CENWW-OD-McNary **08/20/2020**

MEMORANDUM FOR THE RECORD - 20 MCN 09

SUBJECT: Sampling missed due to juvenile channel rectangular and transition screen brush issues along with dewatering valve concerns.

Narrative: 1. On August 14 and 15, the south side dewatering valve motor ran very hot and the north side dewatering valve appeared to slip at times resulting in the whole valve shaking. With the north valve possibly slipping, the south valve appears to over adjust at times. These are the two valves that regulate the channel water elevation. From August 16 to 17, we cycled the orifices once a day to reduce operation of the valves. This appeared to help the problem with each valve, and we returned to the normal orifice cycling schedule. Then, at times on August 18 to 20, the south valve's motor again begun to run very hot. The north valve slipping was not as severe. So, on August 20, we returned to cycling the orifices once a day in the morning. Concern over these valves and the issues with the screen cleaning brushes discussed below resulted in a full day of sampling being missed on August 16. The valves were examined on August 20 with no electrical or mechanical issue found above water. Most crew members believe the control program operates the valves to frequently. We will have access to the control program in about one month. Also, there may be some below water issues, but these would have to wait for the winter outage. We will continue to monitor the valve closely.

2. On August 15 at 1700 hours, the technician on duty reported the rectangular screen cleaning brush had stalled and the transition screen cleaning brush had jammed into the rectangular brush. The project biologist was about an hour out and asked the technician to monitor the channel until they got there. The biologist arrived at 1800 hours. The rectangular brush had stalled out going downstream after the brush was raised. In other words, it did not return to the upstream part position. The brush did not trip an alarm and the green run light on the control panel was still on, both are very concerning. The biologist disengaged the rectangular brush from the transition brush by lowering the brush with the switches on the control panel and then used the control switches to park the brush upstream with the brush raised. The biologist ran the brush twice using the start button on the control panel. However, due to the stall out problem, lack of an alarm earlier and questions about the control program, the fisheries staff on duty were asked to run the brush using the four switches on the control panel.

With the rectangular brush downstream and running, the control program is not supposed to let the transition brush run in order to avoid a collision. Yet, the brush did operate and collide with the rectangular brush. After about 30 minutes, a transition brush cycle timing alarm did come in as it never had an opportunity to complete the cycle. With the control switches, the biologist parked the transition brush back up stream and cleared the alarm. The green start button was used to operate the brush and it stalled out on the D beam with both the D and C beam limit switches light up. The biologist used the switch buttons on the control panel to park the brush and removed it from service. The brush only cleans 7 percent of the total screened surfaces in the channel, the air burst system's zone 5 keeps the transition screen clean and keeping the rectangular screen brush operating is far more important due to the amount of service area it cleans.

Again, with the dewatering valve and brush issues, it was decided by 1900 hours it would be best to not sample on August 16 and monitor the channel 24/7 instead. There was 24 hours of sampling missed.

On August 16, it was noted the transition brush C beam limit light had gone off. Also, the rectangular brush appeared to be lower as if it had slightly slipped down. Finally, we found the air burst system zone 4 off. All were very curious conditions. Zone 4 was returned to service at 1118 hours. The rectangular brush continued to be operated by the control switches and the transition brush remained out of service.

On August 17, from 0700 to 0900 hours, the electrical staff attempted to find the issue with both brushes. However, nothing was found. With no access to the program, testing the limits is as best we can do. They asked for the brushes to run more frequently. Both brushes were returned to automatic mode and the brush cycle sequence was set for approximately every hour. At 0940 hours, the transition brush ran once out of sequence, almost as if the program was finding itself. At 1118 hours, the transition brush stalled out on the D beam with the C beam limit also light up. The timing alarm came in at about 1150 hours. In the afternoon, the electrical tied the supply conduit up and away from the C beam limit in order to eliminate magnetic interference. However, the project biologist did not like the fact that the C limit stayed light up until the brush moved to the D beam. This had not been observed before. With no access to the program and a limited supply of limit switches, the biologist removed the transition brush from service at 1530 hours. Until issues with this brush can fully be resolved, attempting to run it risk more problems than the benefit as stated above.

The rectangular screen brush continued to operate satisfactory in automatic mode. At 1530 hours, the brush cycle sequence was set for approximately every 3 hours. With no problems overnight, sample collection was resumed as scheduled on August 18. At 0800 hours, the brush cycle sequence was set at about every 4 hours. That afternoon, the electrical staff examined the rectangular brush and determined position adjustments to the park and raise limits should resolve the stalling downstream issue and the brush raised position problem, respectively. On August 19, the brush cycle sequence was set for every hour at 0800 hours. The rectangular screen brush continued to operate without issue. The cycle sequence was reset to every 4 hours at 1530 hours. Magnetic limit switches not tripping off along with program concerns appears to be the main issues with the rectangular brush. Since these are the type of limits on the brush and we have one month before we have access to the program, we suspect there will be more issues until these limits can be replaced and the program examined.

Location: McNary juvenile collection channel and fish facility.

Method: In order to monitor the channel 24/7, sampling did not occur at the facility on August 16 until issues with side dewatering valves, transition screen cleaning brush and rectangular screen cleaning brush were somewhat resolved.

Timeline - Duration: From August 14 to 20.

A. Species: No fish mortalities occurred. Index sampling was missed for one full day.

B. Origin: NA.

C. Length: NA.

D. Marks and Tags: NA.

E. Marks and Injuries Found on the Carcasses: NA.

F. Future and Preventative Measures: We will continue to examine the nature of these failures and the best course of action to take to reduce the probability of these type of failure occurring again or at least less frequently. Also, we will continue to insure proper spare parts are on hand. Access to the control program will be critical and should occur in a month. Finally, channel screen brushes and dewatering valves will be the focus of the winter outage.

G. Photos Taken: No

Bobby Johnson
Project Fisheries Biologist
McNary Lock and Dam