

**U.S. ARMY CORPS OF ENGINEERS  
WALLA WALLA DISTRICT  
FISH FACILITIES WEEKLY REPORT  
#40-2018**

**Project: McNary**

Biologist: Bobby Johnson and Denise Griffith

Dates: November 30 to December 6, 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	NA	Nine year overhaul.
9 to 12	12/6	0627	12/6	1708	BPA substation outage.

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 November 30, December 2 and 4.

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 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 1.7 fps.
X			Washington Entrance Head Differential	1.0' – 2.0'	
X			WFE2 Weir Depth	≥ 8.0'	
X			WFE3 Weir Depth	≥ 8.0'	

Comments: There are no problems to report.

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 21.
X		X	Oregon Ladder Fish Pump 2, Blade angle: 20.
X			Oregon Ladder Fish Pump 3, Blade angle: 21 to 22.
X			OR North Powerhouse Pool supply from juvenile fishway.

Comments: On December 6, from 0611 to 0615 hours, fish pump 2 tripped off line. On December 10, the juvenile facility will no longer be supplying flow to the Oregon north powerhouse pool, as the facility will be switch to emergency bypass as ESBS removal begins.

**Juvenile Fish Passage Facility**

Maintenance at the juvenile passage facility continued. On December 10, the juvenile facility will switch to emergency bypass as ESBS removal begins.

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. No problems were observed in the gatewell slots.

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 1C, 2B, 3A, 3C and 4A slots remained in timer mode. All week, the brush on the screen in 2B slot was intermittently not fully completing its cycle. The operators monitored the brush cycle and reset it as required. Since the unit has been mostly in standby, the operators will insure the screen is cleaned until the ESBS is raised on December 10, when the winter maintenance season will begin. On December 6, the brush on the screen in 2A slot was noted not fully cycling. The operators reset the brush cycle, which resolved the issue.

No ESBS inspections will occur the rest of the season as ESBS removal will begin December 10. At this time, we are considering ordering a new inspection camera.

VBS differential monitoring occurred daily. One high differential (1.5 feet) was measured on December 6, when the unit was at 78 megawatts. On December 4 and 6, a total of eight screens were 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			Dewatering and cleaning systems operating satisfactory?	

Comments: Orifices were adjusted for the VBS cleaning as required. Orifice lighting and valve operators were repaired as needed this week.

On December 6, all three screen cleaners were noted to have an alarm when examining the PLC panel view but no alarms were recorded on the alarm screen or elsewhere. At this time, we have no explanation for this observation. Also that day, the brush cycle sequence was decreased from every four hours to every two hours as fine debris increased.

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. Sample gate maintenance began 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
137.8	94.0	0.0	0.0	49.0	48.0	6.0	6.0

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

**Other**

Inline Cooling Water Strainers: On December 4, the cooling water strainer examinations revealed no juvenile lamprey or smolt mortalities. We estimated 2,500 juvenile shad mortalities were removed from the strainers.

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. Gulls and cormorants were feeding in the powerhouse flow and at the outfall. Both species were roosting on structures around the tailwater area.

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

Large gull flocks 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: November 30 – December 6, 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
5	12/4/18	1250	12/4/18	1415	Tap the hub to check for presence of oil
1	12/5/18	1035	12/5/18	1407	Exciter trouble

Comments: None.

**Adult Fish Passage Facility**

Ice Harbor fish facility staff inspected the adult fishways on December 3, 4, and 6.

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'	2.1'
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'	0.9'
		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: The SFE-1 channel/tailwater differential and was slightly above criteria on the December 3 inspection and the NFE-2 channel/tailwater differential was slightly below criteria on the December 6 inspection. These readings may have resulted from observer error when reading the staff gauges and using the tape measure.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
0-5 pumps	3 pumps		Status of the 8 South Shore AWS Pumps
0-2 pumps	1 pump		Status of the 3 North Shore AWS Pumps

Comments: The temporary loss of station service and subsequent switching of power feeds during the unit 1 outage on December 5 lead to the need to reduce the project power demand during that time. All of the south shore AWS pumps were shut off from 1017 hours to 1042 hours, and from 1358 hours to 1425 hours. There were three south shore pumps operating from 1042 hours to 1056 hours. No north shore pumps were operating from 1018 hours to 1101 hours, and from 1357 hours to 1435 hours. There was very minimal channel/tailwater differential at the fish ladder entrances when all the pumps were off.

**Juvenile Fish Passage Facility**

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	80 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 4 STSs were pulled on December 3, since the unit 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?	17-20
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifice 1BN light was found to be not working, with the light fixture hanging loose, on November 8. Orifice 1BS was opened in place of 1BN until the light was fixed on December 4.

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
22.1	15.7	0	0	48	47	10.4	9.7

\*Unit 1 scroll case temperature.

### Other

Inline Cooling Water Strainers: Unit 1, 5, and/or 6 strainers were cleaned on November 30, December 2, 3, 4, and 6, because of juvenile shad plugging up the strainers. A total of approximately 17,700 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.

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.

Other: On December 3, the remains of a dried-up juvenile chinook was found on the cover of the juvenile fish bypass flume by the separator. The fish was presumably left there by a bird.

**Project: Lower Monumental**

Biologists: Chuck Barnes and Raymond Addis

Dates: November 30 – December 6, 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		12/22/2018	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 3, 4 and 6.

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 7.7, 6.0 and 6.7 feet respectively.

South Powerhouse Entrance (SPE-2) was at sill during all inspections with readings of 7.7, 6.0 and 6.7 feet respectively.

South Shore Entrance (SSE-1) was at sill during the December 4 and 6 inspections with readings of 7.3 and 7.9 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)	342 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.

The VBS in gatewell 4C was inspected by Corps biologist on December 3. The uppermost plate is bent out into the gatewell and will be welded flush with the wall before the unit is watered back up. All other mesh, seams and structural components were intact.

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
23.9	16.6	0	0	46.5	46.0	7.0	6.8

\*Scroll case temperatures.

**Other**

Inline Cooling Water Strainers: Cooling water strainers are not inspected in November.

Avian Activity: Bird hazing efforts by USDA personnel ended at 2000 on June 2. Tailrace observations for bird hazing effectiveness ended with the June 30 observation.

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: November 30-December 06, 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	1/1/20	17:00	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 04 and 06.

**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'	0.8
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Adult fishway control system is currently operating in manual mode. On December 04, North Shore Entrance 2 (NSE-2) was found at 0.8 feet. 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?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Gatewell drawdowns were measured on November 21 on Unit 1 and were in criteria. There is currently 190 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 November 21 on Unit 1 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
22.2	13.4	0.0	0.0	45.7	44.9	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: November 30 – December 6, 2018**

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**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 3, 4, and 6.

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		X	North Powerhouse Entrance (NPE-1) Weir Depth	$\geq$ 8.0' or on sill	
X		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	
			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: Annual PMs were performed on SSE and NPE weir gates December 4 and December 6, respectively. NSE weir gate annual PMs are on hold due to an elevator outage.

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 13.3 yd <sup>2</sup>
	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: Collection Channel has been dewatered for the season.

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
20.7	17.0	0	0	43.0	42.0	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.