

USACE WALLA WALLA DISTRICT BIOLOGICAL SERVICES: TEMPERATURE MONITORING PROGRAM AT MCNARY DAM

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		Report Period:	June 3 to 9, 2016
Report No.	MCN TEMP 2-16		

Fish Collection

Daily data sets run from 0700 of the previous day to 0700 of the reporting day. Data for this week's report were collected from 0700 June 2 to 0700 June 9 and reported each day from June 3 to June 9. An estimated 63,288 juvenile salmonids bypassed the McNary Juvenile Fish Facility (JFF) and consisted of 81% subyearling Chinook salmon, 7.2% yearling Chinook salmon, 7.7% steelhead, 2.4% coho salmon, and 1.6% sockeye salmon. There were total of 13 juvenile system mortalities.

River Conditions

Average river flow for this reporting period was 224,600 cubic feet per second (224.6 kcfs), with an average spill of 89.9 kcfs. Average river temperature was 62.2 °F.

Weather Conditions

The weekly average temperature for June 2 to June 8 was 75.0 °F. Temperatures ranged from a maximum of 100.2 °F at 1630 on June 6 to a minimum of 58.1 °F on June 4 at 0630. For the week, winds averaged 2 mph. The highest winds averaged 9 mph on June 2 at 1100, with gusts up to 21 mph.

Probe Operations

Currently there are 38 probes deployed:

- 14 in the forebay, at slot C
- 14 in the B gatewells

- 5 in the spillways at bays 22, 17, 12, 7, and 1
- 1 on the tailrace wing wall
- 1 at the unit 14 tailwater
- 3 at JFF, one each in the separator, sample tank A, and recovery raceway 9W

The probe deployed at spillway 22 collected data sporadically starting on June 7 and June 8, either due to a loose battery or corrosion on the circuit board inside the probe.

Water Temperatures

The weekly average temperature across the forebay during the reporting period was 63.4 °F. The highest forebay temperature was 75.8 °F at 1930 at unit 14. The weekly average temperature across all gatewells was 63.7 °F. The highest gatewell temperature was 73.4 °F in unit 10 at 2030.

The average weekly temperature in the collection channel was 63.0 °F. The highest temperature was 69.3 °F at 2030 at unit 8. The average weekly temperature in JFF was 62.1 °F. The maximum temperature in JFF for the week was 66.4 °F in the recovery raceway 9W on June 7 at 2000. The average weekly temperature in raceway 9W was 62.3 °F

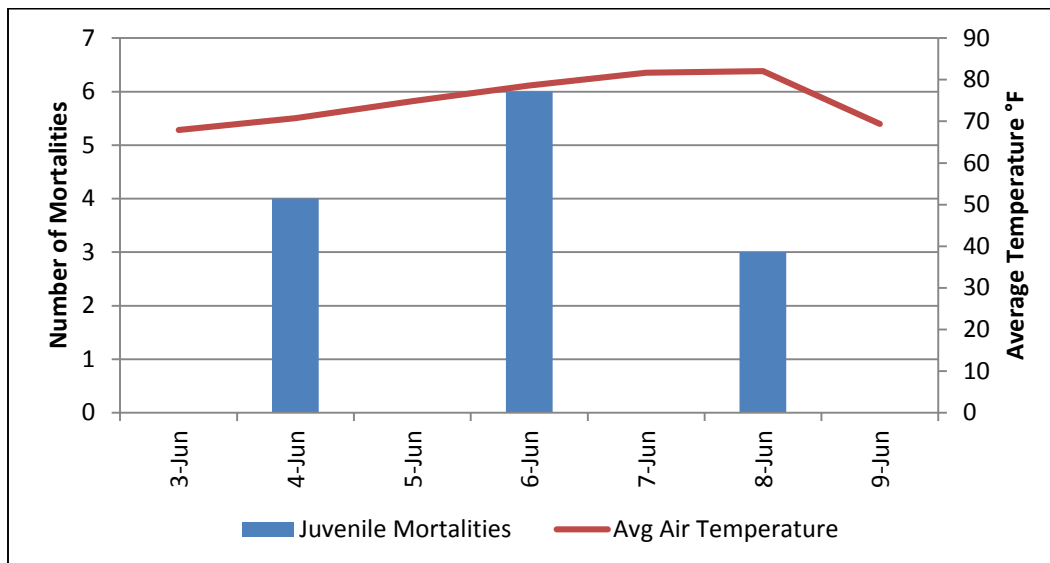


Figure 1
Juvenile Fish Facility Total System Mortalities and Air Temperature

**Table 1
Forebay Water Temperature**

Dates	Daily Average														Daily Max
	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	
2-Jun/3-Jun	63.1	59.5	61.7	59.0	59.1	60.7	61.9	60.9	59.4	60.7	58.1	60.9	61.6	62.9	63.2
3-Jun/4-Jun	65.3	60.6	62.3	60.3	61.2	62.8	63.8	63.2	61.5	63.0	60.3	63.3	63.7	65.4	73.1
4-Jun/5-Jun	64.0	60.5	62.8	60.3	60.6	62.3	63.5	62.6	61.1	62.5	60.0	62.8	63.4	64.9	64.7
5-Jun/6-Jun	64.7	61.1	63.2	60.8	61.2	62.7	64.4	63.8	62.4	64.0	61.6	64.6	65.1	66.5	66.8
6-Jun/7-Jun	67.8	62.4	64.1	62.1	63.5	65.1	66.5	65.8	63.9	65.4	63.1	66.0	66.3	67.8	72.1
7-Jun/8-Jun	68.3	64.1	65.7	63.4	64.7	66.4	67.8	66.8	65.0	66.1	63.3	65.9	65.9	66.9	70.2
8-Jun/9-Jun	66.4	62.9	65.1	62.5	62.5	64.0	65.1	64.3	62.7	63.9	61.4	64.2	64.8	66.1	66.0

**Table 2
Gatewell Water Temperatures**

Dates	Daily Average														Daily Max
	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	
2-Jun/3-Jun	61.6	62.5	61.2	62.1	61.8	60.7	61.7	59.3	61.0	63.7	60.5	62.1	63.2	60.0	64.1
3-Jun/4-Jun	62.3	63.4	61.1	62.2	62.8	62.0	63.2	60.9	62.4	65.3	62.0	63.7	64.8	61.5	67.5
4-Jun/5-Jun	62.3	63.0	61.4	62.7	62.7	61.7	62.7	60.4	62.1	65.1	61.9	63.6	64.7	61.4	67.1
5-Jun/6-Jun	62.7	63.6	62.2	63.3	63.2	62.4	63.4	61.4	63.4	66.4	63.3	65.0	66.2	62.7	69.9
6-Jun/7-Jun	65.0	65.4	63.0	64.1	64.9	64.2	65.2	63.0	64.7	67.6	64.3	66.1	67.0	63.6	72.5
7-Jun/8-Jun	65.8	66.5	63.4	64.4	66.2	65.7	66.6	64.6	66.1	68.7	65.1	66.7	67.4	63.6	73.4
8-Jun/9-Jun	64.8	65.7	64.5	65.5	65.1	64.0	64.9	62.5	64.2	66.9	63.7	65.3	66.4	63.1	68.6

**Table 3
Collection Channel Average and Maximum Water Temperatures**

Dates	Daily Average			Daily Max			Daily Min		
	1	8	12	1	8	12	1	8	12
2-Jun/3-Jun	60.3	61.1	60.8	60.7	61.4	60.8	59.9	60.7	60.5
3-Jun/4-Jun	61.3	62.5	62.3	62.8	64.4	64.3	59.9	60.7	60.5
4-Jun/5-Jun	61.2	62.4	62.3	62.3	63.5	63.5	60.3	61.7	61.4
5-Jun/6-Jun	62.2	63.7	63.6	64.1	66.2	65.7	60.7	62.1	62.1
6-Jun/7-Jun	63.5	64.8	64.5	65.7	68.0	67.3	61.7	63.0	62.8
7-Jun/8-Jun	64.4	65.6	64.7	66.4	69.3	67.0	62.5	63.5	63.4
8-Jun/9-Jun	63.4	64.2	63.9	64.6	65.9	65.7	63.0	63.7	63.5

Table 4
Juvenile Fish Facility Daily Average Minimum and Maximum Water Temperatures

Dates	Separator			Raceway 9W			Sample Tank A		
	Average	Min	Max	Average	Min	Max	Average	Min	Max
2-Jun/3-Jun	60.2	59.8	60.7	60.1	59.6	60.7	59.4	58.9	59.9
3-Jun/4-Jun	61.3	59.9	62.8	61.2	59.8	62.6	60.5	59.2	62.3
4-Jun/5-Jun	61.2	60.3	62.5	61.2	60.3	62.3	60.5	59.6	61.6
5-Jun/6-Jun	62.2	60.7	64.1	62.1	60.5	63.9	61.5	59.8	63.4
6-Jun/7-Jun	63.5	61.7	65.7	63.5	61.6	65.5	62.8	61.0	65.0
7-Jun/8-Jun	64.4	62.5	66.2	64.3	62.5	66.4	63.7	61.7	65.9
8-Jun/9-Jun	63.4	63.0	64.6	63.4	62.8	64.6	62.7	62.3	63.9

Table 5
Spillway Daily Average and Maximum Temperatures

Dates	Daily Average					Daily Max
	22	17	12	7	1	
2-Jun/3-Jun	59.0	61.6	59.0	61.9	63.5	63.7
3-Jun/4-Jun	62.2	64.5	61.9	65.7	66.5	71.5
4-Jun/5-Jun	61.3	63.7	61.1	64.0	62.3	67.0
5-Jun/6-Jun	62.9	65.5	62.9	65.7	66.7	69.5
6-Jun/7-Jun	64.9	67.0	64.4	67.3	67.6	73.1
7-Jun/8-Jun	--	66.3	63.6	66.4	66.9	70.9
8-Jun/9-Jun	--	64.9	62.4	65.4	66.7	67.9

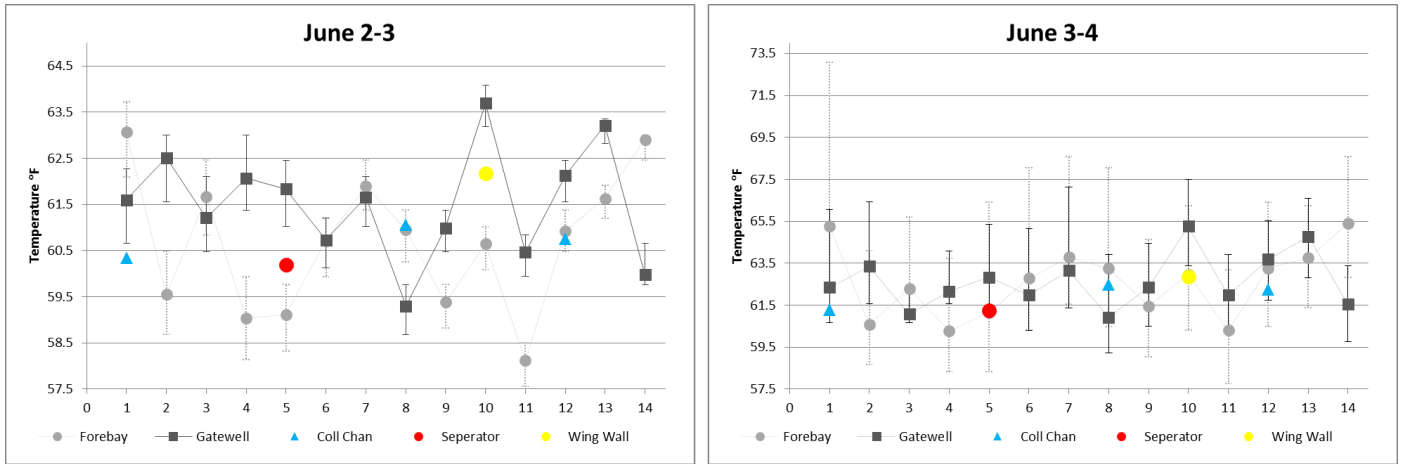


Figure 2
Average, Minimum, and Maximum Water Temperatures for Five Dam Locations for 0700 June 2 to 0700 June 4

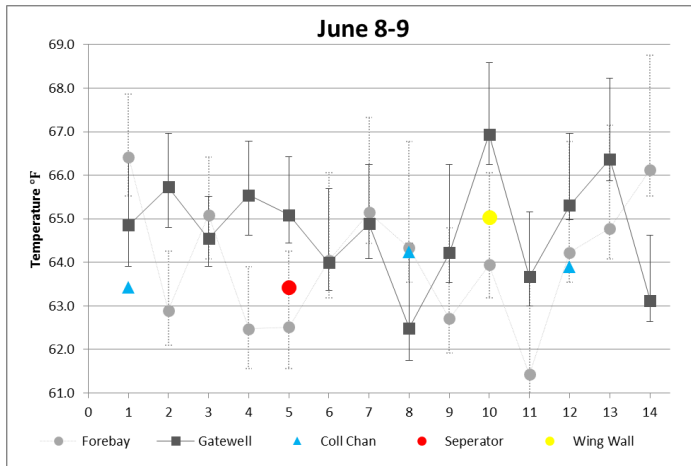
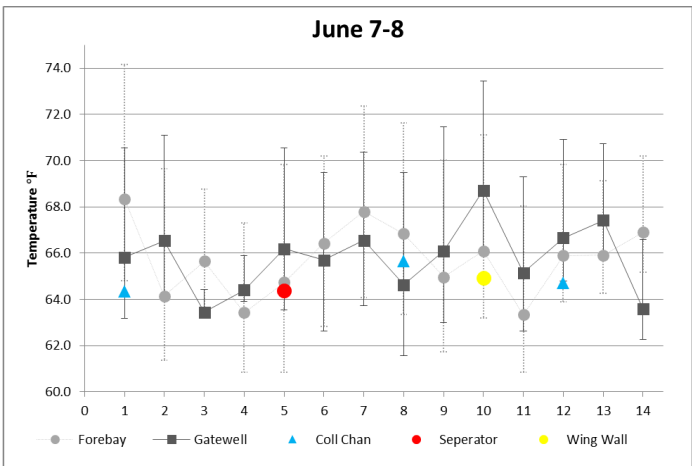
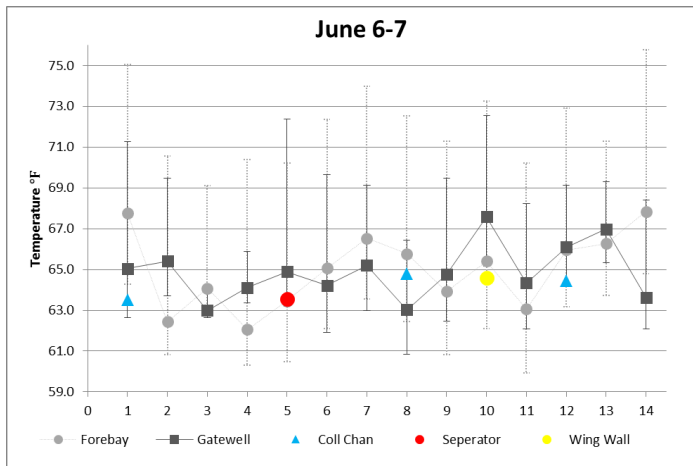
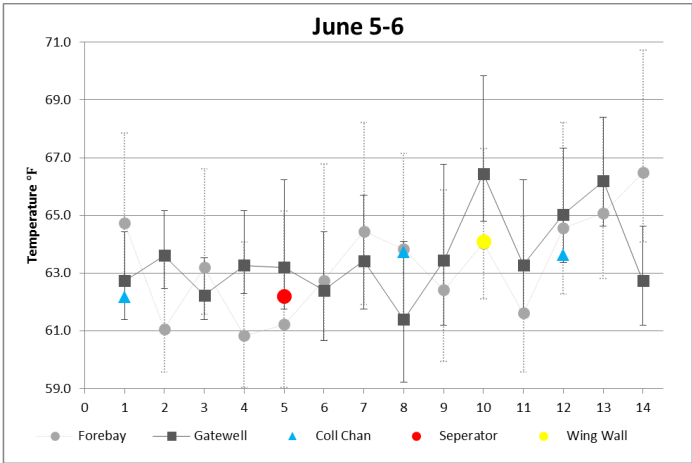
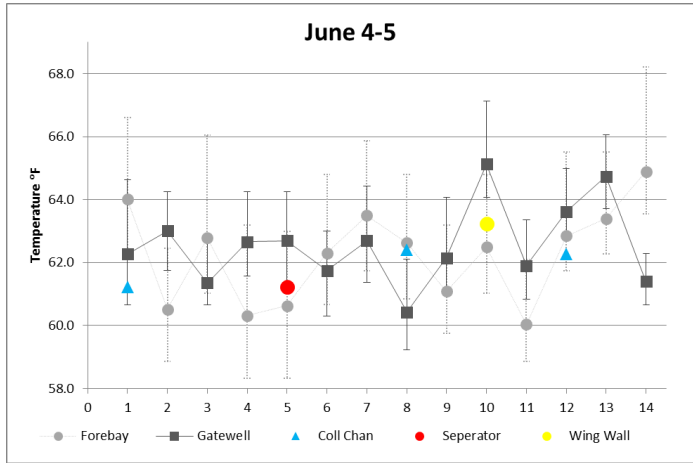


Figure 3
Average, Minimum, and Maximum Water Temperatures for Five Dam Locations for 0700 June 4 to 0700 June 9