U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#03-2021
March 12 -18, 2021

Project: McNary
Biologist: Bobby Johnson and Denise Griffith

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	12/7	0643	04/30	N/A	Thrust bearing upgrades/blade seals

Comments: The soft one percent peak efficiency constraint continues per the 2021 Fish Passage Plan (FPP) page MCN-27. Also, unit priority is being followed per the FPP. RTS dates are subject to change.

Adult Fish Passage Facilities

McNary fisheries biologists performed measured inspections of the adult fishways on March 14, 15 and 17. Picketed leads will be lowered, and fish counting will resume on March 31 and April 1, respectively.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Oregon Count Station Differential	0.0’ to 0.5’	0.0’ to 0.1’
X		Washington Exit	Head over weir 1.0’ to 1.3’	1.1’ to 1.2’
X		Washington Count Station Differential	0.0’ to 0.5’	0.0’ to 0.1’

Comments: Debris loads were very light to light near the Oregon exit and minimal near the Washington exit. Some debris has been moving from the powerhouse to the Oregon shoreline and back.

At the Washington shore exit, a low water alarm came in and was reset on March 14.

A project wide telecom upgrade contract currently occurring will improve phone and internet connections in the count stations and throughout the juvenile fish facility.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.2' to 1.4'
	X*		NFEW2 Weir Depth	≥ 8.0'	7.9' to 8.2'
	X*		NFEW3 Weir Depth	≥ 8.0'	Closed to 8.2'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.4' to 1.7'
	X*		SFEW1 Weir Depth	≥ 8.0'	6.3' to 8.3'
	X*		SFEW2 Weir Depth	≥ 8.0'	6.4' to 8.3'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 2.0 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.3'
X			WFE2 Weir Depth	≥ 8.0'	9.6' to 9.9'
X			WFE3 Weir Depth	≥ 8.0'	9.7' to 9.9'

*Comments: The Oregon ladder entrances out of criteria points noted above occurred on March 15 because fish pumps 2 and 3 were removed from service for fish pump flow testing, which will predominantly involve fish pump 1 as described below. NFEW3 was raised out of the water (closed) from March 15 at 1000 hours to March 16 at 1501 hours while only one fish pump was functional.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Fish Pump Blade Angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes*			22° to 23°	Oregon Ladder Fish Pump 1
Yes*			21° to 23°	Oregon Ladder Fish Pump 2
Yes*			22° to 24°	Oregon Ladder Fish Pump 3
		Yes		OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump discharge flow testing occurred on March 16. For the testing to be accurate, discharge stop logs had to be installed in fish pumps 2 and 3 on March 15. For this time span, fish pump operations are outlined in Table 2 below. All three fish pumps were back to normal operation on March 16 at 1609 hours. This testing is very important to future Oregon ladder system rehabilitation.

Table 2. Fish Pump Operations for Discharge Flow Testing.

Pump	Start Date/Time	End Date/Time	Description
2	Mar 15/1000 hours	Mar 16/1501 hours	Install discharge logs/Test pump 1
3	Mar 15/1000 hours	Mar 16/1609 hours	Install discharge logs/Test pump 1, then pumps 1 and 2
1	Mar 15/1000 hours	Mar16/0800 hours	Pump 1 operated at 31 degrees blade angle
1	Mar 16/0800 hours	Mar 16/0900 hours	Pump 1 out of service to collect baseline data
1	Mar 16/0900 hours	Mar 16/1530 hours	Pump 1 operated for testing
2	Mar16/1501 hours	Mar 16/1530 hours	Pump 2 operated for testing

Fish pump 1 had farval lubrication issue on March 12 to 13 as outlined in Table 3 below.

Table 3. Fish Pump 1 Outages and Farval Lubrication Issue.

Outage Date/Time	Issue	Resolution
Mar 12/0125 to 0133 hours	Tripped offline	Restated pump
Mar 12/0424 to 0429 hours	Tripped offline	Restated pump
Mar 12 0445 to 1322 hours	Tripped offline	Pump examined/Low farval grease/Grease added/Restart
Mar 13/0458 to 0504 hours	Tripped offline	Restarted pump
Mar 13/0508 to 0859 hours	Tripped offline	More grease added/Air pocket removed/Restart pump

There were no further issues with fish pump 1. Fish pumps 2 and 3 were available during these outages and the Oregon shore fish ladder remained in criteria.

The juvenile system remains in emergency bypass, which does not supply flow to the Oregon ladder north powerhouse pool.

Juvenile Fish Passage Facility

For the top spillway weir (TSW) overshoot study, the juvenile system remains in emergency bypass. Early start up will not occur this year due to the facility separator needing new floor screens and the rectangular screen brush in the channel requiring a new drive clutch. Floor screen installation was completed this week. A replacement drive clutch is currently scheduled to arrive on April 19. This will delay normal sampling season, which usually begins on April 2. The system cannot be switched into primary bypass until the rectangular brush is functional. However, project staff continues to brainstorm alternatives.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable?	
	X		Any debris seen in gatewells? (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were moderate near the powerhouse and minimal beside the spillway. New debris loads were minimal. The debris consisted mostly of woody material.

No trash rack cleaning or forebay debris removal occurred this week. All trash racks are scheduled to be cleaned March 22 to 25.

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: ESBS's are installed in units 1, 10, 13 and 14. ESBS maintenance continued this week. The remaining ESBS's will be installed from April 5 to 15. Camera inspections will resume on March 30 in units 1 and 10.

Daily VBS differential monitoring revealed no issues.

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

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

Comments: Emergency bypass continues. Several orifice operators and one orifice valve were rehabilitated this week. Orifice attraction and area lighting bulbs were replaced as needed.

Due to the rectangular screen brush requiring a drive clutch replacement, the remaining channel systems continue to be out of service. Once this issue is resolved, the system could be switched to primary bypass.

A total of four live juvenile lampreys were removed from the rectangular incline screen this week. It is assumed the lampreys passed around the stop logs by way of leakage.

Bypass Facility:

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

Comments: All bypass facility systems remain out of service.

The separator rehabilitation was completed this week. Secondary bypass and sample collection cannot resume until the rectangular screen brush repairs are completed.

Top Spillway Weir (TSW) Operations: The TSW in bay 19 remains closed until April 10 at 0001 hours. The TSW in bay 20 is being used for the adult steelhead TSW passage efficiency study and as required by the Biological Opinion. The TSW will be opened per the study plan.

River Conditions

Table 4. 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
126.6	110.3	1.6	0.0	42.0	42.0	6.0	6.0

Comments: The above data comes from the control room. The data day is 0000 to 0000 hours. The spill recorded is due to the TSW study. Repairs to cranes 6 and 7 are continuing. The spring spill program begins on April 10 at 0001 hours.

Other

Inline Cooling Water Strainers: The next cooling water strainer inspections will occur on April 6.

Avian Activity: Casual avian observations continued. Avian counts will begin April 1.

Currently, there are no hazing efforts occurring. No terns or grebes were observed on project. Twenty to 30 cormorants were noted roosting on the juvenile bypass outfall and occasionally feeding around the project. An occasional pelican was noted feeding in the tailwater area. Finally, a few gulls were occasionally observed around the project.

Invasive Species: Mussel station examinations will resume in late March.

Siberian Prawn: Removing and euthanizing Siberian prawns will resume with sampling.

Fish Rescue/Salvage: For this week, there is nothing to report.

Research: The spring phase of the Pacific Northwest National Laboratory (PNNL) adult steelhead TSW passage efficiency study continues.

Project: Ice Harbor
Fisheries Tech: Tim DeKoster
Fisheries Biologist: Ken Fone

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

Comments: None.

Adult Fish Passage Facility

Ice Harbor fish facility staff inspected the adult fishways on March 16th, 17th, and 18th.

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	7.9’
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	≥ 8.0’ or on sill	
x			North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The South Shore Entrance (SFE-1) entrance weir depth was observed to be one tenth under criteria on March 18, 2020 inspection. Operations has SFE-1 entrance weir on automatic control, and it was noticed at the end of the inspections, by fish operations personal, that it returned to the 8.0’ differential criteria.

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
5 pumps	2 pumps	1 pump	Status of the 8 south shore AWS pumps
2 pumps	1 pump		Status of the 3 north shore AWS pumps

Comments: South shore AWS pump #8 is out of service to replace worn seals in the lower gearbox. On March 18, 2020, Unit 1, and Unit 2 tripped offline due to BPA protection relays and both units returned online within a few hours. As a result, all the fish pumps in both fish ladders were temporally unpowered and restarted after both turbine units came back online.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 126.7 square yards
		x	Gatewell drawdown measured this week?	
		x	Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	STSs blocking view into slots
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (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 removed for annual maintenance.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		x	Orifices operating satisfactory?	0
		x	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile fish channel is dewatered for annual maintenance.

Juvenile Fish Facility: The fish facility is dewatered for annual maintenance.

Fish Sampling: Sampling begins on April 1.

Removable Spillway Weir (RSW): Voluntary spill through the RSW is periodically occurring for the downstream passage of adult steelhead that may have strayed into the Snake River. The RSW will be operated from 0500 hours to 0900 hours on Sundays, Wednesdays, and Fridays, from March 1 to March 31.

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
43.1	37.8	1.6	0	42	40	6.0	6.0

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: No inline cooling water strainer inspections occurred last week.

Avian Activity: There were very few piscivorous birds seen around the project.

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 will be humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill.

Fish Rescue/Salvage: Unwatering activities that involved fish rescue did not occur this week.

Research: No on-site research is occurring at this time.

Project: Lower Monumental
Biologists: Chuck Barnes and Raymond Addis

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	3/15/2021	0702	3/15/2021	0935	Track Rack Cleaning
Unit 2	7/15/2019	0720	4/01/2021	ERTS	Annual, Draft Tube Liner
Unit 3	3/15/2021	0707	3/16/2021	1600	Trash Rack Cleaning/Crane Broke
	3/17/2021	0702	3/17/2021	1110	Trash Rack Cleaning
Unit 4	3/15/2021	1016	3/15/2021	1430	Track Rack Cleaning
	3/17/2021	0709	3/17/2021	1350	Track Rack Cleaning
Unit 5	3/17/2021	1120	3/17/2021	1600	Track Rack Cleaning
Unit 6	3/17/2021	1355	3/17/2021	1600	Track Rack Cleaning

Comments:

Adult Fish Passage Facility

The adult fishways were inspected by Corps biologists on March 15, 16 and 18.

Fish Ladder:

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

Comments:

Fishway Entrances and Collection Channel:

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

Comments: North Shore Entrance (NSE-1) Weir depth was out of criteria on the March 15 inspection with a reading of 7.8 feet. Powerhouse operator was informed.
South Powerhouse Entrance (SPE-1) Weir was on sill during all inspections with readings of 7.8, 7.2 and 7.0 feet respectively.
South Powerhouse Entrance (SPE-2) Weir was on sill during all inspections with readings of 7.8, 7.2 and 7.0 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: Fish pumps returned to service at 1200 hours on February 25 after winter maintenance was completed.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	7 yds^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:

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 inspected on the deck March 18 and are scheduled to be deployed during the week of March 22.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices are closed and Primary Dewaterer is OOS for winter maintenance.

Collection Facility: Fish collection is scheduled to begin on April 1.

Transport Summary: No transport currently.

Spillway Weir: Per 2021 Fish Operations Plan, limited spill through the RSW for adult steelhead passage began on March 1 and will end on March 31. RSW is scheduled to open for juvenile salmonid passage at 0001 on April 3.

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
42.2	37.6	1.5	0.0	42.0	41.0	2.9	5.0

*Scrollcase temperatures.

Other

Inline Cooling Water Strainers:

Avian Activity: Highest counts of foraging piscivorous birds in tailrace (SWT1+PH1+PH2) at Lower Monumental Dam.

Date	Time	Gulls	Cormorants	Terns	Grebes	Pelicans
March 12 – 18		0	0	0	0	0

* Table shows tailrace observation conducted during Adult Fish Ladder inspections.

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

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

Research: No research is occurring currently.

Project: Little Goose
Biologists: Scott St. John

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	04/14/17	14:11	03/31/2021	17:00	Spider and upper guide bearing repair.
1	11/30/20	08:00			6-year overhaul
6	03/18/21	14:17			T2 transformer ground
3	03/18/21	14:17	03/18/21	16:27	T2 transformer ground
4	03/18/21	14:17	03/18/21	16:27	T2 transformer ground
2	03/18/21	14:17	03/18/21	16:32	T2 transformer ground

Comments: Little Goose experienced a T2 transformer ground on March 28 at 14:27. At that time, the 500 kV line at Little Goose tripped and all Units tripped out of service. Little Goose conducted 45 kcfs of emergency spill from 14:25 until 16:45. The line was restored and Units 3 and 4 returned to service at 16:27 and Unit 2 at 16:32. The T2 C phase transformer was found ruptured. T2 transformer and Units 5 and 6 will be out of service until repairs/replacement can be conducted.

Adult Fish Passage Facility

Little Goose fish facility staff inspected the adult Fishway on March 15, 16 and 17.

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		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
	X		South Shore Entrance (SSE-1) Weir Depth	$\geq$ 8.0’	7.5
	X		South Shore Entrance (SSE-2) Weir Depth	$\geq$ 8.0’	7.5
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	5.7
	X		North Shore Entrance (NSE-2) Weir Depth	$\geq$ 6.0’ or on sill	5.7
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.9
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was returned to service on February 10, with AWS pumps 1 and 2 returning to service on February 23. The SSE and NSE weir depth were found out of criteria on March 16. The NSE channel/tailwater differential was found out of criteria on March 17. Subsurface water velocity was measured on March 17 at NPE and averaged 1.8 fps.

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: Fish pumps 1 and 2 were returned to service on February 23. Fish pump 3 remains out of service as staff await parts.

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: There is approximately 86,670 square feet of floating woody debris currently inside the trash shear boom in the forebay. Little Goose plans to conduct operations in hopes of removing forebay debris through the ASW (MOC 21 LGS 01).

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: ESBS's are scheduled to be installed the week of March 22.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
		X	Orifices operating satisfactory?	0
		X	Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system is currently dewatered for winter maintenance.

Collection Facility: The juvenile collection facility is currently dewatered for winter maintenance.

Transport Summary: Fish transportation is scheduled to begin in April.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 2 to facilitate passage of adult steelhead overshoots. Operation is occurring three days each week on non-consecutive days for four hours in the morning and will continue to occur on Tuesday, Thursday and Sunday each week, through March 31. Spring spill operations will begin on April 3. Little Goose staff are still working to resolve issues with the ASW automatic operation but remain able to meet overshoot spill requirements.

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
41.7	36.6	4.4	0.0	42.7	42.3	6.0	5.2

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on January 13. Inspections will continue in accordance to the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam will begin on April 1 with hazing beginning on March 29.

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

Siberian Prawn: Juvenile fish collection begins on April 1. 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.

Gas Bubble Trauma (GBT): GBT monitoring is not being conducted at this time.

Fish Rescue/Salvage: A fish rescue occurred on March 15 in a navigation lock drain valve. A total of 8 sculpin and 15 crayfish were recovered. No salmonids were observed.

Research: No research activities occurred during this report period.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
		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**
6	03/01				DC and low voltage switchgear
3	03/16	0759	03/16	1325	PSS Model Validation testing/tuning
3	03/16	1623	03/16	1701	PSS Model Validation testing/tuning
3	03/17	0811	03/17	1021	PSS Model Validation testing/tuning
2	03/17	1347	03/17	1440	PSS Model Validation testing/tuning

Comments: Units 2 and 3 were operated out of unit priority order as part of the Power System Stabilizer testing/tuning described in MOC 21 LWG 01 – Unit Exciter Testing.

Adult Fish Passage Facility

Lower Granite and Anchor QEA staff inspected the adult fishway on March 12, 13, 15, and 17.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
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: Operation of diffuser 14 will remain in manual for the season due to an issue with the elevation sensor.

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
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	
X			North Shore Entrance (NSE-2) Weir Depth	$\geq$ 7.0’ or on sill	
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.7’, 0.6’, 0.8’, 0.8’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration are being evaluated to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. North shore and north powerhouse channel/tailrace head differentials are unable to be maintained withing the criteria range under current operation. The Project is working with hydraulic engineers to improve collection channel conditions and find a permanent solution to the ongoing channel/tailwater criteria discrepancies.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
No		OOS guide bearing	AWS Fish Pump 3

Comments: AWS pump 1 is being operated in slow mode.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Weekly average 246 yds^2
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:

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: The VBS in gatewell slot 6A is being replaced while the unit is out of service for low voltage switchgear install.

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	17-18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: Orifices in gatewell slot 6A are closed to support VBS replacement during the low voltage switchgear upgrade.

Collection Facility: A total of 144 juvenile salmonids were collected March 12-18. Kokanee likely released from Dworshak are considered incidental species and will not be included as part of the SMP sample until further notice from NOAA.

Transport Summary: No transport.

Spillway Weir: The RSW is operating from 0500-0900 hours Sundays, Tuesdays, and Thursdays March 2 through March 30 to facilitate adult steelhead/overshoot passage. There was no adult PIT tagged steelhead detected going over the RSW this report week and a total of 29 adult PIT tagged steelhead and 1 juvenile steelhead detected since March 2.

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
42.3	37.7	1.2	0.0	42.0	40.5	5+	4.2

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: Unit cooling strainer inspections were conducted on March 2.

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were no Siberian prawns collected in the condition sample.

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

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
March 12	1339	7	9	0	0
March 13	1127	16	4	0	0
March 14	1254	19	8	0	0
March 15	1545	0	4	0	0
March 16	1215	20	2	0	0
March 17	1240	11	7	0	0
March 18	1759	2	0	0	0

Gas Bubble Trauma (GBT) Monitoring: N/A

Adult Fish Trap Operations: The adult trap was watered up at 1000 hours March 1 and started sampling at 1100 hours at a 25% (18% /week) sample rate. Collection for sampling will be conducted Monday through Friday until broodstock collection starts August 18.

Fish Rescue/Salvage: N/A

Research:

Idaho Fish and Game (IDFG) Genetic Stock Identification

Fish collected as part of the Lower Granite juvenile condition sample are used to enumerate and characterize age composition and genetic stock profiles of naturally producing yearling chinook and juvenile steelhead. IDFG will sample Monday through Friday through mid-June with a goal of collecting 2,000-5,000 yearling chinook and juvenile steelhead genetic samples.

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.

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 collected as part of the normal adult trap daily sample and using the adult Sort by Code system to recapture previously PIT tagged fish. 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.