2014 ANNUAL FISHWAYS STATUS REPORT

JOHN DAY DAM

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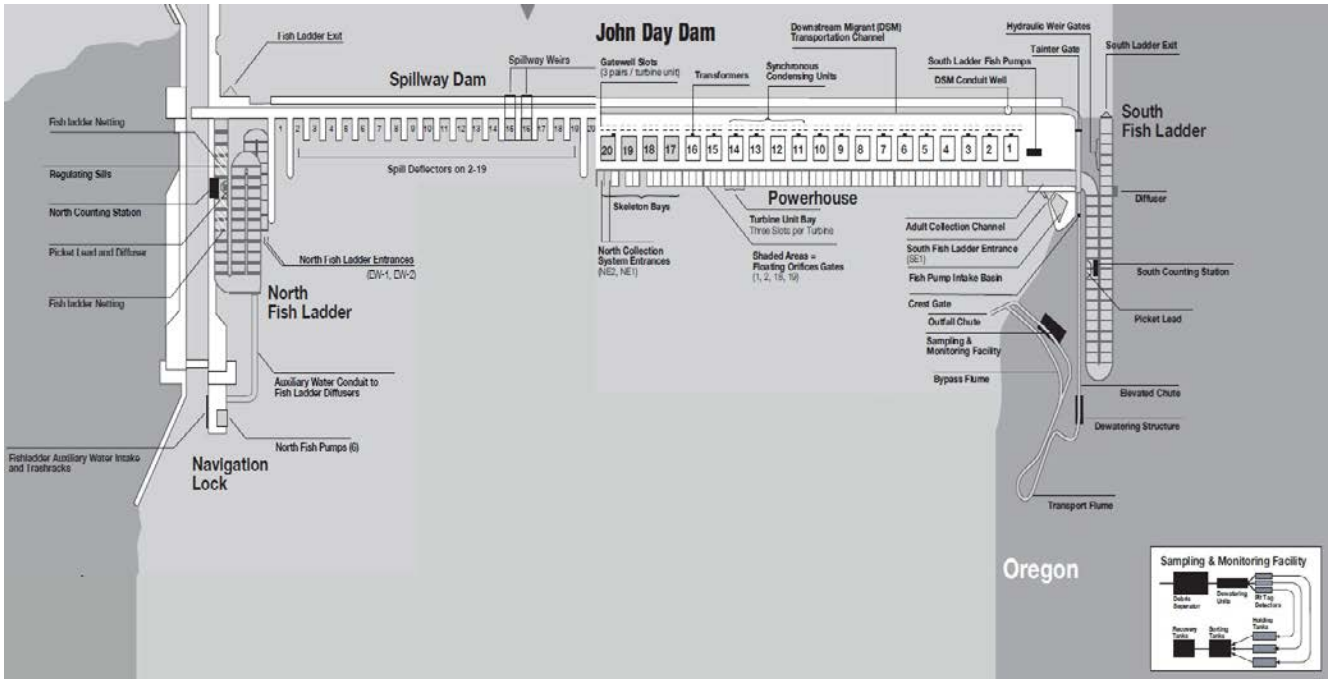


Figure 1: John Day Dam Layout

2014 JOHN DAY FISHWAYS OPERATING SCHEDULE												
	MONTHS											
PERFORMANCE STATUS	J	F	M	A	M	J	J	A	S	O	N	D
	NORTH ADULT FISHWAY											
REGULAR OPERATION W/ AWS	1/1-11/29											
AWS OFF HALF DAY FOR ROV								8/1				
DEWATERED FOR MAINTENANCE											11/29 - 12/23	
	SOUTH ADULT FISHWAY											
REGULAR OPERATION W/AWS		2/28-12/31										
AWS OFF HALF DAY FOR ROV								8/1				
DEWATERED FOR MAINTENANCE	1/4- 2/26											
	SMOLT MONITORING FACILITY											
DEWATERED FOR MAINTENANCE	1/01 - 3/30											
IN REGULAR SAMPLING MODE			3/31-7/24/14									
LIMITED SAMPLING; WATER TEMP > 70F							7/25- 9/15					
IN BYPASS FOR PIT DETECTIONS									9/16-11/23			
DEWATERED FOR MAINTENANCE											11/24- 12/31	
	JUVENILE BYPASS SYSTEM											
1/3 GATEWELL ORIFICES OPEN, ROTATE 2X/WK	1/1 - 3/31											12/19-12/31
REGULAR OPERATION WITH ALL STSs DEPLOYED				4/1 - 12/15 (for kelts in December)								
	SPILLWAY WITH TSWs (at bay 18 &19)											
ON SEAL	1/1 - 4/9											
OPERATIONS PER FPP SCHEDULE				4/10 - 8/31								
1.5 KCFS, BAY 2 ONLY FOR NFL ATTRACTION									9/1 - 11/30			
ON SEAL												12/1-12/31

Table 1: Operating schedule for John Day Fishways during the 2014 season Red = Out of Service, Blue = Bypass for PIT, Light Green = In Service, Peach = Bay 2 Only, and Dark Green = Limited Sampling

Fishway Inspection

Adult fishway inspections were conducted twice daily, during the adult fish passage season (March 1st - November 30th), and once daily during non-passage season. Guidelines were provided by the Corps of Engineers (COE) Fish Passage Plan, and fishway status reports were completed weekly throughout the year. The John Day Dam (JDA) Smolt Monitoring Facility (SMF) inspections were conducted every two hours, 24 hours per day, throughout the juvenile sampling season (April 1st - Sept 15th), and SMF status reports were included in weekly fishway status reports. Any out of criteria (OOC) observations were recorded and monitored (See Table 2).

TOTALS FOR :	2014		2013		2012		2011	
	Total #	% OOC	Total #	% OOC	Total #	% OOC	Total #	% OOC
John Day Dam								
Number of inspections	634		634		622		622	
NORTH FISHWAY								
Exit differential	0	0.00%	0	0.00%	4	0.60%	0	0.00%
Exit regulating weirs position	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Count station differential	0	0.00%	0	0.00%	2	0.30%	0	0.00%
Weir crest depth	0	0.00%	0	0.00%	2	0.30%	0	0.00%
Entrance differential	1	0.16%	3	0.50%	26	4.20%	1	0.20%
Entrance weir EW1 (now fixed weir)	N/A	N/A	N/A	N/A	N/A	N/A	4	0.60%
Entrance weir EW2 (eliminated)	N/A	N/A	N/A	N/A	N/A	N/A	0	0.00%
SOUTH FISHWAY								
Exit differential	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Exit regulating weirs position	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Count station differential	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Weir crest depth	0	0.00%	0	0.00%	0	0.00%	0	0.00%
South entrance differential	0	0.00%	2	0.30%	11	1.80%	4	0.60%
Entrance weir SE1	1	0.16%	2	0.30%	10	1.60%	13	2.10%
Collection channel velocity	0	0.00%	0	0.00%	0	0.00%	5	0.80%
Bay 1 differential	0	0.00%	1	0.20%	10	1.60%	4	0.60%
N. Entrance PH(Bay 19)differential	0	0.00%	3	0.50%	10	1.60%	8	1.30%
Entrance weir NE1	1	0.16%	5	0.80%	14	2.30%	33	5.30%
Entrance weir NE2	1	0.16%	6	0.90%	13	2.10%	30	4.80%
JUVENILE PASSAGE								
Forebay/bypass conduit differential	0	0.00%	1	0.20%	0	0.00%	0	0.00%
Submersible traveling screens	0	0.00%	0	0.00%	0	0.00%	1	0.20%
Turbine trash rack drawdown	2	0.32%	0	0.00%	0	0.00%	22	3.50%
Vertical barrier screen drawdown	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spill volume	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spill pattern	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Turbine Unit Priority	0	0.00%	0	0.00%	23	3.70%	0	0.00%
Turbine 1% Efficiency	0	0.00%	0	0.00%	0	0.00%	0	0.00%

Table 2: Out of Criteria occurrences from 2011-2014 seasons. The table includes the number of discrepancies (Total #) and the percent of time (OOC %) they were out criteria (rounded to the nearest tenth of a percent). The RED numbers represent an increase from the previous year.

Fish Salvage Procedures

Fishway Dewatering Procedures

During fishway dewaterings, bulkheads were installed and drain valves were opened. After the area was dewatered, fisheries personnel entered the area and salvaged any stranded fish. Captured fish were transported to either the forebay or tailwater (depending on circumstances such as; fish species, age class, or stress levels). Follow up inspections were performed to account for any missed fish. Efforts were made to provide continual water supplies throughout the operation, to minimize fish stress. Minimal fish handling practices were utilized throughout the entire process. Fishway areas not listed were inspected by a Remote Operated Vehicle (ROV.)

Turbine Dewatering Procedures

When following operational guidelines, turbine dewatering requires minimal fish handling. If a turbine unit fails, operational guidelines cannot always be followed, which may result in more trapped fish. Fish removed from these areas face higher health risks, due to increased handling. Procedures are continually analyzed to determine the best methods to reduce fish stress or loss. Currently, fish are removed from scroll case and draft tubes by fish bags. If fish volumes are higher than two bags can handle, transport tanks are placed in the draft tube gallery for crane transport. Fish caught within the turbines are released in the tailwater with a bag and rope or by tank and crane.

Fish Ladder 2014 Dewatering Results

Date	Event	Chinook	Steelhead	Lamprey	Shad	Other	Comments	Morts	Cause
1/7	SFL-Upper	-	3J	-	-	(1)A-CP	REC	0	N/A
1/9	SFL-CC	-	2J	-	-	(4)CP,(1)SMB,(1)CR	REC	0	N/A
1/10	SE1 DC	-	(3)A-mort	-	-	(2)A-CP morts	1-J walleye & 1-J CT morts	All	failed valve
2/22	S-AWS	-	-	-	-	(10)WE (8)SMB	REC	0	N/A
12/2	N. Fishway	-	(1)A,(10)J	33	10	(1) mini jack	REC, tailwater	0	N/A

Smolt Monitoring Facility 2014 Dewatering Results

Date	Event	Chinook	Steelhead	Lamprey	Shad	Other	Comments	Morts	Cause
2/3	JBS CONDUIT	-	1A	-	-	-	REC Forebay	0	N/A
11/24	PDS- SMF	35	35	4	30	(30)CT	Flushed thru Adult Drain	0	N/A

Turbine 2014 Dewatering Results

Date	Event	Chinook	Steelhead	Lamprey	Shad	Other	Comments	Morts	Cause
4/1	MU 10-SC	-	-	-	-	(1)CT	REC	(1)CT-J	old mort.
4/2	MU 10-DT	-	-	-	-	(1)CT	REC	0	N/A
4/8	MU10 SC	-	-	35 J	-	-	9-mort under wicket gate	(9)LR-J	exposure
5/13	MU2-DT	-	-	-	-	~(75)CT	REC	(2)LR	spill incident
5/13	MU2-DT	-	-	-	-	(1)-16"ST	REC	0	N/A
5/13	MU2-DT	-	-	-	-	(1)-70"ST	REC	0	N/A
11/3	MU 12 - SC	-	-	-	-	-	No Fish	0	0
11/12	MU1-SC	-	-	-	-	(3)SMB,(4)CT	REC	0	N/A
11/12	MU1-DT(day1)	-	-	-	-	(7)ST, (25)CT	(1)3'-ST all other juvenile	0	0
11/13	MU1-DT(day2)	-	-	-	-	(5)ST,(40)CT	2 Burbot (freshwater cod)	0	N/A

Nav Lock 2014 Dewatering Results

Date	Event	Chinook	Steelhead	Lamprey	Shad	Other	Comments	Morts	Cause
3/3	Nav Lock	-	-	-	-	-	No fish	0	N/A

Key

Lifestage: adult=A, juvenile=J

Fish: carp=CP, crappie =CR, catfish=CT, lamprey=LR, small mouth bass=SMB, Sturgeon=ST

Event Location: aux water supply=AWS, collection chamber=CC, diffuser chamber=DC, draft tube=DT, scroll case=SC, south fish ladder =SFL,

Comment: released in excellent condition=REC

Table 3: John Day Dam fish salvage during the 2014 season

Fish Counting

Visual fish counting was conducted April 1st – October 31st during the 2014 adult fish passage season. These counts were conducted through a contract with Normandeau Associates Inc, and all fish count data was sent electronically to an online database. Prior to the 2013 adult fish passage season, the vast majority of fish passage occurred at the south fish ladder (usually > 95 %.) After several modifications to the north fish ladder entrance (2010-2012), fish passage distribution became significantly more balanced (>25%) (See figure 2).

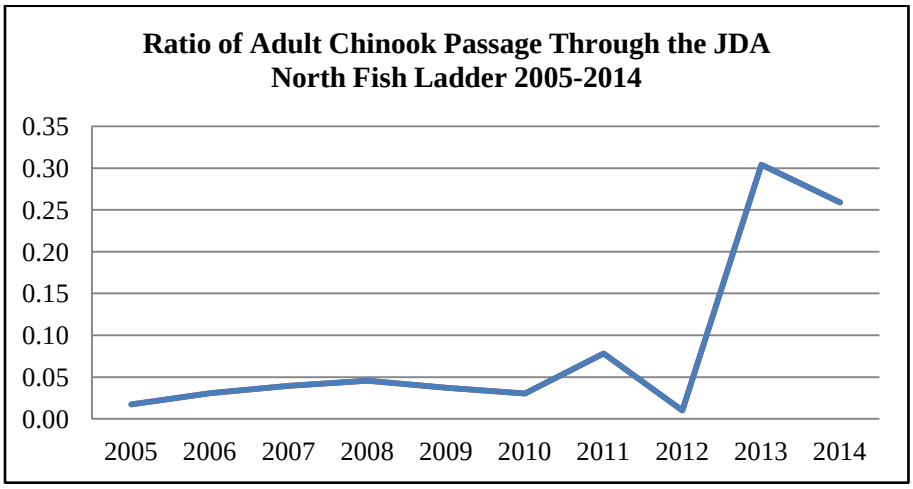


Figure 2: Ratio of adult fall Chinook salmon that migrated through the JDA North Fishway (versus South Fishway) 2005-2014 (September 1st through November 1st).

Pikeminnow Abatement

Northern Pikeminnow (NPM) angling at the John Day powerhouse Boat Restricted Zone (BRZ) was performed by the Washington Department of Fish and Wildlife crew under contract from Pacific States Marine Fisheries Commission. The contracted crew continued fishing/ removing NPM between May 1st, 2014 and October 5th, 2014. The 2014 total catch (4,250 NPM) was higher than 2013 (2,370 NPM), 2012 (2,217 NPM), and 2011 (3,271).

Avian Predator Abatement

Bypassing smolts through spill became a critical part of routine fish passage at JD, in 2006. As a result, the piscivorous bird predation in the spillway BRZ increased significantly and became a serious factor in the total dam mortality of passing smolts. In response, a comprehensive grid of 125avian lines was designed and installed at the JDA's tailrace BRZ in 2010 (See Figure 3.) In addition to avian lines, an intensive boat hazing by U.S. Department of Agriculture (USDA-APHIS) was deployed to reduce the avian predation on smolts.

Similar to the previous years, the APHIS hazing crew continued with one 8 hrs boat shift, seven days a week, April 15th – July 31st in 2014. When the piscivorous birds attempted to fly underneath of avian lines, the hazing crew used fire crackers and bottle rockets to scare them.

One avian line failed in 2013 and it continued missing for the duration of the smolt passage season due to difficulties with its reinstallation. The remaining 124 lines were properly tensioned before the season began in April 1, 2014. However, an additional avian line failed in September 2014. The remaining 123 lines functioned properly throughout the smolt passage season.

During the 2014 smolt passage season the majority of piscivorous birds were observed at the Spillway Forebay (SWFB), and the majority of foraging birds observed were gulls (See Table 4). There were a total of 11,280 piscivorous birds observed throughout the smolt passage season (April 1st, 2014 - September 15th, 2014) at JDA.

In summary, the JD BRZ Avian lines combined with boat hazing continued to be effective in deterring a majority of gulls from actively feeding on smolts at JD. Similar to the last three years, the total avian presence/predation at JD Tailrace BRZ was negligible and well under control in 2014.

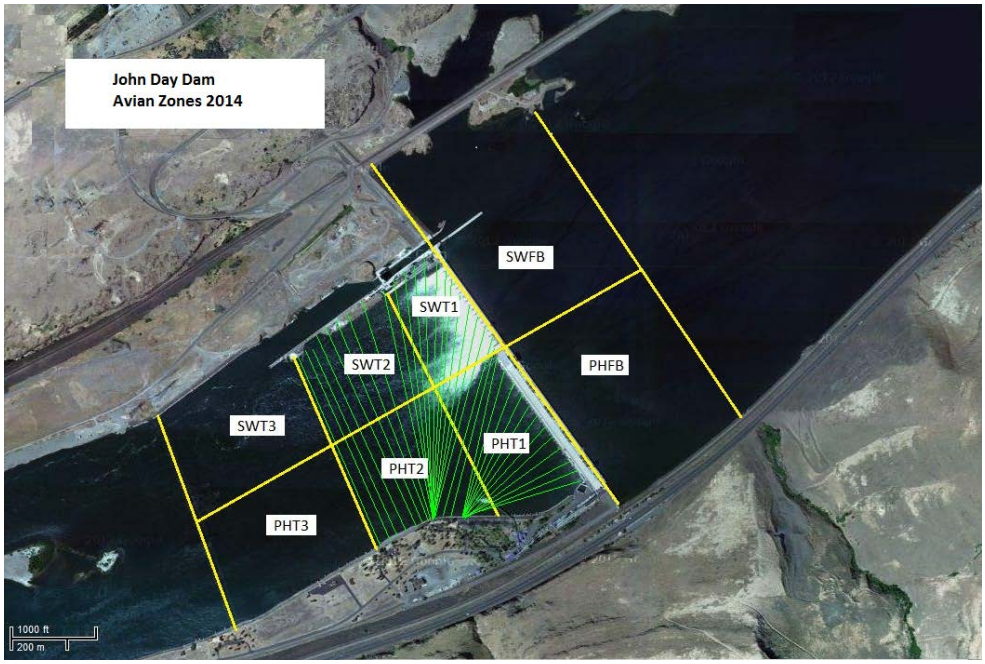


Figure 3: Avian array at JDA Tailrace BRZ installed in 2010 and re-tensioned for 2014 (Powerhouse Forebay-PHFB, Spillway Forebay-SWFB, Powerhouse Tailrace 1-PHT1, Spillway Tailrace 1-3 [SWT1-SWT3], Powerhouse Tailrace 1-3 [PHT1-PHT3]).

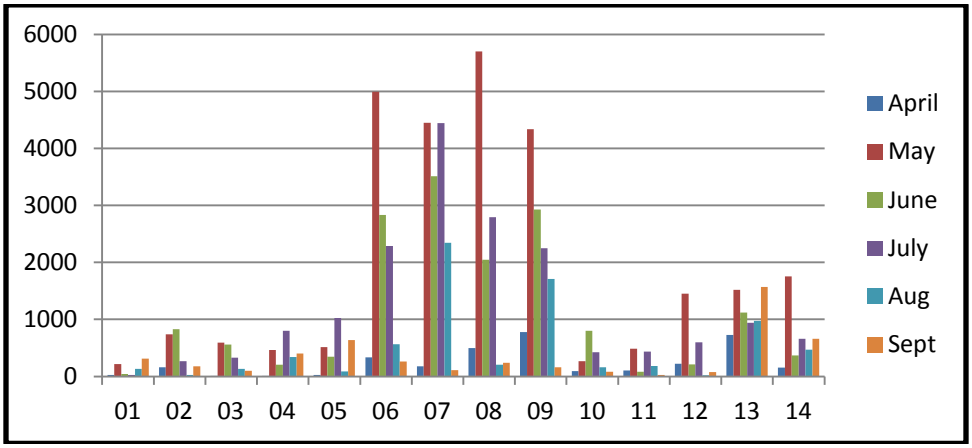


Figure 4: Gull presence per month from 2001-2014 during smolt passage season at John Day Dam

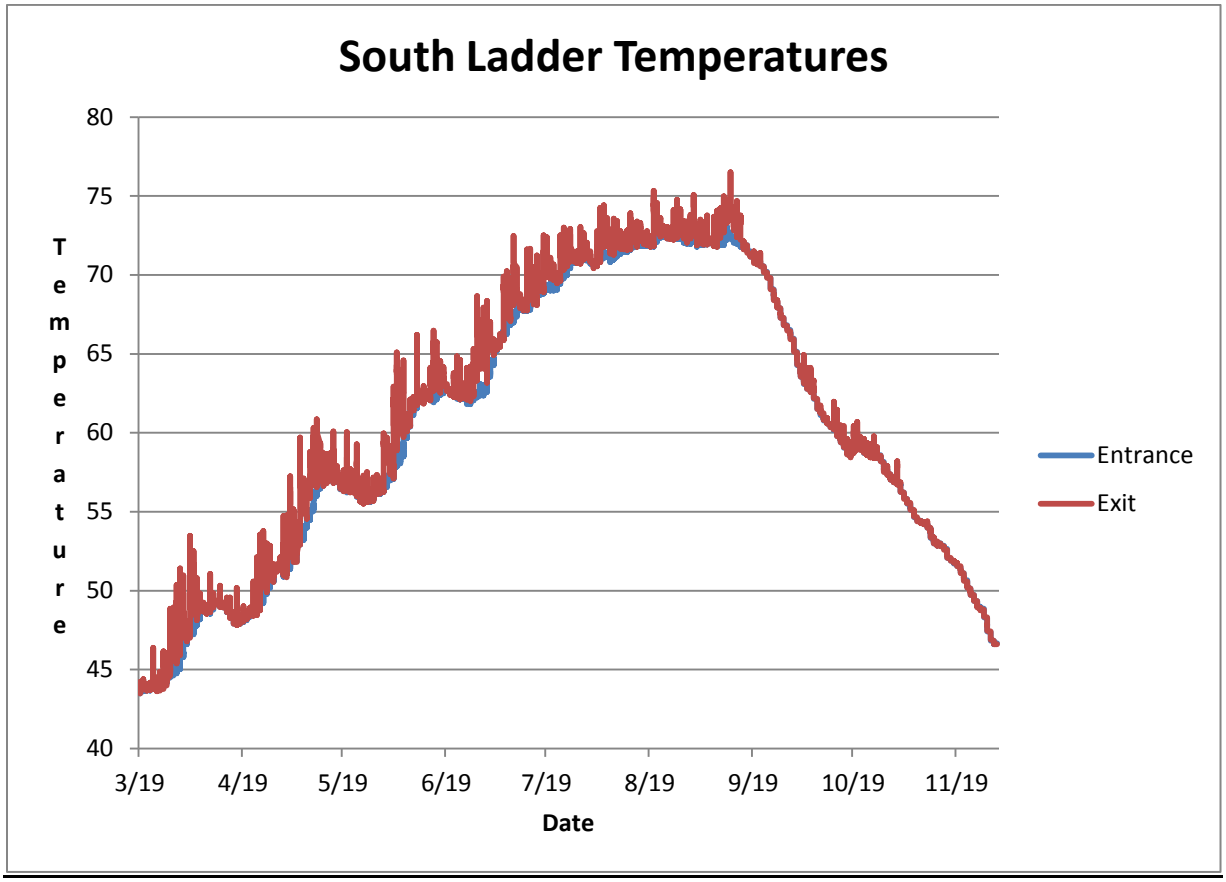
	Gull		Cormorant		Caspian tern		American white pelican		Grebe		Total birds in zone
	F	NF	F	NF	F	NF	F	NF	F	NF	
PHFB	399	307	1	18	8	0	155	87	1533	3464	5976
SWFB	109	123	0	6	1	0	7	24	35	99	404
PH1	102	4	5	2	0	0	1	1	0	0	115
PH2	217	2	0	0	0	0	0	8	0	0	227
PH3	797	188	0	0	0	0	242	21	0	0	1248
SW1	82	18	1	2	0	0	0	0	0	0	103
SW2	83	33	26	15	0	0	53	104	0	0	314
SW3	1507	96	0	138	0	0	984	148	0	20	2893
Totals	**3296**	**771**	**33**	**181**	**9**	**0**	**1442**	**393**	**1568**	**3583**	**11280**

Table 4: Piscivorous bird presence at John Day Dam, organized by Foraging (F) Not Foraging (NF) and location (See Map 1).

Water Quality

Temperatures

Daily River Temperature was read at JDA south forebay's electronic display during the daily fishway inspections. Additionally, the Water Temperatures were collected in both fish ladders at the entrance and exits with HOBO data loggers by JDA Fisheries, 1 April – Nov. 30 (Fig. 4.)
Water Clarity was read by Secchi disc at one counting station during the daily fishway inspections.



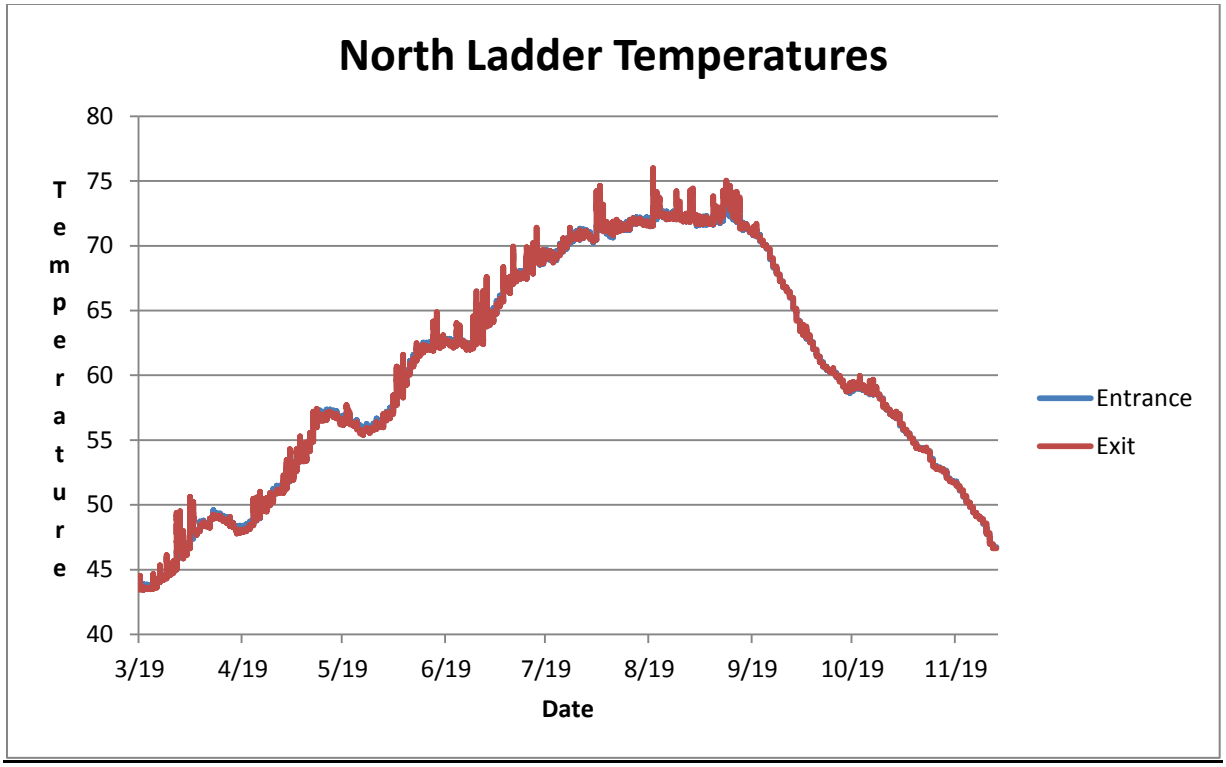


Figure 5: Temperature observed in JDA North and South fish ladders.

Fishway Velocities – Collection Channel

During the 2014 Adult Fish Passage Season (March 1st- November 1st), the South Fishway collection channel velocities were estimated on a weekly basis. Wooden floats were dropped at the head of the collection channel, and channel travel times were recorded. These results were posted in JDA status reports throughout the year. The 2014 JDA South Fishway collection channel velocities were within the Fish Passage Plan (FPP) criteria of 1.5 to 4.0 f³/s (See Figure 7).

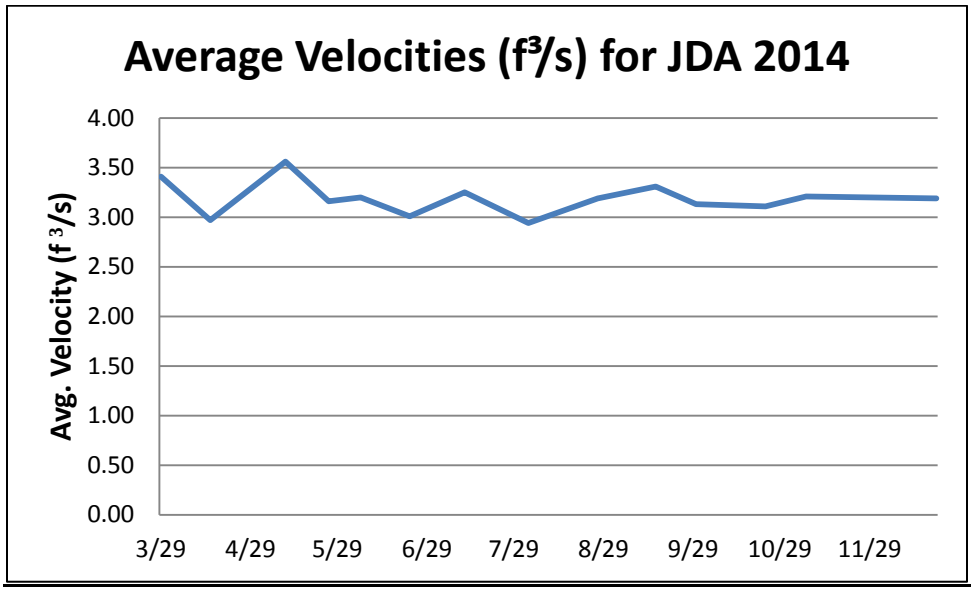


Figure 7: JDA South Fishway collection channel velocities during the 2014 Adult Fish Passage Season (Mar. 1st – Nov. 1st).

Discussion

2014 was a great year for JD fish passage as all Fishways performed well and without a major failure. There were only five OOCs total, which indicates a near perfect compliance with the FPP requirements. This in turn, clearly demonstrates that all JDA fish passage's control and regulating devices have been properly maintained, operated and monitored. Kudos to all JDA Maintenance, Operations and Fisheries personnel for their dedication and hard work in improving fish passage at JDA Dam.

Research

University of Idaho – Testing of JD North LPS and monitoring of lamprey passage at both JD adult fishways. Maintenance and weekly downloading of half-duplex PIT receivers located at the fishways' exits during the 2014 fish passage season.
Also, radiotelemetry monitoring of adult salmonids passing through two JD adult fishways. Installation, maintenance and weekly downloading of radiotelemetry receivers.

Pacific Northwest National Laboratory - Standard testing of the summer juvenile salmonids survival (subyearlings only in 2014.) Intensive collection of spring and summer juveniles at JD SMF for this two dam study (McNary and JD.)

Oregon Dept of Fish and Wildlife – Ongoing BPA funded research associated with the Northern Pikeminnow Management Program. The pikeminnow sampler worked closely with the WDFW/PSMFC northern pikeminnow angling crew that fished the John Day tailrace in order to collect diet sampling and biological data from harvested pikeminnow.

Oregon Department of Fish and Wildlife and fish Passage Center- Continued to perform the monthly fishway inspections of adult and juvenile fish passage systems.

Washington Department of Fish and Wildlife- Performed dam angling from the PH tailrace deck to remove northern pikeminnow.

Normandeau Environmental Consultants – Continued to perform the annual fish counting at the north and east fishways via count stations.

Fisheries Field Unit - Provided over site and standardization to the piscivorous bird monitoring program at the project.

U.S. Dept of Agriculture- Performed intensive avian hazing April 16 to July 31 via pyrotechnics from a boat.

Confederate Tribes of the Umatilla Indian Reservation- Captured adult Pacific lamprey as part of the on-going project to restore lamprey to various tributaries. CTUIR cooperated with the Nez Perce, Warm Springs, and Yakama Nation to help their lamprey re-planting programs.

U.S. Fish and Wildlife Service – Tagged adult Pacific Lamprey trapped in the North and South fishways at John Day. This was part of a study for the Snake River dams on adult passage

Pacific State Marine Fisheries Commission – Performed daily passage indexing and run timing of juvenile salmonids at the smolt monitoring facility. Also, maintained a wide array of pit tag detectors on project.