



Weekly Temperature Report McNary Dam

June 29, 2020

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Report Period: June 19 through June 25
Report No. 2020 EAS: MCN Dam Temperature Weekly for 0619 to 0625

Re: USACE Walla Walla District Biological Services: Temperature Monitoring Program at McNary Dam

Temperature monitoring at the McNary juvenile collection system began at 0700 hours on June 14 and is scheduled to continue through 0700 hours August 31.

Fish Collection

An estimated 73,042 juvenile salmonids were collected and 73,040 bypassed at the McNary Juvenile Fish Facility (JFF; Table 1), comprising mostly subyearling Chinook salmon. There were 2 total facility mortalities.

River Conditions

Average river flow for this reporting period was 296.9 thousand cubic feet per second (kcfs) with an average spill of 167.7 kcfs.

Temperature Logger Operations

Temperature sampling began on June 14. Temperature loggers in gatewell slots 7, 9, and 13 failed this week and were subsequently replaced with new loggers.

Weather Conditions

The weekly average daytime temperature for 0700 hours June 19 to 0700 hours June 25 was 80.2°F. The weekly average nighttime temperature was 66.8°F. Temperatures ranged from a maximum of 95.8°F at 1430 hours on June 23 to a minimum of 57.8°F at 0330 hours on June 19 (Figure 1).

Winds averaged 3.5 miles per hour (mph) and were predominately from the east and northeast. The highest average wind speed was 14.0 mph at 1330 hours on June 24.

Water Temperatures

Average water temperatures within dam locations varied with air temperatures and wind velocities (Figure 2). The weekly average temperatures within dam locations were: 61.0°F, forebay (weekly average of 8 positions); 60.4°F, gatewells (weekly average of 14 positions); 60.4°F, collection channel (weekly average of positions at Units 1, 8, and 12); and 60.4°F, JFF (weekly average of the separator and sample tank "B"). A forebay had the highest weekly average temperature, 61.3°F (Figure 3). The maximum temperature, 68.7°F, was recorded in the Unit 7 at 1800 hours on June 22.

The average weekly temperature differentials within dam locations were: 1.6°F, forebay; 1.2°F, gatewells; 0.2°F, collection channel; and 0.2°F, JFF (Figure 4). The largest temperature differential, 8.7°F, was recorded on June 22 in the forebays at 2000 hours (Unit 7 high, Unit 5 low).

The average weekly temperature differential between the forebay and corresponding gatewell was 0.7°F. The forebay was warmer than the corresponding gatewell on average across the powerhouse. The largest temperature differential was 6.5°F at 1800 hours on June 22 at Unit 7 (forebay greater than gatewell; Figure 5). The average weekly temperature differential between the gatewell and corresponding collection channel location was 0.2°F. On average, the gatewell was warmer than the collection channel at Units 1 and 12. The collection channel was warmer than the gatewell at Unit 8. The largest temperature differential between the gatewell and corresponding collection channel location was 2.1°F at 2000 hours on June 24 at Unit 1 (collection channel greater than gatewell).

Table 1

Bypass, Mortality, and River and Weather Conditions from 0700 Hours June 19 to 0700 Hours June 25

Date	Fish Collected	Fish Bypassed	Mortality		Avg. River Flow	Avg. Turbine Flow	Avg. Spill	Air Temperature		Wind Speed	
			Sample	Facility				Avg.	Max	Avg.	Max
19-Jun					296.8	131.1	155.9	71.0	87.6	2.2	8.0
20-Jun	44,502	44,500	0	2	303.6	137.0	161.8	77.3	94.0	3.2	13.0
21-Jun					308.7	135.5	168.5	69.6	80.7	3.6	20.0
22-Jun	22,300	22,300	0	0	284.4	115.5	164.1	70.8	81.1	3.3	22.0
23-Jun					294.3	117.2	172.4	73.0	86.0	2.7	8.0
24-Jun	6,240	6,240	0	0	294.2	118.3	171.2	80.5	95.8	3.6	10.0
25-Jun					296.5	112.1	179.7	75.4	90.5	5.5	14.0
Weekly Total	73,042	73,040	0	2	296.9	167.7	167.7	73.9	88.0	3.4	13.6

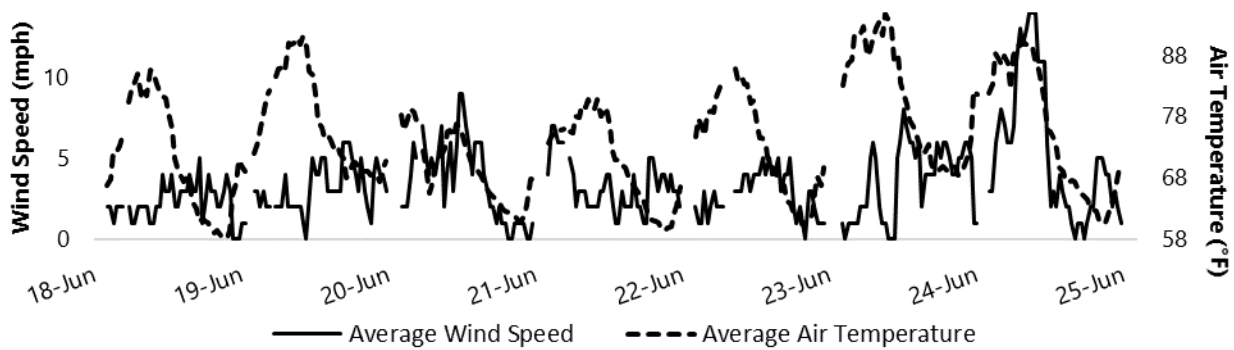


Figure 1

Average Wind Speed and Air Temperature for Each Half-Hour Interval from 0700 Hours June 19 to 0700 Hours June 25

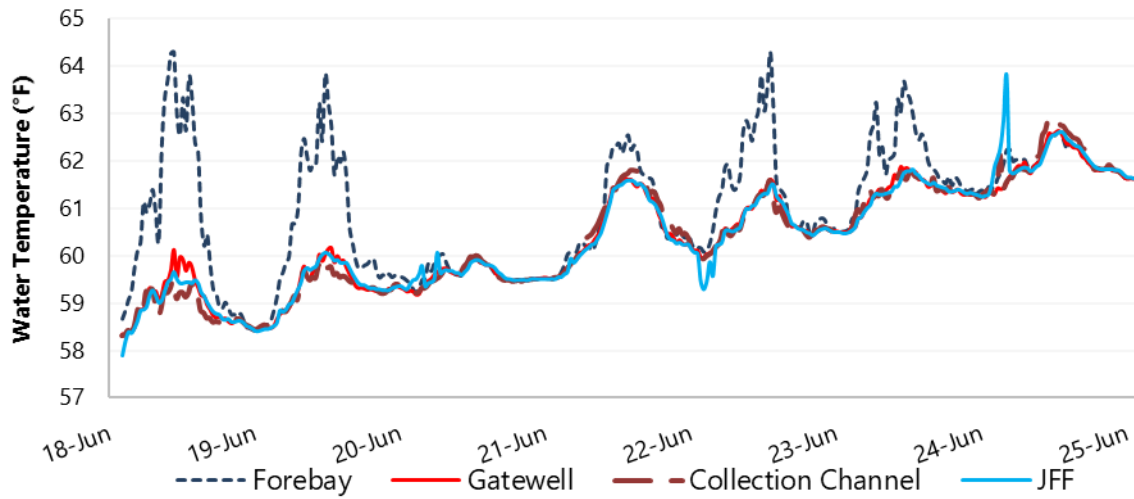


Figure 2
Average Water Temperatures for Each Half-Hour Interval for Four Dam Locations from 0700 Hours June 19 to 0700 Hours June 25

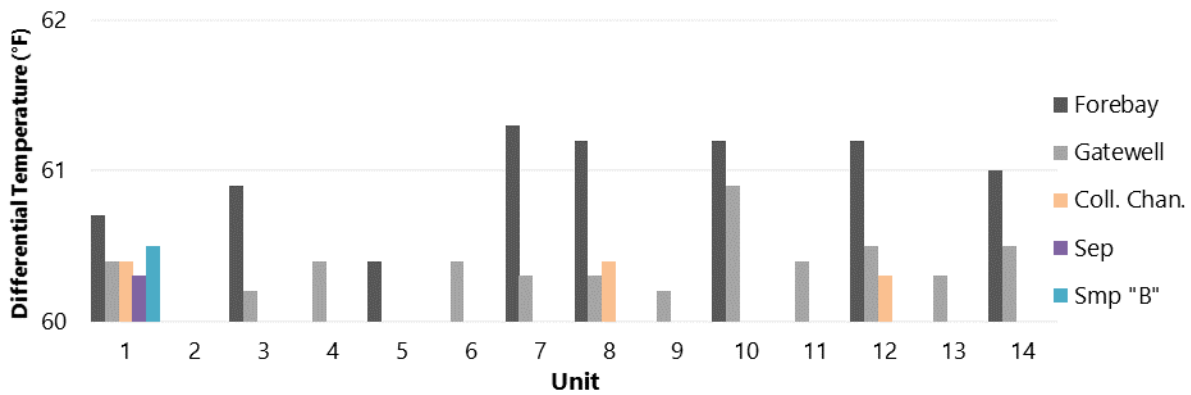


Figure 3
Average Weekly Water Temperatures by Position for Five Dam Locations from 0700 Hours June 19 to 0700 Hours June 25

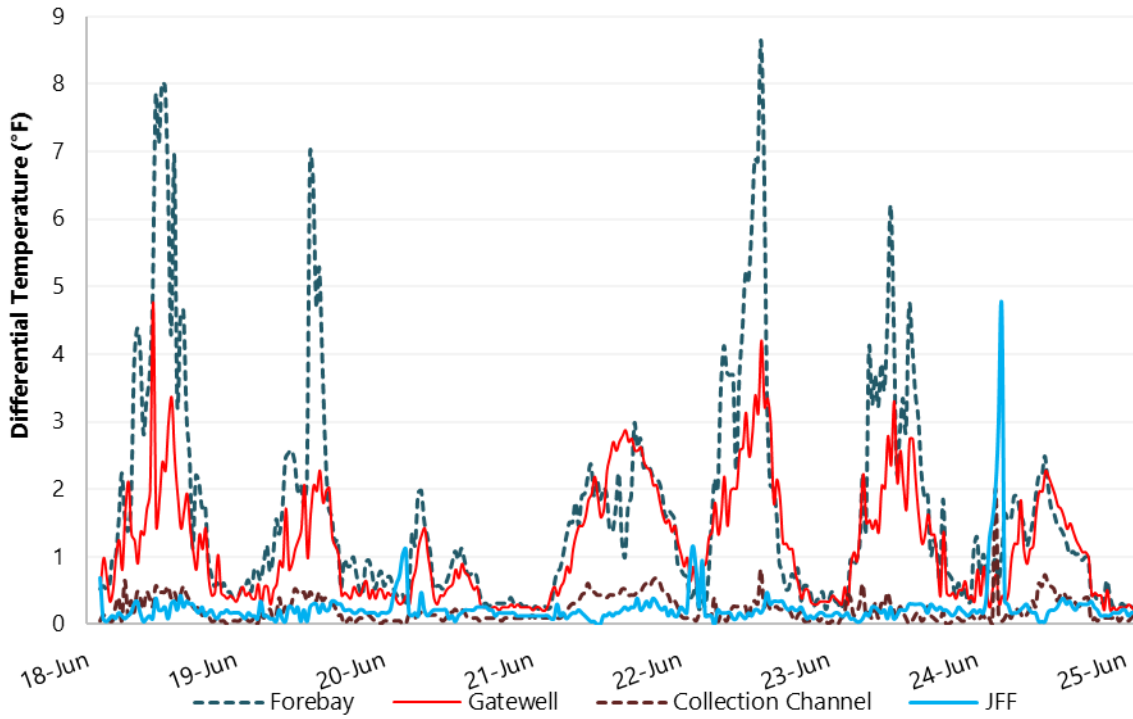


Figure 4
Average Differential Temperatures Within Four Dam Locations from 0700 Hours June 19 to 0700 Hours June 25

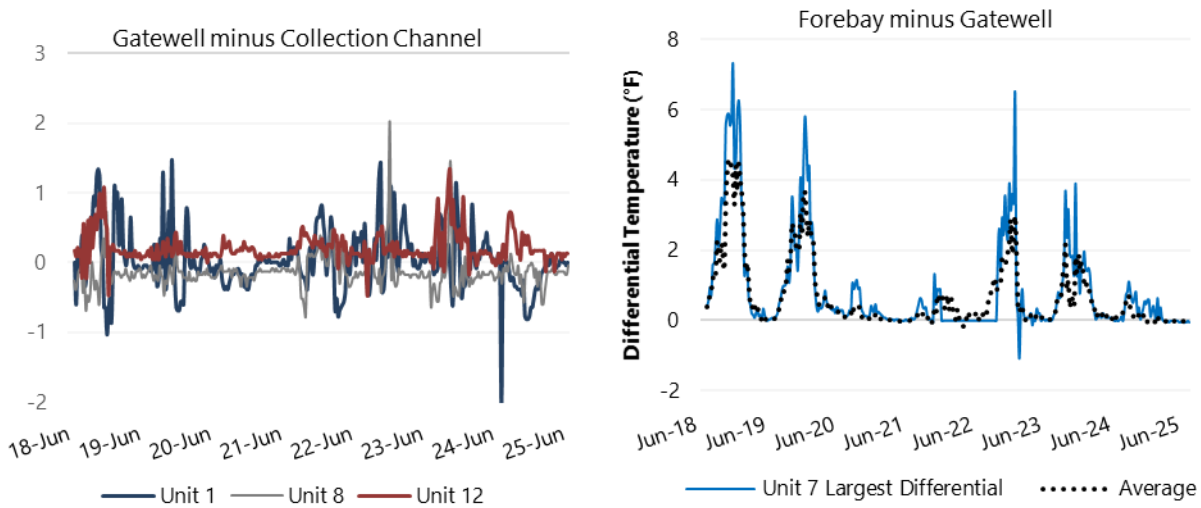


Figure 5
Average Differential Temperatures across Three Dam Locations from 0700 Hours June 19 to 0700 Hours June 25