

**Willamette Action Team for Ecosystem Restoration (WATER)
Research, Monitoring and Evaluation (RM&E)
March 16, 2021**

CONCEPT METRICS DISCUSSION

http://pweb.crohms.org/tmt/documents/FPOM/2010/Willamette_Coordination/Willamette_RME/RME.html

[\[Edits received from NMFS\]](#)

FINAL Facilitator’s Summary

ACTION	BY WHOM?	BY WHEN?
Provide written comments on the concepts.	RM&E Team members	March 22
Revise the concepts based on the input received; send concepts to RM&E and ST ahead of Joint meeting.	Fenton, Anne, DSC	March 30
Review sub-basin planning spreadsheets and send comments to DS Consulting.	RM&E Team members	March 17
Consolidate everyone’s comments into sub-basin planning spreadsheet and send out to the team.	DSC	March 18
Review the consolidated planning spreadsheet and bring input for further discussion to the March 25 RM&E team meeting	RM&E Team members	March 25

Present for all or part of the meeting: Leslie Bach (NPCC), Brad Eppard (COE), Fenton Kahn (COE), Michael Hudson (USFWS), Dave Jepsen (ODFW), Rachel Laird (COE), Jim Myers (NMFS), Anne Mullan (NMFS), Christine Petersen (BPA), Rich Piaskowski (Corps), Kelly Reis (ODFW), Jon Rerecich (COE), Lawrence Schwabe (CTGR), Dan Spear (BPA);

Facilitation Team: Nancy Pionk and Emily Stranz (DS Consulting).

CONCEPT METRICS DISCUSSION

The RM&E Team discussed metrics for the three draft concepts¹. The Corps noted that they expect to develop metrics that are applied across all the projects in analyzing the Interim Measures. RM&E Team members shared that consistency is helpful and allows for an “apples to apples” comparison across the studies. It was acknowledged by all that while consistent metrics across all projects is a good approach, there may some operations at individual projects that require additional metrics that are not needed to assess operations at other projects. In particular, Anne Mullan (NMFS) noted the Cougar operations are very different (changing reservoir elevations to provide better dam passage efficiency) than those at Foster and Detroit, which are currently spill for a passage alternative. The Corps confirmed that metrics will only be applied if they are needed.

The group identified 3 metrics to focus on in assessing the IMs addressed in the draft concept papers:

1. Forebay residence time and distribution

¹ *FY21 JPL-XX-21 (Detroit Dam Juvenile Fish Passage Interim Operations, FY21 JPL-XX-XX-FOS (Foster Dam Juvenile Passage Spill Operations), FY20-xx (Enhanced interim Measure Evaluation of Operational Passage in South Fork McKenzie*

2. Route of passage
3. Downstream survival

Forebay Resident Time and Distribution - The purpose of this metric will be to track fish as they actively migrate downstream. Residence time is defined as the first and last detection at that site. It was noted that fish coming out of the natal streams and into the forebay will be too small to tag. Additionally, there was a request for the Corps to provide further definition of where the “forebay” is. It was noted that for many studies, the forebay line is where the forebay log-boom is located; the Corps will look to the researchers to provide a recommendation on this. Also, NMFS noted the need for considering how reservoir survival is affected by the interim operations, so time in the reservoir will be another metric of interest.

Downstream Survival – Fenton noted that input from the team was needed on the following questions regarding downstream survival: 1) where survival will be measured to; and 2) what precision is needed.

Jim shared some information on the Life Cycle Model (LCM), noting that it considers fish that spawned, emerge, and rear above the dam, and those that spawned, emerge, and rear below the dam. The LCM eventually combines those two life-history types once the location effects are absorbed and the survival impact from passing the project is no longer impacting the fish. In the LCM, the downstream portion of the tributaries are considered one reach (i.e., there is one survival estimate from the dam to the mainstem) and then the mainstem is another reach. It does not matter to the LCM where the survival is measured to, so long as the location is far enough downstream that the impacts of the dam passage and life-history are resolved.

The group shared the following thoughts regarding the question of where survival might be measured to:

- The confluence of the tributary and mainstem is typically a good point to measure to.
 - The Beeman study in the McKenzie showed that the measuring point was below the confluence of the McKenzie. Specifically, that study concluded “There was evidence that **the mortality associated with dam passage was not fully expressed** until the Marshall Island site.” It is tricky to find this point depending on the tributary and could also be influenced by the tagging method used as some tributaries may not be well suited to set up interrogation sites.
 - For the Foster study, the first monitoring point was 20 km below the project, the secondary point was at Willamette Falls.
- The furthest area at which to combine the life-history stages is Willamette Falls.
- Ideally, there would be multiple monitoring points, that would allow the study to identify where the life-history effect is diminished.
- Depending on the tagging system used, there may be existing infrastructure that could be utilized (i.e., there are PIT arrays at Willamette Falls and a trawl in the estuary). NMFS noted that active tags and genetic tags are more costly, the former requires larger fish and the latter needs the fish to be captured at least twice.
- A controlled, experimental study with active tags may be needed ultimately to tease out the effects of the project.
- Alternatively, effects could be studied with a “before/after study”, in which the intervention is the IM operation, and the study looks at passage before and after the operation.

- The Corps noted needing more information on this approach if it is something different than an experimental design, i.e., how would it measure other impacts downstream of the dam?
- It may be that the operation needs to be constant throughout the study to capture the effects.
- To allow for flexibility and capture the nuances of the operation, it could be helpful to look at the percent of passage and the time-step.

The group coalesced around using the confluence of the tributary and mainstem as the downstream point for measuring survival, recognizing that it may be logistically difficult to put detection systems there and the distance from the project to the confluence is different in each tributary. It was also acknowledged that the more monitoring sites, the better the information.

Regarding the precision of the survival metrics, there was general support for including the young-of-year fish if possible, and recognition that all three size classes are important to monitor (first spring, first fall, second spring). However, each size class may have their own metrics (i.e. rearing juveniles spend lots of time in the forebay and it is hard to differentiate dam passage survival and reservoir rearing survival. However, capturing fish closer to the forebay will help limit reservoir rearing “noise”). It was noted that a lot of study designs would lead towards using yearlings.

Regarding detection rates needed for this type of study the group was aligned in asking the researchers to provide a range of precision estimates and sample sizes required. The RM&E team can then take into consideration the needs and logistics to reach those levels.

As next steps, the Corps asked that team members provide written comments on the concepts by March 22, 2021. The Corps will then revise the concepts based on the input received and send concepts to RM&E and Steering Teams ahead of Joint meeting. Nancy also reminded the team to provide any updates to the sub-basin planning spreadsheets by Wednesday, March 17, 2021 so they can be consolidated and sent out for review at the March 25, 2021 RM&E Team meeting.

With that, Nancy and Emily thanked the group and adjourned the meeting.

This summary is provided by DS Consulting. Suggested edits are welcome and can be provided to Nancy at nancy@dsconsult.co