Upper Salmon Basin Watershed Program
Advisory Committee Meeting
Wednesday, April 5th, 2023 @ 1:30 p.m.
Idaho Fish and Game Conference Room

Notes

Welcome and Introductions — Bruce Mulkey, Chair

Agenda Modifications

Approval of Meeting Notes

Habitat Rehabilitation Efforts on the Lemhi

Columbia Basin Tributary Habitat Approach

Jeff Allen, Idaho Representative to the Northwest Power and Conservation Council (NPCC) presented the big picture approach as to why salmon habitat work is being done in the basin. The NPCC was started 42 years ago. The job of the program is to balance the power and fish and wildlife needs of the Columbia River basin. This includes mitigating hydropower impacts on fish and wildlife. The Governor of Idaho and many other state and agricultural interests are united in support of the hydropower system. However, through the U.S. Endangered Species Act (ESA) the regulatory agencies (NOAA and US Fish and Wildlife Service) rolled out a Biological Opinion in 2008 and subsequent revisions that required that ESA species affected by the hydropower system be mitigated for. Idaho has been working to stay out of ESA trouble by working collaboratively with landowners, public and private entities, and federal agencies. Idaho supports the BiOp and has an interest in avoiding ESA litigation or federal government requirements by working to meet the requirements of the BiOp with willing landowners and interested partners.

Community Driven Restoration

Tom Curet, with Idaho Fish and Game, gave a presentation on some of the history behind the restoration effort in the basin. In the Lemhi, the transportation corridor straightened and channelized the river. This, in combination with other impacts on the river (water diversions, habitat loss, etc.) has unintentionally harmed fish species that have historically utilized the Lemhi for spawning and rearing. It is estimated that ½ million salmonids were being entrained (diverted off the river into irrigation diversions. In the 19080's the Ott report identified river flows, fish passage, and habitat loss as limiting factors to salmon survival in the basin. Irrigators requested assistance in an attempt to limit agricultural and irrigation impacts to salmon in order to avoid ESA consequences. The idea was to prevent federal intervention on behalf of the ESA, which would have dramatically impacted the local agricultural economy. As a result, landowners and partners formed the Upper Salmon Basin Water Program (model watershed). The program then expanded and began working on developing minimum stream flows for the benefit of ESA listed salmon. As a result of this community-driven conservation effort, the Federal government elected to not intervene on behalf of the ESA like they have in other regions i.e. Klamath Basin in Oregon. This has been a success for local agricultural producers.

Science Driven Approach

Mike Edmonson, OSC Administrator provided a presentation on the scientific rationale for the fish work being done in the Lemhi subbasin. In order to prevent a third-party from making accusation of "take" under ESA, the community-driven conservation effort must work towards improving anadromous fish numbers in the basin. Through rigorous data collection, utilization of the NOAA BiOp, modeling efforts, and assessment of habitat conditions, partners, with the help of hired consultants have identified the number of juveniles that the subbasin needs to produce to be a sustainable and viable population. They have also identified the types of habitat and habitat capacity needed to support those numbers. The restoration program relies on the willingness of landowners and subsequently, the cumulative result of implementing water efficiency and fish habitat projects to boost fish numbers.

Lemhi Watershed Summary

Rob Richardson, Geomorphologist from Rio Applied Science and Engineering, provided an explanation of the Lemhi watershed. An assessment was recently completed that broke the Lemhi watershed in to three distinct areas: 1. Headwaters, 2. Upper Lemhi – Functions as spring dominated system, is more sinuous, has calmer water, less gravel, significant ground water inputs, and high winter flows, 3. Lower Lemhi – has steeper gradients, has been straightened,

turbulent water, has long riffles, contains more gravels, has high winter flows. The lower Lemhi has experienced significant impacts including channel confinement/straightening, channel simplification, disconnection from the floodplain, native vegetation removal, construction of levees, riprap, roads and infrastructure, and irrigation diversions. These impacts have led to increased velocities erosion potential, and increased the flood stage. The Lemhi has not experienced a 100-year flood on the gage records. Only 4% of the historic floodplains exist in the Lemhi. Floodplains are important because they allow the channel to meander, which plays a role in mitigating flow energy, floodplains reduce flood energy and store flood water/lower the flood stage, and capture sediment and debris. The lack of floodplain connection due to channel manipulation creates increased flood and erosion risk.

Project History

Jeff Diluccia, Project Manager and Fish Biologist with IDFG, gave a presentation on the Lemhi Restoration Project. To meet ESA recovery goals, landowners and partners need to provide more capacity/space for fish production and rearing in order to avoid ESA enforcement risks. Lemhi restoration projects have contributed over $20 million worth of capital improvements. Projects bring in outside funding, providing jobs and contributing to the local economy. The projects aim to address limited habitat capacity to increase the number of juveniles for every adult entering the Lemhi watershed. The Lower Lemhi Project at Eagle Valley is a large-scale restoration project that was developed with multiple willing landowners to cumulative improve habitat capacity. The project was divided into four subreaches with a ten-year timeframe involving many partners, levels of review, and environmental compliance. The bulk of the property is on a donated conservation easement for the purpose of maintaining conservation values related to ranching, natural resources, and scenic values. The restoration project has improved floodplain vegetation and connectivity as well as overall fish habitat.

Design Discussion

Jeff Fealko Engineer from Rio Applied Science and Engineering, discussed the design process for the Lower Lemhi Project on Eagle Valley Ranch. Project goals and objectives align with the previous presentations concern for addressing habitat for juvenile and adult salmonids. The goal is to enhance aquatic habitat and restore natural river function to benefit juvenile and adult salmonids. This is done by increasing channel structure and complexity, floodplain connectivity and function, improve riparian habitat, maintain irrigation diversions and flow requirements and do not increase the flood risk to adjacent landowners. The development of the project had a robust review team that included IDFG, Rio, and the Bureau of Reclamation as the core team. Additional review was provided by a boarder design team. Permits for construction were obtained through the Corps, IDWR, IDEQ, and the County. Baseline for the design assessment was to look at the FEMA flood maps. Maps were developed in the late 1980's and approved in 1990. Maps were developed without the use of current technology. FEMA accounted for ice jams in certain sections in and around Salmon, ID. The FEMA 100-year flood on the Lemhi was based on historical ice jam data for the area above the North St. Charles Street bridge and that ice jam elevations are greater than the 500-year flow flood along the Lemhi River. An extension of the FEMA flood map modeling effort was done in 1988 for the area around Baker, but was modeled in a free flow condition with no ice effects. Lemhi County accounts for the development, ice jams and other misc. scenarios in the required 1.5-feet of freeboard. However, this rendition of the FEMA flood maps are outdated. Newer technology was used to assess the 100-year floodplain in the Lemhi and it showed that the floodplain is much wider than the existing FEMA maps show.

The project design utilized this analysis considering the proposed condition topography and landscape roughness that would act on different flood stage heights in different ways. These modeled results informed the project design to ensure that goals and objectives were achieved, including to protect upstream and downstream landowners.

The project design utilized state of the art tools for analysis of flood risk. Evaluation of effects to upstream and downstream landowners showed no increase to flood elevations and the project was designed, permitted and implemented in accordance with local and federal regulations.

Icing

Mike Knutson, Engineer with the Bureau of Reclamation and Jeff Fealko gave a presentation on the history and hydrology of icing events in the Salmon and Lemhi Rivers. The history and hydrology of icing events explains some of the reasoning behind why the icing event happened in 2023. There is a history of ice jams in the Salmon River and Lemhi River

including in 2005, 2013, 2017, 2022, and 2023. It is likely that some level of icing occurs in the Lemhi subbasin every year, but icing events are poorly documented from year to year.

There are two basic ice types: surface cover ice (occurs in calm water and is solid) and frazil ice (occurs in open fast moving turbulent water, is softer-slush, but sticky and will "floc" together to form larger ice flows. Frazil ice is not solid and somewhat porous. Frazil ice is common in the Lemhi and Salmon Rivers. Product areas include turbulent reaches with higher velocities. The rate of production is a function of the water and air temperature, as well as the degree of turbulence. Forms at long fast riffles or rapids with cold air conditions. Frazil ice flows from production areas downstream, builds as it sticks together. Frazil ice can stick to the bottom of shallow riffles to form anchor ice. It can also stick to surface ice to form hanging dams. Frazil ice can be unpredictable and is difficult to model due to the number of dependent factors. Blockages typically form at abrupt channel changes i.e. constrictions, diversions, pools with ice cover, confluences, bridges, fences/obstructions, etc. Some locations repeat ice damming from frazil ice each year, while other locations are more random.

The channelization of the Lemhi River has created an enlongated and efficient transport of water and ice downstream. This has increased frazil ice production, limited frazil ice storage on the floodplain, and increased water levels when ice jams occur. The connection and efforts to reconnect the floodplain in strategic locations will reduce frazil ice production, would break-up the conveyor belt of ice, reduce local water levels during floods, and provide critical habitat for fish and wildlife. What can be done for the future? 1. Identify specific ice jam risks (conduct a Lemhi Ice Jame Flood Risk Assessment), 2. Mitigate problem areas by reducing jam potential and identify and construct or enhance specific flood bypass channels, 3. Identify potential floodplain areas for additional ice storage and flood capacity.

Jeff Fealko then presented on the specific icing issue in the Lemhi that occurred in 2023. It is believed that frazil ice that water produced upstream began building at the top of the Lower Lemhi restoration project at Eagle Valley Ranch on a relatively hard corner. This project was constructed in 2021 and no icing occurred during the winter of 2021/2022. As part of the project, a riprian fence was constructed river right. When icing started occurring in the main channel, flow shifted river right where ice was being caught up on the fence. To relieve that icing, fencing panels were removed and a 900-ft bypass channel was constructed to provide some relief. Topography on the landscape also confined the floodplain and places for ice to go. This artificial confinement restricts any icing relief the floodplain may provide. The project is considering adaptive management actions to allow for ice to move further into the project to allow more access to the floodplain. This includes altering the channel to increase velocities at the upstream pool location, potential for additional bypass channels on site, and working with willing landowners for additional off site modifications. Offsite modifications that would impact potential icing issues include: reducing the size of frazile ice producing areas feeding any one particular location by creating more floodplain and ice storage areas.

One question was asked after the presentations. Where was the fence located that jammed up the frazil ice? Jeff Fealko responded by saying it was on Eagle Valley Ranch.

Potential Next Steps

Daniel Bertram, Program manager with OSC, provided comments on next steps. Engineers are continuing to evaluate the icing situation, both cause and effects, and ways to address icing on future projects. Designs on future projects will better access icing potential and will adopt actions that take icing into account. There is a lot of opportunities out there now to secure funding that can be utilized to access flood risk in partnership with the County. One option being discussed is to pursue a risk assessment that assesses both flooding and potential ice issues. This would also evaluate areas under the old FEMA flood maps and compare to new assessments of flood prone areas using new technology.

Public Comment – Attendees wishing to make public comments were asked to request an opportunity via a sign-up sheet. Public comment was limited to 3 minutes per person.

1.) Susan Nebeker
    a. Called for a more critical conversation with agencies to find a balance between conservation, wildlife, and the needs of the community.
    b. Should be more robust monitoring and follow-through on permitting.

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c. Need to improve communication with neighbors within a mile upstream and downstream of projects so they know what is going on.
d. Expressed disappointment in the county in their response.

2.) John Blower
   a. Agreed with Susan's comments.
   b. As both part of the restoration planning process, and in response to flooding and other potential natural disasters, there needs to be better emergency planning in place with clarity on who is in charge and responsible parties for the appropriate response in collaboration with the County.
3.) James Whittaker
   a. Expressed concerns of willing seller/willing buyer
   b. Discussed renting Salmon River water and BPA.
   c. The Lemhi is overweighted by the government and called for change.
4.) Stan Davis
   a. Must consider ice jam/frazil ice modeling at slower flow.
   b. Folks should consider development a better communication hub because people need to know who to call in instances like this.
   c. The project should be working with people above and below the project area.
   d. Silt concerns with Salmon River from previous fires
5.) Dave Say
   a. Says his reach of the river across his property has been silted in as a result of the project.
   b. Has concerns about the disappearance of stone flies in the river.
6.) Stan Davis
   a. Continuation of government work is a private property concern.
   b. Changes in floodplain maps will affect property values.
7.) Michael Koncz
   a. Complained about his ditch filling in with silt.
   b. Expressed concern over heavy equipment and creating ditches on his property without permission. That was trespassing.
   c. Wanted to know who is going to be responsible.
   d. Spoke to Matt Belnap previously about the damage assessment.
   e. Threatened a lawsuit.
8.) Chairman Mulkey
   a. Provided some comments regarding his recollection of icing on the Lemhi. Acknowledged that icing does occur, but hasn't seen it in this location in 77 years.

Next meeting is being held on May 3rd. 2023 at 1:30 pm.