

**U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#41-2018**

Project: McNary

Biologist: Bobby Johnson and Denise Griffith

Dates: December 7 to 13, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
6	10/01	0740	12/13	1245	Nine year overhaul/ESBS removal.
2	12/08	0730	12/10	1137	Failed ESBS in B slot/ESBS removal.
3	12/10	0651	12/10	1351	ESBS removal.
4	12/10	1140	12/10	1630	ESBS removal.
5	12/11	0555	12/11	1206	ESBS removal.
7	12/11	1107	12/11	1553	ESBS removal.
8	12/13	0633	12/13	0929	ESBS removal.
9	12/13	0902	12/13	1329	ESBS removal.
10	12/13	0929	12/13	1540	ESBS removal.

Comments: Units were operated outside the soft one percent constraint at BPA's request as needed.

Adult Fish Passage Facilities

McNary fisheries biologists performed adult fishways measured inspections on December 7, 9 and 12.

Fish Ladder Exits:

Yes	No	Location	Criteria	Comments
X		Oregon Exit	Head over weir 1.0' to 1.3'	
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 very light (woody material and aquatic vegetation) near the both ladder exits. Trash racks were cleaned by the general maintenance staff as needed. There are no problems to report.

Fishway Entrances and Collection Channel:

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

Comments: On December 8, south entrance weir, SFEW1 ran up to the upper limit. The operator reset the weir. On December 12 to 13, from 1705 to 1559 hours, power to both south entrance weirs, SFEW1 and SFEW2 was off. Water had gotten into the control cabinet by way of a failed conduit. The ladder remained in criteria as the tailwater elevation did not change significantly.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			WA shore Wasco County PUD Turbine Unit.
	X		WA shore Wasco PUD Bypass.
X			Oregon Ladder Fish Pump 1, Blade angle: 20 to 22.
X		X	Oregon Ladder Fish Pump 2, Blade angle: 20 to 21.
X			Oregon Ladder Fish Pump 3, Blade angle: 22.
X		X	OR North Powerhouse Pool supply from juvenile fishway.

Comments: On December 7, from 0607 to 0616 hours, fish pump 2 was out of service during a bus switch. On December 10, from 0800 to 1100 hours, the juvenile facility collection channel switch to emergency bypass as ESBS removal began. The channel will no longer be supplying flow to the Oregon north powerhouse pool.

Juvenile Fish Passage Facility

On December 10, the juvenile fish collection channel was switched from primary to emergency bypass as ESBS removal began. Maintenance continued at the facility and began in the collection channel. When installing the channel stop logs, two to three dozen fish were observed, half of which were adult steelhead. Adult Sturgeon, channel catfish, smallmouth bass, walleye and shad were also noted. Juvenile shad were observed along with a couple of salmonid smolts.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Light to moderate near powerhouse.
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: The forebay debris loads near the powerhouse were light to moderate. The debris consisted of aquatic vegetation and woody material. New incoming debris loads were minimal. Debris accumulations along the spillway were minimal.

No trash racks were cleaned. On December 13, a small amount of ESBS gear box oil was removed for 9B slot with an absorbent boom.

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

Yes	No	NA	Item
X		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: ESBSs were deployed in all slots until December 10, when removal began. From that date to December 13, ESBSs were raised for units 2 through 10. No ESBS removal occurred on December 12 due to issue with the crane.

ESBS camera inspection will resume next spring. After being raised, the screens at units 2 through 10 were found to all be clean with only juvenile shad noted on top of each brush.

The brush cycles for the screens in 1C, 2B, 3A, 3C and 4A slots remained in timer mode. On December 8, the screen in 2B slot failed. The unit was removed from service until the ESBS could be raised. On December 7 and 8, it was observed that the PLC was not communicating with the ESBSs in unit 4. The operators rebooted the PLC.

On December 9 and 12, the brush on the screen in 1A slot was noted not fully cycling. The operators reset the brush cycle each time, which resolved the issue. On December 9, the ESBS in 13A slot tripped an alarm and was switched to timer mode. On December 10, the ESBS in 9B slot tripped an alarm and was switched to timer mode. However, the brush on the screen in 9B slot was intermittently not fully completing its cycle. The operators monitored the brush cycle and reset it as required until the ESBS was raised on December 13. Before being raised on December 11, both brush cycles for the screens in 6A and 6C slots were reset.

VBS differential monitoring occurred daily but will conclude when all ESBSs have been raised. No high differentials were measured. On December 13, one screen was cleaned. No fish mortalities were noted.

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

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

Comments: On December 10, the channel was switched from primary to emergency bypass. There were 42 orifices in use during each bypass operation. Orifice valve operators were repaired as needed this week.

Before the switch, The channel stop log hoist pendant had to be repaired by the electrical staff before switching to emergency bypass. With station service, unit 1 out of service and dewatered, the deck fire water, which is river water, was used to flush the full flow pipe when switching to emergency bypass.

All other systems were removed from service with no problems to report. The dewatering structure has been winterized and maintenance can begin on all systems downstream of the channel bulkheads.

Bypass Facility:

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

Comments: All systems remained out of service for winter maintenance, which continues. On December 10, winterization was completed. Maintenance occurred on the PIT tag slide gates and the sample tanks crowding devices this week.

TSW Operations: The TSWs remained out of service.

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
150.1	114.6	0.0	0.0	47.0	46.0	6.0	6.0

Comments: The above data is supplied by McNary control room.

Other

Inline Cooling Water Strainers: The next cooling water strainer examinations will occur on January 8.

Avian Activity: Casual avian observations were made during other inspections. No pelicans or terns were noted on project. Gull and cormorant numbers appeared to fluctuate with the juvenile shad outmigration. Both species were roosting on structures around the tailwater area. Both were feeding in the powerhouse flow and at the juvenile outfall, until the system was switched to emergency bypass. No birds have been observed at emergency outfall. Gull and cormorant numbers appear to be decreasing.

A gull flock, gull, bald eagle, grebe or cormorant was occasionally noted in the forebay area.

The gull flock and a few cormorants were noted roosting around the project outside the observation zones and areas near both boat docks were used.

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

Fish Rescue/Salvage: None occurred.

Research: None occurred.

Project: Ice Harbor

Biologist: Ken Fone

Dates: December 7 – December 13, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
2	4/25/16	0606	---	---	Runner replacement
4	9/20/18	1619	---	---	Investigate for possible oil leak
3	11/7/18	0753	---	---	Runner replacement
6	12/3/18	0954	---	---	Install Kaplan piping and investigate for possible oil leak

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on December 10, 12, and 13.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
X		North Ladder Exit Differential	Head \leq 0.3'	
X		North Ladder Picketed Lead Differential	Head \leq 0.3'	
X		North Ladder Depth over Weirs	Head over weir 1.0' to 1.3'	
X		South Ladder Exit Differential	Head \leq 0.3'	
X		South Ladder Picketed Lead Differential	Head \leq 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	\geq 8.0' or on sill	
X			South Shore Channel/Tailwater Differential	1.0' – 2.0'	
X			South Shore Channel Velocity	1.5 – 4.0 fps	
		X	North Powerhouse Entrance (NFE-2) Weir Depth	\geq 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0' – 2.0'	
		X	North Shore Entrance (NEW-1) Weir Depth	\geq 8.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0' – 2.0'	

Comments: None.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	3 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)	87 square yard
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 to 10%
X			Any oil seen in gatewells?	3C gatewell and head gate slots

Comments: A light oil sheen was first observed in 3C gatewell and head gate slots on November 7. Project maintenance staff believe that the sheen is residual oil off of the intake gate hydraulic cylinder rod. The oil sheen was documented and reported to the proper authorities. Oil absorbing socks were deployed in the slot on November 19.

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: The STSs are in cycle-run mode. Unit 2 and 6 STSs were pulled on December 11, since the units will not be operated through December 15.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18-20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifice 1AS would only shut part way on December 13, so it was left open in place of orifice 1AN until it could be fixed.

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

Fish Sampling: Sampling is done for the year.

Removable Spillway Weir (RSW): Voluntary spill for fish passage is done 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
22.7	11.8	0	0	47	45	10.4	9.8

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1 and 5 strainers were cleaned on December 8, 10, 12, and 13, because of juvenile shad plugging up the strainers. A total of approximately 12,000 dead juvenile shad were removed.

Avian Activity: There were large numbers of gulls, pelicans, cormorants, mergansers, and grebes observed around the project. Most of the gulls, pelicans, cormorants, and mergansers were observed foraging downstream of the powerhouse and the grebes were observed foraging in the forebay. A grebe was observed in gateway 1A on December 10. On December 11, a long pole was used to guide the grebe through the orifice into the juvenile fish channel, and out through the bypass pipe.

Invasive Species: No exotic species that are new to the area 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: There is no on-site research occurring at this time.

Project: Lower Monumental

Biologists: Chuck Barnes and Raymond Addis

Dates: December 7 - 13, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
Unit 1	12/10/2014		2/1/2019	ERTS	Rehabilitation Overhaul
Unit 4	9/19/2018	1600	01/11/19	ERTS	Inspection of Oil Governor System/Blade Seal Replacement

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

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on December 11, 12 and 13.

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		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 (SPE-1) was at sill during all inspections with readings of 6.3, 6.8 and 7.4 feet respectively.

South Powerhouse Entrance (SPE-2) was at sill during all inspections with readings of 6.3, 6.8 and 7.4 feet respectively.

South Shore Entrance (SSE-1) was at sill during the December 10 and 12 inspections with readings of 6.9 and 7.7 feet respectively.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
No		X	AWS Fish Pump 1
Yes			AWS Fish Pump 2
Yes			AWS Fish Pump 3

Comments: AWS Fish pump 1 is out of service for seized Wicket Gate Bushings. Current estimated RTS date is 7 February, 2019.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	25 sq yd average
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
X			Any debris seen in gatewells (% coverage)	0 - 30%
	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 operating on cycle mode due to average sub-yearling Chinook and sockeye lengths being greater than 120 mm.

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: PDW mechanical cleaning brush was turned off on weekend days in case of faults. The run frequency of the bubbler debris removal system was increased to keep the screen clear of debris.

Collection Facility: Collection for truck transport ended at 0700 on October 1 and the facility operation was changed to primary bypass. The facility was dewatered at 1230 on October 3 for cleaning and winter maintenance.

Transport Summary: Alternate day trucking ended at 0700 on October 1.

Spillway Weir: RSW went into service when Spring Spill began at 0001 on April 3. RSW was closed at 1245 on August 8 due to TMT decision. Summer Spill ended at 00:00:00 on September 1.

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
22.7	11.7	0	0	46.0	45.8	7.0	7.0

*Scroll case temperatures.

Other

Inline Cooling Water Strainers: Cooling water strainers inspection resumes this month.

Avian Activity: N/A Bird hazing efforts by USDA personnel ended at 2000 on June 2. Tailrace observations for bird hazing effectiveness ended with the June 30 observation. Observation of piscivorous birds during fish ladder inspections ended on October 1.

Outfall pipe bird water cannons were turned off on June 11, due to a damaged water cannon at pipe exit. The standby set of cannons have a missing water cannon and were already out of service.

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

Fish Rescue/Salvage: No fish rescue during this reporting period.

Research: No onsite research is in progress at this time.

Project: Little Goose

Biologists: Scott St. John and Richard Weis

Dates: December 06-13, 2018

Turbine Operation

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
5	04/14/17	14:11	06/01/20		Spider and upper guide bearing repair.
1	11/26/18	07:27	12/16/18	00:01	Unit Annual

Comments: None.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult fishway on December 10, 12 and 13.

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 Pumps in Service		
		X	Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fishway Entrances and Collection Channel

Yes	No	Sill	Location	Criteria	Measurements
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	
X			North Shore Entrance (NSE-2) Weir Depth	\geq 6.0' or on sill	
X			North Shore Channel/Tailwater Differential	1.0'–2.0'	
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Adult fishway control system is currently operating in manual mode. Adjustments were made and the fishway is currently operating within criteria.

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			Gatewell drawdown measured this week?	
			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Gatewell drawdowns were measured on December 13 on Units 3 and 6 and were in criteria. There is currently 150 sq. ft. of floating woody debris inside the trash shear boom in the 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?
	X		VBSs inspected this week?

Comments: VBS differentials were measured on December 13 on Units 3 and 6 and were in criteria. Units 1 and 5 have ESBS screens removed for the season.

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.

Collection Facility: Juvenile fish facility switched to primary bypass at 07:00 on November 01.

Transport Summary: Collection for transportation ended at 07:00 on November 01.

Spillway Weir: Adjustable spillway weir was closed for the season on August 03 at 15:30.

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
24.0	11.7	0.0	0.0	43.9	42.9	6+	6+

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainers are being inspected and results submitted every other week.

Avian Activity: Average daily piscivorous bird counts ended on October 31 per the Fish Passage Plan requirement at Little Goose Dam.

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile Fish Facility is currently in primary bypass and not sampling.

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

Fish Rescue/Salvage: None.

Research: None.

Project: Lower Granite

Biologists: Elizabeth Holdren and Stephen Hampton

Dates: December 7 – December 13, 2018**Turbine Operation**

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

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

Unit	OOS		RTS		Outage Description
	Date	Time	Date	Time	
4	Nov 07	0700			Annual maintenance and digital governor upgrade

Comments: Unit are being operated in the soft constraint of 1% efficiency.

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway December 10, 11, and 13.

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 Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments: None.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
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 8.0' or on sill	
X			North Powerhouse Entrance (NPE-2) Weir Depth	\geq 8.0' or on sill	
X			North Powerhouse Entrance Channel/Tailwater Differential	1.0'–2.0'	
X			North Shore Entrance (NSE-1) Weir Depth	\geq 7.0' or on sill	N/A
			North Shore Entrance (NSE-2) Weir Depth	\geq 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	

Comments: Diffuser-14 water level monitoring sensor wire breakage occurred December 10. The valve was placed in manual control to maintain depth over weir criteria. NSE-1 weir gate level sensor faulted resulting in no digital readout of gate elevation. NSE-1 weir gate level sensor replaced and annual PM completed December 12 from 0700 to 1430 hours.

Auxiliary Water Supply System:

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

Comments: AWS pumps are operating with pump 1 in fast mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Average Coverage of 23.3 yd ²
	X		Gatewell drawdown measured this week?	
		X	Gatewell drawdown 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: ESBSs are dogged off for the winter maintenance season.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

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

Comments: None.

Collection Facility: N/A.

Transport Summary: N/A

Spill/Spillway Weir: N/A.

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
24.3	15.6	0	0	42.0	41.9	5.0+	5.0+

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A.

Invasive Species: No mussels were present on the December 6 inspection.

Siberian Prawn: N/A.

Avian Activity: N/A.

Gas Bubble Trauma (GBT) Monitoring: N/A.

Adult Fish Trap Operations: N/A.

Fish Rescue/Salvage: N/A.

Research: N/A.