

FPP Change Form

Change Request Number: 10MCN004 Turbine unit priority with elevated temperature.

Date: October 28, 2009

Proposed by: CENWW -

Proposed Change:

Change the following section of the 2010 Fish Passage Plan to minimize impact of elevated summertime forebay temperatures on juvenile salmonids entering and passing through the bypass system.

4.1. Turbine Unit Operation. When in operation, turbine units will be operated to enhance adult and juvenile fish passage and juvenile bypass from March 1 through November 30 as in **Table MCN -5**. During this time period turbine units will be operated as needed to meet generation requirements in the following order: 1, 2, 3, 4 or 5 and then 14 through 6 or 5 in descending order when units are available for operation. Unit operating priority may be coordinated differently to allow for fish research, construction, or project maintenance activities. During the summer, (when all collected fish are transported) turbine operating priority will change to north powerhouse loading to improve juvenile egress conditions, when recorded forebay temperatures reach 70 degrees Fahrenheit (F). Under north powerhouse loading, turbine units shall be loaded consecutively from unit 14 back towards unit 1. Turbine units 1, 2, 3, 4 or 5 may also be taken off-line during parts of the summer to avoid adding warmer water to the juvenile fish collection channel. Starting and stopping of units, two or more at a time, should be avoided if possible during periods of warm water, especially between 1000 and 2400 hours. During times of elevated forebay temperatures (>70 degrees F measured in the forebay) the project biologist may coordinate through CENWW-OD-T to designate up to 5 turbine units to a higher priority of operation to even out water temperature differences within the juvenile collection channel and to spread out the tailrace flow to reduce back eddies for safer smolt egress and safer fish barge docking conditions.

Table MCN – 5 Turbine unit operation priority for McNary Dam

Season	Operation	Unit Priority
March 1 to November 30	Fish Passage period and Fish Bypass	1,2,3,4, or 5, then 14 in descending order*
	Fish Collection and Transportation, and no spill	14 to 1 in descending order
	Fish Bypass or Fish Collection and Transport with forebay temperatures	14 to 1 Priority with modifications at the southern end of the powerhouse to be determined by Project Biologist to minimize

	$\geq 70^{\circ}\text{F}$ and spill is taking place	temperature differentials in gatewells and juvenile collection channel
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* Provides positive downstream flows at the outfall and based on unit availability.

Reason for Change:

During periods of extreme air temperatures, forebay temperatures become elevated. Turbine units being operated have warmer gatewell temperatures than turbine units not being operated. If normal priority is followed under these conditions, the juvenile collection channel may develop extreme temperature differentials between different sections of the collection channel depending on which turbine units are operated. Operating turbine units in the upper, middle and lower ends of the collection channel will cause water to mix within the channel and reduce the temperature differentials between the affected portions of the channel.

Comments from others:

Lorz and Fredricks thought that they had north loading operations at high temps already. Also want north loading for the TSW. Fredricks doesn't see anything wrong with it, but it does seem a bit redundant. There was some confusion about the changes, this was a result of the change form track changes not carrying over to the agenda. Above is the track changes version of the change form. Dykstra read the proposed changes. Fredricks had concerns about whether the Project Biologist has the tools to determine the best tailrace egress conditions.

Record of Final Action:

Approved at November FPOM.