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Subject: Prioritizing Lamprey Passage Work
Date: Tuesday, April 14, 2009 1:04:41 PM
Attachments: [Bonneville Dam Prioritization for Diffuser Grating Replacement.doc](#)
[Grating size test poster Moser.pdf](#)
[030721-22_dive_results.doc](#)
[lamprey_salvage.xls](#)
[Juvenile lamprey proposal \(final for COE USGS mgm 10 17 08\) \(2\).doc](#)

Folks,

Wanted to bring an issue up to all of you with regards to starting work on replacing diffuser gratings in the WA shore BON ladder this year to help prevent stranding and mortality of adult lamprey during salvage operations. We had planned to use some of our funding this year to finalize designs for gratings, intake trashrack screens, trash rakes, etc. and buy diffuser gratings, then over the next 1-2 years to buy the screens, modify the trash rake and get everything installed. With the constantly increasing costs to accomplish these modifications we are rethinking if it still a priority or if other actions make more sense. Current estimates run around 5M to get this done for only the BON WA shore ladder prioritized gratings.

Following is a summary of information I feel may be pertinent to the issue;

First, these new 3/4 inch gap gratings definitely work to stop adult lamprey from going through them. NMFS researchers showed this conclusively in the lab(see attachment 2). JDA north ladder pool 16 had diffuser gratings with this reduced gap size installed and it basically eliminated historic stranding there. The BON gratings to be replaced were selected and prioritized based on information given to us by project bios based on historic locations of where adult lamprey, either dead or alive, were found under the gratings during dewatering (first attachment). A new grating was designed to replace the existing gratings. Issues began to arise about use of galvanized steel, existing insufficient supports for the gratings at most ladders, intake screen replacement needs, and now trashrack cleaning improvements; all escalating the costs.

Over the years several things have occurred relative to the amount of lamprey being found under gratings in ladders (see attachments 3 and 4 from BON project Bios regarding salvaged lamprey 1999-present). One is the relative drop in run sizes, making it less likely to find adults under gratings. The other deals with improvements in methods used to dewater and salvage fish such that more fish are moved downstream quickly, adequate numbers of people and equipment are available to ensure efficient salvage, and more. Are there other operational practices or devices that can improve salvage when it occurs such that grating replacement is less needed and the likelihood of stranding adult lamprey below gratings is further reduced, is an important question. If our entrance area modification are successful and lead large numbers of adult lamprey into an LPS it also reduces the proportion of fish continuing up the ladder into the areas where stranding is prevalent.

At this time it may be prudent to re-evaluate the merits of proceeding with grating replacements considering the seemingly never ending escalation of costs involved with such efforts. We have estimates of \$2.2 million in FY10 to build and replace fish intake trash racks but we now have to add costs related to upgrading trash rack cleaning (new or modified trash rake) and the costs to install the diffuser gratings. IN 2009 we are looking at around \$600+K to buy diffuser gratings, plus design development work of \$100-200K. All in all it may cost around \$5M to ensure only the historically know problem gratings in one ladder are improved. Ladder entrance modifications are likely to cost a similar amount per entrance if not a bit more. Research needs can reach up to 2 million per year to do a fairly thorough job of keeping up with evaluating installations, including LPS planning, designing, and installations by NMFS, and developing juvenile passage evaluations.

We have other high priority options that we are considering focusing on instead over the next 2 years;

1. Initiate design development of entrance modifications at BON WA shore ladder and MCN ladder to try to keep on our timetable for entrance modifications. Entrance mods are likely to provide the biggest improvement for adult passage of any options, assuming our designs and tests prove them effective. NWP engineers are starting work to develop designs for modifying BON 2 WA north downstream entrance to be more lamprey-friendly. This entrance is one of worse anywhere with regard to entrance efficiency and has more lamprey attempt to use it than anywhere. There are significant structural changes that need to be addressed to make entrance modifications. NWW engineers plan to start design work for MCN south entrance mods this year (this entrance is rather different in that it cannot be dewatered and has plenty of depth that may require a different design of an entrance) and do serious modeling next year as well.

2. To initiate juvenile research on tag criteria (basically this would entail objectives 3 and 4 in the juvenile tag evaluation proposal from Mesa, Peery, and Lodge). Before we build any type of prototype tags we need to know what size, shape, and materials juvenile lamprey can tolerate and still behave close enough to normal to get meaningful data from evaluations. This work should do that.

3. To ensure that the engineering work needed to prepare for next winter's implementations of smaller scale lamprey fixes at MCN are completed.

For winter of 2010 we are already planning to address some of the smaller scale fixes in the MCN ladders found during inspections. NWW engineers need to plan how to accomplish those fixes this year without negatively affecting the functions of the ladder. We will also be undertaking the lamprey modifications in the exit section of JDA north ladder next winter.

IN FY09, we are continuing to develop the entrance modification DDR design work for JDA north ladder dam as well. This is beside the LPS work at CI and associated tagging and passage metric research ongoing at dams from BON through MCN and beyond.

Now that we are discovering the real costs of some of our planned Accord actions we need to make sure we all understand the hard choices about what and how fast we can accomplish our goals and how that affects prioritization. I would really appreciate your feedback regarding this issue and the prioritization of actions to take in 09 and 10. We need to make decisions quickly to ensure we can move forward on some of these items this year.

Regards,

David