USACE Portland District (NWP) FFDRWG Update Form
6 June, 2019

PROJECT INFORMATION

Project Title	John Day Dam Turbine Unit Rehab
SCT Reference Number	
Project Manager (PM)	George Medina (NWP, 503-808-4753)
Technical Lead (TL)	Curtis Lipski (NWP 503-808-4351)
Biologist/Coordination	Jon Rerecich (NWP, 503-808-4779)

PROJECT DESCRIPTION

The purpose of this project is to address reliability concerns and maximize production of hydroelectric power at JDA, which includes electrical energy production and electrical grid ancillary services while at the same time, improving survival of fish passing through the turbines. Maximum production of hydroelectric power at JDA will be realized through increased reliability and increased efficiency. Reliability improvements will be realized through a combination of replacement and refurbishment of powertrain equipment to include, but not limited to, turbine runners, shafting, generators, isophase bus, breakers, switches, and transformers. Efficiency improvements will be realized through increased turbine efficiencies associated with new turbine runners and other modifications to the turbines.

The purpose of this project is also to increase survival of turbine passed fish. Increased survival of turbine passed fish will be realized through developing state-of-art hydroelectric turbines to obtain improved fish passage survival through the turbines in accordance with RPA 55, subaction 6, of the 2014 NOAA BiOp. The design of the state-of-the-art turbines will be an iterative and collaborative process that focuses on fish-friendly design features and criteria. This iterative and collaborative design process will be similar to the ongoing Ice Harbor L&D turbine runner replacement design and upcoming McNary L&D turbine runner replacement in NWW.

CURRENT SCHEDULE

A. Short Term Schedule	Start	Finish
-In-Section Review	5-31-2019	6-14-2019
-District QC/	6-10-2019	6-28-2019
-ATR-Draft Final/FFDRWG Review	6-10-2019	6-28-2019
- Final Report		August 2019

PROGRESS AND KEY ISSUES (List)

The schedule has changed since the last FFDRWG meeting. The PDT continues to work on developing the draft final Phase 1A report.

Three alternative categories were developed to organize the evaluation of different alternatives. The alternative categories include the following: do nothing, full replacement, and partial replacement. One alternative was analyzed under the do nothing category, four alternatives were evaluated under the full replacement category, and three alternatives were evaluated under the partial replacement category.

The evaluation of alternatives involved the development of criteria, identification of constraints, and evaluation of alternatives against the criteria and constraints.

The recommended alternative is to pursue a partial replacement strategy where only 14 turbine runners and generator stator windings are replaced. To ensure adequate contract flexibility and allow for adjustments based on updated and more accurate information at the time of construction, it is recommended the contract scope specify the replacement of 12 turbine runners and stator windings in the base scope with four additional units as optional.

While analysis supporting a partial replacement strategy was based on 16 adjustable-blade turbine runners, which was required to minimize computational time, it is recommended that the new turbine runners be a mix of adjustable-blade and fixed-blade designs. It is recommended the contract specifications, plans, and clauses facilitate the selection of the turbine runner type after the collaborative hydraulic design process is complete. The contract should have enough flexibility to adjust the final powerhouse configuration based on the most current information available at the time.

Further analysis is required to determine the final turbine runner type configuration. The models will require modification during Phase 1 to better capture unit priority, spinning reserves, and reliability. After contract award, analysis will continue and results will be recalculated based on the most current information gathered, including actual costs, updated pricing forecasts, actual turbine performance curves, development of any new electricity markets, and changes to the fish passage plan. Finally, the location of each type of turbine will be determined based on future analysis during Phase 1 and Phase 2.

FFDRWG REVIEW NEEDED AT MEETING? (If YES, list discussion topics below)

No.