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Report Period: June 16 to June 30, 2022

Report No.: 2022 Willamette RST Bi-Weekly Report 06/16 to 06/30 by EAS

**Re: WILLAMETTE VALLEY FISH PASSAGE MONITORING VIA ROTARY SCREW TRAPS**

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## Project Schedule

**Table 1. Project Schedule**

Site	Task	Start	End	Days
Big Cliff Dam RST	Operation	12/01/2021	2/15/2022	292
Big Cliff Dam RST	Operation	3/15/2022	10/15/2022	
Big Cliff Dam Tailrace	Trap Efficiency Release (1,000 Fish)	12/22/2021	12/22/2021	1
Big Cliff Dam Tailrace	Temporary Trap Removal and Install	05/06/2022	05/13/2022	7
Big Cliff Dam Tailrace	Trap Efficiency Release (1,000 Fish)	05/25/2022	05/25/2025	1
Green Peter Tailrace- Middle Santiam River RST	Trap Install	03/02/2022	03/02/2022	1
Green Peter Tailrace- Middle Santiam River RST	Operation	03/03/2022	06/30/2022	120
Green Peter Tailrace- Middle Santiam River RST	Trap Efficiency Release (643 Fish)	03/29/2022	03/29/2022	1
Green Peter Tailrace- Middle Santiam River RST	Trap Efficiency Release (521 Fish)	04/30/2022	04/30/2022	1
Green Peter Tailrace- Middle Santiam River RST	Temporary Trap Removal	05/12/2022	05/12/2022	1
Foster Dam Head of Reservoir-South Santiam River RST	Trap Install	03/16/2022	03/16/2022	1
Foster Dam Head of Reservoir-South Santiam River RST	Operation	03/10/2022	06/30/2022	113
Cougar Dam RST	Operation	11/30/2021	11/30/2022	366
Cougar Dam	Trap Efficiency Release (1,200 Fish, 600 per route)	01/19/2022	1/19/2022	1
Cougar Dam	Trap Efficiency Release (735 Fish, ~365 per route)	04/20/2022	4/20/2022	1
Cougar Dam	Trap Efficiency Release (993 Fish, RO route)	05/15/2022	05/15/2022	1
Cougar Dam Head of Reservoir	Highline and Trap Install	03/7/2022	3/7/2022	1
Cougar Dam Head of Reservoir	Operation	03/8/2022	06/30/2022	115
Cougar Dam Head of Reservoir	Trap Efficiency Release (806 Fish)	03/18/2022	03/18/2022	1
Cougar Dam Head of Reservoir	Trap Efficiency Release (500 Fish)	05/19/2022	05/19/2022	1
Cougar Dam Head of Reservoir	Trap Efficiency Release (515 Fish)	06/23/2022	06/23/2022	1
Dexter Dam Tailrace RST	Highline Install	03/02/2022	03/02/2022	1
Dexter Dam Tailrace RST	Trap Install	03/03/2022	03/03/2022	1

Dexter Dam Tailrace RST	Operation	03/07/2022	12/16/2022	285
Dexter Dam Tailrace RST	Trap Efficiency Release (988 Fish)	03/23/2022	03/23/2022	1
Dexter Dam Tailrace RST	Trap Efficiency Release (1000 Fish)	05/04/2022	05/04/2022	1
Dexter Dam Tailrace RST	Trap Efficiency Release (1019 Fish)	05/24/2022	05/24/2022	1
Lookout Dam Tailrace RSTs	Operation	03/15/2022	07/31/2022	139
Lookout Dam Tailrace RSTs	Trap Efficiency Release (1,013 fish, PWR route)	04/13/2022	04/13/2022	1
Lookout Point Head of Reservoir RST	Trap Install	03/06/2022	03/06/2022	1
Lookout Point Head of Reservoir RST	Operation	03/07/2022	12/16/2022	285
Lookout Point Head of Reservoir RST	Trap Efficiency Release (993 fish)	04/05/2022	04/05/2022	1
Lookout Point Head of Reservoir RST	Trap Efficiency Release (989 fish)	04/14/2022	04/14/2022	1
Lookout Point Head of Reservoir RST	Trap Efficiency Release (1007 fish)	05/18/2022	05/18/2022	1
Fall Creek Dam Tailrace RST	Operation	03/15/2022	07/15/2022	123
Fall Creek Dam Tailrace RST	Trap Efficiency Release (518 fish)	06/08/2022	06/08/2022	1
Fall Creek Dam Tailrace RST	Trap Efficiency Release (513 fish)	06/30/2022	06/30/2022	1
Fall Creek Head of Reservoir RST	Trap and Highline Install	01/11/2022	01/11/2022	1
Fall Creek Head of Reservoir RST	Operation	01/02/2022	05/31/2022	150
Fall Creek Head of Reservoir RST	Removal	06/02/2022	06/02/2022	1
Hills Creek Dam RO and PWR	Deployment	10/12/2021	10/12/2021	1
Hills Creek Dam RO	Operation	10/15/2021	03/01/2022	138
Hills Creek Dam PWR	Operation	10/15/2021	03/01/2022	138
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	01/6/2022	01/6/2022	1
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	02/16/2022	02/16/2022	1
Hills Creek Dam	Trap Efficiency Release (1,200 fish, 600 per route)	02/23/2022	02/23/2022	1
Hills Creek Dam RSTs	Trap Removal	03/01/2022	03/01/2022	1

## Summary of Rotary Screw Trap Data

Rotary screw traps (RSTs) have been operated at eleven locations in the southern Willamette River watershed. For this reporting period, traps were being operated at the following nine locations: Big Cliff Dam, Foster Dam Head of Reservoir- South Santiam, Cougar Dam, Cougar Dam Head of Reservoir, Fall Creek Dam Tailrace, Dexter Dam Tailrace, Lookout Dam Tailrace, and Lookout Point Head of Reservoir. The Green Peter Dam Tailrace- Middle Santiam trap was removed on May 12<sup>th</sup> due to damage incurred to the highline. The sampling period for the Fall Creek Head of Reservoir trap ended on May 31, 2022. The trap was removed from the site on June 2, 2022.

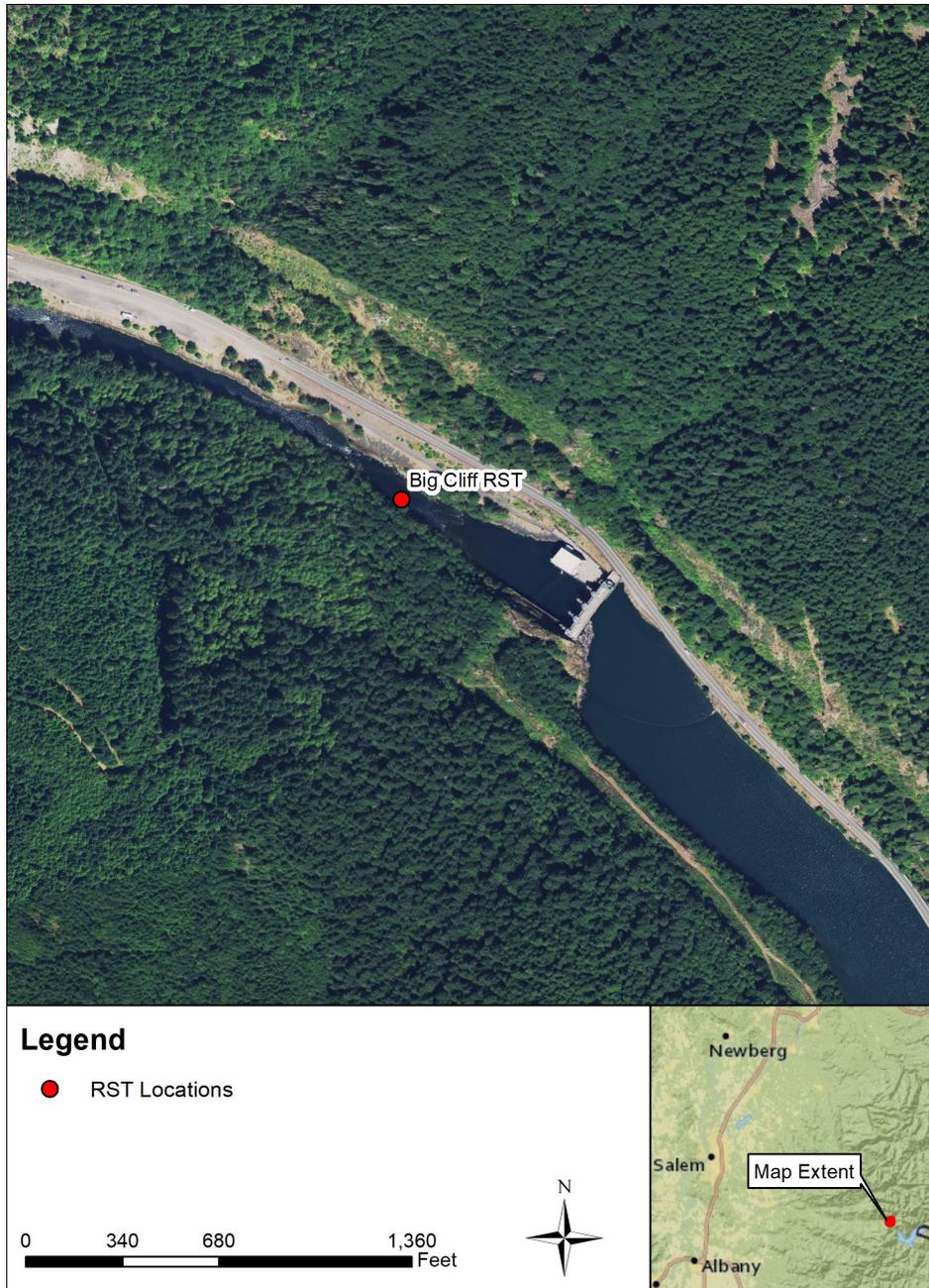
The RST's at Big Cliff Dam and Lookout Dam Tailrace started sampling on March 15<sup>th</sup>. On March 1<sup>st</sup> the Middle Fork Willamette River below Hills Creek Dam RST's were removed for the sampling season in conjunction with the end of RO spill and to prioritize the limited number of screw traps to other locations.

Below Dam sites that include both RO and PWR to monitor passage routes include South Fork McKenzie River below Cougar Dam and on the Middle Fork of the Willamette River in the Lookout Dam Tailrace. Below dam sites that include one RST to monitor passage include Big Cliff Dam, Green Peter Tailrace-Middle Santiam, the Middle Fork of the Willamette River below Dexter Dam and Fall Creek Dam Tailrace which is a tributary on the Middle Fork of the Willamette. At the Green Peter Dam Tailrace, the single RST is placed to sample fish passing through spillways, regulating outlets, and powerhouse outlets. The RST at Dexter Dam is placed to monitor fish passage through the spillways and powerhouse outlets. The RST in the Fall Creek Dam Tailrace is placed in a position to sample fish passing through the regulating outlet.

The RST on the North Santiam River below Big Cliff Dam was not sampled while fish passage measures were not being implemented from 16 February 2022 to 14 March 2022. Sampling resumed on 15 March 2022 in accordance with Task 2.2.

Above reservoir sites include Fall Creek Head of Reservoir, Lookout Point Head of Reservoir on the Middle Fork Willamette River, Foster Dam Head of Reservoir- South Santiam, and Cougar Dam Head of Reservoir on the South Fork McKenzie.

Sampling start dates are included in Table 2, and season total collection numbers are displayed in Table 3. The locations of the RST's are depicted in Figures 1 through 10.



**Figure 1. Big Cliff RST Location**



Figure 2. Green Peter Tailrace- Middle Santiam River RST Location



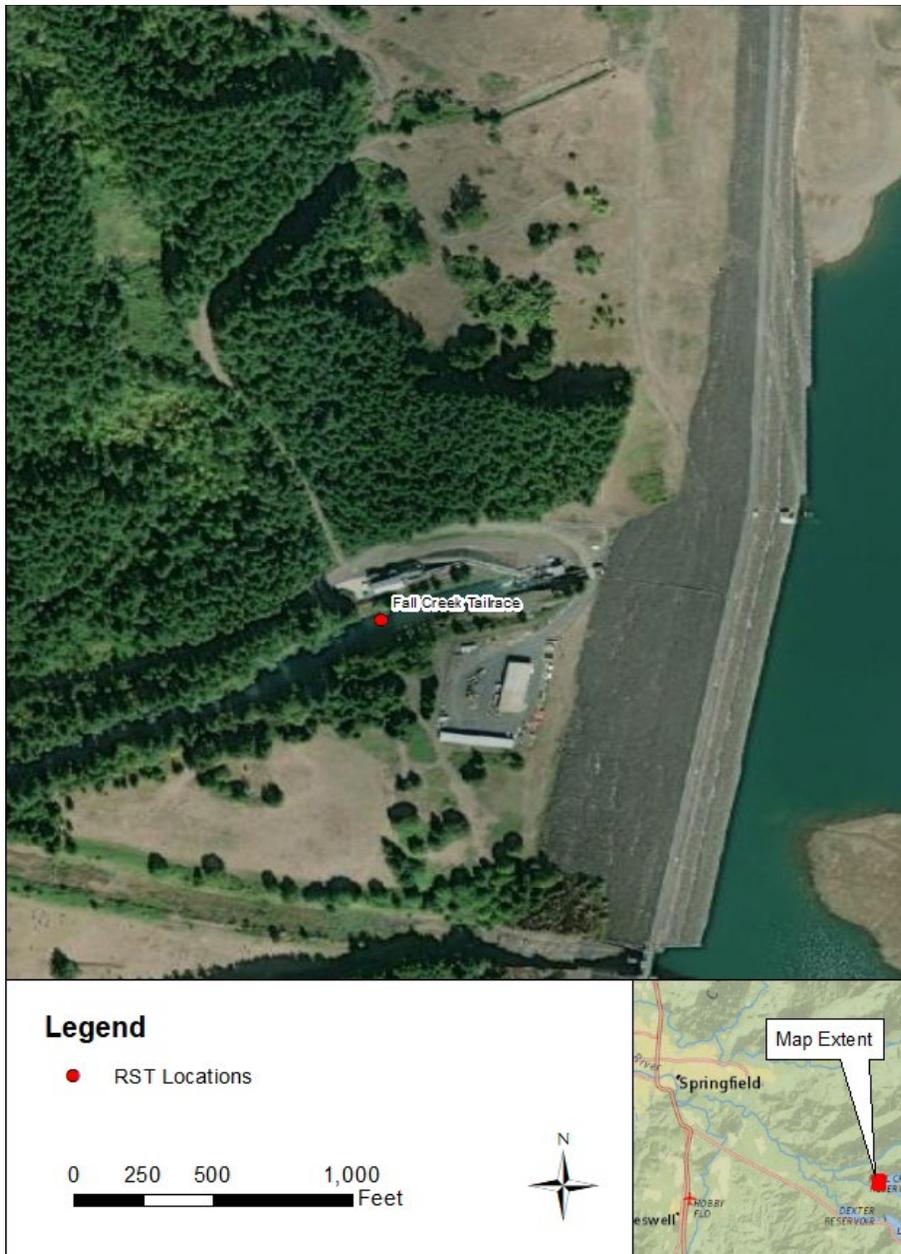
Figure 3. Foster Dam Head of Reservoir- South Santiam RST Location



**Figure 4. Cougar Dam RST Locations**



**Figure 5. Cougar Dam Head of Reservoir RST Location**



**Figure 6. Fall Creek Dam Tailrace RST Location**



**Figure 7. Dexter Dam RST Location**



**Figure 8. Lookout Point Dam Tailrace RST Location**



**Figure 9. Lookout Point Head of Reservoir RST Location**

**Table 2. Sampling Dates for Reporting Period**

Site	Total Sampling Period Start	Current Reporting Period Start	Current Reporting Period End	Days Sampled This Period	Total Days Sampled
Big Cliff Dam	12/1/2021	6/16/2022	6/30/2022	15	169
Green Peter Tailrace- Middle Santiam River	3/2/2022	6/16/2022	6/30/2022	0	67
Foster Dam Head of Reservoir- South Santiam	3/16/2022	6/16/2022	6/30/2022	15	100
Cougar Dam PH	12/1/2021	6/16/2022	6/30/2022	15	212
Cougar Dam RO	12/1/2021	6/16/2022	6/30/2022	15	211
Cougar Dam Head of Reservoir	3/7/2022	6/16/2022	6/30/2022	15	100
Fall Creek Dam Tailrace*	3/15/2022	6/16/2022	6/30/2022	15	108
Dexter Dam Tailrace	3/7/2022	6/16/2022	6/30/2022	15	115
Lookout Point Dam PH	3/15/2022	6/16/2022	6/30/2022	15	102
Lookout Point Dam Spill	3/15/2022	6/16/2022	6/30/2022	13	102
Lookout Point Head of Reservoir	3/10/2022	6/16/2022	6/30/2022	15	109

\*Fall Creek Dam Tailrace trap was being operated by the Corps until EAS began sampling the site on March 15<sup>th</sup> per Task 7.1

**Table 3. Willamette Valley Rotary Screw Trap Monitoring Catch Summary**

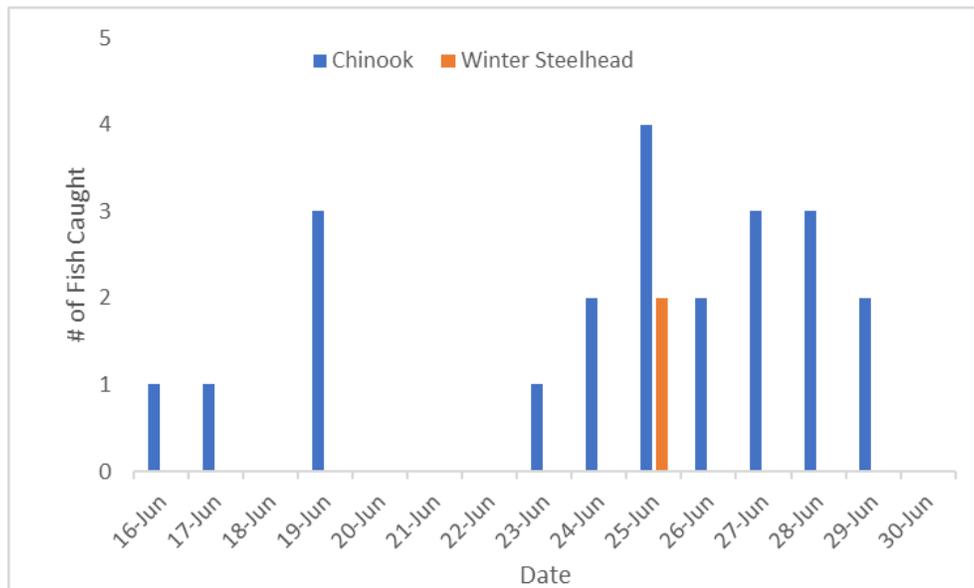
Site	Species	Catch (Reporting Period)	Recaptures (Reporting Period)	Total Catch	Total Recaptures
Big Cliff Dam	CHS	22	0	496	61
Big Cliff Dam	STW	2	0	19	0
Green Peter Tailrace- Middle Santiam	CHS	0	0	0	13
Green Peter Tailrace- Middle Santiam	STW	0	0	6	0
Foster Dam Head of Reservoir- South Santiam	CHS	3	0	66	0
Foster Dam Head of Reservoir- South Santiam	STW	2	0	90	1
Cougar Dam	CHS	10	0	1192	215
Cougar Dam Head of Reservoir	CHS	116	7	576	71
Fall Creek Dam Tailrace	CHS	0	0	0	11
Dexter Dam Tailrace	CHS	46	0	84	112
Lookout Point Dam	CHS	17	0	59	2
Lookout Point Head of Reservoir	CHS	14	0	96	197

## North Santiam – Big Cliff Dam

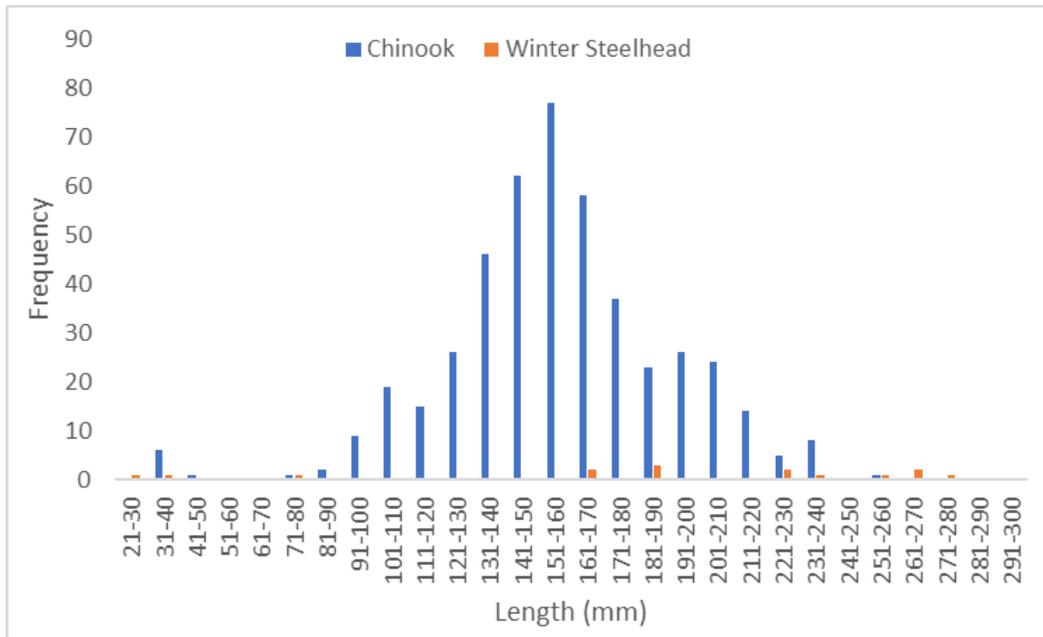
The RST on the North Santiam River below Big Cliff Dam was not sampled while fish passage measures were not being implemented from 16 February 2022 to 14 March 2022. Sampling resumed on 15 March 2022 in accordance with Task 2.2. The RST had to be temporarily removed from 6 May 2022 to 13 May 2022 due to high flows at the site that could have damaged the trap.

### Target Species

This reporting period began on June 16 and ended on June 30. There were a total of 22 Chinook salmon (CHS) and 2 Winter Steelhead (STW) captured during the 15-day sampling period (Figure 10). Sampling duration was 100% for the RST. Table 4 provides life stage, length, and weight data for all Chinook Salmon and Winter Steelhead that have been caught at the Big Cliff Dam site to-date and for the reporting period. Figure 11 shows length frequency data to-date.



**Figure 10. Chinook and Winter Steelhead Captured per day 06/16/2022 to 06/30/2022 (Big Cliff)**



\*Figure does not include fish without heads (8)

**Figure 11. Length Frequency of Juvenile Chinook and Winter Steelhead Sampled Season To-Date (Big Cliff)**

### Trapping Efficiency

A total of 1000 juvenile hatchery Chinook (parr) were bismarck brown dyed, adipose clipped and released on 05/25/2022 below Big Cliff Dam. A total of 21 fish were recaptured in the 8ft trap. Trapping efficiency was 2.1%.

Of the 21 fish recaptured, only 1 fish had injuries present. It displayed minor head injury. All other fish were unharmed.

Big Cliff Dam	Release #	Recapture #	Capture Efficiency
8ft Trap	1000	21	2.1% (21/1000)

**Table 4. Descriptive Statistics of Target Species Captured at Big Cliff Dam Season To-Date**

To-Date (Since Dec. 01, 2021)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
		CHS	Fry	8	31	48	36.5	1.2	1.4	1.4
		CHS	Parr	20	78	130	101.2	4.8	20.1	11.9

Big Cliff	PWR	CHS	Smolt	465	91	260	159.8	8.9	180.6	43.6
		STW	Fry	2	29	31	30.0	N/A	N/A	N/A
		STW	Parr	2	75	75	93	5.2	14.3	9.8
		STW	Smolt	13	157	280	216.2	36.1	230.5	100.0

\*Fish that were missing heads are not included in length and weight calculations (8).

June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Big Cliff	PWR	CHS	Fry	1	32	32	32.0	N/A	N/A	N/A
		CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	21	102	158	118.0	13.3	40.0	19.7
		STW	Fry	2	29	31	30.0	N/A	N/A	N/A
		STW	Parr	0	0	0	0	0	0	0
		STW	Smolt	0	0	0	0	0	0	0

\*Fish that were missing heads are not included in length and weight calculations (1).

## 24-Hour Post Collection Holding Trial

21 Spring Chinook and 2 Winter Steelhead were captured during the current reporting period and held for 24 hours. 0 Chinook (0%) and 0 Winter Steelhead (0%) died in holding.

## Injuries and Copepod Infection

Partial descaling <20% was observed in 12 of the 22 Chinook captured (54.5%), 5 displayed descaling >20% (22.7%), 10 displayed body injury (45.5%), 1 had eye injury (4.5%), 6 had copepods present in the branchial cavity (27.3%) and 9 had copepods on fins (40.9%). No Chinook displayed gas bubble disease (0.0%). There was 1 mortality (4.5%).

Partial descaling <20% was observed in 0 of the 2 Winter Steelhead captured (0%) and 0 displayed descaling >20% (0%), 0 displayed body injury (0%), 0 had eye injury (0%), 0 had copepods present in the branchial cavity (0%) and 0 had copepods on fins (0%). No Winter Steelhead displayed gas bubble disease (0%). There were no mortalities (0%). A summary of injuries observed during the reporting period are provided in Table 5, and for the duration of the season are provided in Appendix A.

**Table 5. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon and Winter Steelhead for Sampling Period. (Big Cliff Dam).**

Site	Species	# Fish Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Big Cliff Dam	Chinook	22	12	5	10	1	6	9	1
Big Cliff Dam	Winter Steelhead	2	0	0	0	0	0	0	0

## Non-Target Species

59 non-targets were captured during this sampling period. A summary of to-date non-target species catch and mortality numbers are listed in Table 6.

**Table 6. Summary of Non-target Species (Big Cliff Dam)**

Species	PWR Capture	PWR Mortality	Season Total	Season Total Mortality
Bluegill	9	0	48	9
Brook Lamprey	0	0	0	0
Bullhead	0	0	3	0
Crappie	0	0	0	0
Longnose Dace	0	0	0	0
Kokanee	10	0	120	39
Red-Sided Shiner	0	0	0	0
Sculpin	0	0	0	0
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	4	0
Cutthroat	0	0	3	0
Chinook (clipped)	0	0	8	0
<i>O. mykiss</i> (clipped)	0	0	3	2
Pumpkinseed	39	2	67	5
Unknown	1	0	1	0
<b>Totals</b>	<b>59</b>	<b>2</b>	<b>251</b>	<b>55</b>

## Stream Statistics

Basic stream statistics at the Big Cliff Dam site were calculated from data downloaded from U.S. Geological Survey stream gage numbers 14181410 and 14181500. Gage height (feet) is the only metric provided at gage 14181410. Total dissolved gas (TDG) saturation data was received from gage 14181500, 1 rkm downstream of the trap. During the reporting period, daily maximum values for instantaneous gage height ranged from 1,109.9 feet to 1,112.8 feet (mean: 1,110.9 feet). Figure 12 shows instantaneous gage height.

Total dissolved gas saturation ranged from 103 to 119% during the reporting period (mean: 109.2%). Figure 13 shows total dissolved gas saturation.

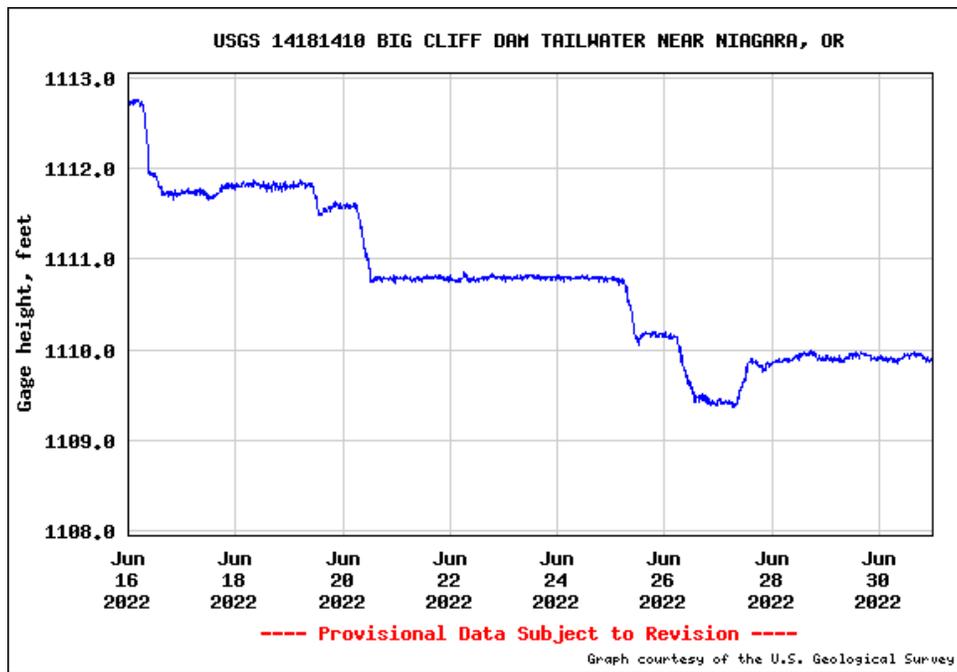
Stream temperatures were recorded every 2 hours for the length of the report period at the RST (Figure 14). Temperature probes operated normally throughout this reporting period.

Flows through the Powerhouse and Spill during the reporting period averaged 2,483.9 and 29 cubic feet per second (cfs), respectively (Figure 15). Catch per unit of effort (CPUE) data are summarized in Table

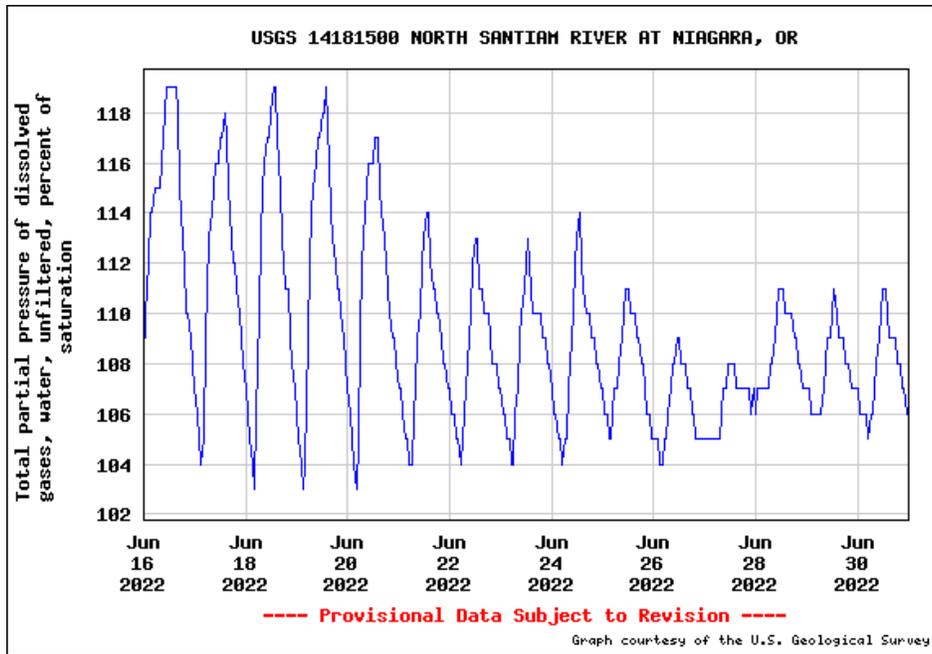
7. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 7. Summary of salmonid CPUE, Big Cliff Dam.**

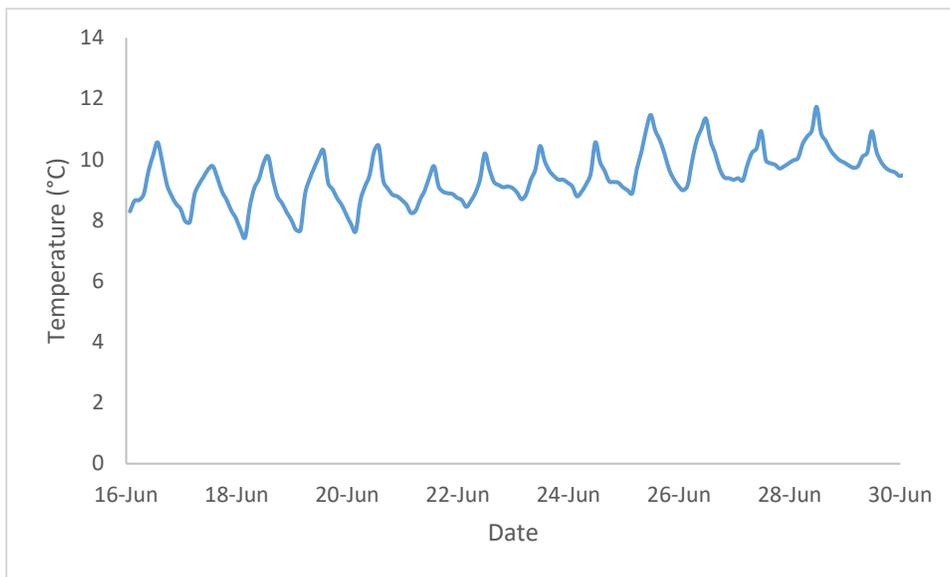
	Chinook	Winter Steelhead
Description	(8 ft)	(8 ft)
Catch	22	2
Effort (hrs)	362.3	362.3
CPUE (fish/hr)	0.061	0.006



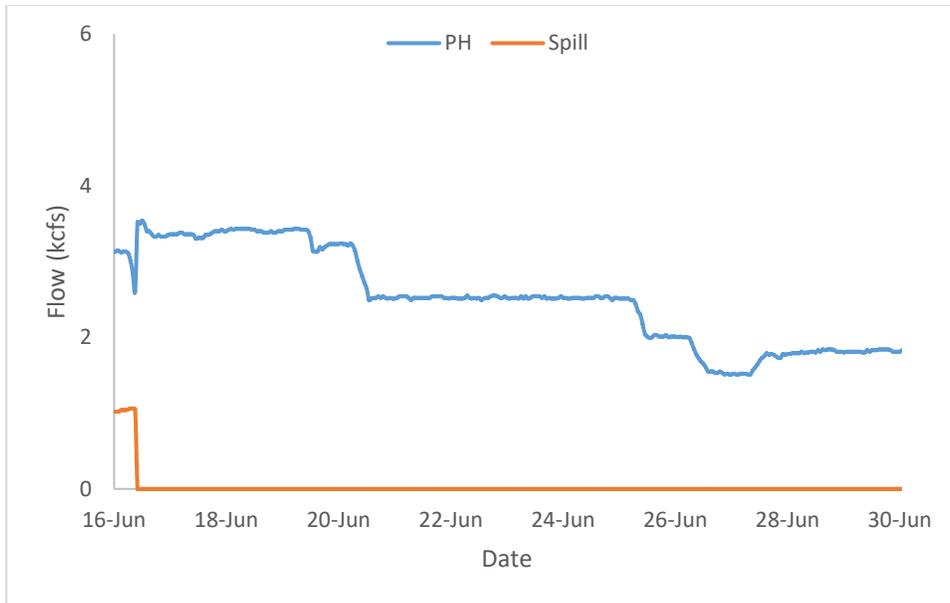
**Figure 12. Gage height (ft); below Big Cliff Dam**



**Figure 13. Total Dissolved Gas Saturation (%); below Big Cliff Dam**



**Figure 14. Temperature at RST (Big Cliff Dam)**

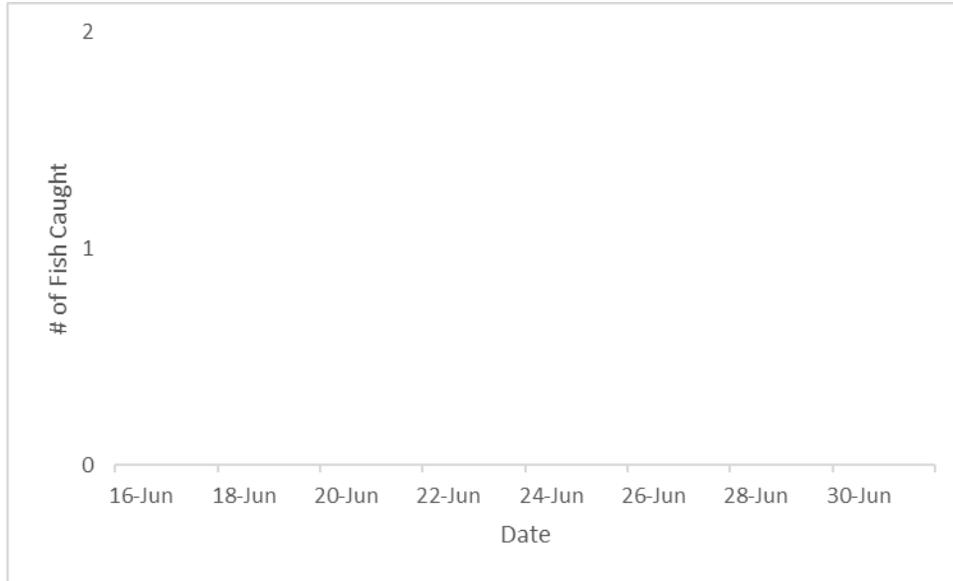


**Figure 15. Hourly Flows PWR vs. RO (Big Cliff Dam)**

## **Middle Fork Santiam– Green Peter Tailrace**

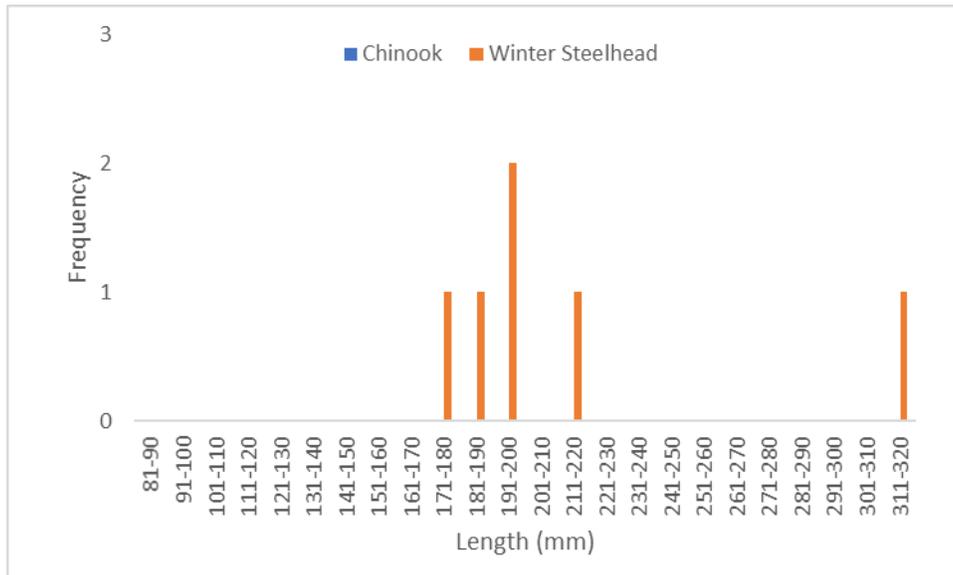
### **Target Species**

This reporting period began on June 16 and ended on June 30. No Chinook Salmon (CHS) or Winter Steelhead (STW) were captured during the 15-day sampling period (Figure 16) as the trap was removed prior to this reporting period. The trap was raised to the non-sampling position on May 7<sup>th</sup> due to highline damage after flows were raised to ~4,000 cfs. The RST was removed on May 12<sup>th</sup> to prevent further damage from expected high flows. Table 8 provides life stage, length, and weight data for all target species that have been caught at the Green Peter Dam site to-date. Figure 17 shows length frequency data to-date.



\*Recaptured fish for trapping efficiency trials not included.

**Figure 16. Chinook and Winter Steelhead Captured Per Day 06/16/2022 to 06/30/2022 (Green Peter Tailrace- Middle Santiam)**



\*Figure does not include fish without heads or fish used for trapping efficiency trials.

**Figure 17. Length Frequency of Juvenile Chinook and Winter Steelhead Sampled Season To-Date (Green Peter Tailrace- Middle Santiam River)**

## Trapping Efficiency

A total of 518 juvenile hatchery Chinook (parr) were bismarck brown dyed, adipose clipped and released on 4/30/2022 below Green Peter Dam. A total of 9 fish were recaptured in the 8ft trap on 5/1/2022. Trapping efficiency was 1.74%.

Of the 9 fish recaptured, only 1 fish that was captured had injuries present. The injured fish displayed fin damage. Mt. Hood Environmental staff noted that fish appeared to be in good condition upon retrieval from the hatchery.

Green Peter Dam Tailrace- Middle Santiam	Release #	Recapture #	Capture Efficiency
8ft Trap	518	9	1.74% (9/518)

**Table 8. Descriptive Statistics of Target Species Captured at the Green Peter Tailrace-Middle Santiam River Season To-Date**

To-Date (Since March 01, 2022)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Green Peter Dam Tailrace-Middle Santiam	Spill	STW	Parr	0	0	0	0	0	0	0
		STW	Smolt	6	175	320	213.7	46.2	316.1	107.1

\*Fish that were missing heads are not included in length and weight calculations.

## 24-Hour Post Collection Holding Trial

No target species were captured during the current reporting period.

## Injuries and Copepod Infection

No Spring Chinook were captured at Green Peter Dam. No Winter Steelhead were captured during this reporting period. A summary of injuries observed on Winter Steelhead during the reporting period is provided in Table 9, and target species injuries for the duration of the season are provided in Appendix A.

**Table 9. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead STW for Sampling Period. (Green Peter Tailrace- Middle Santiam River).**

Site	Trap	# Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Green Peter	8 ft	0	0	0	0	0	0	0	0

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

## Collected DNA and Scale Samples

No target fish were captured for the reporting period and thus, no scale or DNA samples were collected.

## Non-Target Species

No non-target species were captured this reporting period. The season total data is summarized below in Table 10.

**Table 10. Summary of Non-target Species (Green Peter Tailrace- Middle Santiam River).**

Species	Season Total Capture	Season Total Mortality
Bluegill	86	59
Brook Lamprey	0	0
Bullhead	0	0
Crappie	0	0
Longnose Dace	0	0
Kokanee	125	61
Red-Sided Shiner	0	0
Sculpin	0	0
Smallmouth Bass	1	0
Sucker	2	2
Whitefish	0	0
Cutthroat	0	0
<i>O. mykiss</i> (clipped)	4	2
Unknown	11	11
<b>Totals</b>	<b>229</b>	<b>135</b>

## Stream Statistics

Basic stream statistics at the Green Peter Dam Tailrace- Middle Santiam site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14186110 and 14186200. Gage height (feet) is the only metric provided at gage 14186110. Total dissolved gas saturation data was received from gage number 14186200, 50 meters upstream of the trap. During the reporting period, daily maximum values for instantaneous gage height ranged from 701.8 feet to 704.5 feet (mean: 702.3 feet). Figure 18 shows instantaneous gage height.

Total dissolved gas saturation ranged from 102 to 109% (mean: 104.1%) during the reporting period. Figure 19 shows the total dissolved gas saturation.

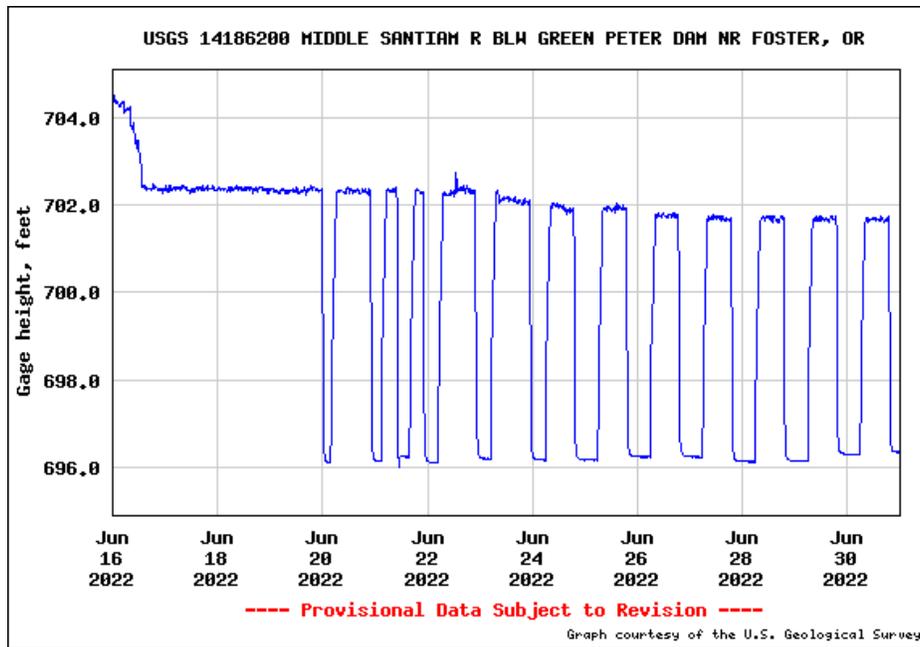
The trap and its HOBO logger were removed prior to this sampling period. Temperature data from USGS gauge 14186200 is provided in Figure 20.

Flows through the Powerhouse and Spillway during the reporting period averaged 1,236.1 and 47.8 cubic feet per second (cfs) respectively (Figure 21). Catch per unit of effort (CPUE) data are summarized in

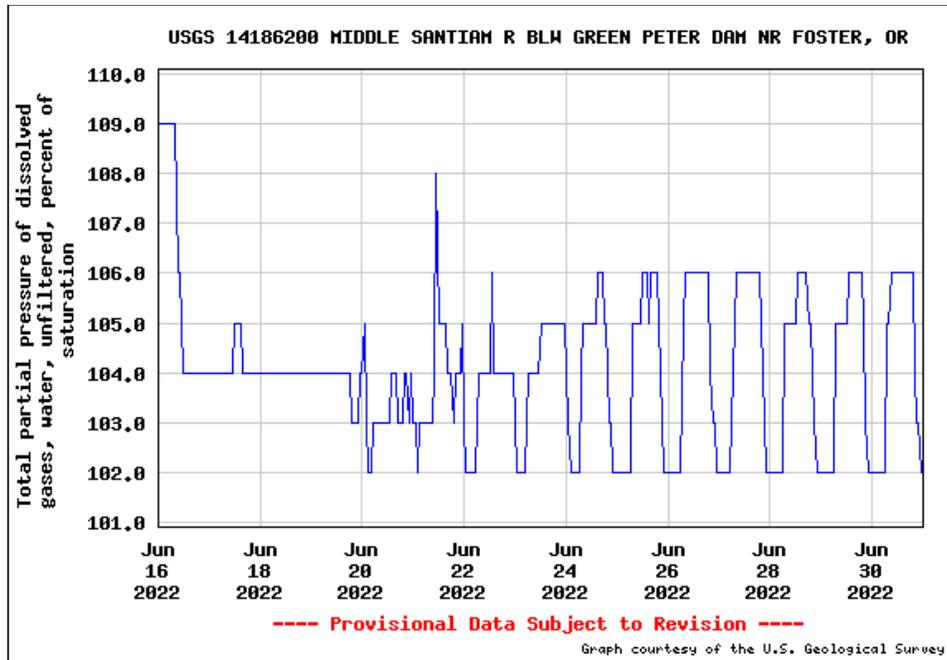
Table 11. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 11. Summary of salmonid CPUE, Green Peter Tailrace- Middle Santiam River.**

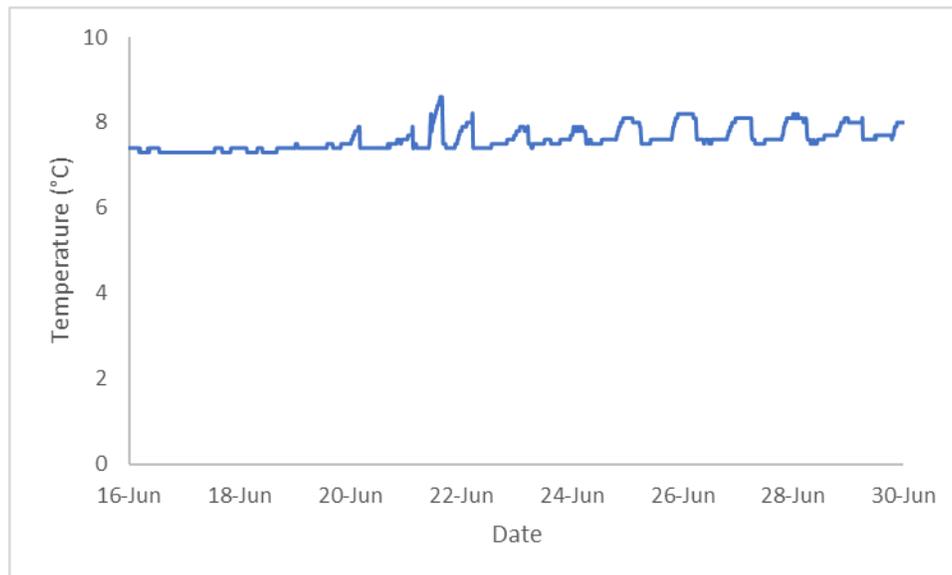
	Chinook	Winter Steelhead
<b>Description</b>	<b>8ft</b>	<b>8 ft</b>
Catch	0	0
Effort (hrs)	0	0
CPUE (fish/hr)	0	0



**Figure 18. Gage Height (feet); below Green Peter Dam**

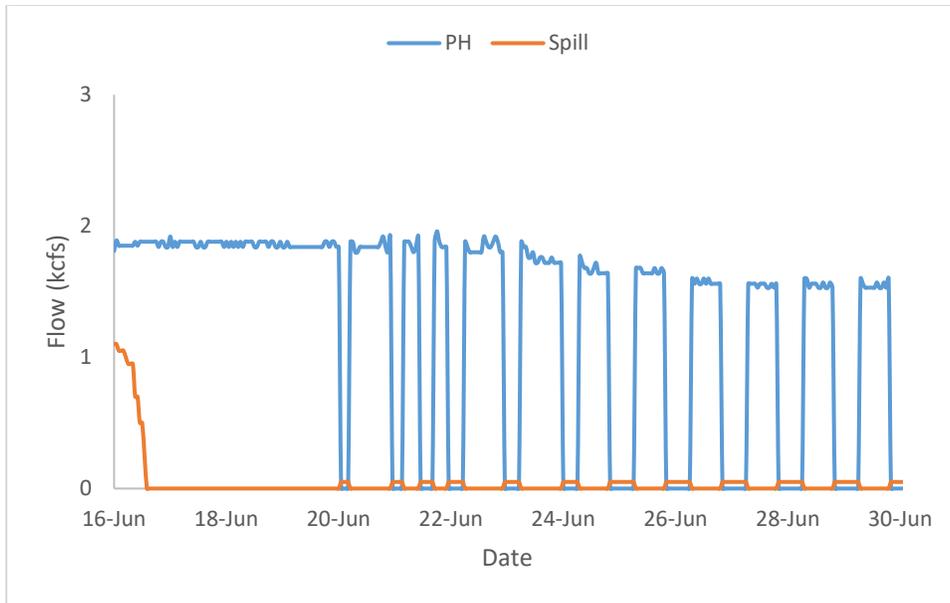


**Figure 19. Total Dissolved Gas Saturation (%); below Green Peter Dam**



Note: Hobo logger was removed with the trap during reporting period. Temperature from USGS stream gage number 14186200, at trap location.

**Figure 20. Temperature at RST (Green Peter Tailrace- Middle Santiam River)**

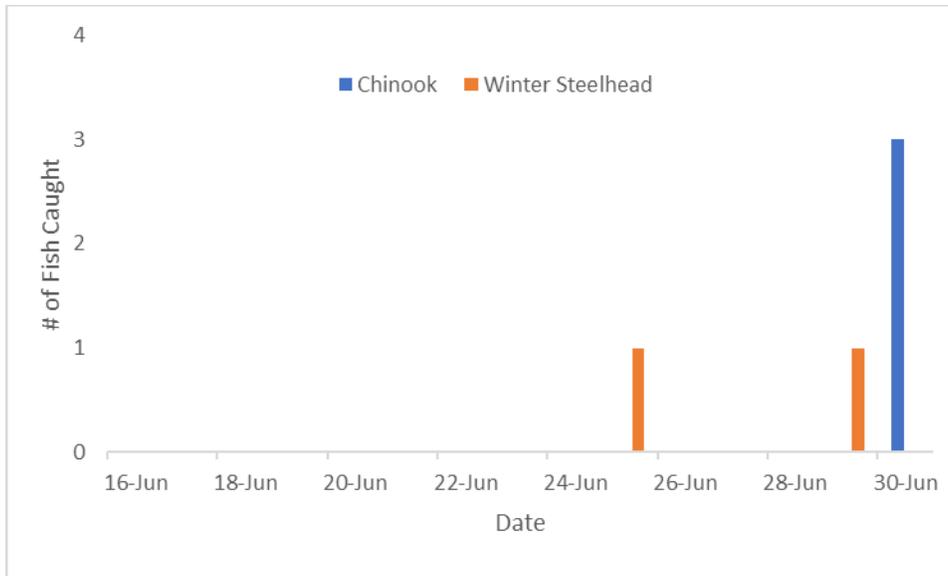


**Figure 21. Hourly Flows PWR vs. Spill (Green Peter Dam)**

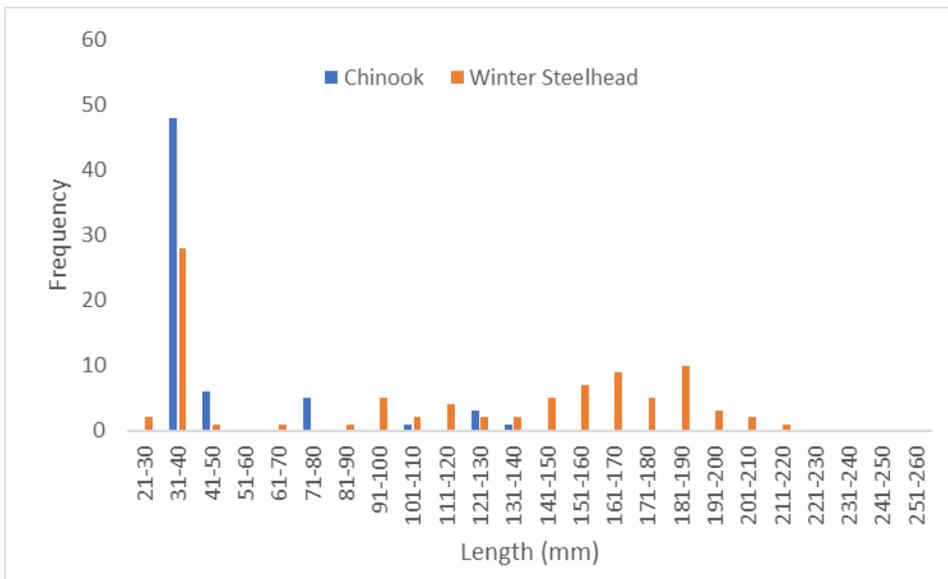
## **South Fork Santiam– Foster Dam Head of Reservoir**

### **Target Species**

This reporting period began on June 16 and ended on June 30. There were 3 Chinook salmon (CHS) and 2 Winter Steelhead (STW) captured (Figure 22) during the 15-day sampling period. Sampling duration was 100% for the RST. Table 12 provides life stage, length, and weight data for all Chinook Salmon and Winter Steelhead that have been caught at the Foster Dam Head of Reservoir- South Santiam site to-date and for the reporting period. Figure 23 shows the daily capture numbers for Chinook and Winter Steelhead and Figure 24 shows length frequency data to-date for both species.



**Figure 22. Chinook and Winter Steelhead Captured Per Day 06/16/2022 to 06/30/2022 (Foster Dam Head of Reservoir- South Santiam)**



**Figure 23. Length Frequency of Juvenile Chinook and Winter Steelhead Sampled Season To-Date (Foster Dam Head of Reservoir- South Santiam)**

### Trapping Efficiency

15 Chinook and 60 Winter Steelhead have been caudal clipped and released upstream for the purpose of conducting run of river trapping efficiency trials. To date, one of the released Winter Steelhead has been recaptured. Currently, trapping efficiency for Winter Steelhead is 1.3%. Only fish large enough to be safely caudal clipped have been used for efficiency trials.

**Table 12. Descriptive Statistics of Target Species Captured at the Foster Dam Head of Reservoir- South Santiam Site Season To-Date**

To-Date (Since March 16, 2022)										
Site	Trap	Species	Life stage	Collected	Length (mm)*		Weight (g)*			
					Min	Max	Mean	Min	Max	Mean
Foster Dam Head of Reservoir-South Santiam	5 ft	CHS	Fry	55	32	49	35.9	N/A	N/A	N/A
		CHS	Parr	8	70	127	85	3.1	24.7	8.0
		CHS	Smolt	3	120	138	129	19.6	27.5	23.5
		STW	Fry	31	28	46	34.6	N/A	N/A	N/A
		STW	Parr	17	65	183	116.7	2.4	63.6	20.9
		STW	Smolt	42	112	213	168.7	11.2	75.3	47.4
June 16-30, 2022										
Site	Trap	Species	Life stage	Collected	Length (mm)*		Weight (g)*			
					Min	Max	Mean	Min	Max	Mean
Foster Dam Head of Reservoir-South Santiam	5 ft	CHS	Fry	0	0	0	0	0	0	0
		CHS	Parr	3	70	79	74.0	3.7	5.1	4.3
		CHS	Smolt	0	0	0	0	0	0	0
		STW	Fry	2	28	29	28.5	N/A	N/A	N/A
		STW	Parr	0	0	0	0	0	0	0
		STW	Smolt	0	0	0	0	0	0	0

\*Most fry are too small to collect accurate weight measurements in the field.

### Injuries and Copepod Infection

Partial descaling <20% was observed on 3 of the 3 Spring Chinook captured (100%). Body injuries were present on 1 Spring Chinook (33.3%) and 0 displayed eye injury (0%). No copepods were present on any of the Spring Chinook captured (0%). There were no mortalities.

Partial descaling <20% was observed on 0 of the 2 Winter Steelhead captured (0%). Body injuries were present on 0 Winter Steelhead (0%) and 0 displayed eye injury (0%). No copepods were present on any of the Winter Steelhead captured (0%). There were no mortalities. A summary of injuries observed during the reporting period are provided in Table 13, and for the duration of the season are provided in Appendix A.

**Table 13. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon and Winter Steelhead for Sampling Period. (Foster Dam Head of Reservoir- South Santiam).**

Site	Species	# Fish Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Foster Dam Head of Reservoir- South Santiam	Chinook	3	3	0	1	0	0	0	0
	Winter Steelhead	2	0	0	0	0	0	0	0

### Collected DNA and Scale Samples

For the reporting period, scales and DNA were collected from 3 Spring Chinook and 0 Winter Steelhead. The Winter Steelhead captured did not meet length criteria for DNA sampling.

### Non-Target Species

8 non-target species fish was captured during the reporting period; the data is summarized below in Table 14.

**Table 14. Summary of Non-target Species (Foster Dam Head of Reservoir).**

Species	5 ft Capture	5 ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Brook Lamprey	0	0	0	0
Bullhead	0	0	0	0
Crappie	0	0	0	0
Dace	8	0	12	1
Kokanee	0	0	0	0
Red-Sided Shiner	0	0	0	0
Sculpin	0	0	2	1
Spotted Bass	0	0	0	0
Sucker	0	0	3	0
Whitefish	0	0	0	0
Cutthroat	0	0	28	0
<i>O. mykiss</i>	0	0	0	0
Pumpkinseed	0	0	0	0
Unknown	0	0	4	0
<b>Totals</b>	<b>8</b>	<b>0</b>	<b>49</b>	<b>2</b>

### Stream Statistics

Basic stream statistics at the Foster Dam Head of Reservoir- South Santiam site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14185000. Discharge (cfs) and Gage height (feet) are available at this gage. During the reporting period, daily maximum values for

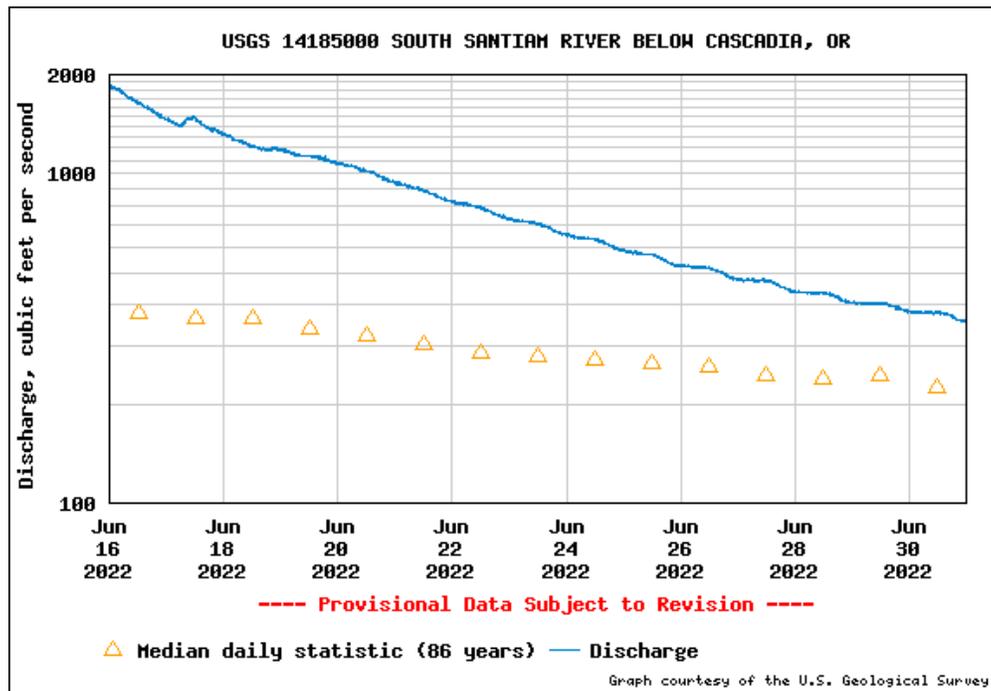
instantaneous discharge ranged from 380.0 cfs to 1,870.0 cfs (mean: 864.5 cfs). Figure 24 shows instantaneous discharge.

Stream temperatures were recorded every 2 hours for the length of the report period for the RST (Figure 25). Temperature probes for the trap operated normally throughout this reporting period.

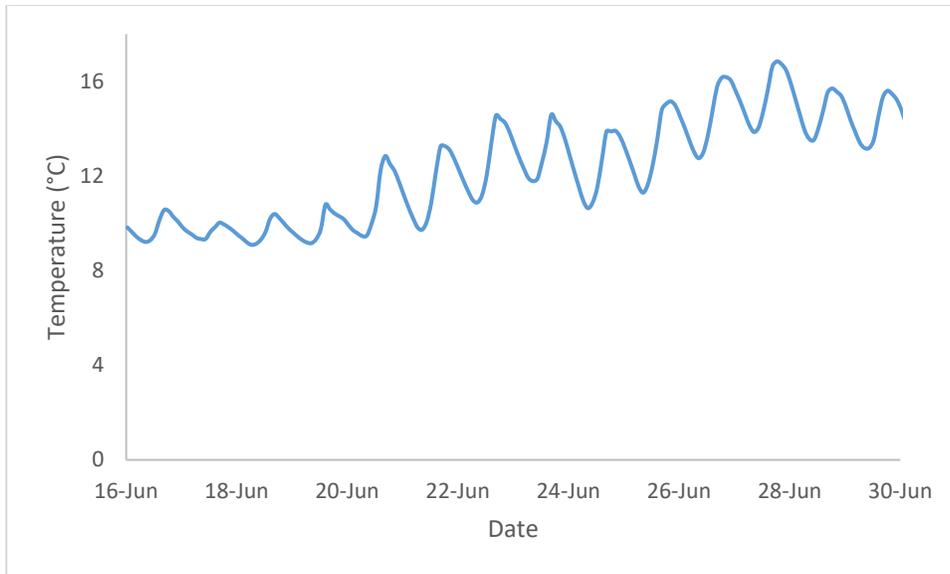
Catch per unit of effort (CPUE) data are summarized in Table 15. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 15. Summary of salmonid CPUE, Foster Dam Head of Reservoir- South Santiam.**

	Chinook	Winter Steelhead
Description	(5 ft)	
Catch	3	2
Effort (hrs)	356.7	356.7
CPUE (fish/hr)	0.008	0.006



**Figure 24. Discharge (cfs); Foster Dam Head of Reservoir – S. Santiam)**

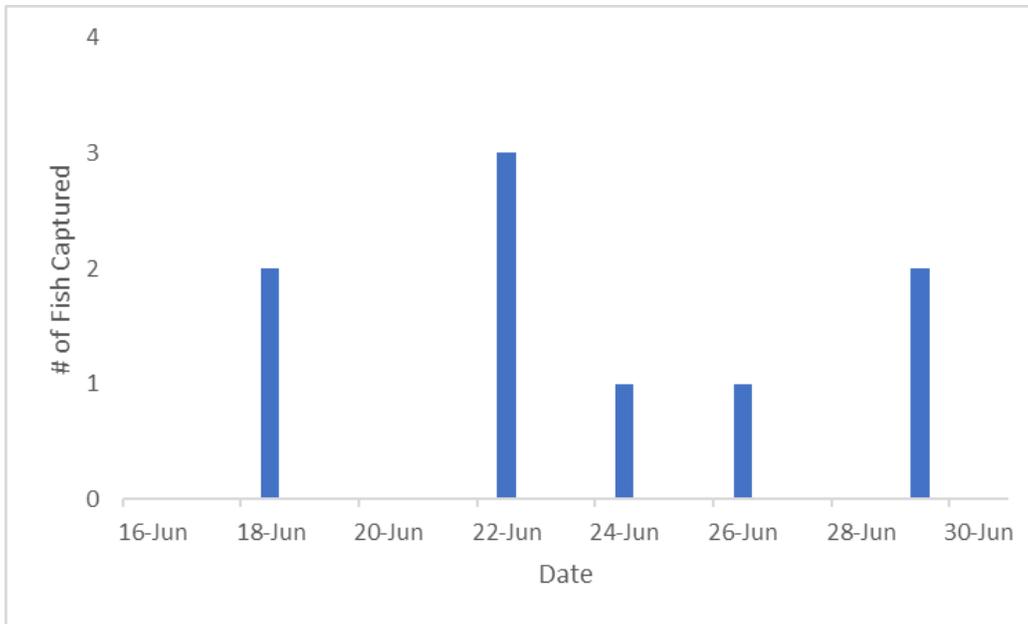


**Figure 25. Temperature at RST (Foster Dam Head of Reservoir – S. Santiam)**

## **South Fork McKenzie – Cougar Dam**

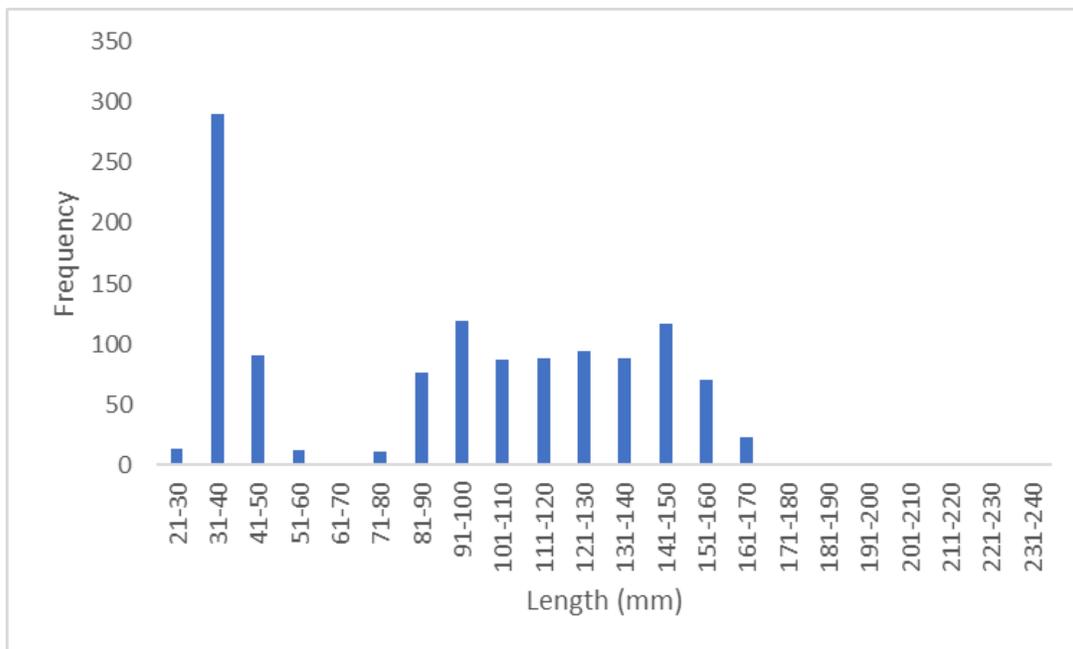
### **Target Species**

This reporting period began on June 16 and ended on June 30. There was a total of 9 juvenile Chinook Salmon (CHS) captured during the 15-day sampling period (Figure 26). A wild (no adipose clip) adult Chinook Salmon was captured in the Powerhouse trap during this reporting period. A crew was present when the fish entered the trap and they immediately released it back into the river. Sampling duration was 100% for both Powerhouse RST and RO RSTs. Table 16 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Cougar Dam site to-date and for the reporting period. Figure 26 shows the daily capture numbers for chinook and Figure 27 shows length frequency data to-date.



\*Recaptured fish for trapping efficiency trials not included.

**Figure 26. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Cougar Dam)**



\*Figure does not include fish without heads or fish used for trapping efficiency trials.

**Figure 27. Length Frequency of Juvenile Chinook Sampled Season To-Date (Cougar Dam)**

## Trapping Efficiency

A total of 993 juvenile hatchery Chinook (sub-yearlings) were bismarck brown dyed, adipose clipped, left vent clipped and released on 05/15/2022. 63 fish were recaptured for an efficiency of 6.3%. 37 fish displayed injuries, primarily descaling and fin damage. 3 fish were dead displaying head injury. Mt. Hood staff noted that fish were in good condition at time of retrieval from the hatchery but displayed some fin damage and minor descaling.

Cougar Dam	Release #	Recapture #	Capture Efficiency
RO Route	993	63	5.56% (21/993)

**Table 16. Descriptive Statistics of Target Species Captured at the Cougar Dam Season To-Date**

To-Date (Since Dec. 01, 2021)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam	RO	CHS	Fry	21	34	48	40.8	N/A	N/A	N/A
		CHS	Parr	135	56	164	108.5	1.2	41.1	14.8
		CHS	Smolt	225	92	230	139.2	8.8	86.1	29.1
Cougar Dam	PWR	CHS	Fry	381	25	55	38.0	1.0	1.8	1.2
		CHS	Parr	234	54	165	100.3	1.6	41.0	11.0
		CHS	Smolt	193	76	167	133.6	4.2	45.6	24.8

\*Fish that were missing heads are not included in length and weight calculations.

June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam	RO	CHS	Fry	0	0	0	0	N/A	N/A	N/A
		CHS	Parr	0	0	0	0	0	0	0
		CHS	Smolt	0	0	0	0	0	0	0
Cougar Dam	PWR	CHS	Fry	3	25	28	26.7	N/A	N/A	N/A
		CHS	Parr	3	64	108	85.7	1.7	11.2	7.5
		CHS	Smolt	3	93	153	115.3	8.0	40.4	19.3

\*Fish that were missing heads are not included in length and weight calculations. Spawning age adult was not handled, therefore not included in length and weight calculations.

## 24-Hour Post Collection Holding Trial

A total of 9 Chinook captured in the RSTs, 9 fish from the PWR RST and 0 from the RO RST, were held for ~24 hours in holding tanks and then evaluated for survival rates. In total, 1 of the fish (11.1%) held during this period died during holding. 1 of the 9 PWR RST captured fish (11.1%) died during holding and no fish were held from the RO RST this reporting period.

## Injuries and Copepod Infection

Partial descaling <20% was observed on 0 of the 0 Chinook collected at the RO RST (0.0%). Descaling >20% was observed on 0 of the 0 Chinook collected at the RO RST (0.0%). There were 0 RO RST fish with bodily injuries (0.0%) and 0 had eye injuries (0.0%). 0 fish from the RO RST had copepods present in the branchial cavity (0.0%) and 0 had copepods present on fins (0.0%). No fish displayed Gas Bubble Disease (0.0%).

Partial descaling <20% was observed on 2 of 9 Chinook collected at the PWR RST (22.2%), and descaling >20% was observed on 2 Chinook collected at the PWR RST (22.2%). Of the 9 Chinook captured in the PWR RST, 2 displayed body injuries (22.2%) and 0 had eye injuries (0.0%). 0 of the PWR RST Chinook had copepods present in the branchial cavity (0%) and 1 had copepods present on fins (11.1%). 0 PWR RST Chinook displayed Gas Bubble Disease (0.0%).

There were 0 chinook mortalities collected in the RO RST (0.0%) and 0 in the PWR RST (0.0%). Data is summarized below in Table 17. A summary of injuries observed during the reporting period, and for the duration of the season are provided in Appendix A.

**Table 17. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Cougar Dam).**

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Cougar	RO	0	0	0	0	0	0	0	0
Cougar	PWR	9	2	2	2	0	0	1	0

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

## Non-Target Species

A total of 804 non-target species fish were captured during the reporting period; the data is summarized below in Table 18.

**Table 18. Summary of Non-target Species (Cougar Dam).**

Species	RO Capture	RO Mortality	PWR Capture	PWR Mortality	Season Total Capture	Season Total Mortality
Bluegill	0	0	0	0	0	0
Lamprey	0	0	0	0	1	0
Bullhead	0	0	0	0	0	0
Crappie	0	0	0	0	0	0
Dace	0	0	720	1	923	2

Kokanee	0	0	0	0	0	0
Red-Sided Shiner	0	0	0	0	0	0
Sculpin	0	0	29	0	67	1
Spotted Bass	0	0	0	0	0	0
Smallmouth Bass	0	0	0	0	2	0
Sucker	0	0	0	0	1	0
Whitefish	0	0	12	0	17	0
Cutthroat	0	0	2	0	34	1
<i>O. mykiss</i>	0	0	40	1	133	2
Bull Trout	0	0	0	0	1	0
Unknown	0	0	0	0	20	1
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>720</b>	<b>2</b>	<b>1116</b>	<b>7</b>

### Stream Statistics

Basic stream statistics at the Cougar Dam site were calculated from data downloaded from U.S. Geological Survey stream gage numbers 14159410 and 14181500. Gage height (feet) is the only metric provided at gage 14159410. Total dissolved gas saturation data was received from gage 14181500, 500 meters downstream of the traps. During the reporting period, daily maximum values for instantaneous gage height ranged from 1,252.8 feet to 1,253.0 feet (mean: 1,252.8 feet). Figure 28 shows instantaneous gage height.

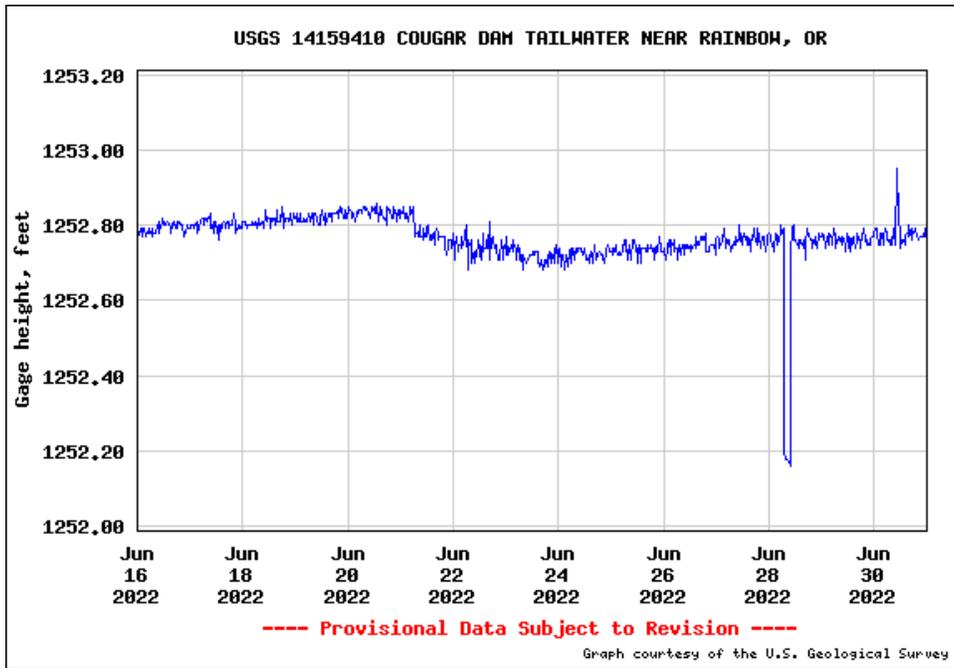
Total dissolved gas saturation ranged from 101 to 107% (mean: 103.4%). Figure 29 shows total dissolved gas saturation.

Stream temperatures were recorded every 2 hours for the length of the report period for the RO and PWR RST's (Figure 30 and 31 respectively). Temperature probes for the RO and PWR RST operated normally throughout this reporting period.

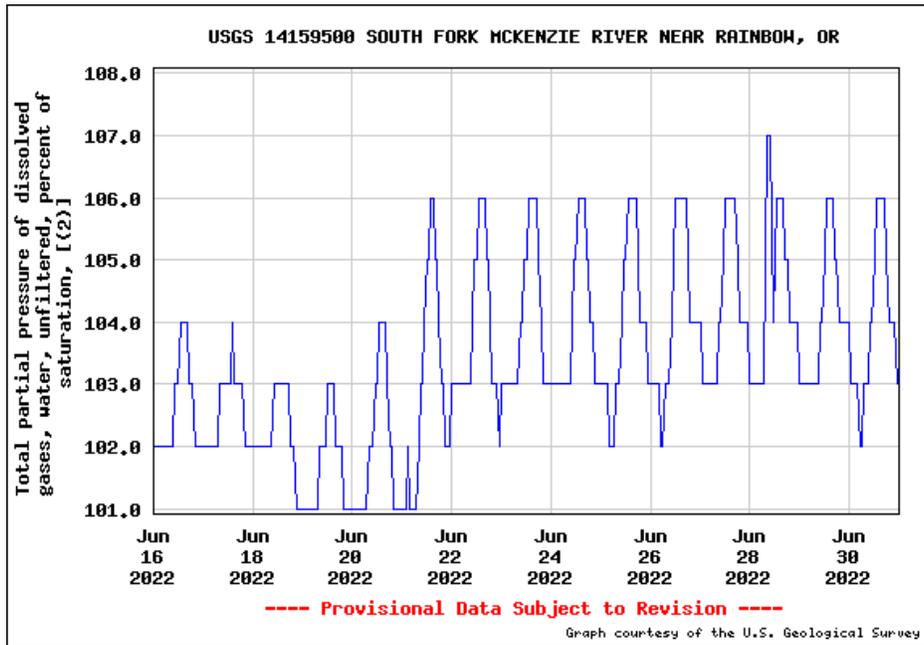
Flows through the Powerhouse and RO during the reporting period averaged 325 and 4.8 cubic feet per second (cfs), respectively (Figure 32). Catch per unit of effort (CPUE) data are summarized in Table 19. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 19. Summary of salmonid CPUE, Cougar Dam.**

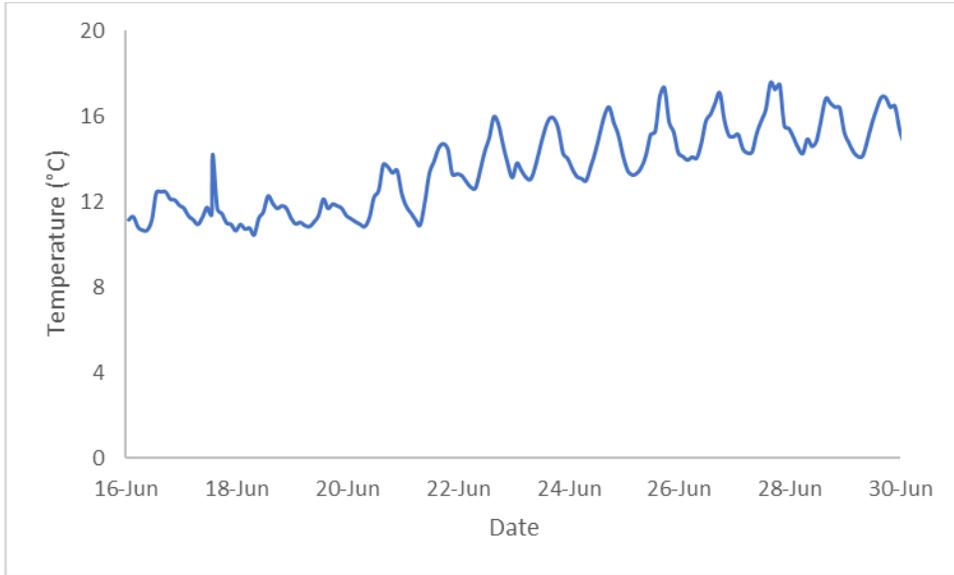
Description	Chinook	
	RO (5ft)	PWR(8ft)
Catch	0	9
Effort (hrs)	360.2	720.4
CPUE (fish/hr)	0	0.012



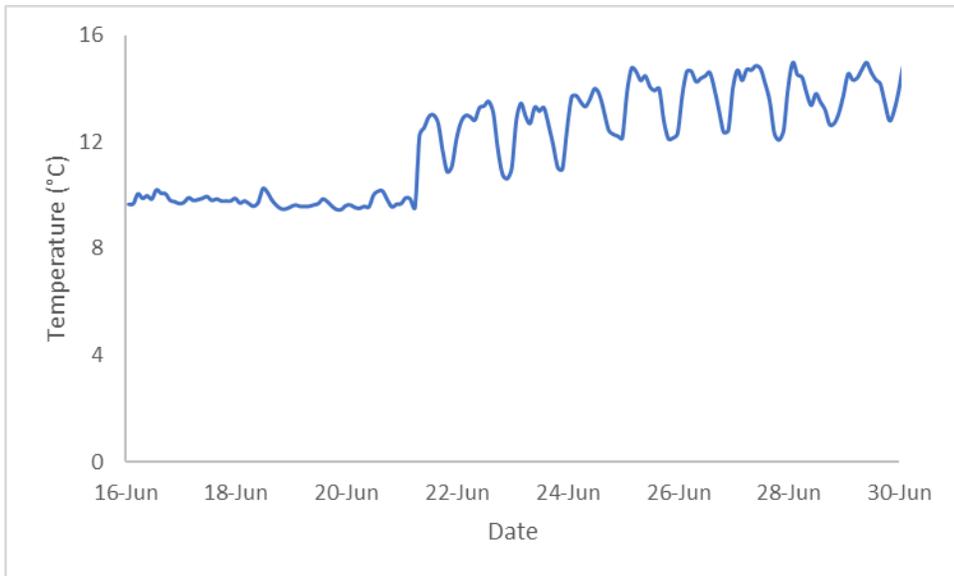
**Figure 28. Gage Height (feet); below Cougar Dam, South Fork McKenzie River**



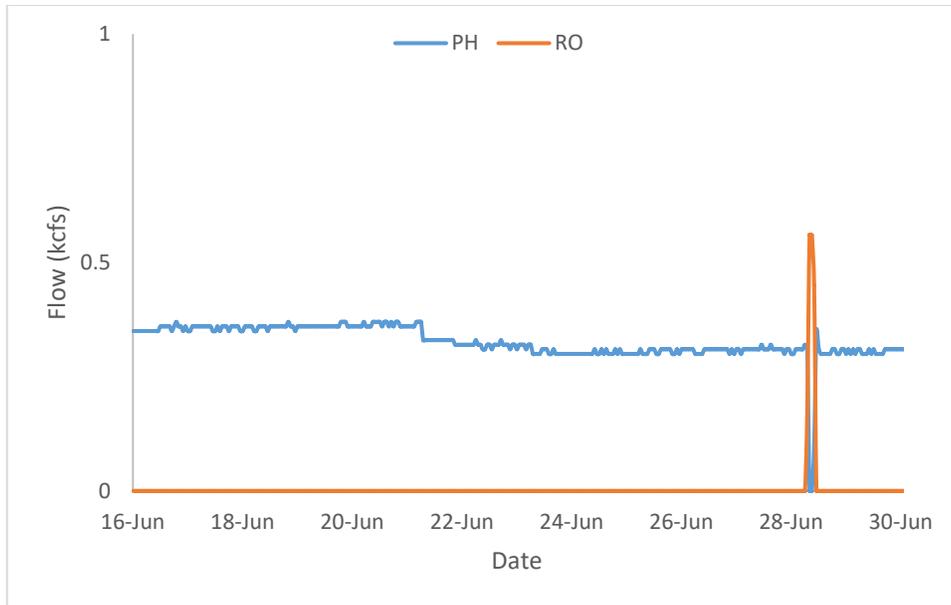
**Figure 29. Total Dissolved Gas Saturation (%); below Cougar Dam, South Fork McKenzie River**



**Figure 30. Temperature at RO RST (Cougar Dam)**



**Figure 31. Temperature at PWR RST (Cougar Dam)**

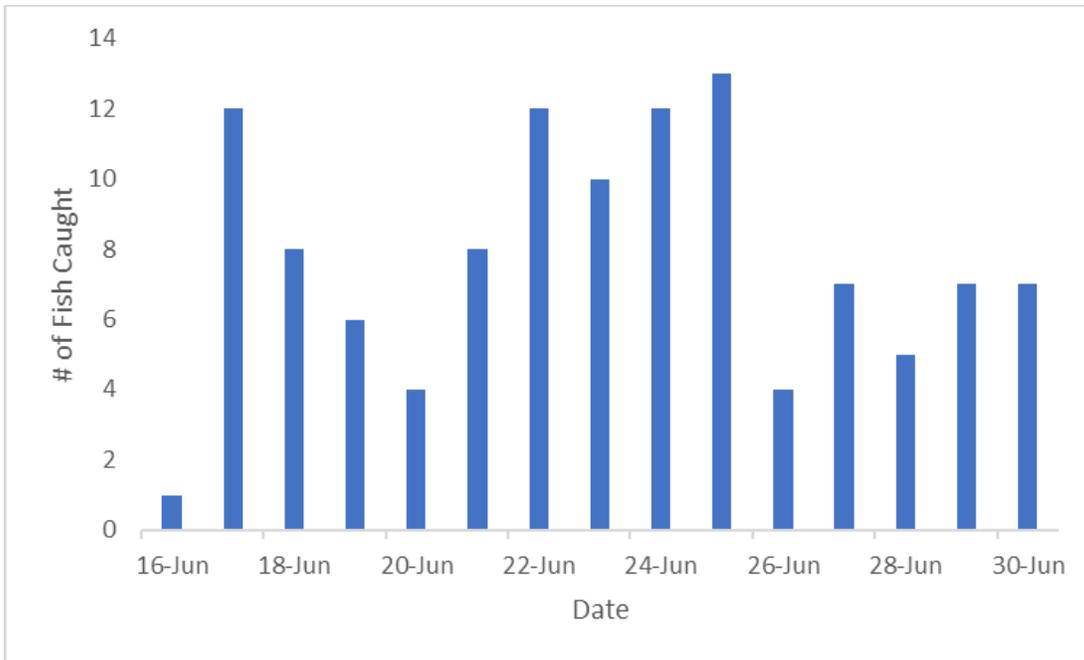


**Figure 32. Hourly Flows PWR vs. RO (Cougar Dam)**

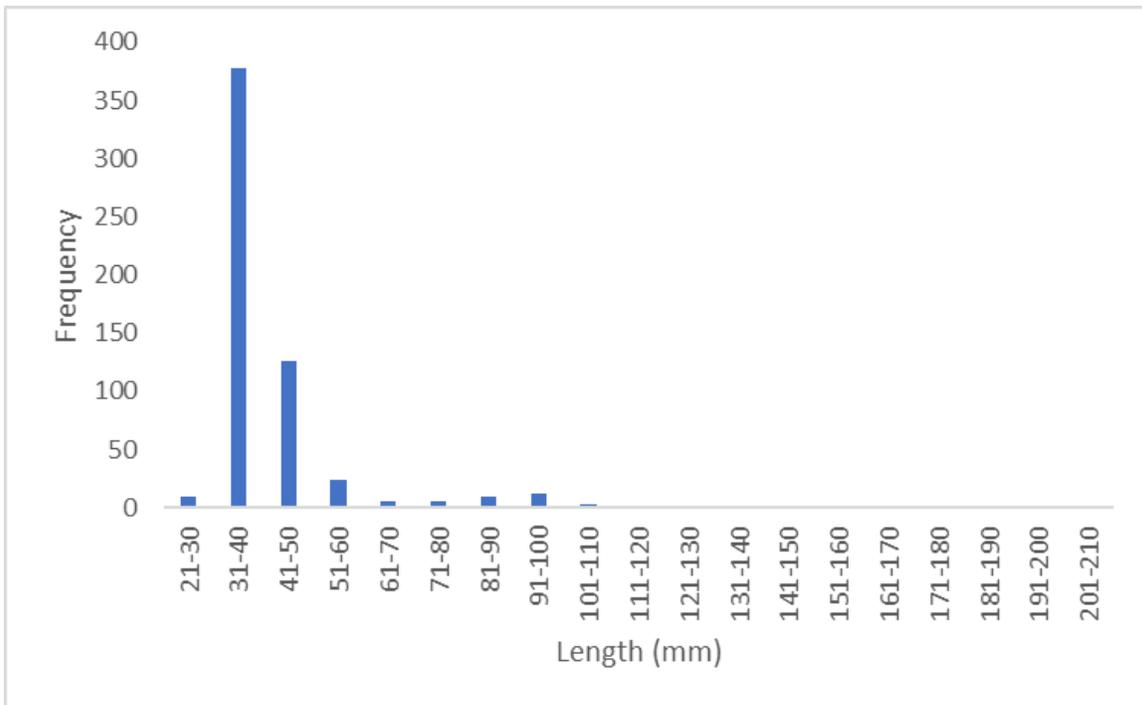
## **South Fork of the McKenzie–Cougar Dam Head of Reservoir**

### **Target Species**

The reporting period began June 16 and ended June 30. There were 116 Chinook salmon captured during the 15-day sampling period (Figure 33). The trap was operated 100% of the reporting period. Table 20 provides life stage, length, and weight data for all Chinook salmon that have been caught at the site to-date and Figure 34 shows length frequency data to-date.



**Figure 33. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Cougar Dam Head of Reservoir)**



**Figure 34. Length Frequency of Juvenile Chinook Sampled Season To-Date (Cougar Dam Head of Reservoir)**

**Table 20. Descriptive Statistics of Target Species Captured at Cougar Dam Head of Reservoir, Season To-Date and for the Reporting Period**

To-Date (Since March 07, 2022)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	48	43	150	80.6	1.0	11.2	5.9
		CHS	Fry	528	27	63	38.6	0.6	2.8	1.4

June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Cougar Dam Head of Reservoir	5 ft	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	12	43	60	51.8	1.0	2.6	1.6
		CHS	Fry	104	27	63	44.6	0.6	2.8	1.4

\*Most fry are too small to collect accurate weights and thus some metrics are not available for them.

### Trapping Efficiency

A total of 515 juvenile hatchery Chinook (smolt) were adipose clipped, left or right ventrally clipped and released on 06/23/2022 upstream of the Cougar Head of Reservoir trap site. A total of 7 fish were recaptured in the 5 ft trap. Trapping efficiency was 1.4%.

Of the 7 fish recaptured, 3 displayed minor descaling and 5 had fin damage.

Cougar Dam Head of Reservoir	Release #	Recapture #	Capture Efficiency
5ft trap	515	7	1.4% (7/515)

### Injuries and Copepod Infection

There were 116 Chinook were captured for the reporting period. Of the fish captured, partial descaling <20% was observed on 1 fish (0.9%), 0 had copepods (0%), and 4 had bodily injury (3.4%). There were 3 mortalities for this reporting period (2.6%). Injury data for the reporting period is summarized in Table 21. To date injury data can be found in Appendix A.

**Table 21. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Cougar Dam Head of Reservoir)**

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Cougar Dam Head of Reservoir	116	1	0	4	0	0	0	3

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

### Collected DNA and Scale Samples

Scales and DNA were collected from 71 of the Chinook captured. The rest of the captured fish were under the minimum fork length threshold and samples were not collected (less than 45 mm fork length for DNA and less than 50 mm fork length for scales).

### VIE Marking

Visual Implant Elastomer (VIE) trials commenced on 6/25/2022. Since then, 30 Chinook have been VIE marked to the left of their dorsal fin with fluorescent yellow elastomer. No fish with VIE marks have been detected at downstream RST sites to date.

### Non-Target Species

A total of 20 non-target fish were captured at the Cougar Dam Head of Reservoir RST during the reporting period; the data is summarized below in Table 22.

**Table 22. Summary of Non-target Species (Cougar Dam Head of Reservoir)**

Species	5ft Capture	5ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	0	0	0	0
Bullhead	0	0	0	0
Bull Trout	0	0	2	0
Crappie	0	0	0	0
Cutthroat Trout	0	0	41	1
Dace	1	0	7	0
Red-Sided Shiner	0	0	0	0
Sculpin	1	0	3	1
Spotted Bass	0	0	0	0
Sucker	0	0	0	0
Whitefish	0	0	0	0
<i>O. mykiss</i>	18	1	317	3
Unknown	0	0	9	0
<b>Totals</b>	<b>20</b>	<b>1</b>	<b>379</b>	<b>5</b>

## Stream Statistics

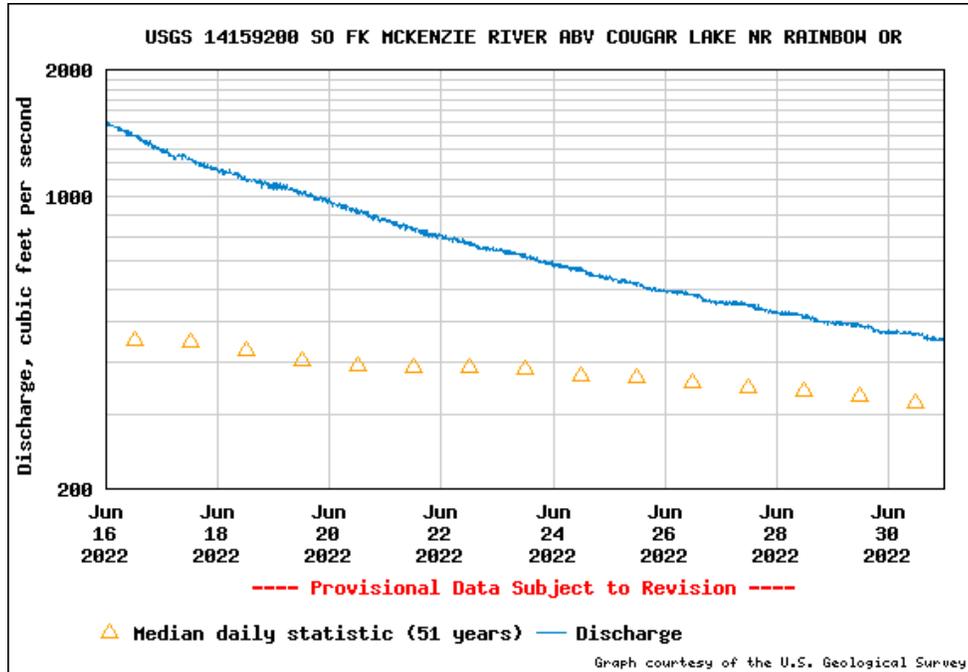
Basic stream statistics at the site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14159200. During the reporting period, daily maximum values for instantaneous discharge ranged from 478.0 cfs to 1,510.0 cfs (mean: 829.0 cfs). Figure 35 shows instantaneous discharge.

Stream temperature was recorded every two hours with a temperature probe at the trap. The temperature probe operated normally during this period (Figure 36).

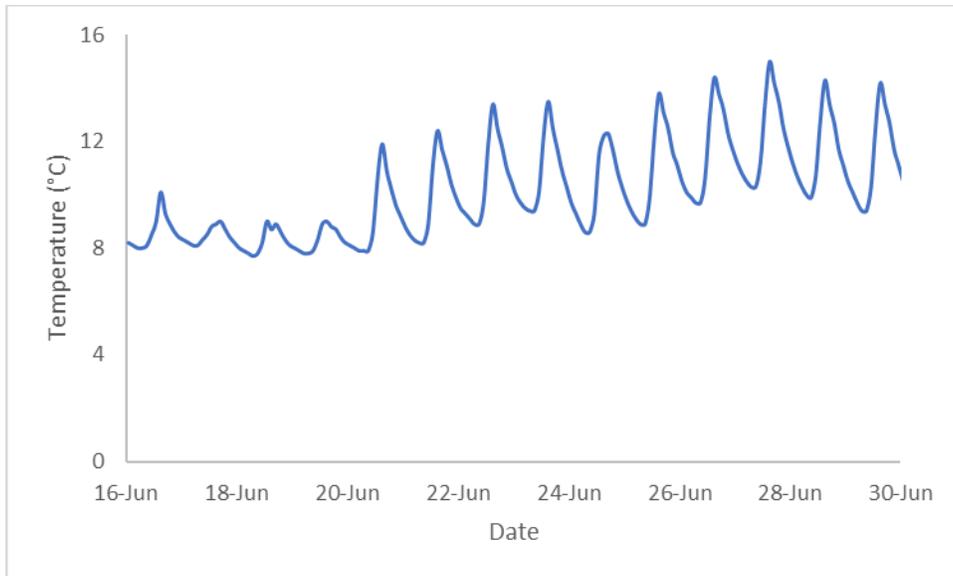
Catch per unit of effort (CPUE) data are summarized in Table 23. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 23. Summary of Chinook CPUE, Cougar Dam Head of Reservoir**

	Chinook
Description	5 ft
Catch	116
Effort (hrs)	360.2
CPUE (fish/hr)	0.322



**Figure 35. Gage Height (feet); South Fork McKenzie above Cougar Dam**

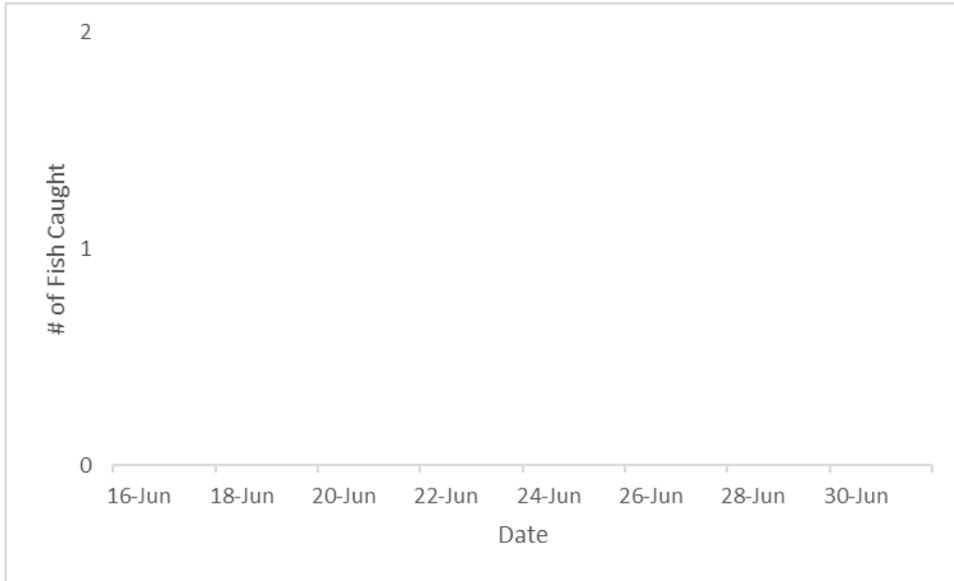


**Figure 36. Temperature at RST (Cougar Dam Head of Reservoir)**

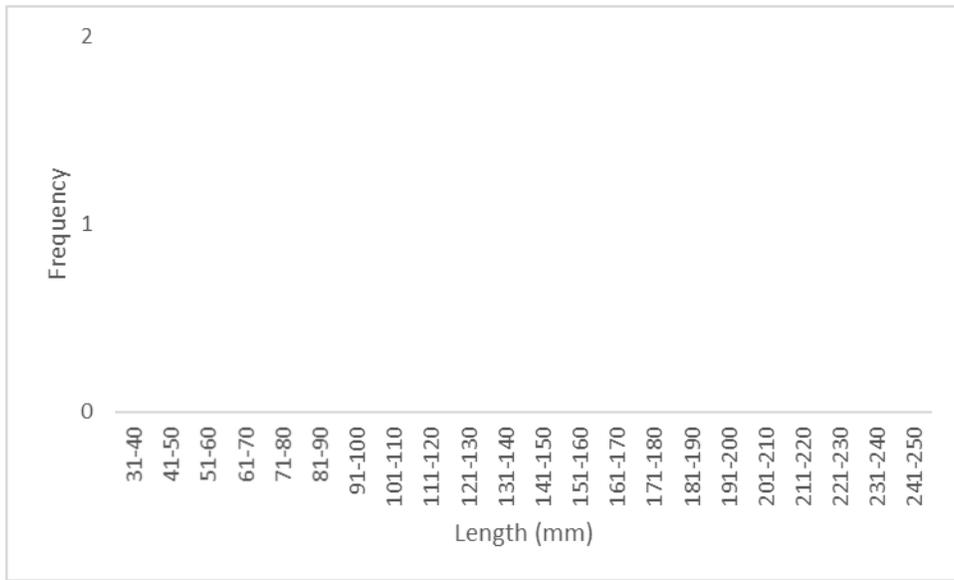
## **Middle Fork Willamette – Fall Creek Dam Tailrace**

### **Target Species**

The reporting period began June 16 and ended June 30. No Chinook salmon were captured during the 15-day sampling period (Figure 37). The trap was operated 100% of the reporting period. Table 24 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Fall Creek Dam Tailrace site to-date and Figure 38 shows length frequency data to-date.



**Figure 37. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Fall Creek Dam Tailrace)**



**Figure 38. Length Frequency of Juvenile Chinook Sampled Season To-Date (Fall Creek Dam Tailrace)**

**Table 24. Descriptive Statistics of Target Species Captured at Fall Creek Dam Tailrace, Season To-Date and for the Reporting Period**

To-Date (Since March 15, 2022)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Fall Creek Dam	RO	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	0	0	0	0	0	0	0

June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Fall Creek Dam	RO	CHS	Smolt	0	0	0	0	0	0	0
		CHS	Parr	0	0	0	0	0	0	0

### Injuries and Copepod Infection

No Chinook were captured during this reporting period. The data is summarized in Table 25. To date injury data is listed in Appendix A.

**Table 25. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Fall Creek)**

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Fall Creek Dam	0	0	0	0	0	0	0	0

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

### Trapping Efficiency

A total of 513 juvenile hatchery Chinook (sub yearlings) were adipose clipped, Bismarck Brown dyed, and released on 06/30/2022 upstream of the Fall Creek Dam Tailrace RO channel trap site. A total of 0 fish were recaptured in the 8 ft trap. Trapping efficiency was 0%.

Fall Creek Dam	Release #	Recapture #	Capture Efficiency
RO	513	0	0% (0/513)

## Non-Target Species

7 non-target fish were captured at the Fall Creek Dam Tailrace site during the reporting period; the data is summarized below in Table 26.

**Table 26. Summary of Non-target Species (Fall Creek Dam Tailrace)**

Species	8ft Capture	8ft Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0
Lamprey	3	0	5	0
Bullhead	0	0	1	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	0	0	4	0
Dace	2	0	97	0
Red-Sided Shiner	0	0	4	0
Sculpin	2	0	4	0
Spotted Bass	0	0	0	0
Sucker	0	0	4	0
Whitefish	0	0	0	0
<i>O. mykiss</i>	0	0	5	1
<b>Totals</b>	<b>7</b>	<b>0</b>	<b>124</b>	<b>1</b>

## Stream Statistics

Basic stream statistics at the site were calculated from data downloaded from U.S. Geological Survey stream gage numbers 14151000. Instantaneous discharge (cfs) and dissolved oxygen concentration (mg/L) data was collected from the gage. During the reporting period, daily maximum values for instantaneous discharge ranged from 235.0 cfs to 1,510.0 cfs (mean: 627 cfs). Figure 39 shows instantaneous discharge.

Dissolved oxygen concentrations ranged from 10.2 to 12.1 mg/L (mean: 11.1 mg/L) during the reporting period. Figure 40 shows dissolved oxygen concentrations.

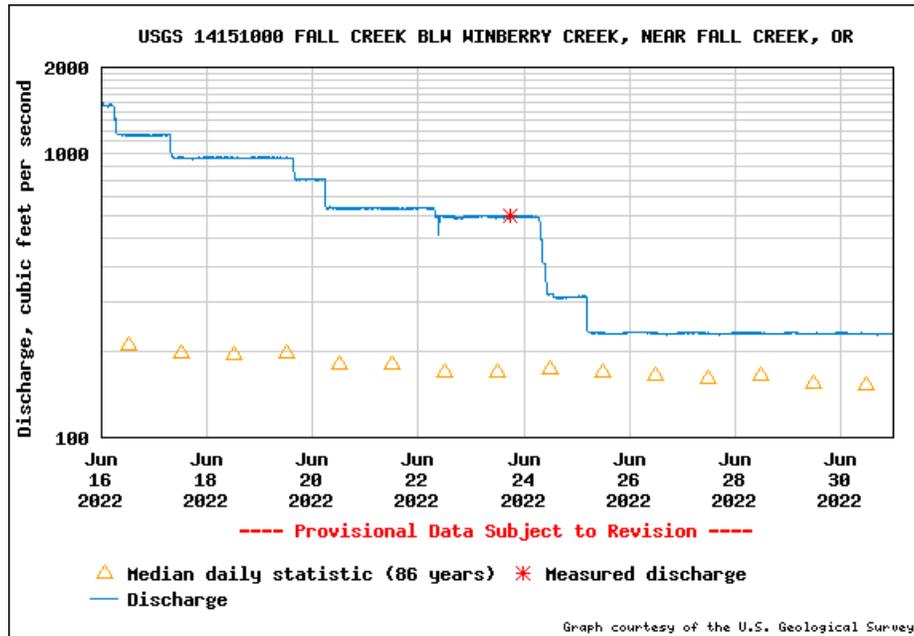
Stream temperatures were not recorded using temperature probes for the Fall Creek Dam Tailrace RST site during this reporting period. The temperature probe was ripped off the trap during the latest weather event. In place of the Hobo logger temperature probe, data from USGS gage number 14151000 was used (Figure 41).

Flows In and Out of reservoir during the reporting period averaged 519.7 cfs and 567.3 cfs respectively (Figure 42).

Catch per unit of effort (CPUE) data are summarized in Table 27. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B

**Table 27. Summary of Chinook CPUE, Fall Creek Dam Tailrace**

	Chinook
Description	(8 ft)
Catch	0
Effort (hrs)	363.3
CPUE (fish/hr)	0



**Figure 39. Discharge (cfs); Fall Creek Below Winberry Creek, Near Fall Creek, OR**

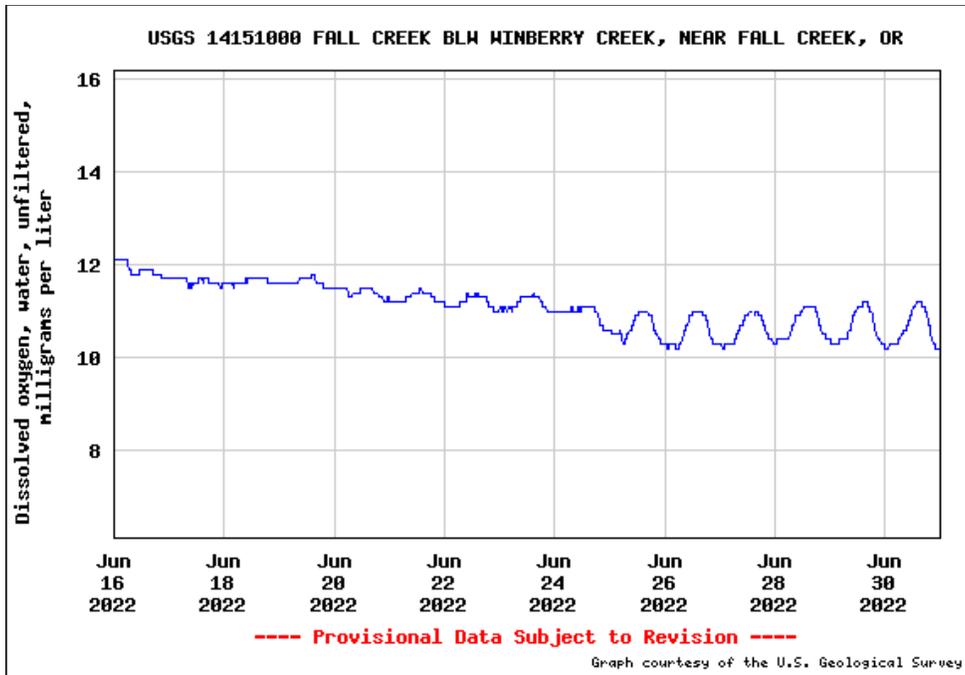


Figure 40. Dissolved Oxygen (mg/L); Fall Creek below Winberry Creek, Near Fall Creek, OR

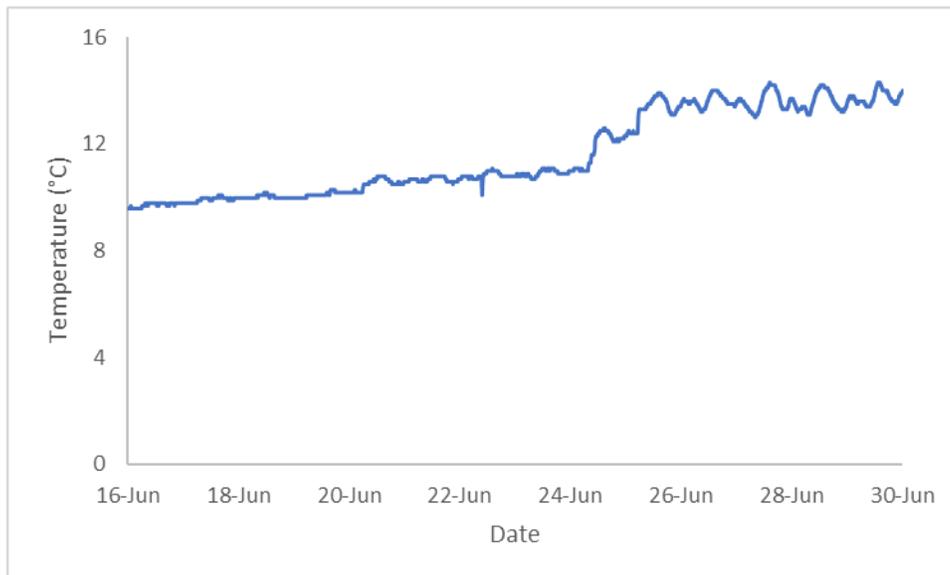
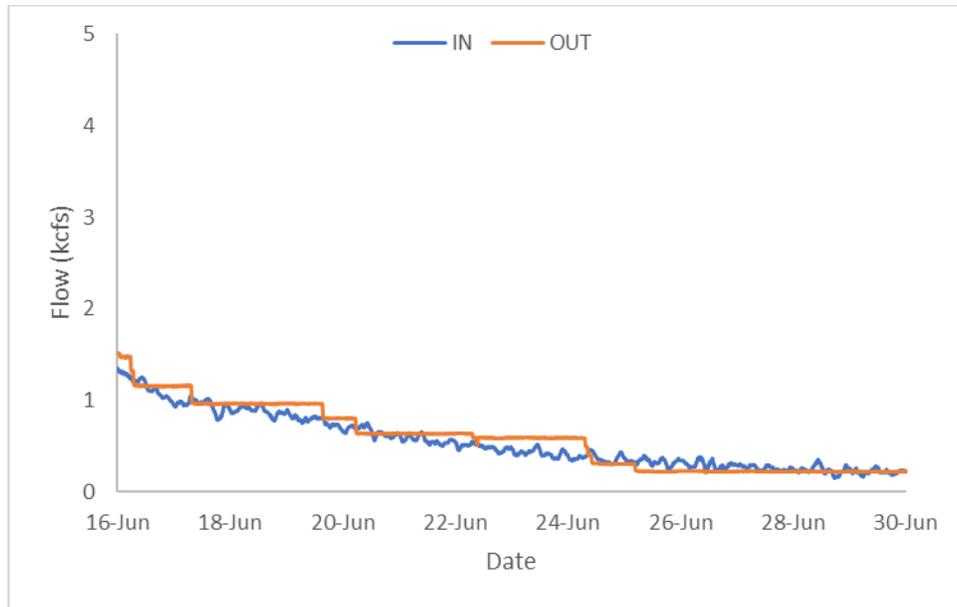


Figure 41. Temperature (°C); Fall Creek below Winberry Creek, Near Fall Creek, OR

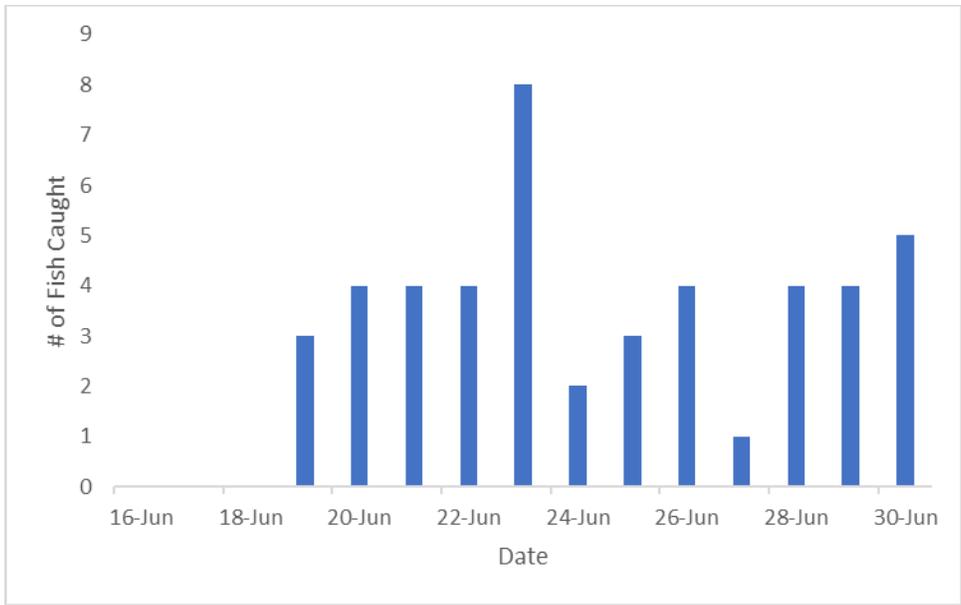


**Figure 42. Hourly Flows IN vs. OUT (Fall Creek Tailrace)**

## Middle Fork Willamette– Dexter Dam

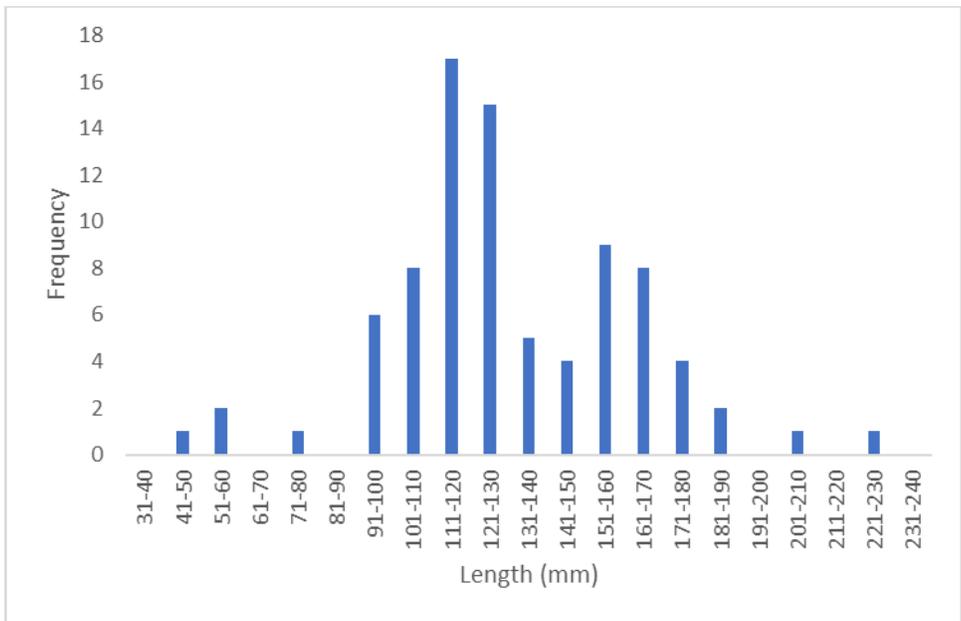
### Target Species

This reporting period began on June 16 and ended on June 30. There were 46 Chinook salmon (CHS) captured during the 15-day sampling period (Figure 48). Sampling duration was 100% for the 5 ft RST. Table 32 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Dexter Dam site to-date and for the reporting period. Figure 43 shows the daily capture numbers for Chinook and Figure 44 shows length frequency data to-date.



\*Recaptured fish for trapping efficiency trials not included.

**Figure 43. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Dexter Dam)**



\*Figure does not include fish without heads or fish used for trapping efficiency trials.

**Figure 44. Length Frequency of Juvenile Chinook Sampled Season To-Date (Dexter Dam)**

**Table 32. Descriptive Statistics of Target Species Captured at the Dexter Dam RST Season To-Date**

To-Date (Since March 07, 2022)										
Site	Trap	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Dexter Dam	5 ft	CHS	Fry	2	46	53	49.5	N/A	N/A	N/A
		CHS	Parr	15	51	159	105	2.1	48.3	14.1
		CHS	Smolt	67	95	224	139.3	9.3	118.4	28.7

June 16-30, 2022										
Site	Trap	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Dexter Dam	5 ft	CHS	Fry	2	46	53	49.5	N/A	N/A	N/A
		CHS	Parr	10	51	122	99.7	2.1	17.8	10.6
		CHS	Smolt	34	95	160	124.0	10.9	44.3	19.7

\*Fish that were missing heads are not included in length and weight calculations.

**Trapping Efficiency**

A total of 1019 juvenile hatchery Chinook (parr) were bismarck brown dyed, adipose clipped, upper caudal clipped and released on 05/24/2022 below Dexter Dam. Fish were released in small groups into different locations in the spillway flow to evaluate the traps efficiency capturing fish passing through spill. 67 fish were recaptured in the 5-foot RST for an efficiency of 6.6%.

Mt. Hood Environmental staff noted that fish appeared to be in good condition upon retrieval from the hatchery.

Dexter Dam	Release #	Recapture #	Capture Efficiency
Spill	1019	67	6.6% (67/1000)
Powerhouse	N/A	N/A	N/A

**24-Hour Post Collection Holding Trial**

44 Chinook captured were held for 24 hours. 4 fish died in holding (9.1%) during this reporting period.

## Injuries and Copepod Infection

46 Chinook were captured during this reporting period. Partial descaling <20% was observed in 28 of the 46 Chinook captured (60.9%) and 9 displayed descaling >20% (19.6%). 25 displayed body injury (54.3%) and 0 Chinook had eye injury (0%). 4 Chinook had copepods present in the branchial cavity (8.7%) and 4 had copepods on fins (8.7%). 7 displayed gas bubble disease (15.2%) (four at level 1 and three level 2). There was 1 mortality this reporting period (2.2%). Injuries are displayed in Table 33. To date injury data can be found in Appendix A.

Table 33. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period. (Dexter Dam).

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Dexter Dam	PWR	46	28	9	25	0	4	4	1

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

## Non-Target Species

A total of 167 non-target species fish were captured during the reporting period; the data is summarized below in Table 34. Dexter Fish Facility previously released adipose clipped Chinook near our trapping site. During this reporting period, Dexter Fish Facility also received adipose clipped juvenile Chinook salmon for their holding ponds. At this time, we noticed an increased catch of juvenile adipose clipped Chinook. After discussion with the Hatchery Manager, it appears that these fish have escaped the facility holding ponds and will be reported as non-targets.

**Table 34. Summary of Non-target Species (Dexter Dam).**

Species	Capture	Mortality	Season Total	Season Total Mortality
Bluegill	0	0	1	0
Brook Lamprey	0	0	0	0
Bullhead	0	0	0	0
Crappie	2	1	11	4
Dace	1	1	31	6
Red-Sided Shiner	0	0	1	0
Sculpin	7	0	187	13
Spotted Bass	0	0	0	0
Sucker	0	0	2	0
Whitefish	0	0	0	0
Cutthroat	0	0	2	0
<i>O. mykiss</i>	4	0	11	0
<i>O. mykiss</i> (clipped)	0	0	30	1
Chinook (clipped)	153	0	253	7
<b>Totals</b>	<b>167</b>	<b>2</b>	<b>420</b>	<b>29</b>

## Stream Statistics

Basic stream statistics at the Dexter Dam site were calculated from data downloaded from the U.S. Geological Survey stream gage numbers 14149510 and 14150000. Gage height (feet) is the only metric provided at gage 14149510. Total dissolved gas saturation data was received from gage 14150000, 4.75 rkms downstream of the trap. During the reporting period, daily maximum values for instantaneous gage height ranged from 638.6 feet to 639.9 feet (mean: 639.1 feet). Figure 45 shows instantaneous gage height.

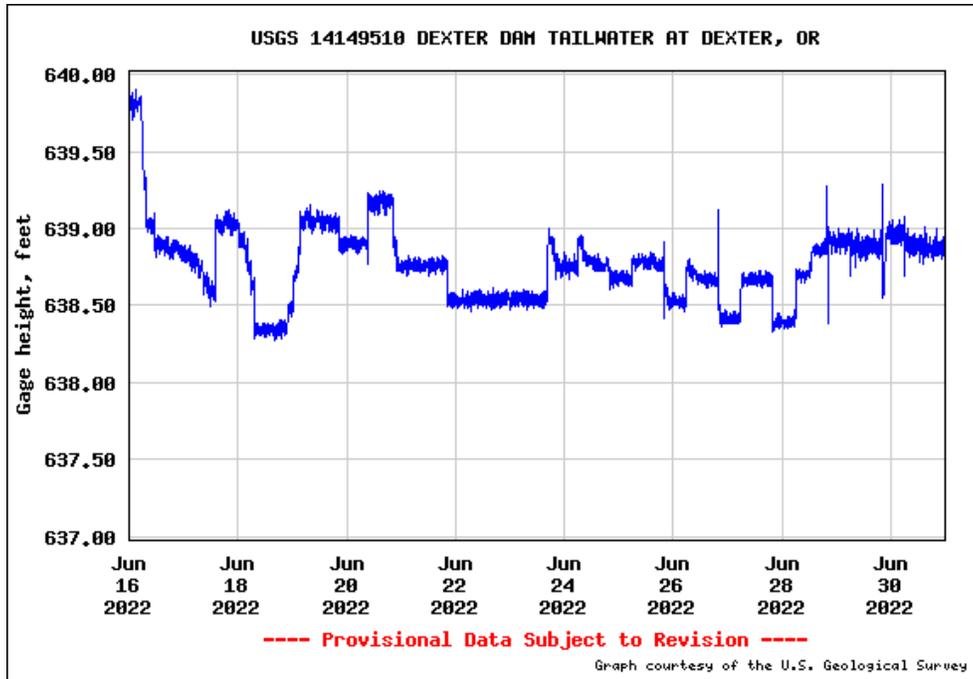
Total dissolved gas saturation ranged from 106 to 118% (mean: 112.8%) during the reporting period. Figure 46 shows total dissolved gas saturation.

Stream temperatures were gathered from USGS stream gage 14150000 for the Dexter Dam RST site during this reporting period. Temperature probe data was not available for this reporting period due to a data transfer error. The data is shown below in Figure 47.

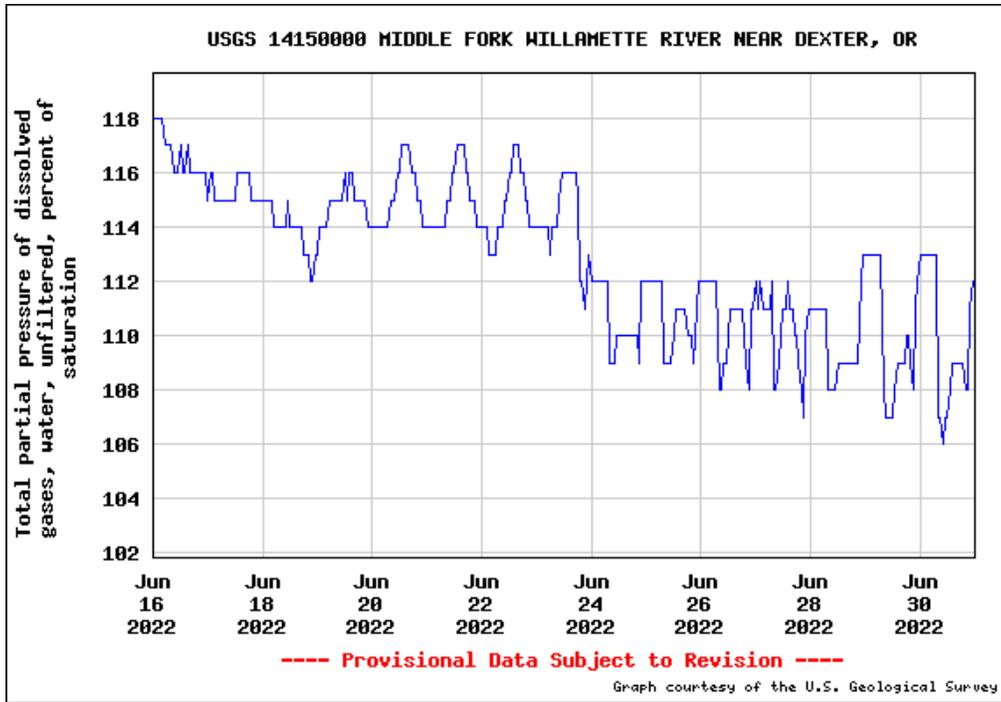
Flows through the Powerhouse and Spill during the reporting period averaged 1,131.7 and 3,255.1 cubic feet per second (cfs) respectively (Figure 48). Catch per unit of effort (CPUE) data are summarized in Table 35. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 35. Summary of salmonid CPUE, Dexter Dam.**

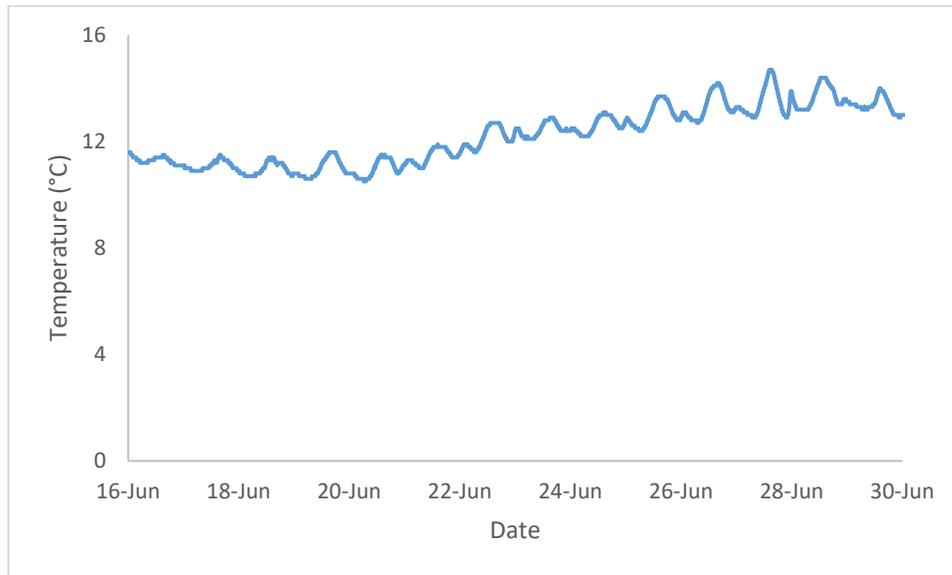
	Chinook
Description	8 ft
Catch	46
Effort (hrs)	362.0
CPUE (fish/hr)	0.127



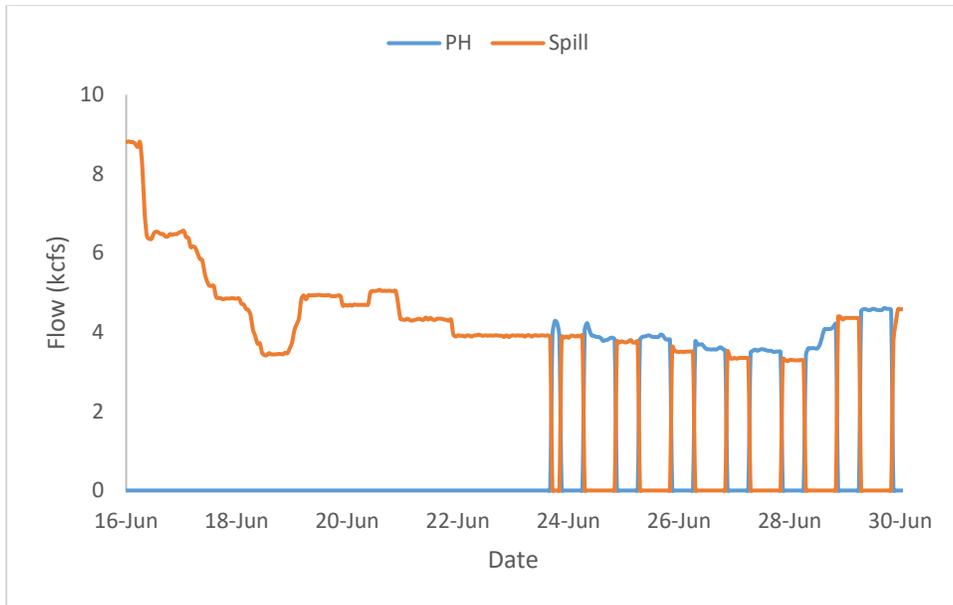
**Figure 45. Gage Height (feet); below Dexter Dam, Middle Fork Willamette**



**Figure 46. Total Dissolved Gas Saturation (%); Middle Fork Willamette River, Near Dexter, OR**



**Figure 47. Temperature at RST (Dexter Dam)**

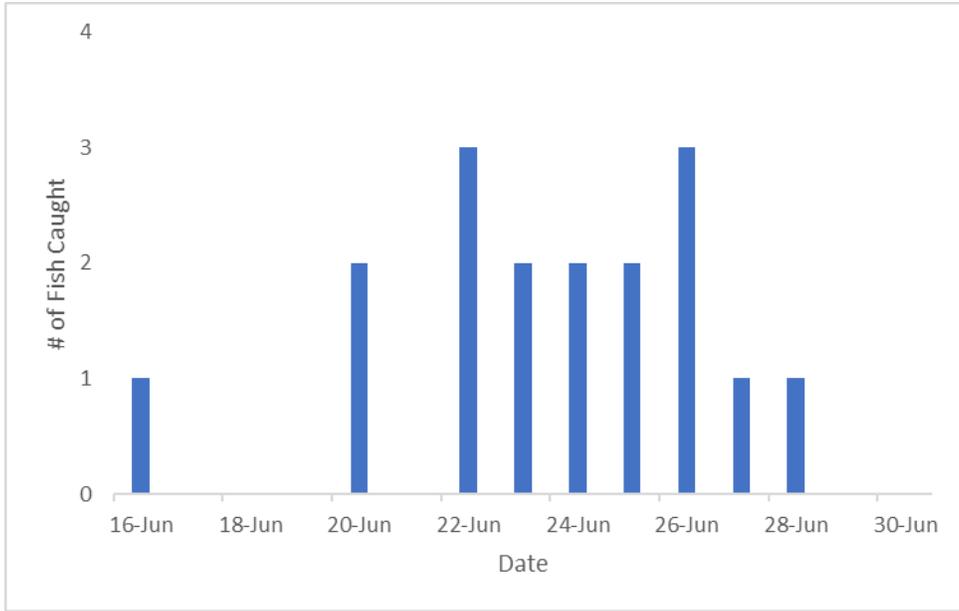


**Figure 48. Hourly Flows PWR vs. Spill (Dexter Dam)**

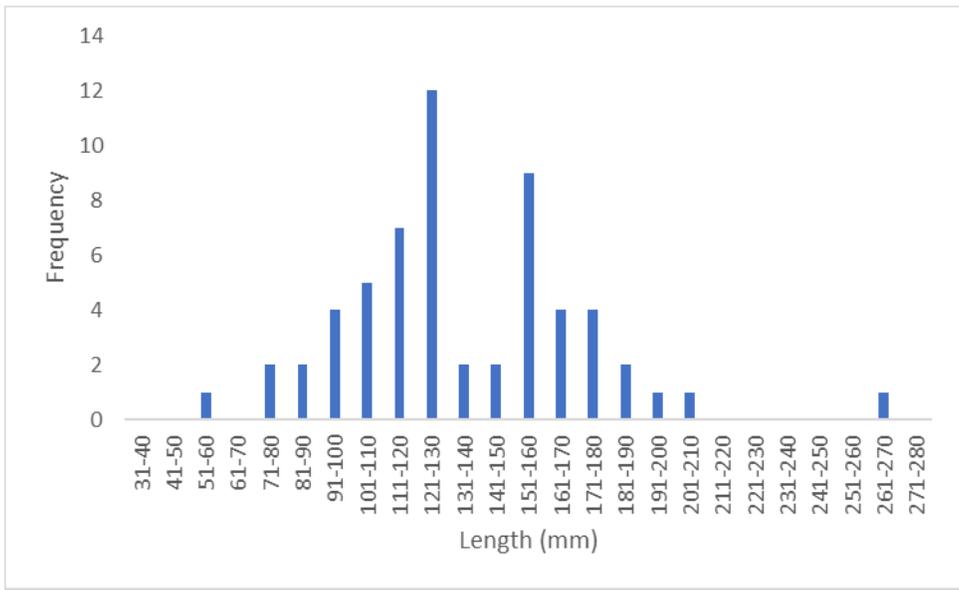
## Middle Fork Willamette – Lookout Dam Tailrace

### Target Species

The reporting period began June 16 and ended June 30. 17 Chinook salmon were captured during the 15-day sampling period (Figure 49). The PWR traps were operated 100% of the reporting period and the Spill trap was operated 87% of the reporting period. The sampling outage at the spill trap was due to the cone being raised while repairs were made. Table 36 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Lookout Point Dam Tailrace site to-date and Figure 50 shows length frequency data to-date.



**Figure 49. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Lookout Point Dam Tailrace)**



**Figure 50. Length Frequency of Juvenile Chinook Sampled Season To-Date (Lookout Point Dam Tailrace)**

**Table 36. Descriptive Statistics of Target Species Captured at Lookout Point Dam Tailrace, Season To-Date and for the Reporting Period**

To-Date (Since March 15, 2022)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Dam	PH 1	CHS	Smolt	19	118	266	159.2	18.4	108.9	47.7
		CHS	Parr	3	84	107	94.3	3.8	10.5	6.5
		CHS	Fry	0	0	0	0	0	0	0
	PH 2	CHS	Smolt	4	115	141	124.3	17.7	32.3	23.9
		CHS	Parr	3	58	108	86.3	2.2	13.4	8.4
		CHS	Fry	0	0	0	0	0	0	0
	Spill	CHS	Smolt	19	94	194	141.8	7.6	63.0	41.9
		CHS	Parr	6	77	126	96.5	5.4	26.1	12.1
		CHS	Fry	0	0	0	0	0	0	0

June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Dam	PH 1	CHS	Smolt	4	118	122	120.0	18.4	20.5	19.5
		CHS	Parr	1	84	84	84.0	3.8	3.8	3.8
		CHS	Fry	0	0	0	0	0	0	0
	PH 2	CHS	Smolt	4	115	141	124.3	17.7	32.3	23.9
		CHS	Parr	1	93	93	93	9.6	9.6	9.6
		CHS	Fry	0	0	0	0	0	0	0
	Spill	CHS	Smolt	5	114	146	128.4	16.0	31.4	23.5
		CHS	Parr	2	79	83	81.0	6.0	7.8	6.9
		CHS	Fry	0	0	0	0	0	0	0

\*Some fry are too small to accurately weigh and are omitted from the above tables.

### 24-Hour Post Collection Holding Trial

A total of 13 Chinook captured in the RSTs were held during this reporting period. 7 fish were held from the PWR RST and 6 fish were held from the Spill RST. 1 hold fish died from the PWR RSTs (PH 2) (14.3%). 1 of the fish from Spill RST died during holding (16.7%).

## Trapping Efficiency

A total of 1,013 juvenile hatchery Chinook (parr) were bismarck brown dyed and adipose clipped, right ventral fin clipped and released on 04/13/2022 below Lookout Point Dam. Fish were released in small groups directly into powerhouse flow at 17:00 to 19:00. 2 fish were recaptured in the PH 1 RST for an efficiency of 0.2%. 1 Lookout Point Dam trap efficiency fish was captured downstream in the Dexter RST on 4/15/2022.

Mt. Hood Environmental staff noted that fish appeared to be in good condition upon retrieval from the hatchery but did note some descaling and fin damage present as is common among hatchery fish of this age.

Lookout Dam	Release #	Recapture #	Capture Efficiency
Powerhouse	1,013	2	0.2% (2/1,013)

## Injuries and Copepod Infection

There were 7 Chinook captured in the Spill Channel RST. Partial descaling <20% was observed on 4 of 7 Chinook collected at the Spill RST (57.1%), and descaling >20% was observed on 1 Chinook collected at the Spill RST (14.3%). 3 displayed body injuries (42.9%) and 2 had eye injuries (28.6%). 2 of the Spill RST Chinook had copepods present in the branchial cavity (28.6%) and 1 had copepods present on fins (14.3%). 1 of the fish captured in the Spill RST displayed Gas Bubble Disease (20.0%) (level 2).

There were 10 Chinook captured in the Powerhouse channel RSTs. Partial descaling <20% was observed on 8 of the 10 Chinook collected at the PWR RSTs (80.0%). Descaling >20% was observed on 1 Chinook collected at the PWR RSTs (10.0%). 5 PWR RSTs fish had bodily injury (50.0%) and 1 had eye injuries (10.0%). None of the fish had copepods present in the branchial cavity (0%) and 2 had copepods present on fins (20.0%). 1 fish displayed Gas Bubble Disease (20.0%) (level 1).

There were no chinook mortalities collected in the Spill RST (0.0%) and 2 in the PWR RSTs (20.0%). Injuries are displayed in Table 37. To date injury data can be found in Appendix A.

**Table 37. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period (Lookout Point Dam Tailrace).**

Site	Route	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
Lookout Point Dam Tailrace	PWR	10	8	1	5	1	0	2	2
	Spill	7	4	1	3	2	2	1	0

\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

## Non-Target Species

17 non-target species were captured during the reporting period; the data is summarized below in Table 38.

**Table 38. Summary of Non-target Species (Lookout Point Dam Tailrace).**

Species	PWR Capture	PWR Mortality	Spill Capture	Spill Mortality	Season Total	Season Total Mortality
Bluegill	0	0	0	0	1	0
Lamprey	0	0	0	0	0	0
Bullhead	2	1	0	0	3	1
Crappie	0	0	0	0	4	1
Cutthroat Trout	0	0	0	0	1	0
Northern Pike minnow	3	2	0	0	4	2
Red-Sided Shiner	1	0	0	0	1	0
Sculpin	0	0	2	1	15	2
Largemouth Bass	1	1	0	0	1	1
Smallmouth Bass	3	1	2	1	52	13
Sucker	1	1	0	0	23	13
Walleye	1	1	0	0	4	3
<i>O. mykiss</i>	1	0	0	0	6	1
<i>O. mykiss</i> (clipped)	0	0	0	0	1	1
Chinook (clipped)	0	0	0	0	4	0
<b>Totals</b>	<b>13</b>	<b>7</b>	<b>4</b>	<b>2</b>	<b>120</b>	<b>38</b>

## Stream Statistics

Basic stream statistics at Lookout Dam Tailrace site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14149010. Total dissolved gas saturation or dissolved oxygen concentration measurements are not available at this stream gage site, or any nearby stream gages. Gage height (feet) is the only metric provided at this gage. During the reporting period, daily maximum values for instantaneous gage height ranged from 692.3 feet to 694.4 feet (mean: 693.3 feet). Figure 51 shows instantaneous gage height.

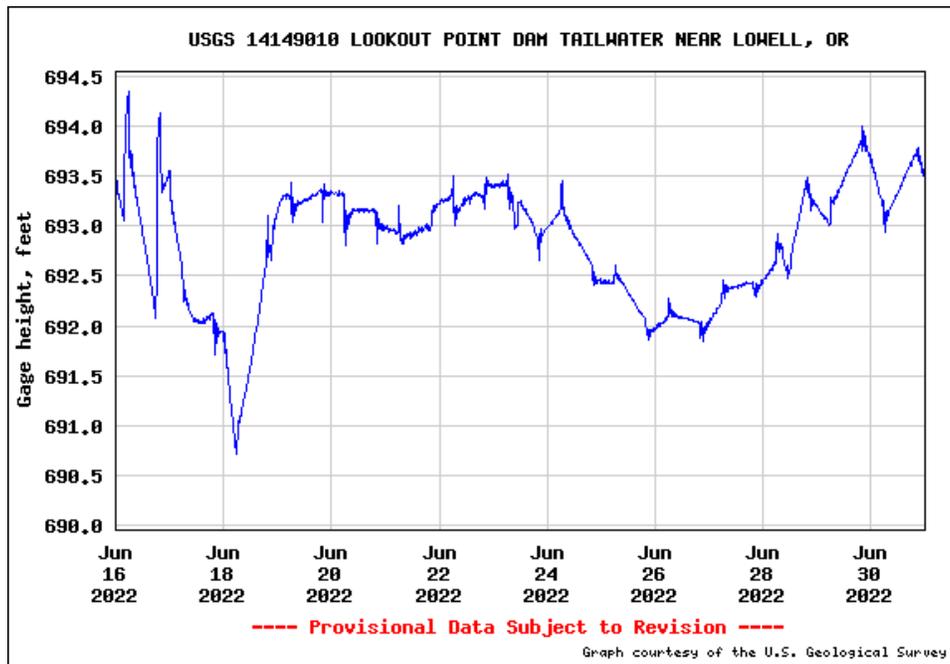
Stream Temperature data was gathered using HOBO loggers for the spill RST. HOBO data was not available for the PWR traps during this reporting period. Stream temperatures were gathered from daily temperature checks using probe thermometers for the Lookout Dam Tailrace PWR RST sites during this reporting period. The data is shown below in Figures 52 and 53.

Flows through the Powerhouse and Spill during the reporting period averaged 2,264.2 and 2,136.6 cubic feet per second (cfs) respectively (Figure 54). Catch per unit of effort (CPUE) data are summarized in Table 39. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

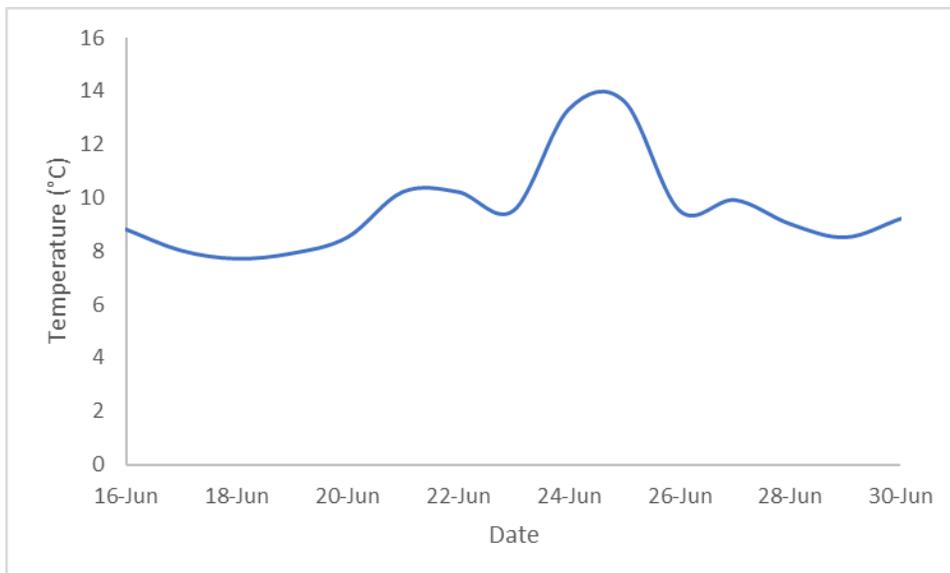
**Table 39. Summary of Chinook CPUE at Lookout Point Dam Tailrace.**

	Chinook
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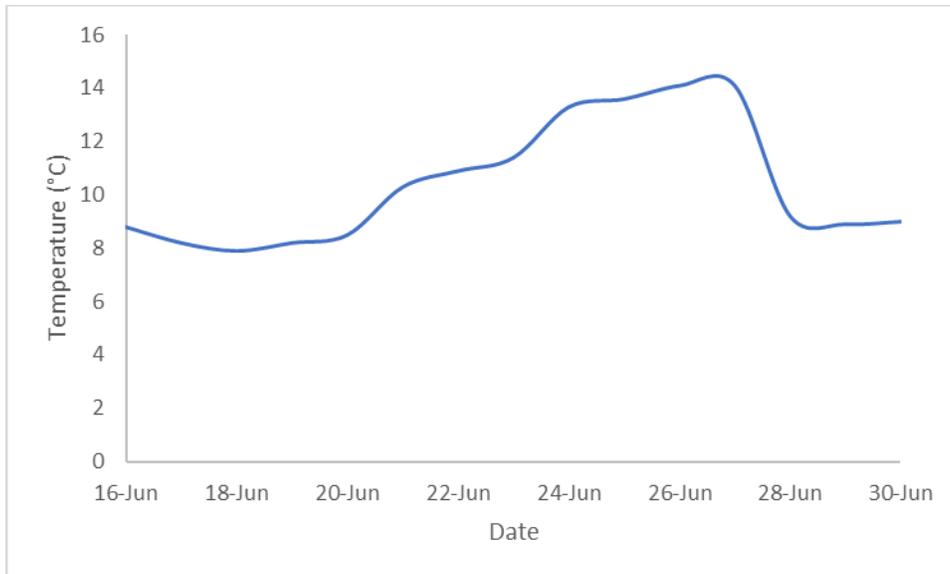
Description	PH 1	PH 2	Spill
Catch	5	5	7
Effort (hrs)	337.5	336.7	283.4
CPUE (fish/hr)	0.015	0.015	0.025



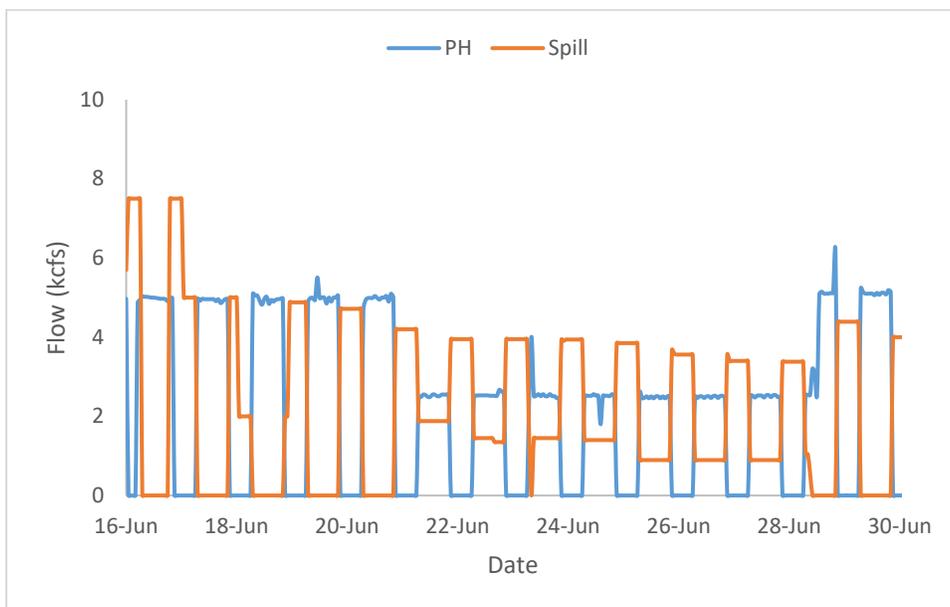
**Figure 51. Gage Height (feet); below Lookout Dam**



**Figure 52. Temperature at RST (Lookout Dam PWR)**



**Figure 53. Temperature at RST (Lookout Dam Spill)**

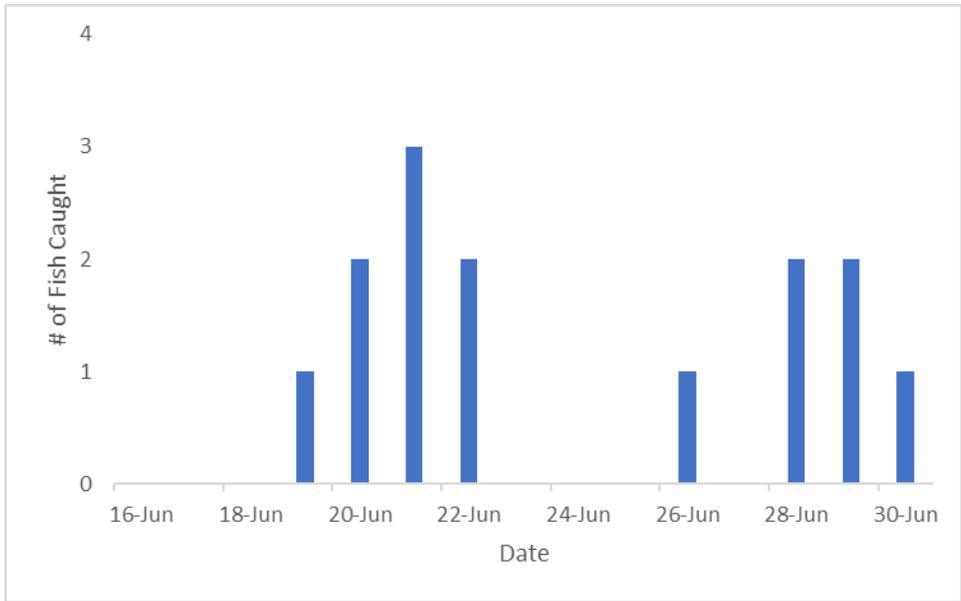


**Figure 54. Hourly Flows PWR vs. Spill (Lookout Dam Tailrace)**

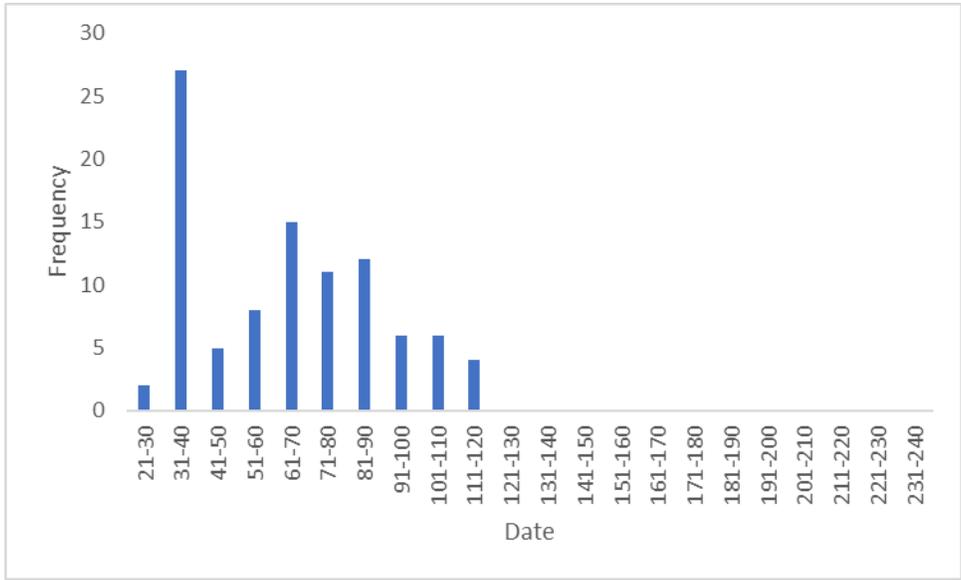
## Middle Fork Willamette – Lookout Point Head of Reservoir

### Target Species

The reporting period began June 16 and ended June 30. 14 Chinook salmon were captured during the 15-day sampling period (Figure 55). The trap was operated 100% of the reporting period. Table 40 provides life stage, length, and weight data for all Chinook salmon that have been caught at the Middle Fork Willamette - Lookout Point Head of Reservoir site to-date and Figure 56 shows length frequency data to-date.



**Figure 55. Chinook Captured Per Day 06/16/2022 to 06/30/2022 (Lookout Point Head of Reservoir)**



**Figure 56. Length Frequency of Juvenile Chinook Sampled Season To-Date (Lookout Point Head of Reservoir)**

**Table 40. Descriptive Statistics of Target Species Captured at Lookout Point Head of Reservoir, Season To-Date and for the Reporting Period**

To-Date (Since March 10, 2022)										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Head of Reservoir	5 ft	CHS	Smolt	1	118	118	118	17.5	17.5	17.5
		CHS	Parr	59	51	115	80.0	1.0	19.8	5.9
		CHS	Fry	36	28	69	37.7	N/A	N/A	N/A
June 16-30, 2022										
Site	Route	Species	Life stage	Collected	Length (mm)*			Weight (g)*		
					Min	Max	Mean	Min	Max	Mean
Lookout Point Head of Reservoir	5 ft	CHS	Smolt	1	118	118	118	17.5	17.5	17.5
		CHS	Parr	13	62	90	74.7	2.2	10.4	5.2
		CHS	Fry	0	0	0	0	0	0	0

\*Some fry are too small to accurately weigh and are omitted from the above tables.

### Trapping Efficiency

A total of 1007 juvenile hatchery Chinook (parr) were bismarck brown dyed and adipose clipped and released on 05/24/2022 above the Lookout Point Head of Reservoir trap. Fish were released in small groups to evaluate the traps efficiency capturing fish migrating downstream. 125 fish were recaptured in the 5-foot RST for an efficiency of 12.4%.

Of the 125 fish recaptured, 2 were dead. Injuries were descaling, body injury, and fin damage.

Lookout Point Head of Reservoir	Release #	Recapture #	Capture Efficiency
05/24/2022	1007	125	12.4% (125/1007)

### Injuries and Copepod Infection

There were 14 Chinook captured during this reporting period. Of these 14 fish, 3 had partial descaling <20% (21.4%) and 2 had body injuries (14.3%). No other injuries were observed. There were no mortalities. Injury data for the reporting period is shown in table 41. To date data can be found in Appendix A.

**Table 41. Number of Descaled, Bodily/Eye Injured, Copepod Infected and Dead Chinook Salmon for Sampling Period (Lookout Point Head of Reservoir).**

Site	# CHS Collected	# DSC* <20%	# DSC* >20%	# with Body Injuries	# with Eye Injuries	# with COP* In B.C.	# with COP* on Fins	Mortalities
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Lookout Point Head of Reservoir	14	3	0	2	0	0	0	0
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\*DSC=Descaled, COP=Copepods, B.C.=Branchial Cavity

### Collected DNA and Scale Samples

Scales and DNA were collected from 14 Chinook captured for the reporting period. All other target fish were under sampling minimum thresholds (45 mm FL for DNA and 50 mm FL for scales).

### VIE Marking

Visual Implant Elastomer (VIE) trials commenced on 6/27/2022. To date, no Chinook have been VIE marked as no fish meeting the marking criteria were caught (under 65 mm fl).

### Non-Target Species

26 non-target species were captured during the reporting period. The data is summarized below in Table 42.

**Table 42. Summary of Non-target Species (Lookout Point Head of Reservoir).**

Species	8ft Capture	8ft Mortality	Season Total	Season Total Mortality
Bluegill	1	0	2	0
Lamprey	1	0	1	0
Bullhead	0	0	0	0
Bull Trout	0	0	0	0
Crappie	0	0	0	0
Cutthroat Trout	1	0	8	0
Dace	3	0	20	0
Red-Sided Shiner	0	0	2	0
Sculpin	0	0	5	2
Smallmouth Bass	1	0	7	0
Sucker	3	0	12	1
Whitefish	0	0	0	0
Pikeminnow	1	0	3	0
<i>O. mykiss</i>	8	1	50	2
<i>O. mykiss</i> (clipped)	0	0	2	0
Chinook (clipped)	2	0	4	0
Unknown	5	0	5	0
<b>Totals</b>	<b>26</b>	<b>0</b>	<b>119</b>	<b>4</b>

### Stream Statistics

Basic stream statistics for the Lookout Point Head of Reservoir RST site were calculated from data downloaded from the U.S. Geological Survey stream gage number 14148000. During the reporting

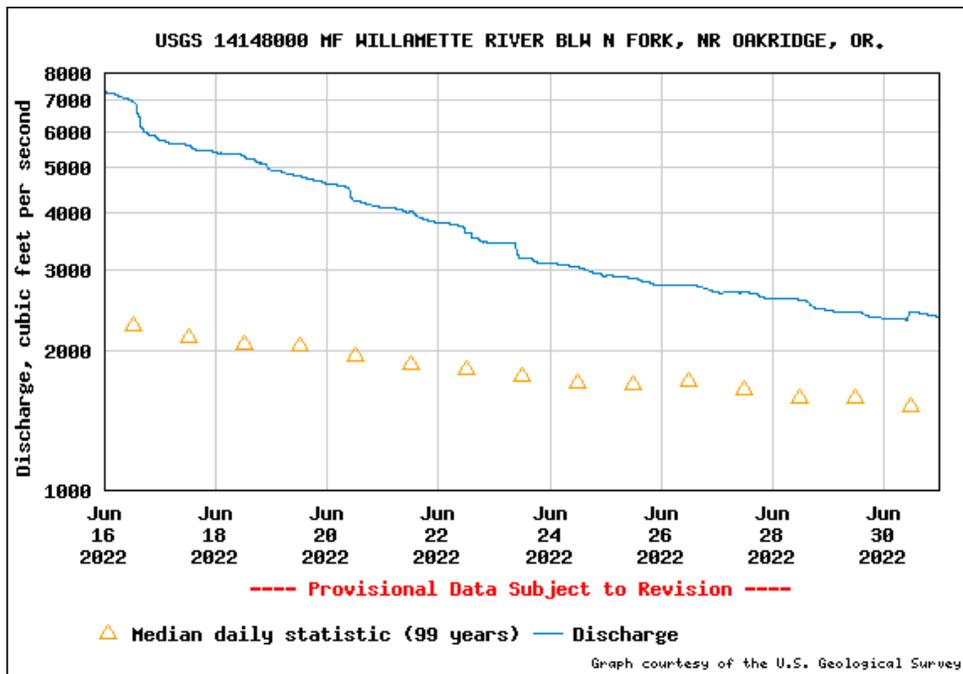
period, daily maximum values for instantaneous discharge ranged from 2,440.0 cfs to 7,350.0 cfs (mean: 3,892.7 cfs). Figure 57 shows instantaneous discharge.

Stream temperatures were not recorded using a temperature probe at the Lookout Point Head of Reservoir RST site during this reporting period. The probe was ripped off the trap during a previous weather event. Temperature data from the local gage station is being supplemented (Figure 58).

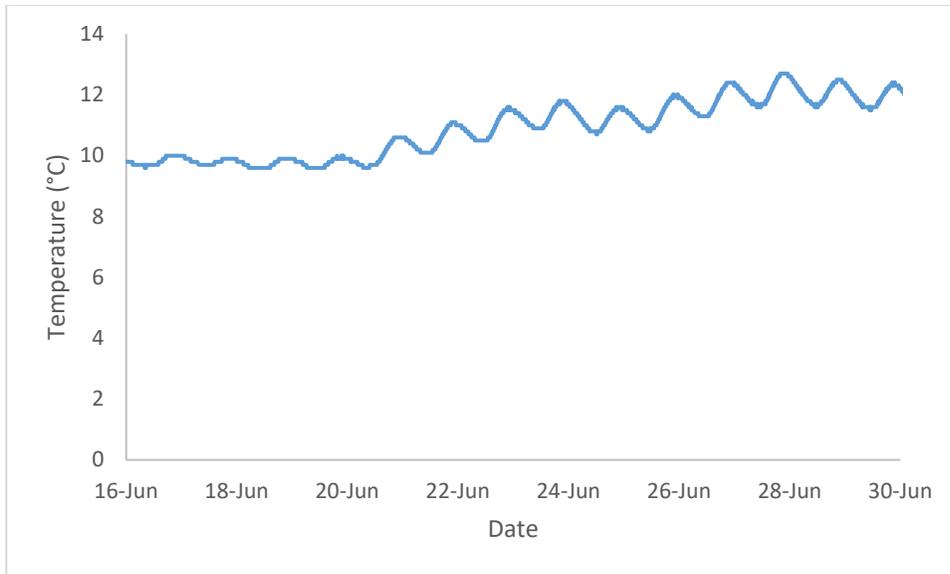
Flows into Lookout Point Reservoir averaged 3,723.8 cfs (Figure 59). Catch per unit of effort (CPUE) data are summarized in Table 43. Discharge and capture data for the duration of monitoring efforts at this location are provided in Appendix B.

**Table 43. Summary of Chinook CPUE at Lookout Point Head of Reservoir.**

	Chinook
<b>Description</b>	<b>5 ft</b>
Catch	14
Effort (hrs)	308.9
CPUE (fish/hr)	0.045

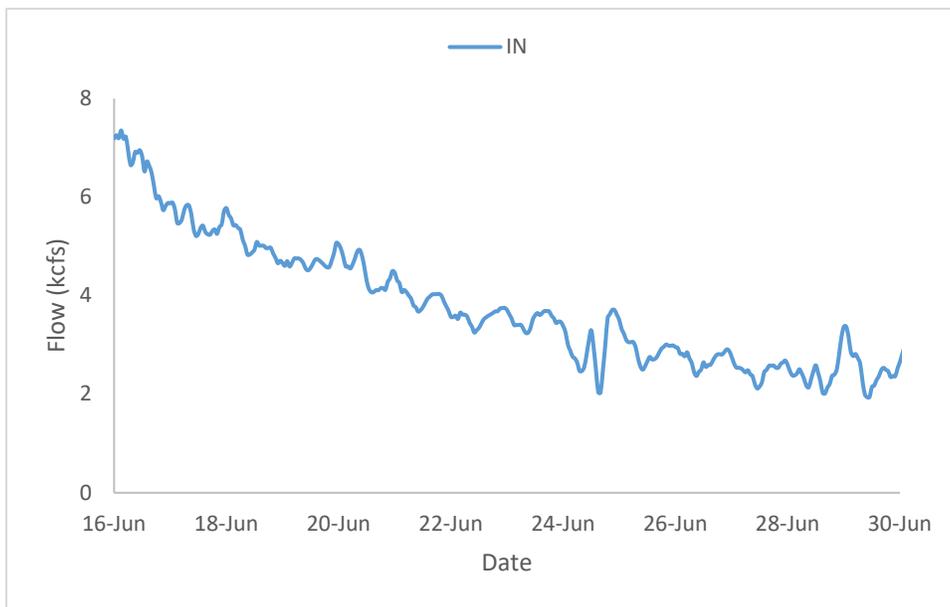


**Figure 57. Discharge (cfs); above Lookout Point Reservoir, Below Oakridge, OR**



Note: Hobo logger was ripped off trap during reporting period. Temperature supplemented with USGS stream gage number 14148000, 5.4 rkms downstream.

**Figure 58. Temperature at RST (Lookout Point Head of Reservoir)**



**Figure 59. Hourly Flows (Lookout Point Head of Reservoir site)**

### Issues Encountered

The Lookout Dam Tailrace Spill trap was put in a non-sampling position for two days while repairs were being made. The trap has been repaired and no damage to fish was observed.

### Upcoming USACE Support Services

None at this time.

## Appendix A

### Chinook (CHS)

Chinook Injuries During Reporting Period (6-16-2022 to 6-30-2022)																								
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD	
Big Cliff Dam	22		12		1			12	5		8									2	2			
8 ft	22		12		1			12	5		8									2	2			
Smolt	21		12		1			12	5		8									2	2			
Fry	1																							
Foster Dam HOR	3		3								1													
5 ft	3		3								1													
Parr	3		3								1													
Cougar Dam	10		2					1	2		1												1	
PH	10		2					1	2		1											1		
Adult	1																							
Parr	3		1						1															
Smolt	3		1					1	1		1											1		
Fry	3																							
Cougar Dam HOR	116	3	1							1	2									1	1			
5 ft	116	3	1							1	2									1	1			
Parr	12																							
Fry	104	3	1							1	2									1	1			
Dexter Dam Tail.	46		28					6	8		18									1	1		7	
5 ft	46		28					6	8		18									1	1		7	
Parr	10		5					1	2		5												2	
Smolt	34		23					5	6		12										1	1		5
Fry	2										1													
Lookout Dam Tail.	17		12		3			4	2		8									2	4			2
PH 1	5		4						1		3													1
Parr	1								1		1													
Smolt	4		4								2													1
PH 2	5		4		1			2			2										2			
Parr	1		1		1						1											1		
Smolt	4		3					2			1										1			
Spill	7		4		2			2	1		3									2	2			1
Parr	2																							
Smolt	5		4		2			2	1		3									2	2			1
Lookout Point HOR	14		3								2									1				
5 ft	14		3								2									1				
Parr	13		3								2									1				
Smolt	1																							

### Chinook (CHS)

		Chinook Injuries to-date																						
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD	
Big Cliff Dam		496	279	1	66	2	1	409	132	1	259	5	10	2	21	5	41	15	68	48	18	12	14	
8 ft		496	279	1	66	2	1	409	132	1	259	5	10	2	21	5	41	15	68	48	18	12	14	
Parr	20		6		1	1		13	1		4					2			1					
Smolt	465		273	1	64	1		396	130	1	254	5	10		21	3	40	15	66	47	18	11	14	
Unknown	2													2								1		
Fry	9				1		1		1		1						1		1	1				
Foster Dam HOR		66	9		1						2													
5 ft		66	9		1						2													
Parr	8		5								1													
Smolt	3		3								1													
Fry	55		1		1																			
Cougar Dam		1191	10	466	3	81	5	3	488	131	3	257	2	4	2	17	2	32	25	66	39	22	7	24
RO		381		212	2	60	2	3	252	79	3	151	2			6	2	19	9	42	25	9	3	21
Parr	135		70		23				77	25		48				1		5	2	11	7			6
Smolt	225		142	2	34	2	3		175	53	3	102	2			5	2	13	7	30	16	9	3	15
Fry	21				3					1		1						1		1	2			
PH		810	10	254	1	21	3		236	52		106		4	2	11		13	16	24	14	13	4	3
Parr	234		128		11	1			96	20		51		1		5		3	3	10	5	5		
Smolt	193		124	1	6	2			140	26		50		3		5		8	6	11	6	8	1	3
Unknown	2														2									
Fry	381	10	2		4					6		5				1		2	7	3	3		3	
Cougar Dam HOR		576	3	23					3		1	14								7	6	1	1	
5 ft		576	3	23					3		1	14								7	6	1	1	
Parr	48		21						3			6										1		
Fry	528	3	2								1	8								7	6		1	
Fall Creek HOR		7		3					2			1												
8 ft		7		3					2			1												
Parr	2		2						1															
Smolt	5		1						1															
Dexter Dam Tail.		84		50		5			11	22		41				1		3	4	6	5	4		20
5 ft		84		50		5			11	22		41				1		3	4	6	5	4		20
Parr	15		5		2				2	6		8							2	3	2			6
Smolt	67		45		3				9	16		32				1		3	2	3	3	4		14
Fry	2											1												
Lookout Dam Tail.		59		28	1	12	1		11	25		33				2	2	8	1	8	7	3		6
PH 1		22		9	1	5			5	12		17				2	2	6		5	1	1		1
Parr	3				1					2		2					1	1		1				
Smolt	19		9	1	4				5	10		15				2	1	5		4	1	1		1
PH 2		7		6		2			2	1		4						1	1		3			
Parr	3		3		2					1		3						1	1		2			
Smolt	4		3						2			1									1			
Spill		30		13		5	1		4	12		12						1		3	3	2		5
Parr	6		1							3		1												
Smolt	24		12		5	1			4	9		11						1		3	3	2		5
Parr	46		26						1			7						1						
Lookout Point HOR		96		30					1			10						1		1				
5 ft		96		30					1			10						1		1				
Parr	59		29						1			9						1		1				
Smolt	1																							
Fry	36		1									1												

### Steelhead (O. mykiss)

O. mykiss Injuries During Reporting Period (6-16-2022 to 6-30-2022)																								
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD	
Big Cliff Dam	2																							
8 ft	2																							
Fry	2																							
Foster Dam Head of	2																							
5 ft	2																							
Fry	2																							

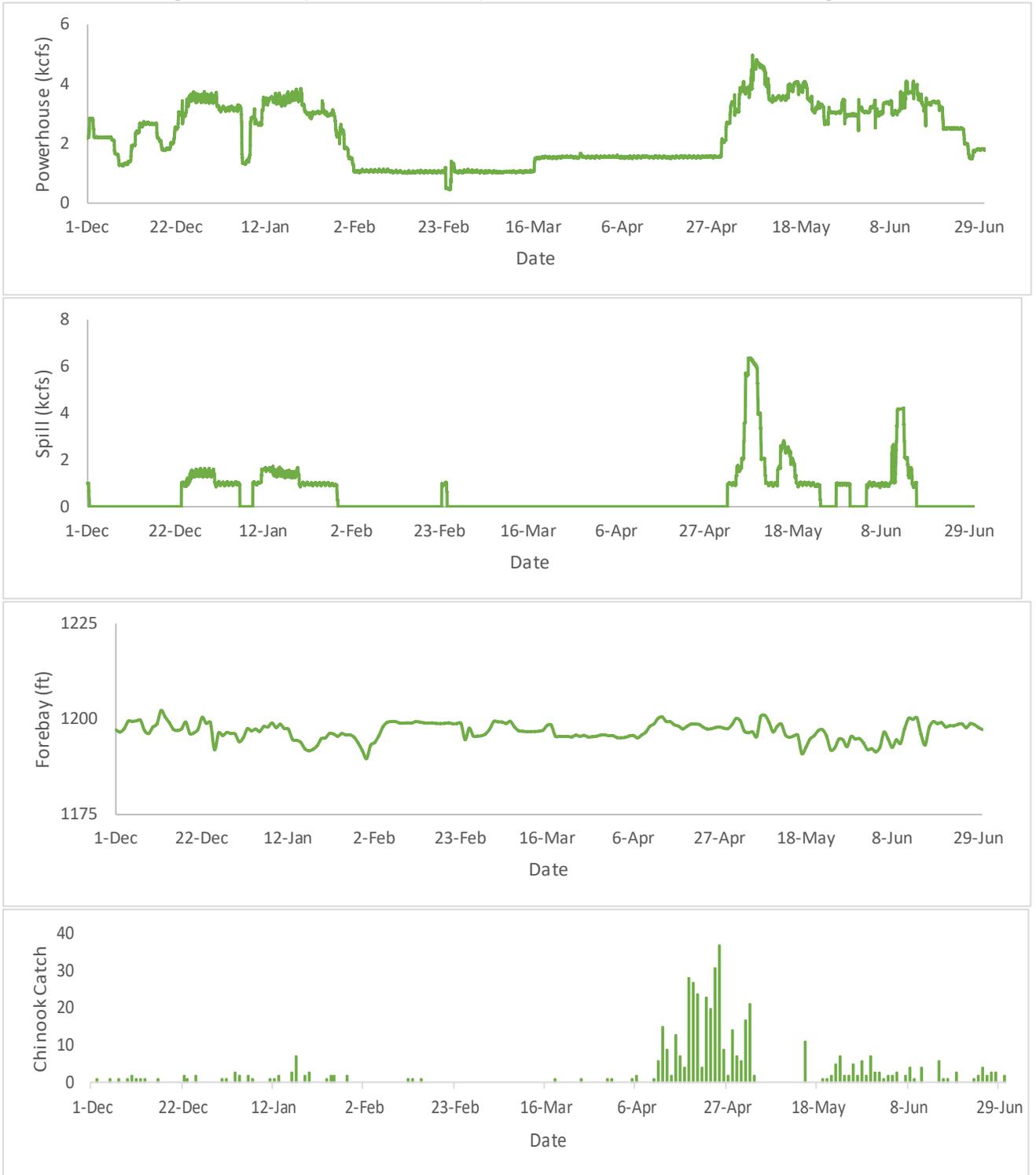
### Steelhead (O. mykiss)

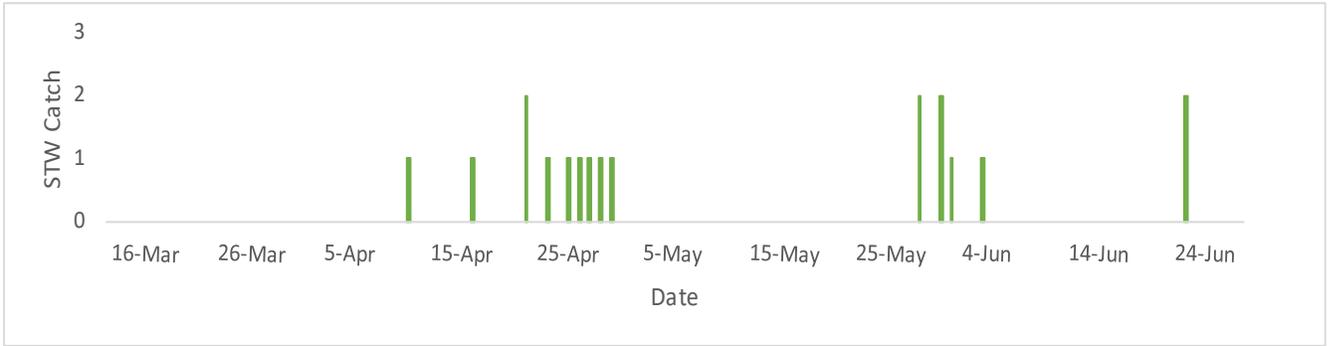
O. mykiss Injuries to-date																								
Site/Trap/Life Stage	Total Fish	MUNK	DS<2	BLO	EYB	FUN	BKD	COP	DS>2	PRD	FID	HBO	BO	HO	BVT	HBP	BRU	TEA	OPD	HIN	FVB	POP	GBD	
Big Cliff Dam	18		9					9	4		8				1		3	2	4	6			1	
8 ft	18		9					9	4		8				1		3	2	4	6			1	
Adult	1								1		1									1	1			
Parr	2																				1			
Smolt	13		9					9	3		7				1		3	2	3	4			1	
Fry	2																							
Green Peter Tail.	6		3		1			1	2		4						4		1	1			5	
8 ft	6		3		1			1	2		4						4		1	1			5	
Smolt	6		3		1			1	2		4						4		1	1			5	
Foster Dam HOR	90		25					1			11								1					
5 ft	90		25					1			11								1					
Adult	7		1								2													
Parr	17		7					1			2													
Smolt	35		17								7							1						
Fry	31																							

<b>Injury Code</b>	<b>Description of Injury/Condition</b>
NXI	Live fish with no external injuries
MUNK	Mortality with no external injuries
DS<2	Descaling <20%
BLO	Bloated
EYB	Bloody Eye (hemorrhage)
BVT	Bleeding from Vent
FVB	Fin Blood Vessels Broken
GBD	Gas Bubble Disease (fin ray/eye inclusions)
POP	Pop Eye (eye popping out of head)
HIN	Head Injury
OPD	Operculum Damage
TEA	Body Injury (tears, scrapes, mechanical damage)
BRU	Bruising (any part of the body)
HBP	Hole Behind Pectoral Fin
DS>2	Descaling > 20%
HO	Head Only
BO	Body Only
HBO	Head Barely Connected
FID	Fin Damage
PRD	Predation Marks (vert. claw or teeth marks)
COP	Copepods (on gills or fins)
BKD	BKD (distended abdomen)
FUN	Fungus

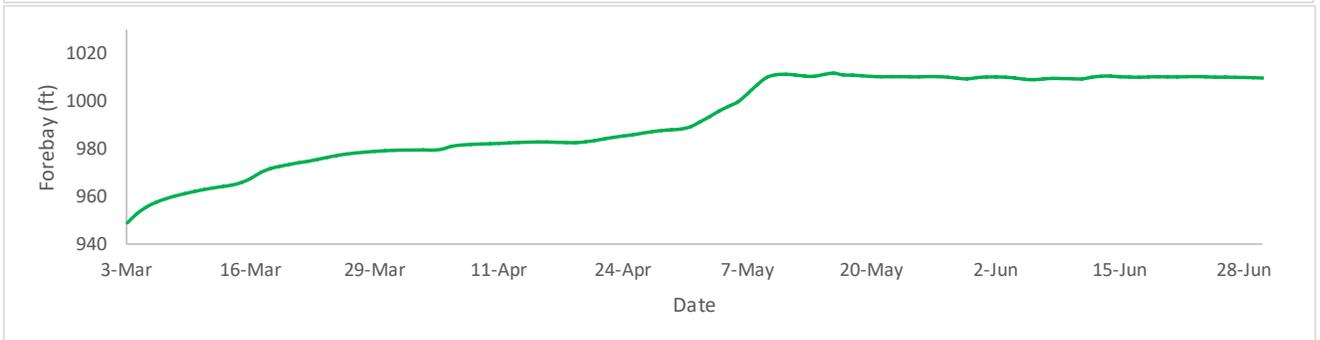
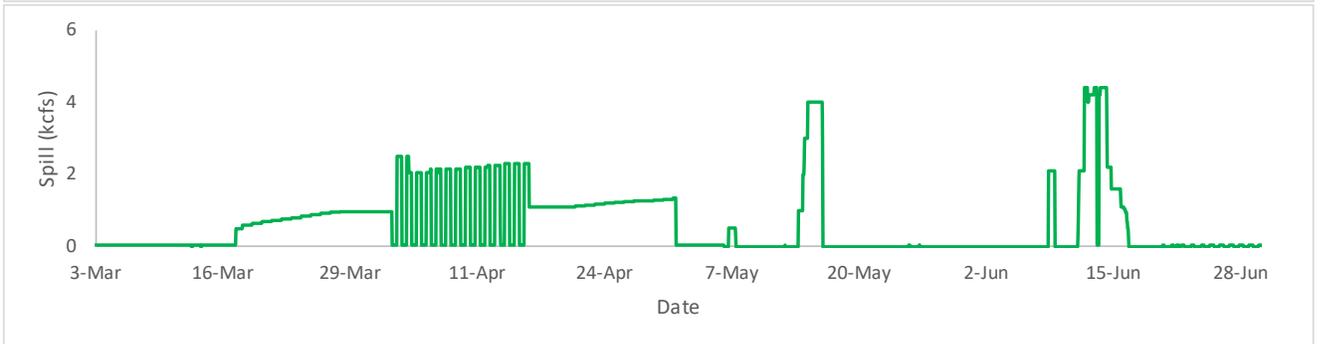
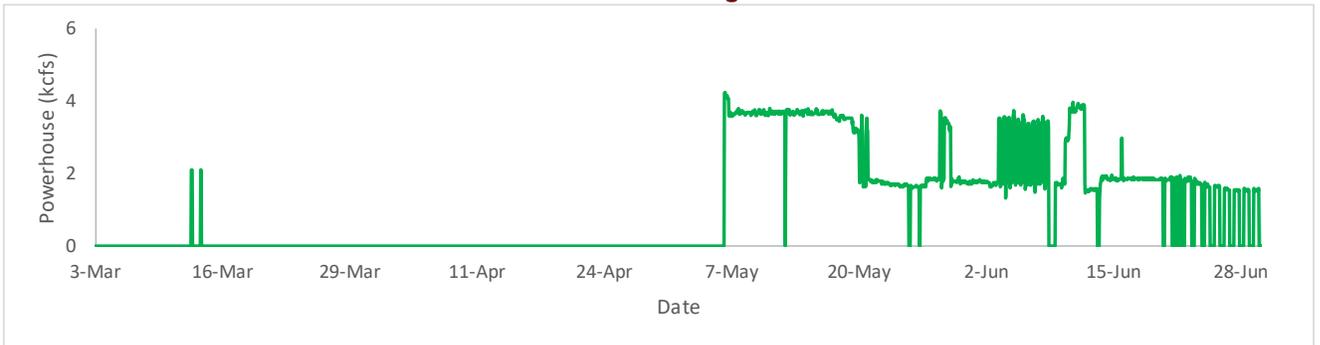
# Appendix B

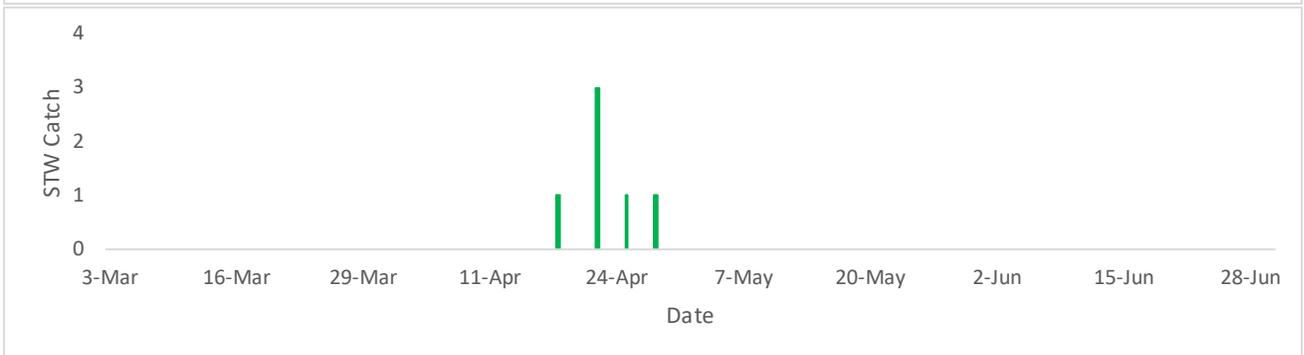
## Big Cliff Dam Operational and Capture Data Since Start of Monitoring



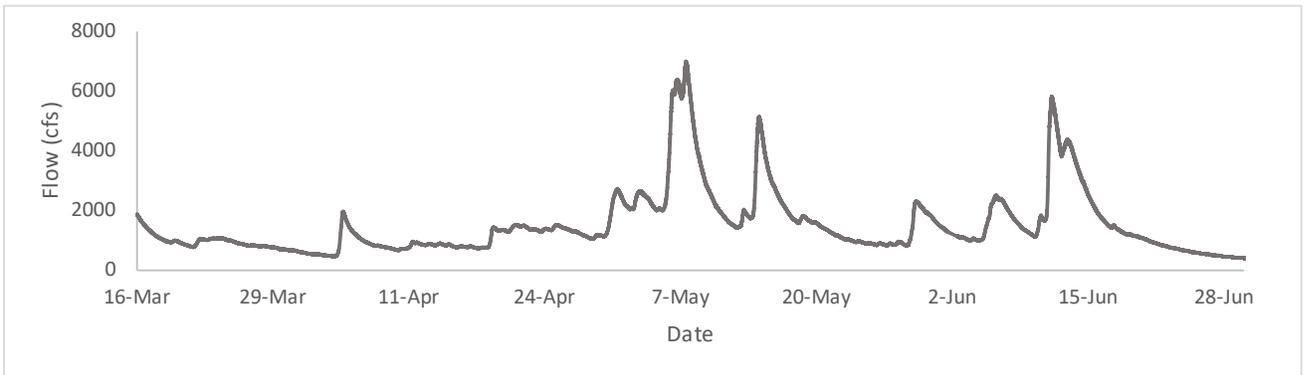


**Green Peter Dam Operational and Green Peter Tailrace- Middle Santiam River Capture Data Since Start of Monitoring**

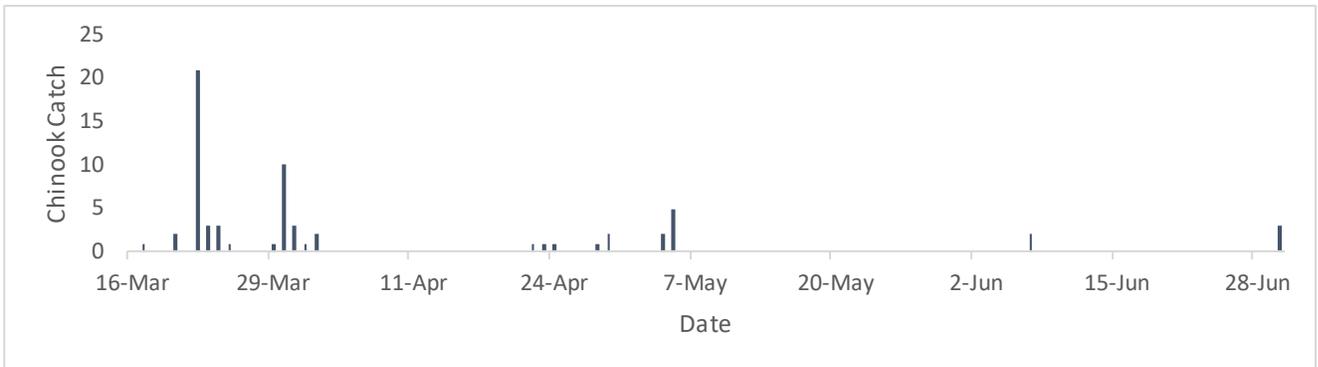


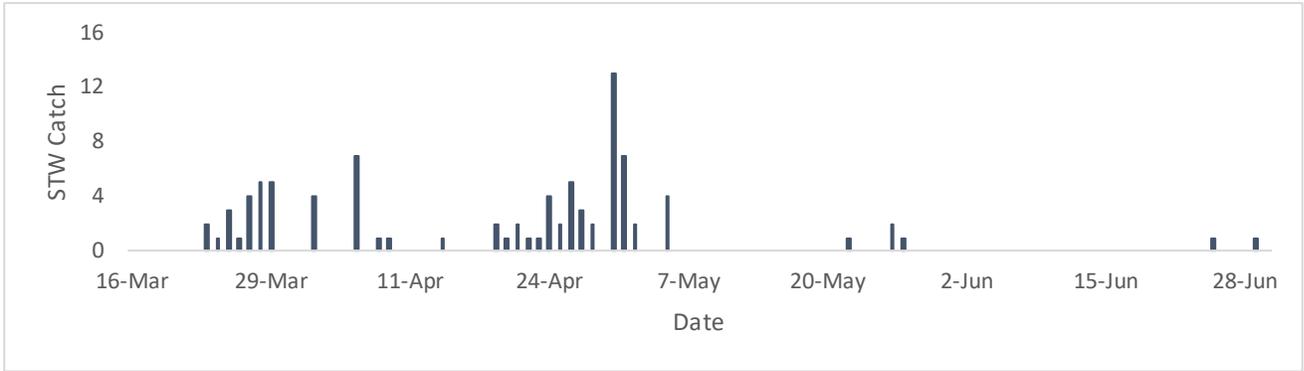


**South Santiam River Above Foster Dam Discharge and Foster Dam Head of Reservoir Capture Data**

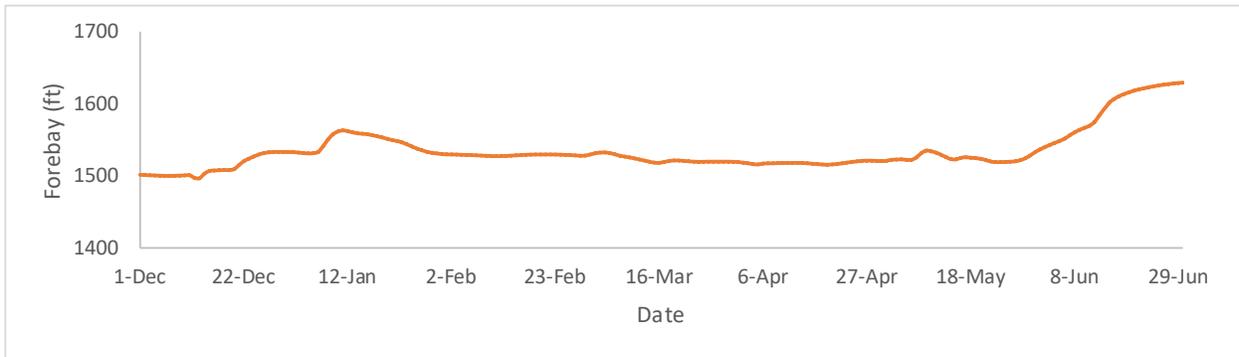
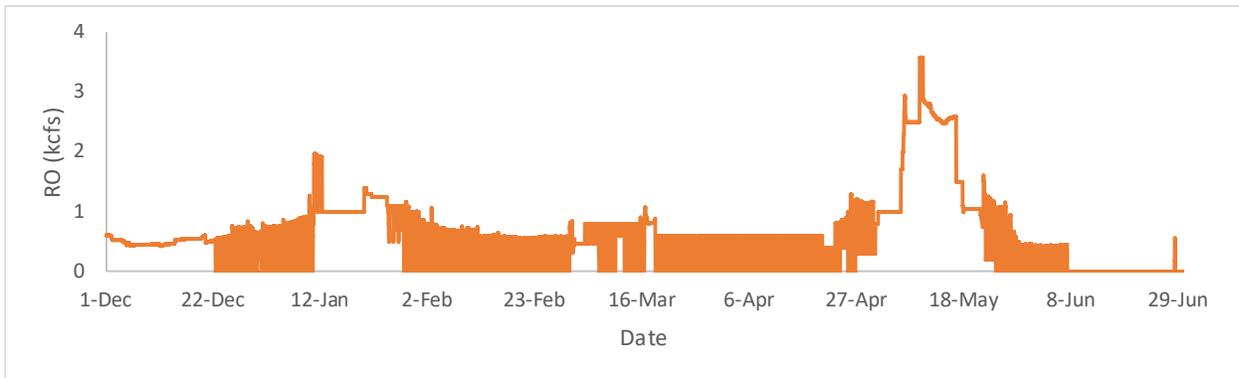
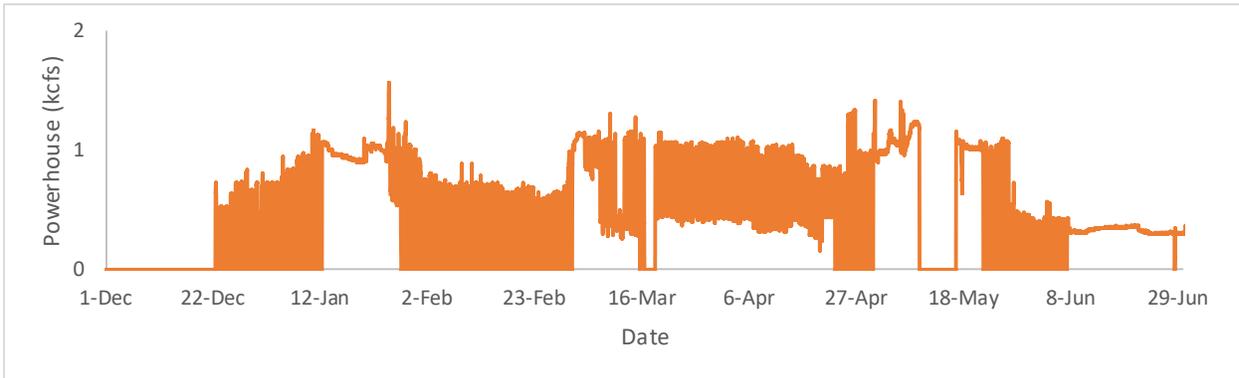


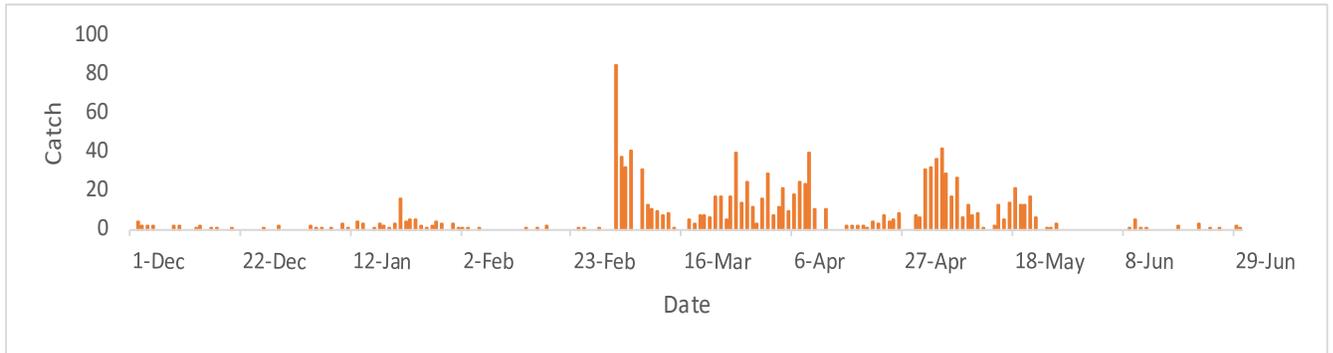
Note: Discharge data was taken from USGS gage site number 14185000, 250 meters upstream.



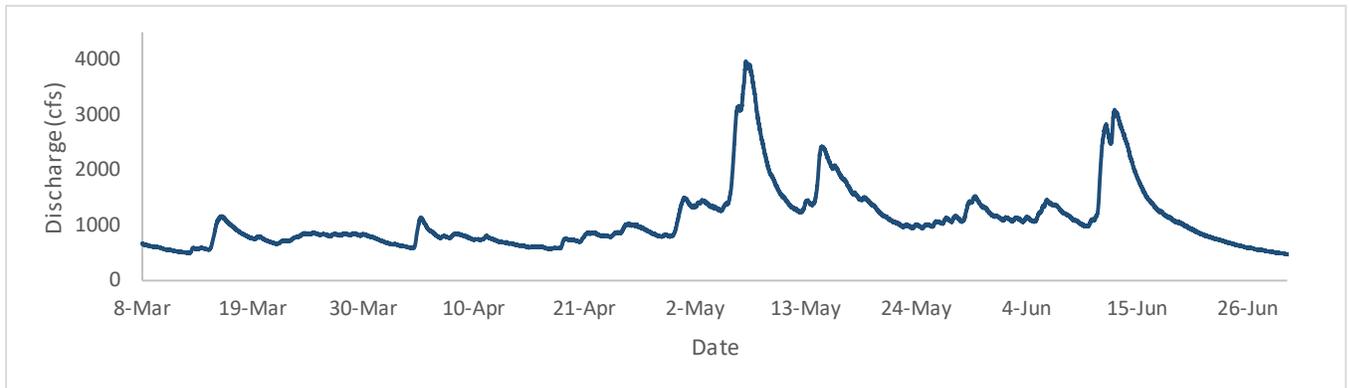


**Cougar Dam Operational and Capture Data Since Start of Monitoring**

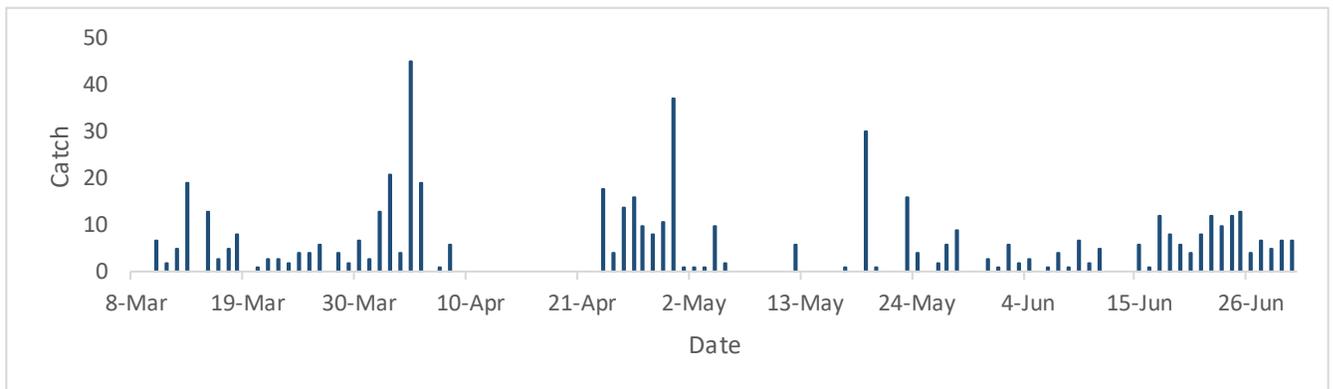




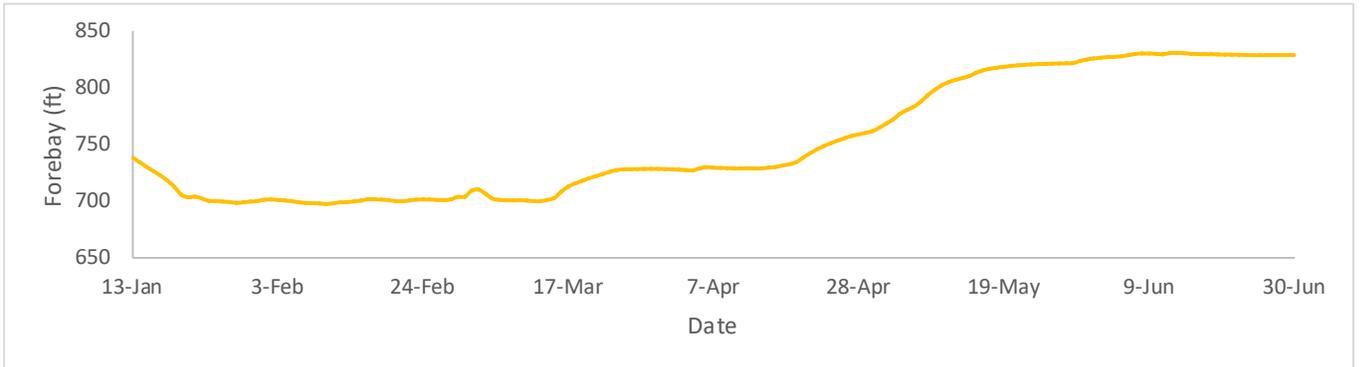
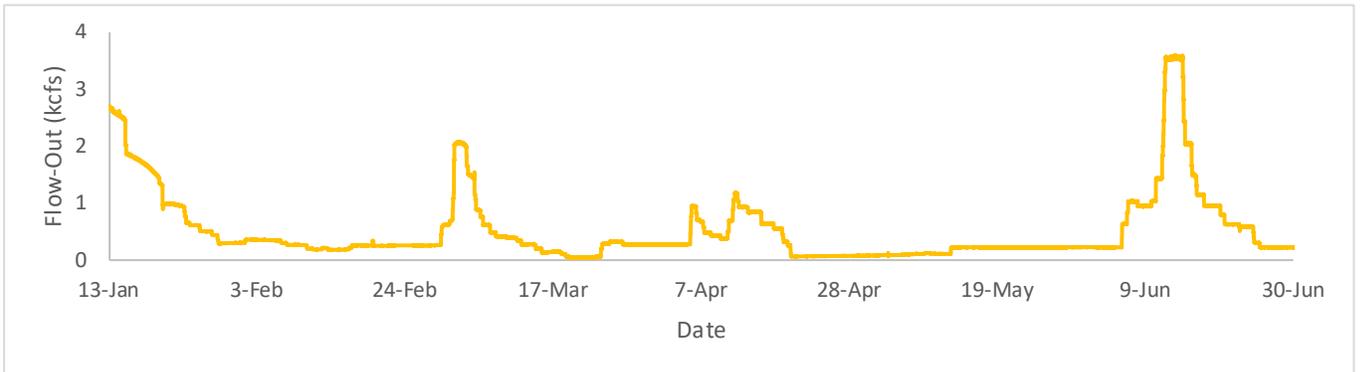
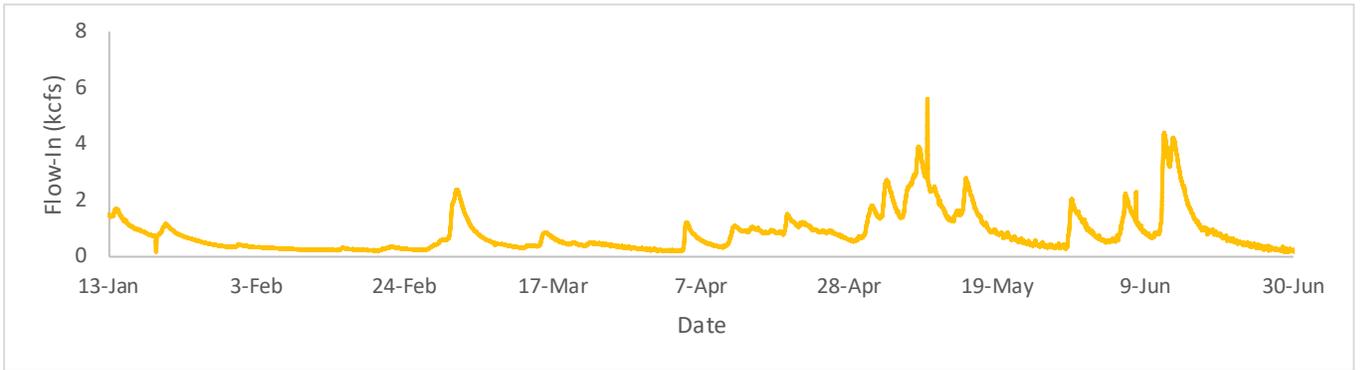
**South Fork McKenzie above Cougar Dam Discharge and Cougar Dam Head of Reservoir Capture Data Since Start of Monitoring**



Note: Discharge data was taken from USGS gage site number 14159200, 250 meters upstream.

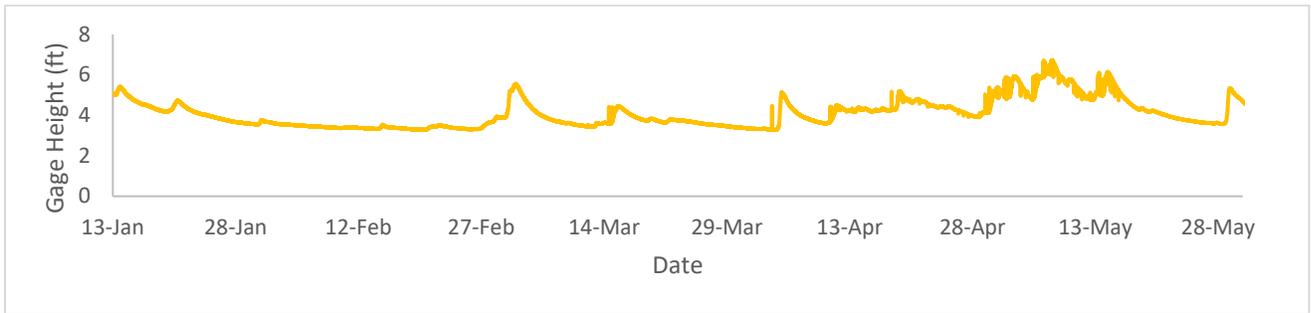


### Fall Creek Dam Tailrace Operational and Capture Data Since Start of Monitoring

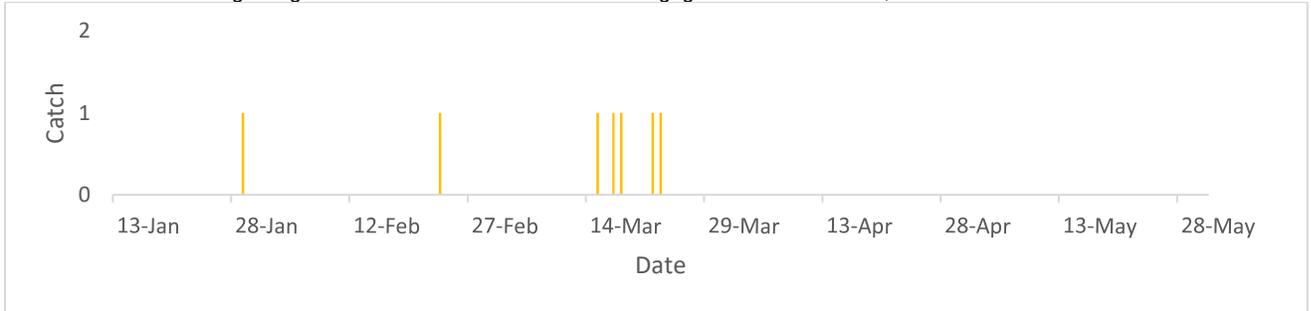


Note: Operational data was being tracked for Fall Creek Head of Reservoir site prior to initiation of Fall Creek Dam monitoring.

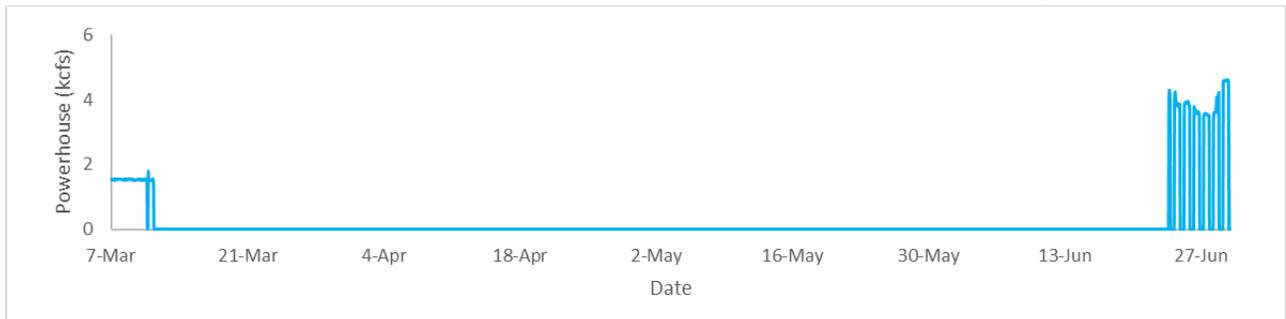
### Fall Creek Head of Reservoir Operational and Capture Data Since Start of Monitoring

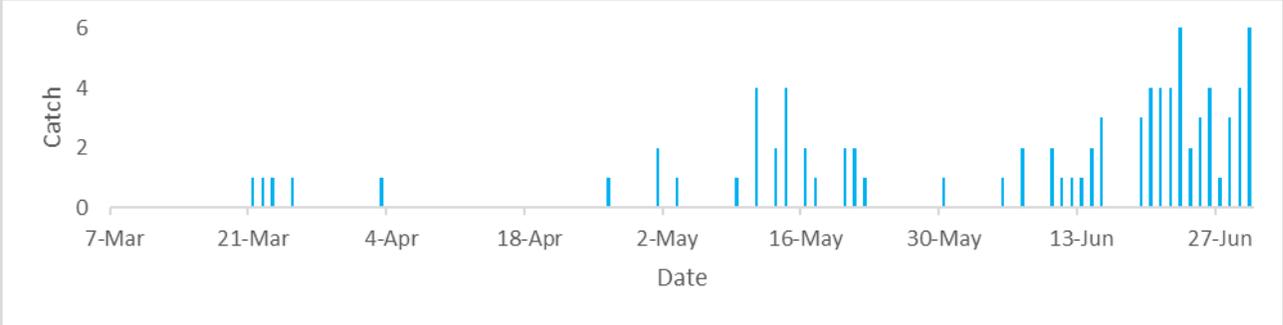
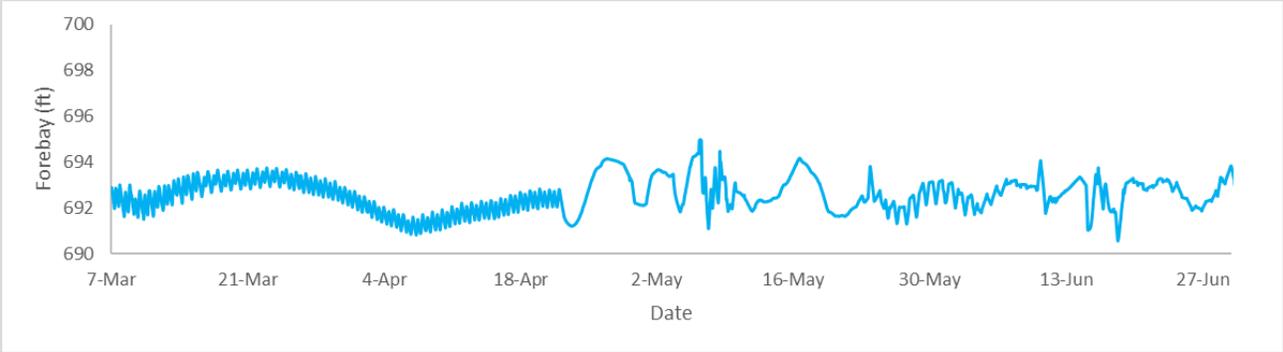
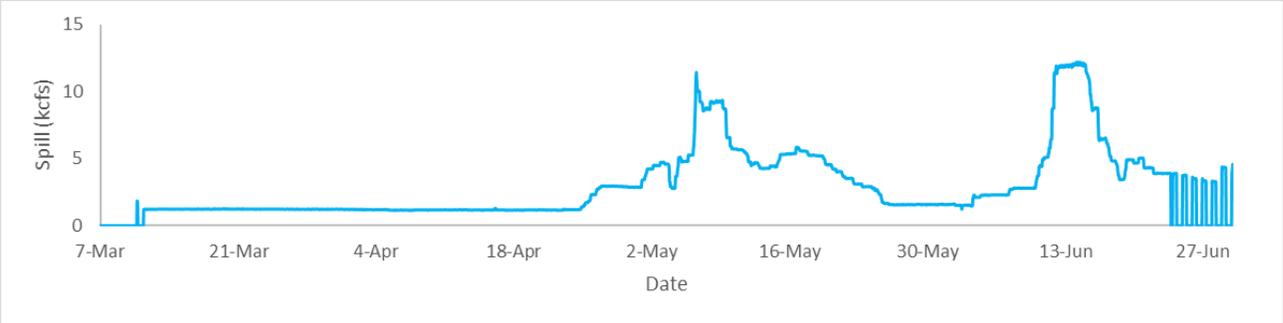


Note: Gage height data was taken from USGS stream gage number 14150290, 1.2 rkms downstream.

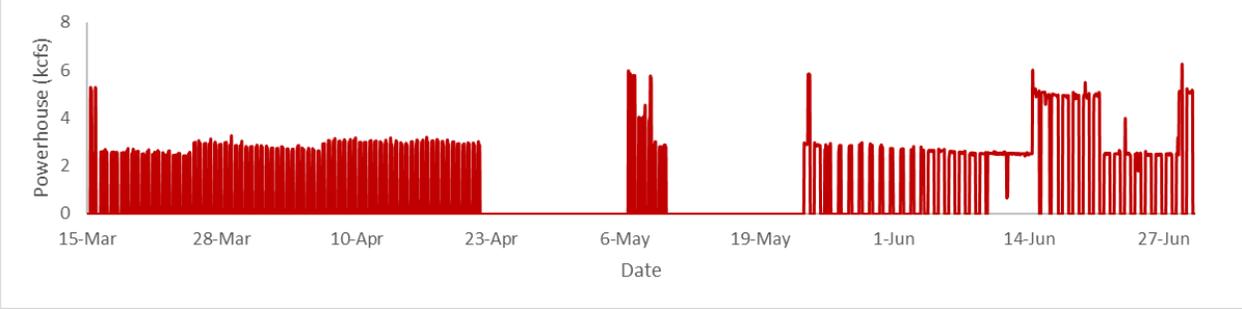


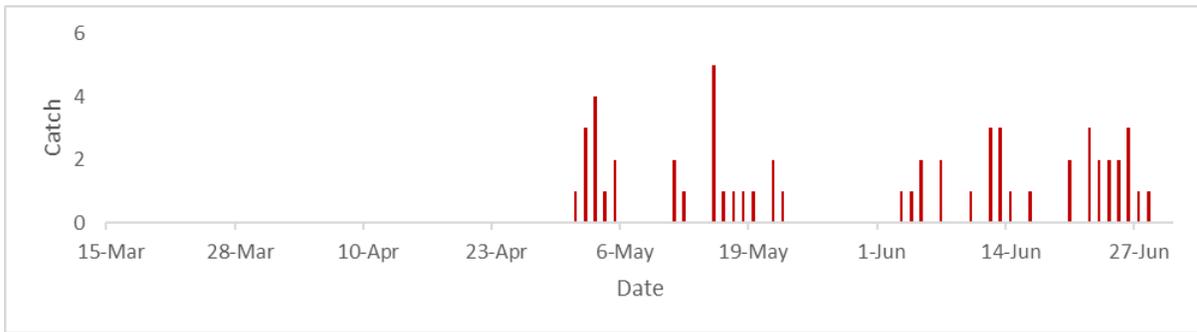
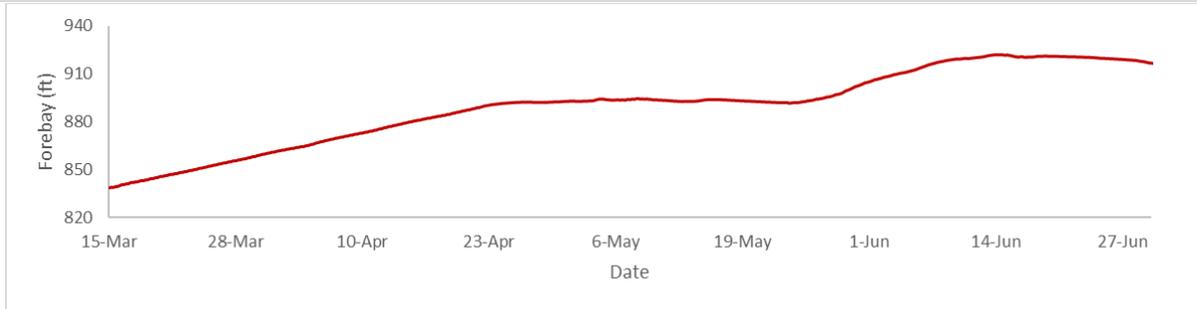
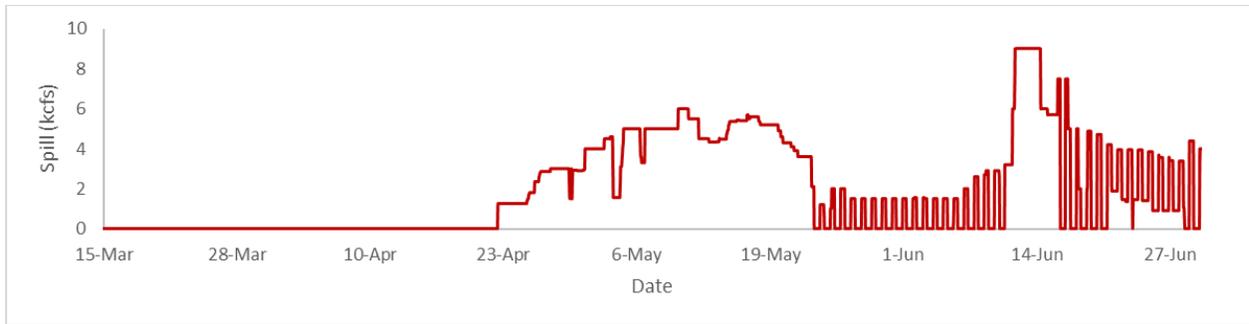
### Dexter Dam Operational and Capture Data Since Start of Monitoring



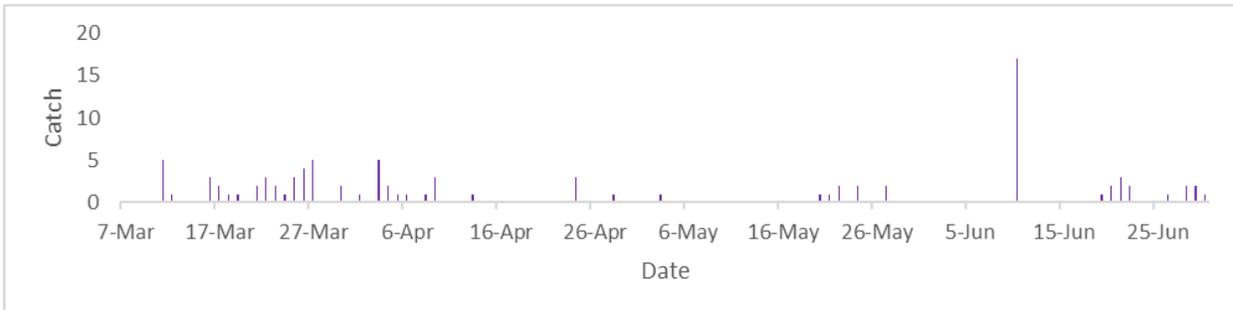
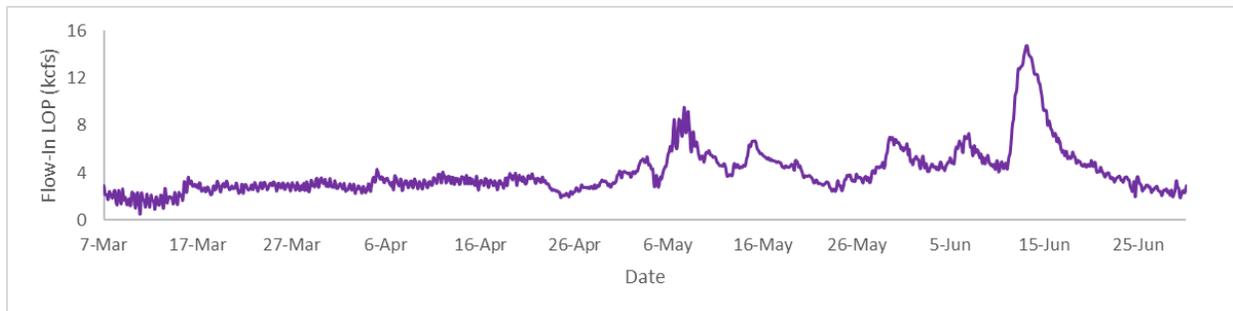


**Lookout Dam Tailrace Operational and Capture Data**

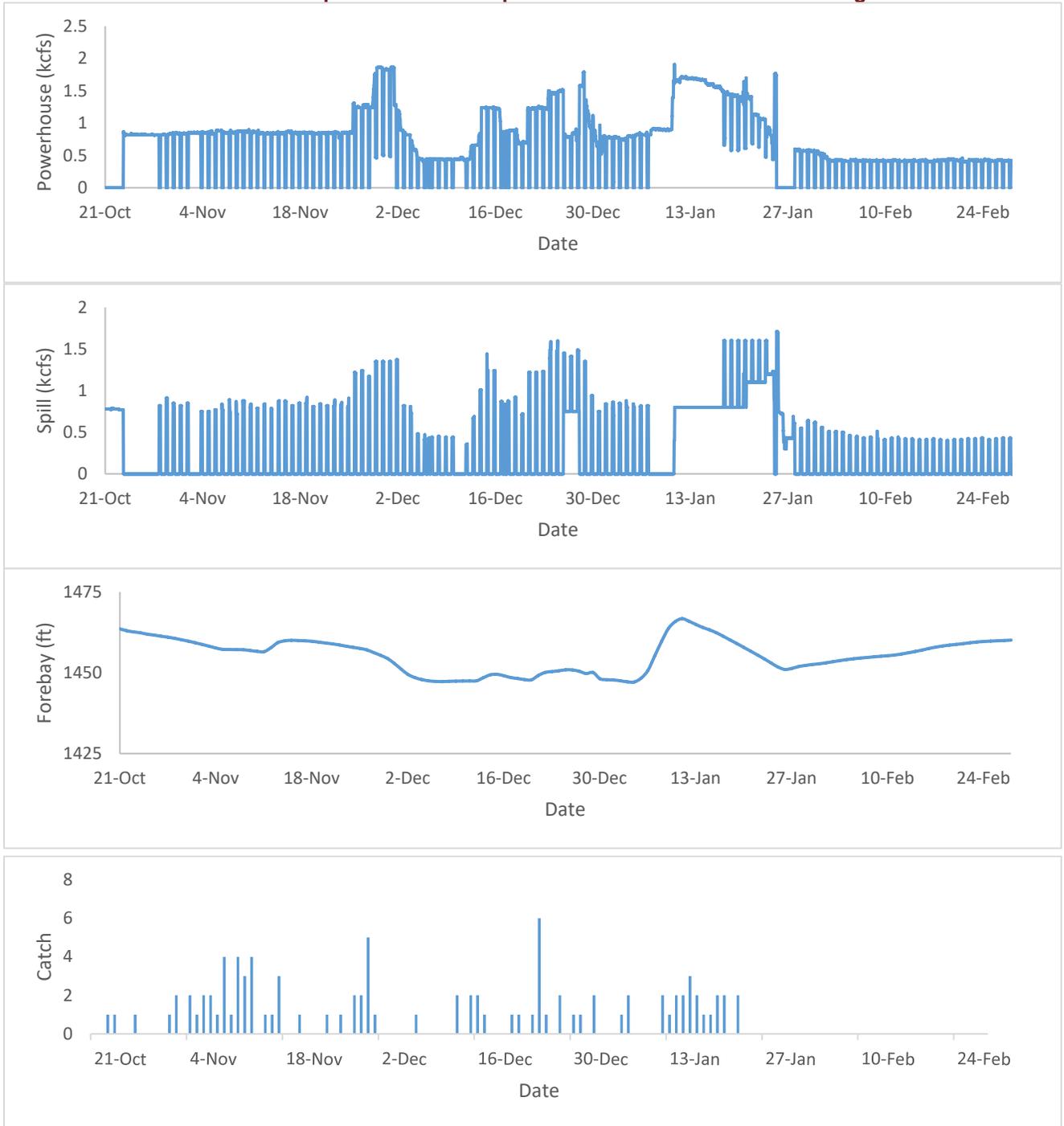




**Lookout Point Head of Reservoir Operational and Capture Data Since Start of Monitoring**



### Hills Creek Dam Operational and Capture Data Since Start of Monitoring



## Appendix C

### Hills Creek Trapping Efficiency 1/6/2022

Hills Creek Dam	Release #	Recapture #	Capture Efficiency
PH Route	596	20	3.36% (20/596)
RO Trap	RO Route- 605	13	2.15% (13/605)
	PH Route- 592	5	0.84% (5/592)

\*Live fish captured at the PH trap are released just downstream of the PH trap, upstream of the RO trap and therefore retained in the capture efficiency estimates for the RO Trap if they arrive in the lower trap.

\*Any dead fish captured at the PH trap are excluded from the RO trap capture efficiency estimate as they are not alive at time of re-release.

### Cougar Dam Trapping Efficiency (01/19/22)

Cougar Dam	Release #	Recapture #	Capture Efficiency
PH Route	405	40	9.88% (40/405)
RO Route	410	28	6.83% (28/410)

### Dexter Dam Tailrace Trapping Efficiency (03/23/2022)

Dexter Dam	Release #	Recapture #	Capture Efficiency
Spill	988	2	0.2% (2/988)
Powerhouse	N/A	N/A	N/A

### Green Peter Dam Tailrace- Middle Santiam Trapping Efficiency (03/29/22)

Green Peter Dam Tailrace- Middle Santiam	Release #	Recapture #	Capture Efficiency

8ft Trap	643	4	0.62% (4/643)
----------	-----	---	------------------

**Big Cliff Dam Trapping Efficiency (12/23/2021)**

Big Cliff Dam	Release #	Recapture #	Capture Efficiency
8ft Trap	996	40	4.01% (40/996)

**Cougar Dam Head of Reservoir Trapping Efficiency (03/18/2022)**

Cougar Dam Head of Reservoir	Release #	Recapture #	Capture Efficiency
5ft trap	806	41	5.1% (41/806)

**Cougar Dam Trapping Efficiency (04/20/2022)**

Cougar Dam	Release #	Recapture #	Capture Efficiency
PH Route	357	62	17.37% (62/357)
RO Route	378	21	5.56% (21/378)

**Dexter Dam Tailrace Trapping Efficiency (05/04/2022)**

Dexter Dam	Release #	Recapture #	Capture Efficiency
Spill	1000	43	4.3% (43/1000)
Powerhouse	N/A	N/A	N/A

**Lookout Point Head of Reservoir Trapping Efficiency Releases**

<b>Lookout Point Head of Reservoir</b>	<b>Release #</b>	<b>Recapture #</b>	<b>Capture Efficiency</b>
04/05/2022	993	53	5.3% (53/993)
04/14/2022	989	19	1.9% (19/989)

**Lookout Point Head of Reservoir Trapping Efficiency Release (6/8/2022)**

<b>Fall Creek Dam</b>	<b>Release #</b>	<b>Recapture #</b>	<b>Capture Efficiency</b>
RO	518	11	2.1% (11/518)

## Appendix D

### Summary of Project PIT Tagged Fish for Reporting Period

Site	Trap	# of PIT Tagged Fish
Big Cliff Dam	8 ft	0
Foster Dam Head of Reservoir- South Santiam	5 ft	3
Cougar Dam	PWR	0
Cougar Dam	RO	0
Green Peter Tailrace- Middle Santiam	8 ft	0
Dexter Dam Tailrace	5 ft	0
Lookout Point Head of Reservoir	5 ft	10
Lookout Dam Tailrace	Spill	1
Lookout Dam Tailrace	PH 1	0

### To Date Summary of Captured Fish Containing PIT Tags

Site	Date	Trap	Species	PIT Tag #
Cougar Dam	4/7/2022	RO	Chinook	3DD.003BD59645
Cougar Dam	3/3/2022	PH	Chinook	3DD.003DA4DC74
Cougar Dam	3/4/2022	PH	Chinook	3DD.003E14CA70
Cougar Dam	3/4/2022	PH	Chinook	384.36F2B2C5D2
Cougar Dam	3/5/2022	PH	Chinook	3DD.003E14CC20
Cougar Dam	3/8/2022	PH	Chinook	3DD.003E14CD8D
Cougar Dam	3/6/2022	RO	Chinook	3DD.003E14C9D6
Cougar Dam	1/8/2022	RO	Chinook	3DD.0077780789
Cougar Dam	1/14/2022	RO	Chinook	384.36F2B2C55F

List of EAS PIT Tagged Fish for Reporting Period

Site	Date	Trap	Species	PIT Tag #
Foster Dam Head of Reservoir- South Santiam River	6/30/2022	5 ft	Chinook	3DD.003E1BC7A2
Foster Dam Head of Reservoir- South Santiam River	6/30/2022	5 ft	Chinook	3DD.003E1BC789
Foster Dam Head of Reservoir- South Santiam River	6/30/2022	5 ft	Chinook	3DD.003E1BC79C
Lookout Dam Tailrace	6/16/2022	Spill	Chinook	3DD.003E1BC798
Lookout Point Head of Reservoir	6/19/2022	5 ft	Chinook	3DD.003BEE2A30
Lookout Point Head of Reservoir	6/20/2022	5 ft	Chinook	3DD.003BEE1A6A
Lookout Point Head of Reservoir	6/21/2022	5 ft	Chinook	3DD.003BEE2A2E
Lookout Point Head of Reservoir	6/22/2022	5 ft	Chinook	3DD.003BEE1A63
Lookout Point Head of Reservoir	6/22/2022	5 ft	Chinook	3DD.003BEE1A53
Lookout Point Head of Reservoir	6/28/2022	5 ft	Chinook	3DD.003BEE2620
Lookout Point Head of Reservoir	6/28/2022	5 ft	Chinook	3DD.003BEE25F6
Lookout Point Head of Reservoir	6/29/2022	5 ft	Chinook	3DD.003BEE1689
Lookout Point Head of Reservoir	6/29/2022	5 ft	Chinook	3DD.003BEE16A1
Lookout Point Head of Reservoir	6/30/2022	5 ft	Chinook	3DD.003BEE1671