

**MEMORANDUM FOR THE RECORD** 16 LGS 03 MFR Failure of Fish Pump # 2. (Update March 17, 2016)

**SUBJECT:** Intermittent Failure of Fish Pump # 2 at Little Goose

On March 2, 2016, we were made aware that Fish Pump # 2 tripped off due to low oil pressure alarm. At the time, Little Goose was operating on two Fish Pumps (# 2 and # 3), while Fish Pump # 1 is under maintenance for a misaligned shaft. Upon inspecting the oil levels in Fish Pump # 2, and not identifying any concerns, operators were able to restart the fish pump. Between March 3 and March 6, the fish pump tripped off several more times, and each time, was restarted by the operator. Investigation of the intermittent failure by the mechanical crew, on March 7, determined that a higher oil viscosity was used in this system, per the recommendation of the pump manufacturer. The belief is that the higher viscosity oil is causing the oil pump to run at higher amperage, which trips the oil pump off. This was leading to a drop in oil pressure, and a tripping of the fish pump due to low oil pressure.

On March 8, mechanical crews decided to shut down Fish Pump # 2 and purchase a replacement oil pump that will handle the new operating conditions. We made adjustments to the fish entrance weirs and requested to increase the operation speed of fish pump # 3 to help maintain criteria in the adult Fishway. Early on March 9, we discovered that we were unable to maintain criteria in the Fishway under current operating conditions. Following recommendations in the Fish Passage Plan (3.3.2.3), we made the several adjustments. First we closed NSE 2 and NPE 2, but this did not result in the desire 1'-2' head differential. Next, we adjusted NSE 1 to a depth of 5' below tailwater (normal operating criteria is 6'). These adjustments allowed us to meet the desire 1'-2' head differential at all open fish entrances.

The new oil pump for Fish Pump # 2 is expected on Monday, March 14, 2016. Installation of the new pump will occur immediately and normal operation of Fish Pump # 2 and the Adult Fishway System will resume following installation.

**Update:** The new oil pump on Fish Pump # 2 was installed on March 16, 2016. The fish pump was returned to service at 1:30 PM. As of March 17, we are again maintaining criteria for both weir depth and head differential at all fish entrances.

- A. Species – Steelhead
- B. Origin – N/A

- C. Length – N/A
- D. Marks and tags – N/A
- E. Marks and Injuries found on carcass – N/A
- F. Cause and Time of Death – N/A
- G. Future and Preventative Measures – Ensuring we have three operable fish pumps at the facility will reduce the risk of operation conditions outside of criteria, in the event of unforeseen pump failures.

Sincerely,  
Towns Burgess  
Little Goose Project Biologist