Bighorn River System Issues Group
Billings, MT.
May 21, 2008

Introduction

Facilitator, Barb Beck, welcomed participants and had them introduce themselves. She then gave a quick review of the history of the group which has been meeting for over a year. The group was originally convened to look into long-term issues, but now explores shorter-term and operational issues in addition. The group has both problem and charter statements that provide the scope in which the group operates. These and the past meeting notes can be found on the U.S. Bureau of Reclamation's website. The group can continue meeting as long as the participants believe it is productive. Costs are borne by a variety of sources.

Operations Criteria

Lenny Duberstein explained how the agenda for this meeting had been developed. The group will look at what can be achieved with water management (targets) in the morning and then in the afternoon talk about understanding forecasting, probabilities and risk management. Lenny pointed out that April was the 4th lowest precipitation of record and that inflows were 50% of average this year. The area has been the drought of record since 2000.

The Bureau of Reclamation (Reclamation) has Standard Operations Procedures (SOPs) and within those SOPs, Chapter IV provides the specific guidance used for decisions on the operations of Yellowtail Dam. Chapter IV addresses reservoir allocations, the afterbay, design floods, water rights for the reservoir, and general filling and release procedures. Handouts of portions of Chapter IV were available to participants. Lenny also made available a diagram showing water uses within the reservoir by elevation. The base level for active conservation is 3547 feet. The joint use pool (operated Reclamation) sits between 3614 and 3640 feet. The exclusive flood pool begins at 3640 feet. The US Army Corps of Engineers (USACE) takes over dam operations when water exceeds 3640 feet. When the pool gets above 3657 feet, operational management reverts back to Reclamation for protection of the dam itself.

Resource and Power Needs

John Keck, Acting Superintendent of Bighorn Canyon National Recreation Area (NRA) explained that the facilities at the NRA have been designed for recreation use at reservoir levels of 3630-3640 feet. The high visitation season is generally considered to be from Memorial Day to Labor Day and this is the period of time the Park Service prefers the reservoir within this range. During other months, the Service has recommended a minimal lake level of 3620 feet to provide year round access. The Park Service has a mission of resource protection and visitor

enjoyment. The Canyon is managed to assure protection of the resources and to provide for public access and awareness.

Mark Smith, Wyoming Game and Fish Department (WY G&F) explained that managing the fishery in the reservoir is complex. WY G&F has a mission of both conserving the fisheries resource and providing for recreational angling. The fisheries growing season in the reservoir is from about April through September. The limiting factor for production of fish for people to catch is largely food resources. To adequately produce the food needed to support the sport fishery, the reservoir needs to be >3630 feet during the growing season. Below 3620 feet, the reservoir fails to provide fishing opportunities in Wyoming and greatly reduces the preferred habitat of many fish. The reservoir does not contain any federally threatened or endangered fish. However there are six fish species in the reservoir that are of considered to be of greatest conservation need in Wyoming.

Ken Frazer, Montana Fish, Wildlife and Parks (MT FWP) explained that MT FWP stocks walleye into the Bighorn Lake each year. Sauger and channel catfish have done well in recent years. The goal of MT FWP is to provide access for anglers and other recreational users to Bighorn Lake by making sure water levels do not drop below ramps at Barry's Landing and Ok-A-Beh. In the river, flow levels are the critical factor. Optimal flow conditions for rainbows and brown trout would be 3,500 cubic feet per second (cfs) or higher. This would spread the anglers out and provide usable side channels. MT FWP considers 2,000 cfs minimal flow for fish and 1500 cfs drought levels. Brown trout spawn from late October to mid-December. Rainbows spawn from March to mid-May. Between the two trout species, the fish are either spawning or have eggs in the gravel most of the year. The normal hydrograph with a spring rise is favorable to the rainbows. The upper river is managed for brown and rainbow trout even though they are not native species.

John Gierard from the Western Area Power Administration (Western) explained that agency is responsible for transmitting and marketing power from federal projects. The primary aspects they are concerned with at Yellowtail are marketing and reliability. The contracts on power generated by Yellowtail are in effect through 2024. Western used Reclamation's operations criteria and modeling to develop their water marketing contracts. In general, more head equals more efficiency in generation, but there are also peak months (July-August and December-January) and peak hours of demand. In general, peak demand hours (daytime) are when it is most desirable to generate the power. Western estimates that the drought costs the power customers from this project (rural cooperatives, municipalities, and other users) from $700-800 million dollars in additional power charges.

Summary of Needs

Lenny summarized commonalities in the resource needs presented with assistance from a graph created by Clayton Jordan. For January through April there is general agreement except that Reclamation has a lower target than others who would like to see. Most of the resource needs would be best served by maintaining a steady reservoir level from October through March with a slight drop in March and April that would be made up during May- July.

Federal Advisory Committee Act (FACA)

John Chaffin, Department of Interior Solicitor (representing Reclamation, NPS, and Bureau of Indian Affairs) provided background on FACA.

The Bighorn River Issues Group could request that Reclamation pursue forming a Federal Advisory Committee (this would require a request to the Secretary of Interior from the Commissioner of Reclamation) or continue to work recognizing that if the issues group wishes to advise Reclamation or develop consensus recommendations, this would clearly require formation of a Federal Advisory Committee. The presumption is that federal agencies have the wherewithal to carry out their management responsibilities using the other public involvement processes available to them. The advantage to not needing to charter a Federal Advisory Committee is more flexibility and less formality.

The group discussed the potential need to form a Committee under FACA. In general, they were comfortable that they had not yet triggered the need for a formal committee and appreciate the current situation with less formal communications. Lenny suggested that if any more formalized agreement is needed in the future, parties to the agreement could legitimately be governmental entities. Some type of documentation--whether it be in the form of updated SOPs--or some other form is desired and would provide more reliability for all.

Points of discussion included;

- The formality of communications in a federally-chartered committee,
- Who is selected to sit on the committee and how this selection occurs,
- Not losing the work of the issues group if there are changes in various state and federal administrations and/or key positions,
- When NEPA is required related to an SOP update or other actions, and
- How much and what might be reimbursable costs of the issues group.

The conclusion of the discussion was that the group would proceed informally without asking to create a Federal Advisory Committee, continuing to revisit the question to ensure that if and when the group's activities fell within the realm of the FACA, the law would be properly followed. Meeting participants seemed generally comfortable with an update to the SOPs as a means to document agreements that could come from this group, but this will need further discussion.

Forecasting

Tim Felchle, Reclamation Reservoir and Rivers Operating Group, explained that forecasting is not an exact science. Reclamation derives its forecast from Natural Resource Conservation Service (NRCS) 19 snowtel data sites, National Weather Service data at 9 sites, antecedent conditions (October-December inflows), and actual historic flows (April-July.) Typically the period from October to December provides the best correlation to predict future runoff. The dependent variable is the April-July spring inflows. Thirty percent of the spring inflows are due to rain and seventy percent is due to snowpack. The NRCS is now installing some soil moisture monitors in mountain areas. Tim uses the period of record since the completion of the dam. The NRCS average numbers are based on a 30-year rolling average updated every 5 years.

The forecast uses a linear regression analysis of the above information to produce an "equal chance forecast." This forecast is one where there is an equal chance that inflows will either be below or exceed the forecasted numbers. Following the year, a statistical evaluation is performed on the predicted situation compared to the actual. Regression models don't predict as well at extremes, very low inflows or very high inflows.

Variability of forecasts was discussed by the group. The following items can affect the inflows:

- Spring precipitation
- Weather conditions
- Irrigation demands
- Soil moisture
- Snowpack elevation
- Upstream reservoir and river operations.

Tim explained that when he looks at risk and probability he uses 10% and 90% chance of exceeding the inflow numbers, in addition to most probable or equal chance of exceeding inflow numbers. Looking at the 90% chance means that there is a 90% chance that the inflow forecast will be exceeded, in other words this would be a dry year. Most probable, or equal chance forecast level means that there is a 50% chance that the inflows will be more than the forecast and a 50% chance that the inflows will be less than the forecast. These forecasts are used to help manage risk.

Forecast accuracy could be increased with more automatic precipitation reporting, more snowpack monitors, more soil moisture monitors, and more information on the timing and amounts of irrigation diversion. Wyoming will be able to provide this information in the next few years. Montana is not able to at this point.

Technical Reports

Stephanie Hellekson provided an update the three technical projects. All of theses studies are "appraisal" or concept level. If the appraisal level studies indicate promise, feasibility studies (greater detail and higher level) would be the next step. Feasibility studies require Congressional authorization and funding.

1. Flood Pool Reallocation Study

This study is to look at raising the joint use flood pool to 3645 feet. Reclamation is working with the US Army Corps of Engineers on this study. The total cost is estimated to be $164,000. There is a funding gap of $79,000. The study is on target for completion in November 2008.

2. Bighorn Lake Sedimentation Management Study

This study is looking at some alternatives for addressing sedimentation in the lake. Reclamation is working with the US Army Corps of Engineers on this study. The total cost is estimated to be $75,000 and is completely funded by Reclamation and the NPS. This study should be completed by the end of November.

3. Bighorn River Side Channel Study

This study will look at the geomorphology of the Bighorn River and identify alternatives to remediate side channel habitat. The total cost of this four-year study is estimated to be $400,000, and $359,000 is still needed. An MOU has been prepared for the parties involved. This study is behind scheduled and has not had much activity.

Model Simulation

Three volunteers went through the model simulator to understand the risk and probability factors of 10%, 50%, and 90% chance of exceeding the forecasted inflow numbers. Several scenarios were discussed.

Wrap-up

Possible topics for the next meeting include; climate change related to forecasting, resource needs and operations criteria, products of this group, and opportunities for collaboration between various agencies.

Next meeting tentatively set for Tuesday July 29th in Wyoming (tbd.)