U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#36-2019

Project: McNary
Biologist: Bobby Johnson and Denise Griffith
Dates: November 1 to 7, 2019

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 14 turbine units available for service. (See table & comments below for details).	**Hard**	**Soft**
	X	Available turbines operated within 1% peak efficiency? Constraint in effect.		X

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS).

	OOS		RTS		
Unit(s)	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	05/23	0943	01/09/20	NA	Turbine blade packing.
14	08/19	1221	01/02/20	NA	Thrust bearing.
13	06/10	0610	12/12	NA	Thrust bearing.
8	10/31	0924	11/21	NA	Thrust bearing inspection.
12	11/04	1159	11/04	1713	Trash rack inspections. (ROV)
10 & 11	11/04	1436	11/04	1713	Trash rack inspections. (ROV)
9, 10 & 11	11/05	0724	11/05	1138	Trash rack inspections. (ROV)
6 & 7	11/05	1025	11/05	1544	Trash rack inspections. (ROV)
3 & 4	11/05	1432	11/05	1639	Trash rack inspections. (ROV)
1, 2, 3 & 4	11/05	0703	11/05	1237	Trash rack inspections. (ROV)

Comments: All return to service dates are subject to change. For the ROV trash rack inspections, the unit outages were rotated during each day. The soft one percent peak efficiency constraint began on November 1. At times, units ran outside the constraint at BPA's request.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on November 1, 3 and 5. The general maintenance staff raised the picketed leads on November 1.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.4' on Nov 5
X		Oregon Count Station Differential	0.0' to 0.5'	
X		Washington Exit	Head over weir 1.0' to 1.3'	
X		Washington Count Station Differential	0.0' to 0.5'	

Comments: Debris loads were minimal to light near the Oregon exit and minimal to very light near the Washington exit. Picketed leads were cleaned as required.

At the Oregon exit, multiple weir alarms came in on November 5. The out of criterion point mentioned above was observed while the alarms were coming in. The ladder returned to criterion after the alarms were reset. The operators rechecked the exit set points the next day. The traveling screens debris trough was cleaned as needed. Scheduled maintenance of the traveling screens occurred on November 6.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		North Oregon Entrance Head Differential	1.0' – 2.0'	2.1' on Nov 1.
	X		NFEW2 Weir Depth	≥ 8.0'	7.9' on Nov 1.
X			NFEW3 Weir Depth	≥ 8.0'	
X			South Oregon Entrance Head Differential	1.0' – 2.0'	
	X		SFEW1 Weir Depth	≥ 8.0'	7.9' on Nov 1.
	X		SFEW2 Weir Depth	≥ 8.0'	7.9' on Nov 1.
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.0 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: The out of criteria points listed above for November 1 were possibly due to calibration or set point drifts and/or control issues.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			WA shore Wasco County PUD Turbine Unit
	Yes		WA shore Wasco PUD Bypass
		Yes	Oregon shore Fish Pump 1, OOS to December 31.
Yes			Oregon shore Fish Pump 2, Blade angle: 24°
Yes			Oregon shore Fish Pump 3, Blade angle: 26°
Yes			OR North Powerhouse Pool supply from juvenile fishway

Comments: There are no problems to report.

Juvenile Fish Passage Facility

The juvenile system remains in primary bypass for the fall season. Light maintenance and preparations for the winter outage continued at the facility. The full flow flume adult flush line valve remained partially closed.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Powerhouse forebay debris load acceptable?	Minimal to light.
X			Trash rack differentials measured this week?	Daily.
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris was a mixture of aquatic vegetation and woody material. New incoming debris was minimal. The spillway debris load would be described as minimal. Much of the debris moved between the powerhouse and the Oregon shoreline, which is causing the debris to dissipate.

This week, a few small pieces of woody material were removed from two slots. An ESBS rope was removed for the orifice in 7B slot on November 3.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
	X		VBSs differentials acceptable?

Comments: The brush cycles for the screens in units 6, 8, 10 and 13 remained in timer mode. Camera inspections did not occur this week.

Daily VBS differential monitoring continued. Three high differentials were recorded. The high readings occurred when the units were at 80 MW. These screens and seven others were cleaned on November 1, 5 and 6. No fish were observed.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X			Orifices operating satisfactory?	42
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices were operated as required for VBS cleaning. Orifice valve operators were repaired as needed.

Bypass Facility:

Yes	No	NA	Item
		X	Sample gates on?
		X	PIT-tag sampling system on?

Comments: During the fall primary bypass season, all systems remain out of service with light maintenance ongoing.

The separator remained dewatered for inspection. The paint will again be tested to for lead and other elements. After which, the process needed to clean the separator will be determined and proceed. Next, measures of the wall and floor thickness will occur. Finally, a path forward for rehabilitation will be determined.

TSW Operations:

The TSW in spillbay 19 remained closed for the season. The TSW in bay 20 is being operated per the adult steelhead top spillway weir (TSW) passage efficiency study plan.

River Conditions

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
112.5	96.0	2.8	0.0	54.0	51.0	6.0	6.0

Comments: The above data is from the control room. The spill recorded was due to the TSW passage study.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on December 3.

Avian Activity: Casual avian observations continued. Bird numbers appear to be fluctuating with their migration and the juvenile shad out migration.

Gull activity fluctuated in the powerhouse zone with birds feeding and roosting. At times, gulls were noted feeding in large numbers. A few cormorants were noted also.

In the spill zone, gull and cormorant numbers again fluctuated. No pelicans or terns were observed this week. All birds were feeding or roosting. Feeding was especially high when the TSW was open. Much fewer gulls and cormorants roosted on the top of the navigation lock and Washington ladder walls. Adult and juvenile birds were observed.

In the bypass outfall zone, the gulls and cormorants were mostly roosting on the full flow pipe. However, at times, a fair numbers of these birds were noted feeding.

The laser for bypass outfall hazing remained in place. The laser did appear to be fairly effective on the wing wall. The outfall programming has not yet been verified at this time. Thus, bird counts remained high near the outfall. At this point, further evaluation of laser technology will resume next spring.

In the forebay zone, an occasional gull flock, grebe or cormorant was observed. Fluctuating numbers of gulls and cormorants were noted roosting outside the zone along the Washington shore line. Large gull flocks have been staging around the project.

Invasive Species: The next mussel station examinations will occur in late November.

Fish Rescue/Salvage**:** No fish rescue occurred this week.

Research: The University of Idaho has not yet completed removing their equipment for the adult lamprey passage study.

The adult steelhead top spillway weir (TSW) passage efficiency study continued. A dive to repair/replace the cable on the trash rack in 1B slot is scheduled to occur in early December at this time.

Project: Ice Harbor
Biologist: Ken Fone
Dates: November 1 – November 7, 2019

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Ice Harbor Unit Outages (OOS) and Return to Service (RTS):

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	8/14/19	0743	---	---	Annual maintenance and overhaul
5	10/15/19	0741	---	---	Install new head gate cylinder in 5A

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on November 5, 6, and 7.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head ≤ 0.3’	
X		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head ≤ 0.3’	
X		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
		X	South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.7’
X			South Shore Channel Velocity	1.5 – 4.0 fps	
		X	North Powerhouse Entrance (NFE-1) Weir Depth	≥ 8.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Shore Entrance (NEW-2) Weir Depth	≥ 8.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’ – 2.0’	2.6’

Comments: During the night of October 28, the wind picked up and was blowing from the northeast. The water turbulence broke loose the south fish ladder exit debris boom. On November 5, the boom was re-attached to its anchor points on the wall of the dam and on the shore.

The picketed leads at the fish count stations were raised on November 2, because the adult fish count season ended on October 31.

An electrician performed annual preventative maintenance on the south shore and north powerhouse entrance weir gates on November 4. This involved electrical testing on the gates, while running each gate to its upper and lower limits, one gate at a time. At least one gate was fully open at each location during the testing. However, all of the south shore auxiliary water supply pumps (AWS) had to be turned off for about 5 minutes at a time to take the water pressure off of each gate after raising each all of the way up, to be able to lower them down. Both gates at each location were open for approximately 30 minutes at a time, which means the entrance channel/tailwater head differential was most likely below criteria for at least part of the time. By performing the preventative maintenance now, parts can be ordered ahead of time and other preparations made to do any necessary repairs during the winter maintenance period.

The south shore and north shore entrance channel/tailwater head differentials were above criteria on the November 6 and 7 inspections, respectively, when the tailwater was on the low side. The powerhouse operator turned off a second south shore AWS pump to bring the south shore entrance head differential into criteria. The north shore fish ladder normally has two AWS pumps running to meet entrance criteria, and shutting off a second north shore pump may result in the head differential being too low. The subsequent inspection showed the north shore head differential being in criteria when the tailwater was higher.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
6-7 pumps	1-2 pumps		Status of the 8 South Shore AWS Pumps
2 pumps	1 pump		Status of the 3 North Shore AWS Pumps

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average of 25 square yards
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0-5%
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
	X		STSs deployed in all slots and in service?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	X		STSs inspected this week?
		X	STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: None.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Juvenile Fish Facility: The fish facility is being operated in primary bypass.

Fish Sampling: Sampling is ended for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is ended for the year.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
22.5	15.1	0	0	56	51	9.0	7.6

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Monthly strainer inspections for lamprey ended in June and will start again in December. Unit 1, 2, and/or 4 strainers were cleaned on November 2 and 7, due to higher water pressure differentials across the strainers. A total of approximately 2,225 juvenile shad mortalities were found.

Avian Activity: There were moderate to high numbers of gulls observed around the project. The birds were observed to be foraging downstream of the powerhouse and at the navigation lock discharge in the tailrace.

Invasive Species: No new exotic species have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Anchor, frozen and properly disposed of in a landfill. Sampling is done for the year.

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis
Dates: November 1 - 7, 2019

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Lower Monumental Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
Unit 1	11/05/2019	11:15	11/05/2019	12:35	STS Inspections
Unit 2	7/15/2019	07:20	1/10/2020	ERTS	Annual Maintenance/Draft Tube Liner Repair
Unit 3	11/05/2019	13:50	11/05/2019	15:40	STS Inspections
Unit 4	10/09/2019	16:05	12/12/2019	ERTS	Governor Control
Unit 5	10/03/2019	15:50	1/23/2020	ERTS	Governor Control
Unit 6	8/05/2019	12:20	11/21/2019	ERTS	6 Year maintenance/Blade Seal Replacement

Comments: Units went into Hard Restraint at 0001 on April 1.

Adult Fish Passage Facility

The adult fishways were inspected by USACE biologists on November 4, 6 and 7.

Fish Ladder:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head $\leq$ 0.5’	
X		North Ladder Picketed Lead Differential	Head $\leq$ 0.4’	
X		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
X		South Ladder Exit Differential	Head $\leq$ 0.5’	
X		South Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Comments: None.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Shore Entrance (NSE-1) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 8.0’ or on sill	
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
		X	South Powerhouse Entrance (SPE-1) Weir Depth	$\geq$ 8.0’ or on sill	
		X	South Powerhouse Entrance (SPE-2) Weir Depth	$\geq$ 8.0’ or on sill	
X			South Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
		X	South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 6.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: South Powerhouse Entrance weir (SPE-1) was on sill during all inspections with readings of 6.8, 7.1 and 7.0 feet respectively.
South Powerhouse Entrance weir (SPE-2) was on sill during all inspections with readings of 6.8, 7.1 and 7.0 respectively.
South Shore Entrance weir (SSE-1) was on sill during all inspections with readings of 7.3, 7.8 and 7.6 feet respectively.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	54 yd^2
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 – 20 %
	X		Any oil seen in gatewells?	

Comments: None.

STSs/VBSs:

Yes	No	NA	Item
X			STSs deployed in all slots and in service?
	X		STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
X			STSs inspected this week?
X			STSs inspection results acceptable?
		X	VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: STS's were operating in Cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm. STS inspections took place on November 5.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17
	X		Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: The facility was dewatered at 1200 on October 3 for cleaning and winter maintenance.

Transport Summary: Transport season ended on September 30.

Spillway Weir: There was no spill during this reporting period.

River Conditions

River conditions at Lower Monumental Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)*		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
21.5	15.0	0.0	0.0	51.5	51.0	5.1	4.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers were not checked during this reporting period.

Avian Activity: Gulls and cormorants were the predominant piscivorous bird species observed during fish ladder inspections this week.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
11/04/2019	15:00	0	4	0	0	0
11/06/2019	10:00	11	3	0	0	0
11/07/2019	12:20	0	2	0	0	0

Comments: Bird hazing efforts by USDA personnel ended at the end of the working day on June 2. Daily bird hazing effectiveness tailrace observations ended with the June 30 observation.

Invasive Species: No zebra or quagga mussels were observed during monitoring station inspections on October 1.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by PSMFC and Anchor, frozen and properly disposed of in a landfill. Juvenile fish collection ended at 0700 on September 30.

Fish Rescue/Salvage: No Fish Rescue/Salvage took place during this reporting period.

Research: No Research took place during this reporting period.

Project: Little Goose
Biologists: Scott St. John and Richard Weis
Dates: November 01 – November 07, 2019

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Little Goose Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	04/21/17	00:54	03/31/21	17:00	Spider and Upper Guide Bearing Repair
2	10/07/19	07:15	11/01/19	17:00	Unit Annual, VBS/ESBS Inspection
6	11/04/19	09:33	11/04/19	12:50	Trash Raking
4	11/04/19	12:50	11/04/19	15:40	Trash Raking
3	11/04/19	13:40	11/04/19	15:40	Trask Raking
3	11/05/19	08:15	11/05/19	08:50	Trash Raking
1	11/05/19	09:05	11/05/19	11:00	Trash Raking

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility, Anchor QEA and/or Oregon Department of Fish and Wildlife staff inspected the adult fishway on November 03, 05 and 07.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head $\leq$ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head $\leq$ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
	X		Fish Ladder Cooling Water Pump in Service		
		X	Fish Ladder Exit Cooling Water Pump Operating Satisfactorily		

Comments: Cooling water pump was shut off for the season on September 23.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurement
X			South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	
X			South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	
X			South Shore Channel/Tailwater Differential	1.0’ – 2.0’	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 7.0’ or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	$\geq$ 7.0’ or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	
	X		North Shore Entrance (NSE-1) Weir Depth	$\geq$ 6.0’ or on sill	3.6
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	3.6
X			North Shore Channel/Tailwater Differential	1.0’–2.0’	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.1

Comments: The adult fishway continues to operate in manual mode. The electronic equipment used to measure NSE weir depth was found out of service on the August 11 inspection and is awaiting repairs. The November 05 inspection found NSE weir depth out of criteria, however physical measurements could not be taken as the NSE elevator was out of service. The November 05 inspection also found the surface velocity at NPE out of criteria. Subsurface water velocity was measured near NPE on October 27 using a Rickly velocity meter and averaged 2.7 feet per second.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Trash rack and VBS differentials were measured a day after the report period due to Unit operating range constraints. Trash rack differentials for Units 1 and 3 were measured on November 08 and were in criteria. There is approximately 3,000 square feet of floating woody debris inside the trash shear boom in the immediate forebay.

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: ESBS/VBS underwater camera inspections were conducted on Unit 2 on October 10 and 11. The inspection found a VBS fastener bar in gatewell 2B partially dislodged. Powerhouse maintenance crews currently have gatewell 2A dewatered for fastener upgrades and will repair the fastener in gatewell 2B during the current annual maintenance outage. VBS differential for Units 1 and 3 were measured on November 08 and were in criteria.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: None.

Collection Facility: The juvenile bypass system is currently operating in primary bypass, with the Juvenile Fish Facility conducting maintenance and cleanup. Daily collection for condition sampling ended on November 01 at 07:00. The last every other day truck departed on November 01.

Transport Summary: The collection and transportation facility operated within criteria this report period. A total of 37 fish were collected, of which 80 transported via truck, which includes fish collected on October 31. The descaling and mortality rates were 0.0% and 0.0% respectively. There were 0 adult lamprey removed from the separator, raceways, and sample and released one mile above the Dam at Little Goose Landing.

Spillway Weir: The adjustable spillway weir (ASW) was closed on July 23 at 15:17 per the guidance outlined in the Columbia Basin Teletype (CBT). The ASW will remain closed for the season.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		**Daily Average Spill (kcfs)**		**Water Temperature* (°F)**		**Water Clarity (Secchi disk - feet)**	
High	Low	High	Low	High	Low	High	Low
26.0	15.6	0.0	0.0	52.4	51.1	6.0	5.9

*Ladder temperature.

Other

Inline Cooling Water Strainers: Cooling water strainers were last inspected on July 3 with no lamprey being observed. Inspections will resume in December per the Fish Passage Plan.

Avian Activity: Daily Piscivorous bird counts at Little Goose Dam ended on October 31 for the 2019 season.

Invasive Species: No zebra or Quagga mussels were observed.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by Oregon Department of Fish and Wildlife and Anchor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Little Goose Dam for this reporting period are reported below.

Date	**Sample**	**Collection***
11-01	107	107
Totals	107	107

*Collection and sample numbers are the same as the facility when sampling at 100%

Gas Bubble Trauma (GBT): The last gas bubble monitoring occurred on July 15.

Fish Rescue/Salvage: None.

Research: N/A

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: November 1-7, 2019

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.		X

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
Unit 2	11/04	0800			Overhaul

Comments: None.

Adult Fish Passage Facility

Lower Granite Corps biologist's and Anchor Environmental biologist's inspected the adult fish ladder November 2, 4, 6, and 7.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5'	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3'	
X			Fish Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
		X	Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0'	7.6', 7.3', 7.7'
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0'	7.6', 7.3', 7.7'
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0' or on sill	
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	≥ 7.0' or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 7.0' or on sill	Closed
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
	X		Collection Channel Surface Velocity	1.5 – 4.0 fps	1.3, 1.2, 1.1, 1.2

Comments: Since May 4 the fish ladder control system screen and local reading for the south shore channel/tailwater and depth over the SSEs have been inconsistent. SSE gates remain in local operation until Operation and District engineering can resolve the control system issues. SSEs out of criteria readings were due to the gated inability to

adjust to changing tailwater. SSE gates were repositioned to a depth of greater than 8.0 feet in response to out of criteria readings.

NPE channel velocity sensor readings have consistently read below 1.5 fps. Surface velocity is being verified using tape measure and stopwatch and found to be in criteria. Velocities have been reading below 1.5 fps at both north powerhouse and north shore sensors. Biologists, operators, and District engineers are working to resolve fish ladder velocity issues and control system issues.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
	Yes		AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: None.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: None.

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
	X		VBSs differentials checked this week?
		X	VBSs differentials acceptable?

Comments: None

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The collection channel is operating primarily with 14” orifices and some 10” orifices opened to maintain optimal flume flow in response to forebay elevation. The north makeup water valve remains in local control due to an automatic control motor hardware failure. Intermittent issues with local and remote operation of orifices for back flushing continue to be observed. Problems are reported to operations when they are identified. Orifices 2BN and 5AN are inoperable due to failed solenoids. Attempting to operate these orifices results in a blown fuse in the panel.

Collection Facility: Collection for transport and condition sample ended at 0708 hours November 1. Facility operation was changed to primary bypass at that time.

Transport Summary: Truck transport ended with the last truck departing Lower Granite November 1.

Spillway Weir: No spill

River Conditions

River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
20.5	15.6	0	0	50.0	46.0	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Inline cooling water strainers were not inspected during this reporting period.

Invasive Species: No signs of Zebra/Quagga mussels were found on submerged substrates.

Avian Activity: Biologist daily piscivorous bird counts at Lower Granite Dam ended October 31.

Gas Bubble Trauma (GBT) Monitoring: GBT monitoring has ended for the year.

Adult Fish Trap Operations: Adult trap operation remains at 20% sample rate in 24 hours 7 day a week operation. Collection of B-run steelhead brood stock for IDFG continues.

Fish Rescue/Salvage: Fish rescue operation of the floating guide wall dry dock occurred from 1022-1034 hours November 5. One adult unclipped steelhead and one clipped adult chinook were recovered and released in the forebay. Fish rescue operations of unit 2 scrollcase occurred from 1020-1135 hours November 5. Four crawdads were removed from the scrollcase.

Research:

USGS Juvenile Fall Chinook Salmon Growth and Origin

USGS began collection of previously tagged subyearling Chinook utilizing LWG juvenile collection facility SbyC system ended November 1.

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

National Marine Fisheries Service (NMFS) Ancillary Adult Passage Monitoring

Fish that were PIT as juveniles at LWG are monitored as returning adults through the river and LWG facility. For each returning adult the following is estimated; 1) passage time between sets of detection PIT tag coils, 2) whether the fish was handled at the adult trap, 3) duration the fish was held at the adult trap, 4) overall passage time from ladder entrance to exit, 5) whether the turnpool gate was open or closed during passage. This will be the last year of this evaluation.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning April 4 through December 15. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook salmon, and sockeye salmon ascending the ladder April 4-December 15. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS

Bull trout will be incidentally collected as part of the normal adult trap daily sample as well as the recaptured previously PIT tagged using adult SbyC system. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.