The Dalles Dam Fishway Status Report

Date: 8/25/2014
Inspection Period: 8/17/2014 to 8/23/2014

THE DALLES DAM

US Army Corps of Engineers
Portland District

The Dalles Project-Fisheries
P.O. Box 564
The Dalles, OR 97058-9998
Phone: 541-506-3800

Fishways are inspected twice daily plus one SCADA inspection

The Dalles Dam	Inspections Out of Criteria	Criteria Limit	Total Number of Inspections: 21		Temperature: 72.2 F
			Comments		Secchi: 5.1 feet
NORTH FISHWAY					
Exit differential	0	≤ 0.5'			
Count station differential	0	≤ 0.3'			
Weir crest depth	0	1.0' ± 0.1'			
Entrance differential	4	1.0' - 2.0'	Average	1.2	See **Memorandum for the Record** for additional information.
Entrance weir N1	0	depth (≥ 8')	Average	9.8	
Entrance weir N2	0	Closed			
PUD Intake differential	0	≤ 0.5'			
EAST FISHWAY					
Exit differential	0	≤ 0.5'			
Removable weirs 154-157	1	Per forebay	Auto adjusts 1' increments.		
Weir 158-159 differential	0	1.0' ± 0.1'			
Count station differential	0	≤ 0.3'	Window cleaned as needed.		
Weir crest depth	0	1.0' ± 0.1'			
Junction pool weir JP6	0	depth (≥ 7')	Average	9.7	Manually adjusted as needed.
East entrance differential	0	1.0' - 2.0'	Average	1.5	
Entrance weir E1	0	No criteria	Average	-0.2	Manually adjusted as needed.
Entrance weir E2	0	depth (≥ 8')	Average	10.7	
Entrance weir E3	2	depth (≥ 8')	Average	11.1	See **Memorandum for the Record** and **Averages** tab for additional information.
Collection channel velocity	0	1.5 - 4 fps	Average	2.7	
Transportation channel velocity	0	1.5 - 4 fps	Average	3.0	
North channel velocity	0	1.5 - 4 fps	Average	2.8	
South channel velocity	0	1.5 - 4 fps	Average	3.9	
West entrance differential	4	1.0' - 2.0'	Average	1.5	
Entrance weir W1	2	depth (≥ 8')	Average	8.5	
Entrance weir W2	3	depth (≥ 8')	Average	8.2	
Entrance weir W3	0	No criteria	Closed		
South entrance differential	2	1.0' - 2.0'	Average	1.5	
Entrance weir S1	3	depth (≥ 8')	Average	8.5	
Entrance weir S2	2	depth (≥ 8')	Average	8.7	
JUVENILE PASSAGE					
Sluicegate operation	3	1, 8, 18	MU12 VBS removal completed; gates 1-1, 1-2, 1-3, 8-2, 8-3, 18-2 opened 8/18 per FPP.		
Turbine trashrack drawdown	0	<1.5', wkly	Range	0.0' - 0.6'	
Spill volume	0	40% ±1%	Average	39.9	See average tab for daily averages.
Spill Pattern	0	per FPP			
Turbine Unit Priority	4	per FPP	Main Units 13 and 14 OOS for maintenance. See ***Current Outages*** below.		
Turbine 1% Efficiency	0	per FPP			

OTHER ISSUES:

Birds/Sea lions:

Bird observation data collected once daily. Refer to Avian Zone Map.
Cormorants continue to forage in forebay near east fishway exit. Easily hazed by walking on forebay deck.

Operations:

Entrance weir E3 in manual due to sticking. E1 and E2 set in auto. All maintaining criteria depth. Gatewell drawdown check 8/23. All in criteria.

Current Outages:

Fish Unit 1 returned to service 8/17/2014 at 1219 hrs. FU 1 was forced out of service due to a leaking oil cooler 1158 hrs. 8/15/2014.
Fish Unit 2 returned to service 8/17/2014 at 1511 hrs. FU 2 was forced OOS at 2018 hrs. 08/15/2014 due to a lower guide bearing cooler leak.
MU13 OOS 0004 7/21/2014 to 1700 8/28/2014 for annual.
MU14 OOS 0600 7/21/2014 to 1700 8/28/2014 for overhaul.
T8 (MU15 & MU16) de-rated to single unit full load ops through 9/14/2017.

Maintenance:

Fish units F1 and F2 were forced out of service 8/15 for lower guide bearing leaking cooling system. Maintenance was immediately notified to be brought in on overtime and pulled off other jobs. A cooler normally used for main units was modified and installed. Investigation is underway to detemine why this affected both units. A possible water hammer was a result of valve closures. Operational changes may be applied. Spare coolers for both lower and upper guide bearing coolers will also be fabricated. Please see Memorandum for the Record for additional information.
North fishway pump motor replacement delivered. Installation prep starting. To be installed prior to Jan 2015 dewatering.
Parts on order for install of equalizing valve on PUD intake bulkhead for next winter dewatering.
East entrance weir E3 sticking in guide. To be addressed this winter. Does not affect criteria operation.
Permanent boom to be purchased for protecting east fishway from upstream oil spills. Specs determined. Purchase underway.
Long term repair plans funding dependent; Upgrade east exit weirs 154-157, awaiting PM assignment to stabilize north ladder rock walls, remove collection channel diffusers, replace all entrance weir wheels with plastic composite wheels and repair/modify all east fishway dewatering pumps.
Fish related but non-fish funded items; spillway evaluation, spillway crane rehab, spillgate 9 and/or 10/11 wire rope replacement, HDC update fish unit reliability assessment, planning upgrade fish unit breakers and fish unit transformer replacement.
All spillway items on Critical Infrastructure list and Unfunded Requirement list.
New weir 158 leafs fabricated. Wheel and seal install next. Completion by Oct 1. Installation mid Dec.

Studies:

EFL Backup. Plans/Specs underway for 10' hole through dam, under roadway and into AWS conduit at junction pool. Construction winter '15/'16.
Test pits excavation between fishladder and fishlock parking area in Nov. ADCP flow velocity survey also in Nov.
PUD - PUD 'freedom' second turbine proposal for north fishway in FERC review process. Corps comments provided.
Spill Attraction - Record fall Chinook runs expected in 2014. Concern for overcrowding in east fish ladder. ERDC model trip planned for Aug 25-28 to determine potential spill operation to attract more fish to the north fish ladder. Field observations planned to monitor possible passage changes.
Spillgate Repair - District determining funding source for repair of spillgate 9 or spillgate 10/11. Will run both at ERDC model trip to help in decision.
Spill pattern would use these bays for river flow over 445 kcfs. Fish passage benefit of these bays is to be determined.

Research/Contractors:

PSMFC PIT tag monitoring continues at count stations.
Columbia River Northern Pikeminnow Management Dam Angling: weekly total 105 pikeminnow for grand total of 1,852 pikeminnow removed.
Nez Perce continuing lamprey collection at east count station traps through end of Aug. No count report provided.
Normandeau fish counters at north and east count stations 16 hours/day 4/1-10/30. Investigating visibility improvements for north count station.
PSMFC sampling at PUD completed for season.
USDA bird hazing completed for season.
Zebra mussel monitoring with plankton samples ongoing. Samples provided to PSU for analysis.
University of Idaho maintaining antennas and continuing downloads.
Removal last set of 3 derelict Vertical Barrier Screens from MU 12 gate well slot completed.

Approved by: Ron Twiner
Operation Project Manager The Dalles Dam

CENWP-OD-D **18 August 2014**

MEMORANDUM FOR THE RECORD

SUBJECT: 14TDA10 MFR – Fish units forced outage

On 15 August, just before 1200, Fish Unit F1 was forced out of service due to lower guide bearing cooling water leak. Maintenance crews were immediately notified and started working overtime to expedite the repair. Per protocol, Fish Unit F2 was increased to maximum output and entrance weirs were adjusted accordingly.

On 15 August, at 2018, F2 was forced out of service due to water in the lower guide bearing. Entrances were adjusted to Fish Passage Plan operation guidelines, but entrance flow velocity was not noticable.

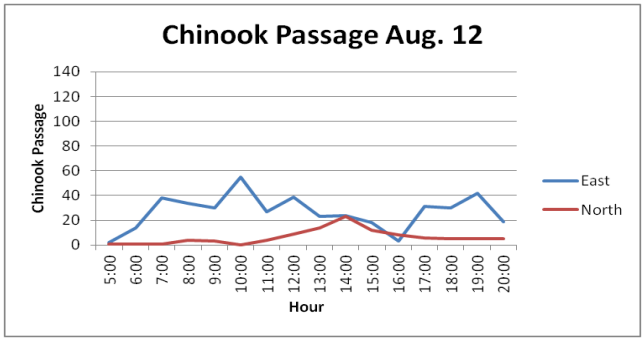
Maintenance crews were tasked to repair both units the following day on overtime. Maintenance was able to creatively adapt a main unit cooling water part fit the fish units.
On 17 August F1 was repaired and returned to service at 1219 (just over 48 hours outage time). F2 was repaired and returned to service at 1511 (just under 43 hours outage time).

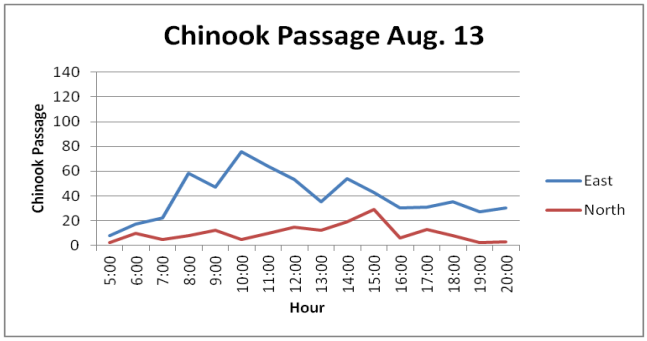
Hourly fish passage was analyzed for the outage time period. There was a noticeable decrease in TDA-E passage use during one fish unit operation (2600cfs flow). This decrease became worse when the second fish unit was forced out of service. There was a noticeable shift to TDA-N, however there was a delay the first morning when both fish units were OOS. Refer to three day Chinook and Steelhead graphs (below) for details.

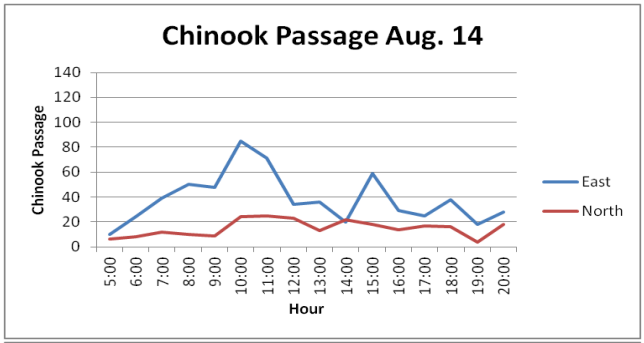
A. Species – Chinook, Steelhead, Pacific Lamprey, few Coho and Sockeye
B. Origin – NA
C. Length –NA
D. Marks and tags - NA
E. Marks and Injuries found on carcass – NA
F. Cause and Time of Death – None
G. Future and Preventative Measures – Cause of the failure is most likely age of cooling system components. New cooling systems were fabricated for the failed lower guide bearing cooling systems. There is concern for condition of upper guide bearing cooling systems as well, which will be replaced during this coming winter outage. Spares will be fabricated for both lower and upper guide bearings to reduce future outage time. Drawings will be updated with new system specs. Since there is common piping for both cooling water systems, the likely cause of F2 unit cooling water failure was a possible water hammer when closing valves for F1 cooling water. This will be corrected through operational changes when isolating the systems.

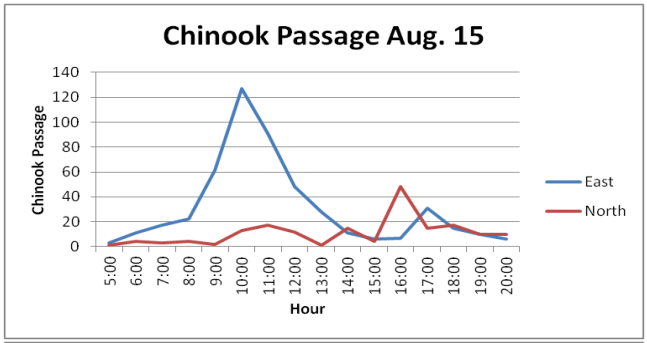
Thank you,
The Dalles Project Fisheries

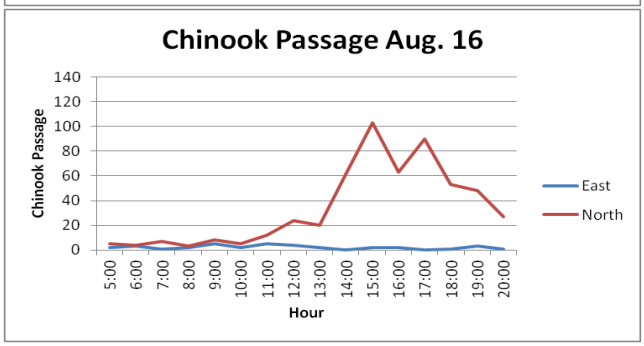
Hourly chinook passage (FU's outage time period 8/15 to 8/17)

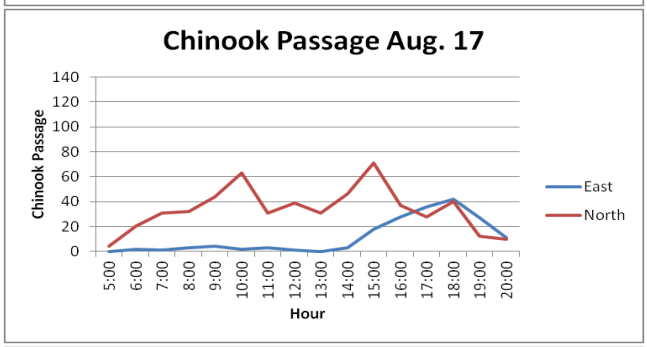


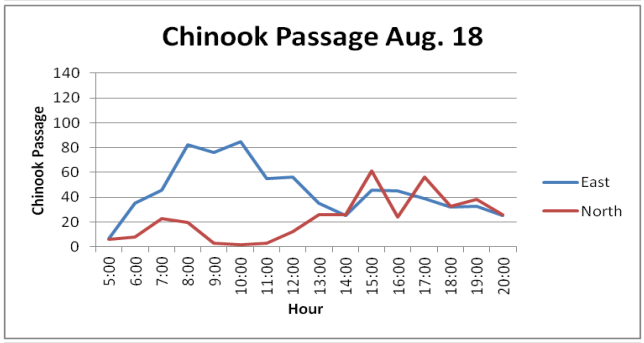


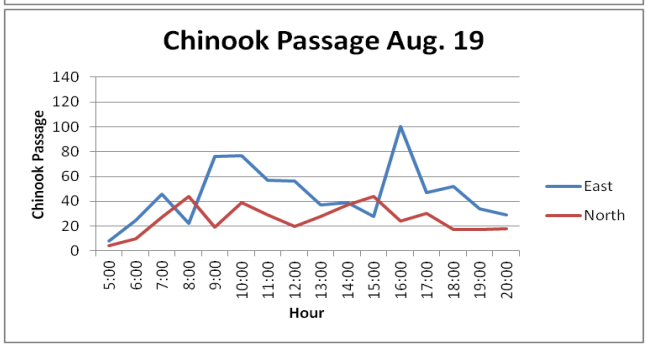


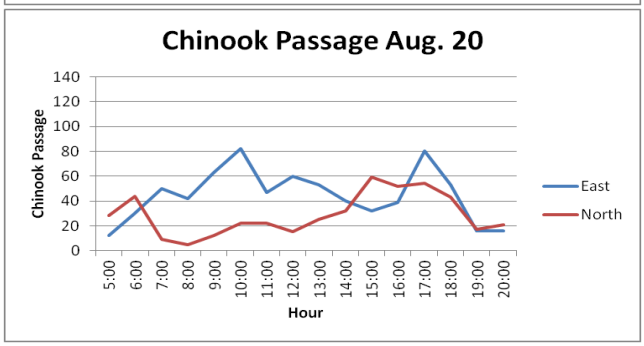












There was a noticable shift to the north ladder, however there was a delay the first morning when both fish units were OOS.

Charts provided by Karrie Gibbons (Fisheries Field Unit)

DART The Dalles Adult Ladders Daily Usage with Spill Percent and Outflow

Date	Chinook				Jack Chinook				Steelhead				Steelhead Wild				Sockeye				Coho				Jack Coho				Lamprey				Spill Pct [Right]	Outflow (kcfs)
	Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder		Left Ladder		Right Ladder			
	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#	Pct	#		
17-Aug-14	20	132	80	536	44	85	56	110	39	488	62	779	36	206	64	371	59	10	41	7	20	1	80	4	33	1	67	2	18	17	82	77	40	121
18-Aug-14	62	677	38	418	89	190	11	23	68	663	32	314	67	293	33	145	89	8	11	1	67	2	33	1	0	0	100	1	51	37	49	36	40	134
19-Aug-14	61	706	39	446	81	174	19	42	65	340	35	182	64	149	36	84	71	10	29	4	50	1	50	1	100	2	0	0	32	36	68	76	40	139
20-Aug-14	55	626	45	506	84	232	17	46	65	452	35	242	61	178	39	115	50	1	50	1	100	7	0	0	100	2	0	0	37	23	64	40	40	128
21-Aug-14	65	671	35	360	80	215	20	54	54	563	46	481	51	209	49	199	80	8	20	2	83	10	17	2	89	8	11	1	44	47	56	59	40	127
22-Aug-14	61	655	39	413	82	182	18	40	58	833	42	602	58	301	42	220	54	7	46	6	80	20	20	5	50	4	50	4	51	29	49	28	40	134
23-Aug-14	59	642	41	451	76	113	24	35	50	783	51	798	47	277	53	314	75	6	25	2	78	14	22	4	83	5	17	1	13	12	87	83	40	125

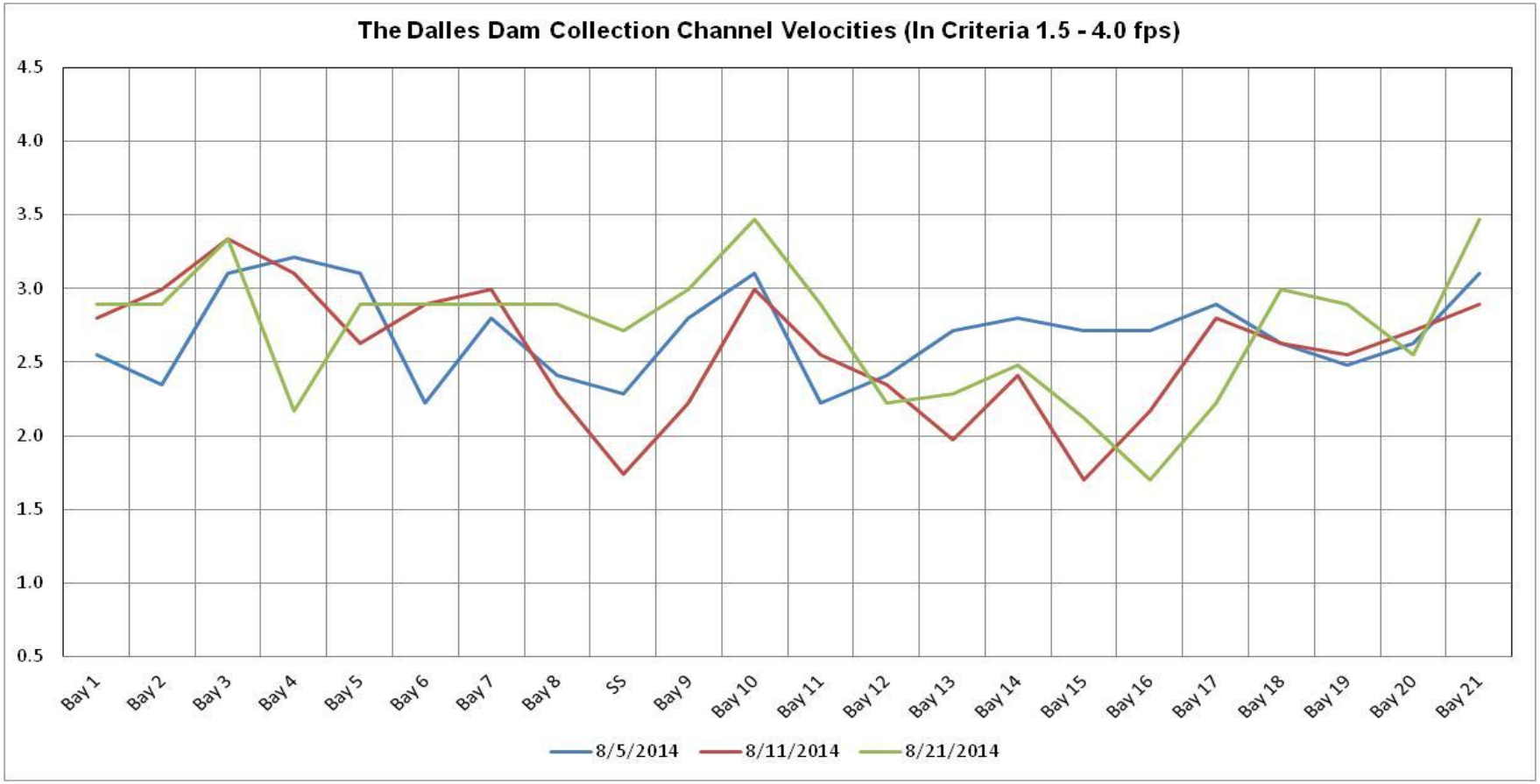
Date	Chinook		Jack Chinook		Steelhead		Steelhead Wild		Sockeye		Coho		Jack Coho		Lamprey		Spill Pct	Outflow
YTD	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct	Left Ladder Pct	Right Ladder Pct		
	57	43	77	23	55	45	53	47	69	32	76	24	71	29	34	67		

NOTES:

/, if either the Right Ladder or Left Ladder species count is: negative or null for the day.

the side of the river when facing downstream.

esy of U.S. Army Corps of Engineers

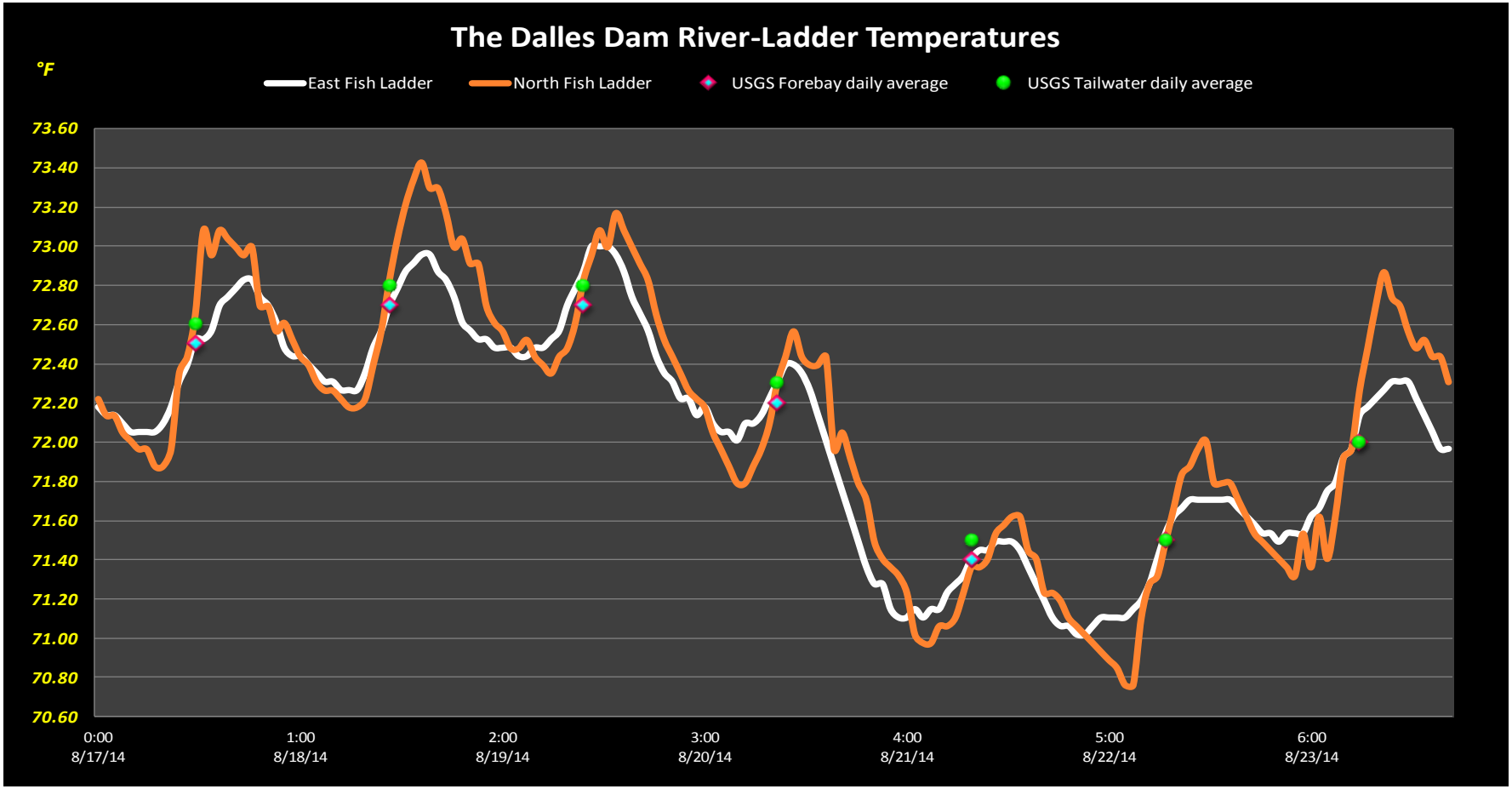

The Dalles Dam Collection Channel Velocities (In Criteria 1.5 - 4.0 fps)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
Bay 1
Bay 2
Bay 3
Bay 4
Bay 5
Bay 6
Bay 7
Bay 8
SS
Bay 9
Bay 10
Bay 11
Bay 12
Bay 13
Bay 14
Bay 15
Bay 16
Bay 17
Bay 18
Bay 19
Bay 20
Bay 21
8/5/2014
8/11/2014
8/21/2014

Hazing activity primarily in SW-T3 and SW-T4

2014 Piscivorous Bird Counts

F=foraging, NF=non-foraging

		9:28	FB	0	0	0	79	0	0	0	0	79		
		8:51	PH1	0	0	0	0	0	0	0	0	0		
		9:00	PH2	0	0	0	0	0	0	0	0	0		
8/17/14	1	9:26	SW1	0	12	0	0	0	0	0	0	12	ehk	
		9:02	SW2	0	0	0	0	0	0	0	0	0		
		9:42	SW3	8	3	0	0	0	0	0	0	11		
		9:43	SW4	54	32	0	0	0	0	0	0	86		
		13:48	FB	0	2	11	10	0	0	0	0	23		
		12:54	PH1	0	0	0	0	0	0	0	1	1		other=osprey
		13:02	PH2	0	0	0	0	0	0	0	0	0		
8/18/14	1	13:45	SW1	0	0	0	0	0	0	0	0	0	jwr	
		13:06	SW2	0	0	0	0	0	0	0	0	0		
		13:40	SW3	1	4	1	6	0	0	0	0	12		
		13:44	SW4	36	27	1	7	0	0	0	0	71		
		7:59	FB	0	0	1	88	0	0	0	0	89		
		7:27	PH1	0	0	0	0	0	0	1	0	1		other=osprey
		7:33	PH2	0	0	0	0	0	0	0	0	0		
8/19/14	1	7:53	SW1	0	0	0	0	0	0	0	0	0	jwr	
		7:36	SW2	0	0	0	0	0	0	0	0	0		
		8:02	SW3	16	5	0	0	0	0	0	0	21		
		8:06	SW4	61	21	0	0	0	0	0	0	82		
		13:24	FB	0	0	6	12	0	0	1	1	20		both "others" =osprey
		13:44	PH1	0	0	1	16	0	0	0	0	17		
		13:40	PH2	0	0	0	0	0	0	0	0	0		
8/20/14	1	13:26	SW1	0	0	0	0	0	0	0	0	0	jwr	
		13:27	SW2	0	0	0	0	0	0	0	0	0		
		13:28	SW3	16	0	1	0	0	0	0	0	17		
		13:31	SW4	36	4	0	6	0	0	0	0	46		
		9:21	FB	0	0	6	86	0	0	0	2	94		others=osprey
		8:57	PH1	0	0	0	0	0	0	0	0	0		
		9:04	PH2	0	0	0	0	0	0	0	0	0		
8/21/14	1	9:23	SW1	0	36	0	1	0	0	0	0	37	jwr	
		9:06	SW2	0	0	0	0	0	0	0	0	0		
		9:14	SW3	3	3	0	0	0	0	0	0	6		
		9:17	SW4	28	14	0	0	0	0	0	0	42		
		14:40	FB	0	0	0	29	0	0	0	0	29		roosting on north electrical towers
		13:40	PH1	0	0	0	1	0	0	0	0	1		
		13:46	PH2	0	0	0	0	0	0	0	0	0		
8/22/14	1	14:51	SW1	0	0	0	0	0	0	0	0	0	PSK	
		13:50	SW2	0	0	1	8	0	0	0	0	9		
		15:04	SW3	0	0	1	0	0	0	0	0	1		
		15:07	SW4	9	4	0	8	0	0	0	0	21		resting on rocks
		10:24	FB	0	0	0	80	0	0	0	0	80		roosting on north side electrical towers
		9:29	PH1	0	0	0	1	0	0	0	0	1		
		9:44	PH2	0	0	0	1	0	0	0	0	1		flyby
8/23/14	1	10:34	SW1	9	0	0	0	0	0	0	0	9	PSK	spill @ 43.7 kcfs
		9:48	SW2	0	0	0	0	0	0	0	0	0		
		10:51	SW3	5	0	0	0	0	0	0	0	5		
		10:54	SW4	10	9	0	0	0	0	0	0	19		resting on rocks


The Dalles Dam River-Ladder Temperatures
°F
East Fish Ladder
North Fish Ladder
USGS Forebay daily average
USGS Tailwater daily average
73.60
73.40
73.20
73.00
72.80
72.60
72.40
72.20
72.00
71.80
71.60
71.40
71.20
71.00
70.80
70.60
0:00
8/17/14
1:00
8/18/14
2:00
8/19/14
3:00
8/20/14
4:00
8/21/14
5:00
8/22/14
6:00
8/23/14

	Forebay	Tailwater
	72.5	***72.6***
	72.7	***72.8***
USGS	***72.7***	***72.8***
	72.2	***72.3***
	71.4	***71.5***
Data	***71.5***	***71.5***
	72.0	***72.0***
AVG:	72.2	

Secchi:
5.0
5.0
5.0
5.0
5.0
5.0
5.5
AVG 5.1

The Dalles Dam Daily Readings and Averages for Temperatures, Secchi, Entrances, and Spill

= out of criteria

	North Ladder		*East Ladder*												Spill%
	North Entrance		East Entrance					West Entrance				South Entrance			
Date:	Differential	N1 Depth	Differential	E1 Depth	E2 Depth	E3 Depth	JP 6	Differential	W1 Depth	W2 Depth	W3 Depth	Differential	S1 Depth	S2 Depth	
8/17/14			East and west entrances OOS; see below and "Memo for the record" for additional information.									South entrance OOS.			
	1.2	9.8	0.0	0.0	8.0	7.9	12.0	0.0	0.0	0.0		0.0	0.0	0.0	39.8
	1.3	9.7	0.4	0.0	8.1	8.1	8.1	0.9	8.1	0.5		1.2	4.0	8.2	
8/18/14			2.9	2.9	10.9	6.6		2.4	8.3	8.3		1.9	8.5	8.5	39.9
	1.3	9.7	1.8	0.0	10.5	11.0	6.5	1.6	8.9	8.9		1.7	9.0	9.0	
	1.3	9.8	1.2	1.0	11.0	12.4	10.4	1.5	9.1	9.1		1.4	9.6	9.5	
8/19/14			1.5	0.3	11.0	11.7		1.5	9.0	9.0		1.5	9.3	9.4	39.8
	1.3	9.8	1.5	-0.6	11.5	12.0	10.0	1.5	9.0	9.0		1.6	8.9	9.0	
	1.3	9.9	1.5	-1.0	10.9	12.6	10.6	1.6	9.0	9.1		1.4	9.7	9.7	
8/20/14			1.4	-1.1	11.9	11.6		1.4	8.9	9.0		1.4	9.5	9.5	39.6
	1.2	9.7	1.6	-1.0	10.9	11.3	9.3	1.5	9.0	9.0		1.5	9.1	9.1	
	1.0	10.0	1.6	-0.9	11.1	12.5	10.5	1.6	9.1	9.0		1.5	9.2	9.2	
8/21/14			1.5	-1.0	11.0	11.6		1.4	9.2	9.2		1.5	9.4	9.4	40.0
	1.2	9.7	1.6	-0.9	11.1	11.5	9.5	1.5	9.1	9.1		1.4	9.6	9.6	
	1.3	9.8	1.5	0.0	11.1	12.5		1.5	9.0	9.0		1.6	9.4	9.4	
8/22/14			1.6	-1.1	10.9	11.6		1.6	10.0	10.0		1.5	9.5	9.5	39.9
	1.2	9.9	1.6	-1.0	10.9	11.7	9.7	1.5	8.9	8.9		1.5	9.0	9.0	
	1.3	9.9	1.5	0.0	11.2	12.6	10.6	1.5	9.1	9.0		1.6	9.1	9.0	
8/23/14			1.6	0.0	10.9	11.2		1.4	8.9	9.0		1.6	9.0	8.9	40.1
	1.2	9.8	1.7	0.0	11.0	11.1	9.1	1.5	8.9	9.0		1.6	9.0	8.9	
	1.3	9.8	1.6	0.0	10.9	11.4	9.4	1.6	8.9	9.0		1.6	9.0	9.1	
AVG:	1.2	9.8	1.5	-0.2	10.7	11.1	9.7	1.5	8.5	8.2	Closed	1.5	8.5	8.7	39.9

Spill % values represent daily average from operations status report

Fish unit 1 returned to service 8/17/2014 @1219 hrs. FU 1 was forced out of service due to a leaking oil cooler @ 1158 hrs.8/15/2014.
Fish unit 2 returned to service 8/17/2014 @1511 hrs. from lower guide bearing cooler leak. FU 2 forced OOS @ 2018 hrs. 08/15/2014.

Cormorants continue to forage in forebay near east fishway exit. Easily hazed by walking on forebay deck.