and Colorado Rivers.

Four-step process would ensure that the 2000 Flow and Temperature Recommendations and the authorized purposes of Flaming Gorge Dam are considered in a balanced and fair manner as each year's operational plan is developed.

Upper Colorado Recovery Program Flow Request Development (end of February)

- Step 1 before March 1 – completed
 - Official flow request from Recover Program sent to UC Region and FGTWG
 - Flaming Gorge initial draft Operational Plan (FG Ops Plan) developed and sent to FGTWG
- Step 2 March 1 to mid-March – completed
 - FGTWG – develop and finalize FGTWG proposal
- Step 3 mid-March to mid-April – currently in process
 - FG WG – FGTWG Proposal presented and updated FG Ops Plan shared with FG WG Meeting/Stakeholder review
 - FG WG provides input and comments (by mid-April)
- Step 4 Early May – to occur in early May
 - Reclamation finalizes FG Ops Plan

Flaming Gorge Forecast summary [same graph Brenda shared] which helps with hydrologic classifications that are in the Plan and in the summary. The reason we talk about so many scenarios in the Plan because we have this window that we are looking at in the forecast. That is the range of flows we could land in. We will have a most likely scenario, but we want to have those contingencies listed in the document so if we end up in any of that shaded forecast [window], the public can give input on those operations and know what could potentially happen.

2024 Flaming Gorge Inflow Forecast – Hydrologic Classifications: this is what allows us to do those different scenarios. The graph shown shows the different groupings of different years depicting dry to wet. Right now, in 2024, we're in the average below and has been hovering to Mod Dry for those classifications. The best way to describe those different classifications is sort of like we have bills to pay. Once you move into one of those classifications, we have different targets. There are things that we *have* to do and being at the lower end of one of those groupings makes the operations a lot harder and the budget a lot tighter. Basically, that means our "bills" moved up, but our income did not move up very much. You will see that reflected in the draft operation.

Luckily, the Yampa at Deerlodge is doing a little bit better. We are above average. Yampa has hydrologic conditions not classifications. The Yampa does not, necessarily, effect what I talked about with regard to the classifications or the "bills". They help us pay the "bills", but it does not necessarily set the "budget". That is the classification for the Flaming Gorge, which helps us set those targets. The Yampa can help us meet those targets. Luckily, the Yampa is, in average, above. What that means is with the Yampa with its unregulated flow behaves in a way that is conducive, we would be in a little bit better boat. If we are in an average below for both, that would make it very hard to meet the budget. This year it looks like the Yampa could help us out.

Looking at the Peak Forecast, I know there was some concern for flooding. If we can, at all, help it, we are not going to cause flooding in Reach 2. Whatever flows the Yampa has and whatever release the Flaming Gorge has adds up to that flooding capacity and sometimes the Yampa just exceeds it. Sometimes the Yampa will be higher at flood stage at Jensen which was a real concern last year and we still came in just below. This year, though, we are looking okay. We have about 4000 cfs wiggle room for releases at Flaming Gorge. We should be fine but, as Brenda talked about, this is dependent on additional snowpack. We will continue to monitor the tools provided by CBRR.

Recovery request summary reviewed that Tildon Jones discussed, which was included in the Draft Operation Plan.

The Draft Flaming Gorge Operation Plan was sent out last week for review. We do expect to update scenarios. The FG Ops Plan for 2024-2025 Mod Dry Release w/Lower and Upper Bound draft chart reviewed which covers the experiments requested. Once experiment is over, there will be an increase for fall when we will need more power generated from dams. These requests come in from WAPA. This will be updated as more water is in the budget, hitting the minimum budget. We will try to reach that 18,600 cfs for 1 day, then 7 days for the LTSP experiment [small mouth bass], then setting up those summer flows for the Colorado Pikeminnow. We had issues in some years with 2000 cfs has caused vegetation encroachment. We are trying to have variable flows from summer to summer.

Table 4 “Operation Matrix for Average, below median, Hydrologic Conditions was reviewed. This is in the Ops Plan. This is the detail of the graph that was shown [from above]. There is a little bit of an update regarding the SWS [Selective Withdrawal Structure], we are in the same boat as we were last year. Some folks had some questions about that. So, we will use Units 2 & 3 adjusted to 50’ below the reservoir surface. There is still an issue with the SWS at Unit 1 so we will try not to use it. They are working on the design, fixing the SWS. There is an order of operations that needs to be done to get that fixed. That has been delayed up at the technical service center at Denver. Unit 1 will be the last unit to be online and the first to be offline before and after full power plant releases.

The Flaming Gorge Operations Plan 2024-2025 Average Above Release with Lower and Upper Bound graph was reviewed along with the Flaming Gorge Operations Plan 2024-2025 Moderate Wet Release with Lower and Upper Bound graph and the Flaming Gorge Operations Plan 2024-2025 Wet Release with Lower and Upper Bound graph.

Ongoing updates: Monitoring and reviewing CBRFC Forecast. Current release 1,000 cfs with an adjustment to approximately 1,150 cfs to be implemented this weekend [3/24- 3/25] or early next week. Additional adjustments expected through April 30, to achieve the upper limit drawdown level 6027’ (+/- 0.5 ft) pool elevation May 1st.

Questions/Discussion:

- **Q.** With regards to Unit 1 SWS, is that plan that you are working on going to require a draw down for the actual repair period? Do you know that yet? **A.** We do not know that yet. The Technical Service Center are the ones working on that design. We would need to be coordinating with them once they start cranking out that design work. **Q.** So, there could be some additional values knowing that as soon as possible...other projects it could affect. **A.** For a timeline on that, there are some repairs that have to be done to the railway that is on the top of the dam first and with design period, we are not expecting that to be done this Operation period. That might be the next year or two.
- **Q.** Looking at that average below median at the flows at Jensen, 7000 cfs for 7 days is wildly different than 14,000 cfs for 14 days. What is the decision/what decides whether we get the bare minimum of that or whether we get something close to the maximum or somewhere in between? **A.** It depends... on a lot of things including the biological trigger, what is the Yampa doing?, when that biological trigger occurs. Like last year, we had a fairly high peak from the Yampa, but it dropped really quickly so then it was difficult to meet those targets. So, part of that will be an analysis just as we are implementing this experiment to see...this is the forecast, these are the different things we *can* do. So, if we cannot get to 14,000 cfs we are not going to do that...and like I mentioned earlier if we cannot get to 18,600 cfs, we are also not going to do that. So, it depends on what the Yampa is doing and when does that biological trigger come in. It is a difficult thing to nail down right now.
- Tim and Bruce had similar questions/concerns [discussed at the end]

Drought Response Operations Update – Alex Pivarnik from the Bureau of Reclamation

Good news: last year we did experience a wet year, we stopped those drought response releases and started what we call Recovery and building that ‘bank account’ back up. The great thing about reservoirs is you can store water in wet years to use in dry so that is what we did for the 2nd phase of the Drought Response Operations which was recovering that water and to keep this tool for potentially using in the future years.

The recovery at Flaming Gorge over the previous couple of years, we have released 588 KAF water under the Drought Response Operations Agreement. Starting in March of last year, we implemented what we called Recovery which was that recouping of that release and building that ‘bank account’ back up. We were able to, through changes in operations, and how we would have typically operated and never released DROA, compared to what we were doing operationally in real time, we were able to get all that water back up. We have completed incremental recovery at the end of February so that the full 588 KAF was pulled back into the reservoir. Per ROD, Reclamation’s goal is to achieve the May 1 Drawdown Target of 6,027 (mod-dry target).

There is no intention of doing, or planning, drought response operations (DROA) this year. We realize the hydrology’s have improved the past couple of months, we are still in a drought and the system remains vulnerable therefore we will continue to monitor hydrology and work with the necessary parties. We are officially recovered and out of drought response (DROA) for now.

Questions?

Q. Will the triggers remain the same at Lake Powell in terms of the pool elevation? **A.** Yes, the pool elevations will remain the same at Lake Powell. We will continue to monitor Lake Powell projections and pool elevations in case there is a need for future DROA. [Thank goodness for Flaming Gorge... it is amazing how much water we can recover in 1 good year]

Roundtable General Discussion/Q&A

Tim Gaylord's comments shared via his e-mail requesting there be a consideration for increasing the base flows higher than 800 cfs to at least 950-1000 cfs from May 1 – LTSP trigger. We would also like there to be a consideration to maintain that same 950-1000 cfs (up to the stated 1200 cfs would be preferred) after the Spring Peak Flow through the time period until the summer SPM base flows are established...It makes a tremendous difference in the viability of running safe river trips for both commercial and private users.

Bruce agreed with the request stating, if we could stay away from that 800 cfs threshold... if we could stay closer to the 900-950. It makes a huge, huge difference in how our trips are operated and the experience for our guests. [There are safety concerns]

Cassie – having that extra 100 cfs, the less chance of having safety issues, it would be safer and create a better environment all around.

Alex – taking all into consideration. Pre-releasing without that certainty is a bit of a concern. We can go back and look at that water budget that we have for our experiments. Mike also mentioned about those Power months. We cannot guarantee anything. Mike mentioned that we try and work with WAPA as much as we can. We remind them of the concerns on the river. But ultimately, they are in control of that hourly pattern. We do try to include that voice over to WAPA so that they are aware.

Leslie – Next meeting overlaps WAPA. When would you like any comments on the Ops Plan? A. anytime between now and before next meeting

Alex – get your comments in for the Operations Plan

Next Meeting

- April 17th, 2024 at 10am MT in Vernal, UT at the Uintah Conference Center
- For those also interested, the following day [April 18th] we will be up Joint Power Water Board in Green River for the Fontenelle Working Group, as well.

Attendees

Amanda Becker – BOR	Michael Callahan – BOR	Alexander Pivarnik – BOR
Nathaniel Todea – BOR	Jaron Andrews	Cambree Carroll
Kate Lunz	Albert Prokopetz	Amee Andreason
Amber Koski	Tana Allen – BOR	Rick Baxter
Kevin Bestgen	Cher. Bonomo	Brenda Milligan
Bryan Seppie	Becki Bryant	Kathleen Callister
Shane Capron	Kevin Clegg	Carson Combs
Peter Crookston	D Wiley	Valerie Deppe – BOR
Jenny Erickson	Jonathan Friedman	Nicki Gibney
Jayden Guymon	Dale Hamilton	Courtney Harris
Hattie Johnson	Heidi Lundberg	Robert Hollahan
Kevin Humphreys	Jared Hansen	Jason Palmer
John Walrath	Leslie James	Lucerne Marina
Mel Fegler	MMiller	OARS Bruce
Heather Patno	William Pedro	Roxann Reid
Keith Robb	Aaron Selig	David Speas
Melissa Trammell	Lee Traynham	Andrew Volkmer
Ed Warner	William Merkley	Woody
John Wullschleger	David Graf	Tildon Jones
Jordan Detlor	Jerry Taylor	Brant Williams
Darrell Gillman	Jordan Dimick	Brenda Alcorn – CBRFC
Jack Lydell		