

**OFFICIAL COORDINATION REQUEST FOR
NON-ROUTINE OPERATIONS AND MAINTENANCE**

COORDINATION TITLE- 20BON06 BI Installation of Pucks for Lamprey

COORDINATION DATE- 2/12/2020

PROJECT- BON

RESPONSE DATE- 2/19/2020

Description of the problem

We are proposing to install a series of hydrodynamic round “pucks” (commonly called pavement markers; Figure 1) in parts of the serpentine weir section during dewatering (and other alternative locations where the viewing of fish interaction is relatively easy, such as UMT and AFF windows). The flat bottom side of the pucks have a web-like structure to maximize their adhesion (to the ground/pavement for road construction use). Two sizes of pucks will be used: 1) 4 inch diameter x 0.5 inch height and 2) 8 inch diameter x 2.75 inch height. The 4 inch pucks have been used for wetted wall lamprey passage structures (Prosser Dam, Yakima River) and they have provided excellent flow refuges for lamprey climbing up. The surface is so smooth that adult lampreys can attach to the pucks itself (in addition to using them as flow refuges).

Due to the potential benefits of flow refuges within the serpentine weir section, we have outlined the following plans for their placement within Bradford Island fishway (Figures 2-5). They will be used experimentally as a pilot project in select locations where it is easy to monitor lamprey use as well as any other fish interactions through windows or from the top near the water surface. The plan is to place them in the upper most section of the serpentine weir where the access for viewing is optimal. We recommend a staggering design as shown in Figure 6 (18-24 inch spacing with 3-6 inch opening in between).



Figure 1. Side and overhead view of a 4” puck (commonly called pavement markers) which will be used for all the wall placements.



Figure 2. Overview of “puck” placement areas on aerial photo. The red lines represent 4 inch pucks and the blue lines represent 8 inch pucks.

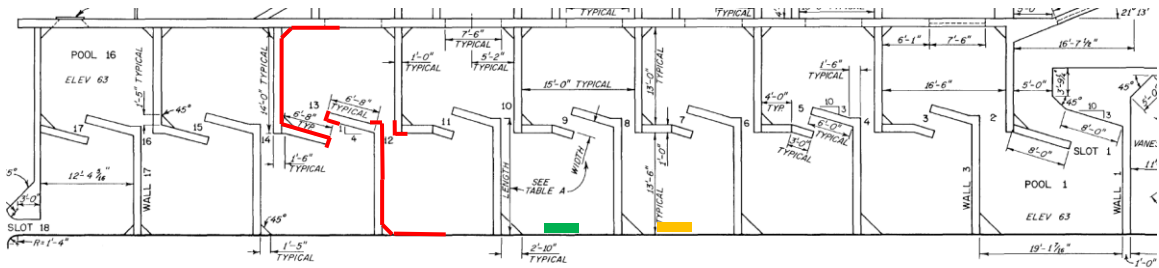


Figure 3. Overview of “puck” placement areas on a serpentine weir fishway design drawing with more details. The red lines represent 4 inch pucks near the water surface (for viewing from the top of the structure). The green line represent 8 inch pucks on the fishway bottom and the orange line represent 4 inch pucks (for viewing from fish viewing windows).



Figure 4. Photo of the serpentine weir fishway during night time tour on July 11, 2018. The blue lines represent areas where the placement of pucks is expected to help adult lamprey passage. Several lamprey can be seen attached to the wall near the water surface in the center of the picture in the high flow high turbidity section.



Figure 5. Photo of another section of the serpentine weir fishway during night time tour on July 11, 2018. The blue lines represent areas where the placement of pucks is expected to help adult lamprey passage. Several lamprey were observed attached to the wall as shown in the inserted photo.

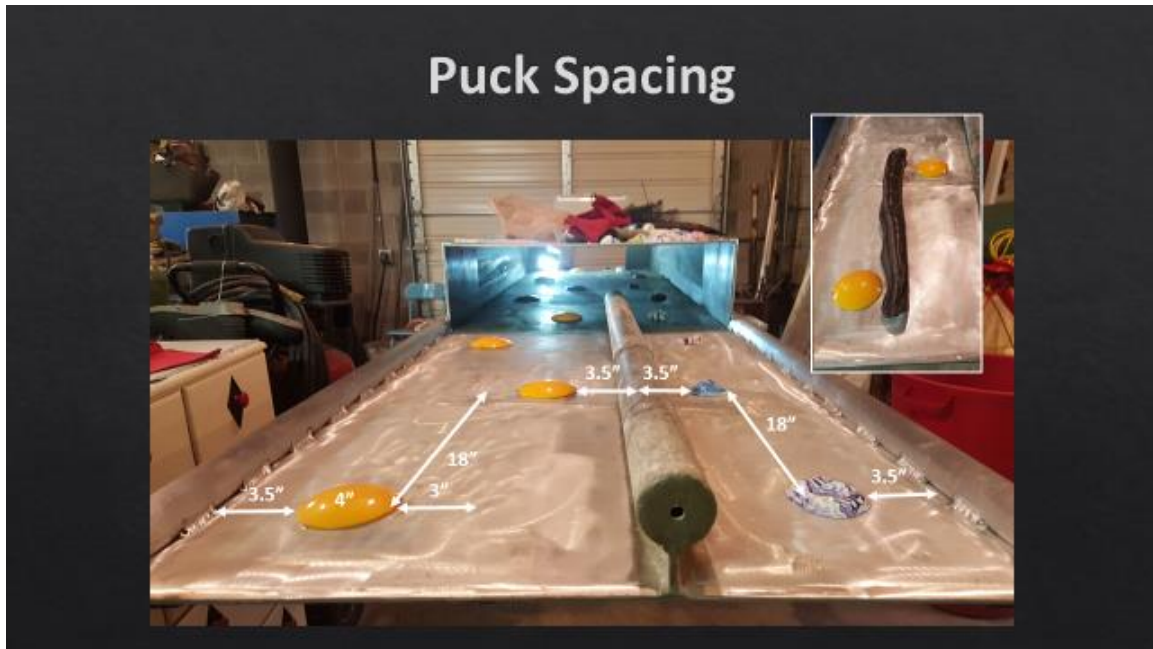


Figure 6. An example of recommended spacing between pucks (18-24 inch spacing with 3-6 inch opening in between), which were used very successfully in a wetted wall environment.

Type of outage required- None

Impact on facility operation (FPP deviations)- None

Impact on unit priority- None

Impact on forebay/tailwater operation- None

Impact on spill- None

Dates of impacts/repairs- N/A

Length of time for repairs-N/A

Analysis of potential impacts to fish

1. 10-year average passage by run during the period of impact for adults and juvenile listed species, as appropriate for the proposed action and time of year;
None
2. Statement about the current year's run (e.g., higher or lower than 10-year average); **N/A**
3. Estimated exposure to impact by species and age class (i.e., number or percentage of run exposed to an impact by the action); **N/A**

4. Type of impact by species and age class (increased delay, exposure to predation, exposure to a route of higher injury/mortality rate, exposure to higher TDG, etc.);

None

Summary statement - expected impacts on:

Downstream migrants

It is possible that due to their smaller size, any downstream migrants that were in the adult fish ladder could use the pucks as a flow break to hold behind.

Upstream migrants (including Bull Trout) - None

Lamprey- Hopefully, lamprey will be able to use the hydraulic disturbance created by the pucks to more effectively navigate high velocity areas.

Comments from agencies – no comments

Final coordination results – FPOM concurred at the February 2020 meeting.

After Action update - The pucks are 8” wide and 1” deep, originally the pucks were supposed to be 4”. The pucks were installed in visible locations.

Please email or call with questions or concerns.

Thank you,

Erin

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