

McNary Dam¹

1 Special Project Operations.

- 1.1 Spill.** Spill for fish passage will be provided during the outmigration season in accordance with spill specifications in Appendix E and as coordinated through TMT. Alternative spill patterns to control dissolved gas levels or change fish passage conditions will be coordinated through the FPOM. During periods of high river flow, spill volumes and the elevation of McNary reservoir may need to be manipulated on a daily or every-other-day basis to provide safe conditions for loading the fish barge at the juvenile fish facility below the dam.
- 1.2 Doble Tests.** Two transformer banks, T1, T2 and the respective turbine units will be taken out of service for Doble testing in 2011. The associated turbine units will be unavailable for up to 4 days during testing between during July 18 to 29, 2011. There may be some overlap between the 2 tests. Since McNary Dam has multiple transformer banks and transmission lines, and redundant switching capability, most turbine units will be available for operation during these tests. Turbine unit 1% efficiency operations and turbine priorities will continue to follow fish passage plan requirements.
- 1.3 TSW Installation.** TSW2 will remain in spillbay 20 for the spring fish passage season and will be removed for the summer fish passage season. TSW1 will be in Spillbay 19 for the spring fish passage season and also be removed for the summer fish passage season.
- 1.4 Headgate Repair.** This is a long term program to return the headgates to a safe operating condition by adding new roller chain, seals, anodes, and other miscellaneous components. The plan will require short unit outages throughout the year while transporting rebuilt gates from the turbine units to the repair pit and vice versa. Each swap will take from 4 to 6 hours to complete, and take place approximately every 2 months. Headgate movements are to take place concurrently with other outages as they occur, and no special operations outside the Fish Passage Plan are expected.
- 1.5 Navigation – Fish barge transit of tailrace.** In order to safely allow juvenile fish barges to pass across the spillway tailrace, the project may temporarily reduce spill (to 0 kcfs if necessary) to safely allow the juvenile fish barge to transit the tailrace from the navigation lock and tie up at the loading facility. Once the barge is loaded and ready to leave the facility, spill may again be reduced as needed until the barge has safely departed. Departure usually takes about 30 minutes to complete. Scheduled navigation lock outage for 2011 is January 17 – March 13.

¹ The purpose of this section is to notify regional interests of planned activities that will or may affect fish passage. Further coordination may occur as needed.

1.6 Waterfowl Nesting. From the end of April to the beginning of July, the McNary pool may be restricted to operations to elevations between 337.0 and 340.0 feet in support of waterfowl nesting on Lake Wallula. Pool elevations are also operated between 338.5 and 339.5 feet at least once every 4 days during daylight hours for a period of 4 to 6 hours. A yearly teletype has been issued to regulate the McNary pool in this fashion since 1982.

1.7 Steady State Model Validation Testing. Western Electricity Coordinating Council requires steady state model validation testing on a periodic basis to ensure the generating equipment will meet real and reactive power ratings. All units will be tested on a 1-2 year cycle. Test will involve running the unit out of fish priority sequence and outside the 1% criteria. Testing can take place at any time except from 1 April to 31 August due to fish considerations. Tests will preferably be conducted just after unit annual maintenance, but may happen at other times. Tests will last for a standard of 30 minutes at maximum load with additional time to run the unit along the maximum real/reactive power curve to the minimum settings. Total test time is anticipated to be 90 minutes or less. Test durations will be minimized to the extent possible and will only be run for the purpose of completing the required model validation testing.

1.8 Transient Model Validation (Exciter Step Response) McNary. Western Electricity Coordinating Council requires model validation testing on a five year minimum cycle to ensure the generating equipment responds to as planned to system requirements and disturbances. Unit tests will be accomplished on 6 units. Testing will involve running the test unit out of fish priority sequence and outside the 1% criteria. Testing will take place at some time from October 1 to April 1 or at night in July or August; each unit will be run for approximately 1 hour with 30 minutes outside the 1% criteria. Test durations will be minimized to the extent possible.

1.9 Trilateration Surveys. Dam safety has scheduled the performance of Trilateration surveys at McNary Lock and Dam, in the February/March/April 2011 time frame. This requires the contracted surveyors to have a direct line of sight across the top of the embankment and roadway deck of the powerhouse, spillway, non-overflow sections, and Navigation lock and that the brass cap survey markers do not have anything set over the top of them.

1.10 Periodic Inspection. The Navigation Lock is scheduled to be inspected during the Lock Outage in February 2011. This is part of the 5 year formal Periodic Inspection process and was delayed due to Navigation Lock derrick crane issues. The Periodic Inspection at McNary Lock and Dam was accomplished on March 23 & 24, 2010. The next Periodic Inspection is scheduled for 2015. There is also a planned stilling basin diver inspection contract to be issued in July/Aug timeframe. The actual inspection will probably take place in September. Coordination with McNary Project and NWW Operations will be done to plan for the best time to do the inspection.

1.11 Unit 1 and 4 rewind. Units 1 and 4 were originally taken out of service July 1, 2010 for winding and various other electrical and mechanical component replacements from the old excitation system down to the wicket gate servomotors. The work is now scheduled to be completed April 1, 2011.

1.12 Unit 1 and 8 rewind. Units 1 and 8 will be taken out of service July 1, 2011 through February 1, 2011 for winding and various other electrical and mechanical component replacements from the old excitation system down to the wicket gate servomotors. The McNary project intends to perform cavitation repair on these same units during the outage. Steady state testing for the rewind will be completed on both units (one at a time) prior to rewinding.

1.13 Asbestos Abatement. Unit 4 will be taken out of service for asbestos abatement/cleanup for 1 month in August 2011.

1.14 Relay install. Installations to units 14, 13, 9, 10, 12, T6 and T3 will occur throughout the year and scheduled coinciding with unit annuals or rewinds.

1.15 Unit 7 blade crack repair. Scheduled to start in October and will take approximately 8 weeks into November to repair the cracked blade.

1.16 McNary-John Day 500kV Line Construction. Daily outages of McNary Powerhouse lines 1, 2, 3, and 4 will be needed for 14 days during the first half of August, 2011 in order to string conductor for the new McNary-John Day 500kV line over the powerhouse lines. This will force out units 1-8. Daily outages of Powerhouse lines 5 and 6 will also be needed for this conductor stringing. This will require a separate 14 day outage in the second half of August, 2011 and will force out units 9-14.

1.17 Special Field Test Unit 7. During the month of June the unit will need to be run outside of the 1% criteria (above and below) during the fish passage season. Estimate duration that Unit will be operated outside of 1% will normally be less than 3 hours. This may happen intermittently throughout the month. When Unit is not being run for testing it will be out of service.

2. Studies.

2.1 McNary adult steelhead fallback study, 2011. The Corps will implement a hydroacoustics evaluation in several units of the powerhouse during the time period when fish screens are not in place. The study duration is January 1 through April 16 when fish screens are expected to be reinstalled. Affected units will be 3, 4, 5, 6, 8, 9, 11, and 13. Installation of equipment will involve diving in front of the trashracks to install transducers, and then removal after study is complete. Transducers will be aimed from the bottom trashrack at the intake ceiling. Primary objective for this study is to provide an updated passage estimate

for adult steelhead falling back downstream. Secondary interests are in their vertical and horizontal passage location.

2.2 Monitoring fish passage at McNary OR shore ladder, 2011. The Corps plans to implement a monitoring study in the forebay upstream of the travelling screens. Primary purpose is to provide assurance that listed fish are not being impinged in these screens. Study design is anticipated to include split beam hydroacoustics upstream of the trashracks of both the north and south screens. This equipment will provide information on the presence/absence of fish in the vicinity of the travelling screens. Underwater video will be used to assess impingement and presence of fish in the near screen area. Cameras will be mounted at two depths to monitor activity near both screens.

2.3 Identify potential for adverse impact of aquatic invertebrates growing within the juvenile collection and bypass systems at McNary, 2011. Purpose for this work will be to taxonomically identify the sponge species and the potential for release of irritable or toxic components. Secondary objective is summarization of possible control measures that could be implemented. Freshwater sponge and bryozoan species grow on structures at McNary dam where minimal velocities occur. This nuisance has been steadily becoming more prevalent each year. These animals are thought to have spicules that may be hazardous to fish gills. Many pounds of these animals are removed from raceways during the transportation period creating additional maintenance concerns. They grow on picketed leads, screens, intake walls and interfere with flow, and potentially shed irritants/toxicants into the surrounding water.

2.4 Evaluation of Adult Pacific Lamprey Passage Success at McNary and Lower Snake River Dams. This study will evaluate passage success for adult Pacific lamprey *Lampetra tridentata* at McNary Dam, Ice Harbor Dam, and the remaining lower Snake River dams and associated river segments using a combination of acoustic telemetry and half duplex passive integrated transponder (HD PIT) systems. Adult lamprey will be trapped in adult fishways at McNary dams, held and then tagged at the juvenile smolt sampling facility prior to release. This study will require McNary, Ice Harbor and potentially other Snake River dams to provide power for electronics equipment in the fishways and tailrace areas (above fishway entrances, powerhouse draft tubes, and adjacent to spillbays, access for the installation, repair, and testing of electronic and trapping equipment and access for the downloading of data from acoustic and PIT tag detection equipment. Some project crane support may be needed to install antennas in and near fishways. Maintenance and installation of equipment will occur during the winter maintenance period when adult fishways are dewatered. Work is continuing in 2011.

2.5 Underwater Video Monitoring of Adult Fish Ladder Modifications to Improve Pacific Lamprey Passage at McNary and Ice Harbor Dams, 2011. The purpose of this study is to use underwater video, DIDSON, and/or other non-

invasive technologies to count and observe adult salmonids and Pacific lampreys, *Entosphenus tridentatus*, in the fish ladders at McNary and Ice Harbor Dams on the Columbia and Snake rivers. The primary goal of this work is to estimate the numbers of adult lamprey passing behind the picketed lead gates at count stations and to develop escapement estimates of the total number of lamprey passing McNary and Ice Harbor Dams. A second goal is to evaluate the behavior of Adult Lamprey at Oregon Shore fishway entrances using underwater video equipment. This study will require McNary to provide power for electronics equipment in the fishways, access for the installation, repair, and testing of electronic equipment and access for the downloading of data from video camera equipment. Some project support may be needed to install video cameras in and near fishways. Maintenance and installation of equipment will occur during the winter maintenance period when adult fishways are dewatered. Work is new in 2011.

2.6 Determining the feasibility of detecting JSAT Transmitters in the Tailrace Environment at McNary Dam. The purpose of this study is to see if JSAT acoustic transmitter signal can be received in a noise tailrace environment. JSAT hydrophone will be mounted above some turbine draft tubes, above fishway entrances, adjacent to spillbays and in the tailrace environment. Researchers will then release JSATs transmitters into various tailrace locations to determine the feasibility of detecting these transmitters. This study will require McNary to provide power for electronics equipment in the fishways, access for the installation, repair, and testing of electronic equipment and access for the downloading of data from telemetry receivers. BRZ Boat access may be needed and will be coordinated with the project. Work is new in 2011.