



FISH PASSAGE CENTER

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MEMORANDUM

TO: Salmon Managers
 Fishway Inspectors
 Rick Klinge, Douglas PUD
 Chuck Peven, Chelan PUD
 Chris Carlson, Grant PUD
 Cal Sprague, COE Portland District
 Dave Hurson, COE Walla Walla District

FROM: Larry Basham

DATE: May 30, 2001

RE: **Fishway Inspections – March/April 2001**

The year 2001 inspection season was started in March at some of the lower Columbia River dams, with the remaining projects starting in April. To begin the new season, there is one new fishway inspector from ODFW who will inspect Lower Granite and Little Goose dams. The other fishway inspectors have been inspecting fish facilities from two to more than ten years.

Inspections began in March/April for the 2001 season at the 13 mainstem Columbia River dams. Designated State or Federal fishery agency personnel are assigned to inspect the projects on a monthly basis (see list of inspectors below). Details of the fishway inspections are listed in the project Section that follows.

AGENCY	INSPECTOR	DAMS INSPECTED
NMFS	Melissa Jundt	Priest Rapids & Wanapum
NMFS	Ed Meyer	Bonneville
NMFS	Larry Swenson	McNary
ODFW	Doug Case	The Dalles & John Day
ODFW	Josh Hanson	Little Goose & Lower Granite
WDFW	Steve Richards	Ice Harbor & Lower Monumental
WDFW	Stewart Mitchell	Wells
WDFW	Denise McCarver	Rock Island & Rocky Reach
WDFW	Glen Liner	Rock Island & Rocky Reach
WDFW	Steve Gacek	Rock Island & Rocky Reach

Bonneville Dam –Ed Meyer completed an inspection of the adult and juvenile fish facilities at Bonneville Dam on March 28 and April 25. River Q was 139 and 113.3 kcfs with no spill for the respective inspections. Seven of eight main turbine units were operating at the new powerhouse with three turbine units operating on the March inspection and none operating during the April

inspection at the old powerhouse. Both fish turbines were operating at the WA shore. The turbidity of the water ranged between 5-6.2-ft and the water temperature 49 to 51° F. As part of the FPP criteria, spillbays 1 and 18 were open .3 ft to provide attraction flows to the Cascades Island and B-Branch fishway entrances. Note that these spillbays will be closed during evening hours for the purpose of conserving water at the project during this low-flow year.

Powerhouse I – The main entrances to the powerhouse collection channel were submerged 9.1 ft and 8.2 ft, with 1.1 ft head (both inspections) and 8.4 ft and 8.1 ft, with 1.7 ft and 1.2 ft head at respective Gates 2 and 64 using the PLC readings. The velocity in the powerhouse collection channel ranged between 2.7 to 2.8 fps at the south end of the channel. The electronic meter at the north end of the channel was not working during either inspection. The five sluice gates were open during the March inspection and closed during the April inspection although the computerized system indicated that they were open. The depth of water over the main Bradford fish ladder weirs was 1.1 ft and 0.9 ft, with 1.1 ft measured at the A-Branch and 0.9 ft and 1.0 ft at the B-Branch fish ladder. The exit from the ladder required cleaning during the March inspection and was clear of debris during the April inspection. The picketed lead sections at the counting station were clear of debris during both inspections.

B-Branch - At the B-branch entrance, the computer system was not operating so visual readings were taken from the staff gages. During the March inspection, the AWS was shut down to allow for the installation of antennas in the forebay (along the spillway). The head differential was measured at 1.3 ft during the April inspection. The north side entrance was open as required. The inspector indicated that diffusers 26 and 27 should have been open based on the tailwater elevation.

Cascades Island - The Cascades Island fishway entrance is similar in design to the B-Branch, with the main entrance operating to meet head differential of 1.5 ft. Head differential was 1.6 and 1.4 ft during the March/April inspections using the staff gages. Ed Meyer indicated that diffuser gate 13 should have been operating based on the tailwater elevation. The depth of water over the ladder weirs was 1.0 ft.

WA shore fishway –The new powerhouse adult collection system operates with two entrance gates located at each end of the powerhouse. Tailwater elevation permitting, the gates are operated 13 ft submerged below tailwater with the head differential between 1.0 and 2.0 ft. During the March inspection, the Gates were submerged between 12.8 and 13.2 ft with head differential ranging from 0.7 ft to 1.1 ft. During the April inspection, the south shore entrance gates were submerged 11.6 ft on average with head differential at 1.05 ft. The north shore entrance gates were submerged 11.35 ft on average with the head differential 1.7 ft average at the gates. All readings were within the desired criteria range given the fact that the gates were on sill, elevation 1.0 ft, and could not be lowered deeper. Floating orifice gates along the channel were operating satisfactorily. The water velocity meter was working during this inspection and read 1.4 fps (March) and 2.1 fps (April). The exit from the fish ladder was clear of debris, as were the pool serpentine sections upstream from the fish counting station. The depth of water over the ladder weirs was 1.2 ft.

Overall, the adult fish passage facilities (main entrance gates) were operating within criteria at the OR and WA fishways during the April inspection; however, the B-Branch entrance was off-line during the March inspection for diving purposes and the head differential at the WA shore entrances was less than 1.0 ft. The inspector reported 3 to 4 sea lions foraging for food (salmon) in the tailrace area of the dam during the April inspection. The computer (PLC) system at the B-Branch and Cascades Island fish ladders should be fixed and operable as soon as possible; it was not operational during either inspection. The project should continue to check diffuser settings in these entrances to assure that the proper diffusers are operating.

Juvenile System – Both juvenile bypass facilities were operating with all screens and orifices operating as required. The project was operating the low outfall based on tailwater elevation at the juvenile fish facility. The orifice lenses were not clear enough in some cases to determine whether

the orifice flow was smooth and the orifices not plugged with debris. Apparently there are still some smolts being trapped in the AWS at the New Powerhouse DSM. This should be investigated and fixed to reduce mortality in that section. Orifice 18C was only half open on the March inspection.

The Dalles Dam – Doug Case, ODFW, and I completed a fish facilities inspection at The Dalles Dam on March 27, with Doug completing an inspection on April 11. Project discharge was 166.6 kcfs and 138.6 kcfs, with flow passing through 14 and 9 operating turbines during the respective March and April inspections. No spill occurred on either inspection. Both fish turbines were operating at the OR fishway, with a single fish turbine operating at the WA fishway. Water temperature was 44 and 46°F with a turbidity reading of 4.0 and 4.5 ft for both inspections.

Washington Shore - Wasco PUD operates a single turbine unit that supplies water to the diffusion system and into the lower end of the fish ladder. Gate N-1 was submerged 9.0 and 8.9 ft below tailwater elevation, with the head differential reading 1.4 ft for both inspections. The gate depth and head differential at Weir N-1 were operated within the proper criteria range. The PUD trash racks required cleaning; a 0.5 ft head differential existed on 3/27 and the exit was not cleaned since prior to Doug's April inspection. The picket leads had some grass and small debris and required cleaning. The depth of water reported over the fish ladder weirs was 1.1 ft.

Oregon fishway – Normally, about 4,600 cfs of water is directed to the auxiliary water supply system via the fish turbines. No orifice gates operate along the powerhouse collection channel. We found only one fish turbine operating and hence poor passage conditions existed at the main entrance gates during the March inspection. At the South entrances, only 0.2 ft of head was reported with 9.6 ft of depth; 0.8 ft head reported at the East entrances; and a satisfactory reading for the Head and Depth at the West entrances. As would be expected, the transportation channel velocity was reported as being very slow (expected as the South entrance gates had only 0.2 ft head); the visual estimate of velocity in the collection channel ranged from 1.0 to 2.0 fps. The electronic meter was removed for repair.

In April, the south (spillway), entrance gates S-1 and S-2, were submerged an 8.1 ft average depth with head differential of 0.6 ft with the PLC, 1.0 ft with the Selsyns, and 1.4 ft using the FPC water sensor probe. As was the case in previous years, we believe that the COE should calibrate their system to produce reliable readings at the South Fishway Entrances. Obviously, this range of readings means that changes are needed to assure accuracy of the equipment.

The West entrance gates, W-1 and W-2, were submerged an average depth of 8.3 ft with the head differential measured at 1.8 ft. The head differential and gate depth was within acceptable criteria range for both inspections. The powerhouse velocity probe was out of service so the velocity was estimated to be nearly 1.5 fps at the eastern end and increased to 2-2.5 fps at the western end of the channel.

The East entrances, E-2 and E-3, were submerged 11.4 ft on average with the head differential at 1.8 ft using the PLC and 13.1 ft submerged with 1.6 ft head differential using the Selsyns gage readings. The exit from the fish ladder was reported with tumbleweeds and a few branches on the trashrack. The picket leads had a lot of sticks and debris on the downstream pickets that required cleaning. The depth of water over the fish ladder weirs was 1.2 ft.

The normal sluice gates, gates 1-1, 1-2, and 1-3 were not operating due to work being done on the occlusion plates located in front of the sluiceway gates.

Overall, during the March inspection, we found only one fish turbine operating and that resulted in less than criteria conditions at two of the Main Entrance Gates. The entrance gates at the OR and WA fishways were all operating within criteria during the April inspection. **The picketed leads at the OR count station had excess debris that required cleaning. The COE should calibrate their PLC system to match the Selsyns Gage or Water Level Sensor readings. This would clear up much of the problem noted at the main fishway entrances.**

The PUD trashrack required cleaning after the March inspection and was not cleared of debris until after this April 11 inspection. The PUD reported there were approximately 40 dead juvenile salmonids in the trap due to the debris problems on the trashracks. The PUD were very concerned and need their intake cleaned on a regular basis. Photographs were taken of several problem areas and forwarded to FPOM.

John Day Dam – Doug Case, ODFW, and I inspected the John Day fish facilities on March 27, with Doug completing the April inspection on the 11th. Project Q was 173.0 kcfs and 139.8 kcfs during the inspections, with 11 and 10 turbine units operating. Turbidity ranged from 5.0 to 4.5 ft with the water temperature from 45 to 47° F. Two north shore (WA) and three south shore (OR) fish pumps were operating to supply flow to the fishways.

OR fishway – During the inspections, the South (OR shore) fishway entrance was operating at less than required criteria regarding gate depth and/or head differential. During March, the gate depth at SE-1 was 8.2 ft on the gage and 7.8 ft at the panel. In April, the gate depth was 7.6 ft using the gage reading while the panel reading showed a depth of 8.4 ft. In March, both readings of head differential were greater than 1.0 ft; however, the gage reading was 1.1 ft while the panel was 1.6 ft. In April, the head differential was 1.1 ft at the gage and only 0.7 ft at the panel. Based on the information from both inspections, **the project should calibrate the panel to match the site readings**. The two main entrances at the north powerhouse (NE-1 & NE-2) were submerged about 8.2 ft average depth with 1.0 to 1.2 ft head differential. The gate depth and head differential readings were satisfactory. The panel readings varied from the gage readings by about 0.4 to 0.6 ft during March and 0.2 to 0.3 ft in April at the north powerhouse entrances. Water velocity recorded along the powerhouse collection channel averaged 1.8 to 2.0 fps during the two inspections. Ten floating orifice gates were operating along the powerhouse collection channel.

The picketed lead section at the counting station had some sticks and wood chunks jammed in the pickets while the exit from the fish ladder was clear of debris. We did note sticks and woody chunks across the exit slots above the overflow weir. These should be removed; however, there is netting covering this section of the ladder and access would be difficult at best. The depth of water over the weirs was 1.0 ft.

WA fishway – One main entrance gate is operated at the WA shore fishway. In March, the readings varied between the Gage and LED reading. In either case, the gate depth or the head differential was shy of the mark. In April, gate N-1 was submerged 8.0 ft below tailwater elevation with the head differential measured at 1.1 ft. The N-1 gate depth and head differential was within criteria for the April inspection.

Readings from the WA shore fish ladder were as follows: the picketed lead section at the counting station and the exit from the ladder was reported clear of debris. The depth of water over the fish ladder weirs was 1.0 to 1.1 ft

Overall, the fish passage facilities were operating at less than acceptable criteria at the South entrance and North entrance (March). One solution would be to calibrate the PLC and Gates to assure that all readings are accurately displaying on the panel or computer system. We found these readings to vary more than 0.3 ft in most cases.

Juvenile Fish Facility – The Smolt Monitoring Facility was operating during the April inspection. The JBS screen cleaners have not worked yet this year. According to the project, they are to be repaired on April 12. All gatewells were clear of debris.

McNary Dam – Larry Swenson and Bill Hevlin, NMFS, and I completed an inspection of the fishways on April 11. Project Q was 132.9 kcfs with no spill occurring during the inspection with 14 turbine units operating. River temperature was 47°F with the turbidity reading 4.2 ft. A

fishway status report was obtained prior to the inspection to compare on-site elevation readings with computer readings.

OR fishway – Two fish pumps were operating with pump angles recorded at 28°. As normal, 450 cfs flow from the juvenile bypass system was added to the north end of the powerhouse collection channel. Gravity flow water from the forebay is also added in the lower end of the OR fish ladder. All auxiliary water systems were operating through the month.

The South Powerhouse and North Powerhouse entrance gates were submerged 9.0 to 9.9 ft below tailwater elevation, with the head differential ranging between 1.3 ft and 1.5 ft during the inspection. Both gate depth and head differential were found within proper criteria range at the powerhouse entrances; however, **one of the two gates at the North Powerhouse was not operating**. The project was aware of the problem and working on the gate while we were at that entrance. The orifice gates along the collection channel were operating satisfactorily, albeit a couple of gates were barely overtopped with water. The velocity reported at the south end of the collection channel was nearly 1.7 fps, and at the northern end of the channel it was estimated at 2.4 fps. The depth of water over the fish ladder weirs was 1.3 ft (prefer that this be 1.0-1.1 ft). The exit from the fish ladder was clear of debris. The picket leads at the fish counting facility were clear of debris, however, with the higher depth of water in the ladder, velocity through the counting window was very fast. We asked Brad Eby to request the operators lower the water level in the Oregon fish ladder.

WA fishway – The fish turbine operated by North Wasco PUD was supplying sufficient flow to the WA shore fishway entrances. Entrances WFE-2 and WFE-3 were operating with head differential of 1.5 ft, with the gates submerged an average depth of 9.2 ft below tailwater elevation during the inspection. The exit from the fish ladder was clear of debris as were the picket leads at the counting station. The depth of water over the fish ladder weirs was satisfactory, with 1.1 ft reported for the inspection.

Overall, the adult fish passage facilities were operating at less than normal criteria mainly due to the one NPE gate temporarily out of service. This gate was later placed back in operation. Otherwise, the entrance gates were within acceptable criteria on all items checked. The computer printout was compared with the actual on site readings. Most readings compared favorably between on-site and computer. **The Project Biologist was asked to reduce the flow, i.e., the depth of water in the Oregon fish ladder. He made this request to the operators for action . Brad Eby indicated that the telescoping gate at the upstream end of the exit channel apparently blocks the exit orifice opening when the gate is in a lowered position. This needs to be further investigated to assure that this will not impede fish passing through this section of the fish ladder.**

Juvenile Fish Facility – Debris in front of the project was recorded as being light during the inspection. The screens, orifices, and other juvenile fish facility equipment appeared to be operating satisfactorily. Juvenile fish will be directly bypassed to the tailwater until early May when juvenile fish will be transported every other day.

Priest Rapids Dam - Melissa Jundt, NMFS, inspected the Priest Rapids adult fish facilities on April 17. Project Q was 66.3 kcfs through six main turbine units with no spill occurring during this initial inspection. The Gravity Intake Gate was open 7.1 ft with the fish pumps supplying the remaining required flow to the main entrances. Nine orifice gates were operating along the powerhouse collection channel.

Left Bank – Entrance gate LSE-4 had 1.3 ft head differential while gate LSE-2, located at the western end of the powerhouse channel, had 1.2 ft head differential. The target for the main

entrances is 1.5 ft at LSE-4, with 1.25 ft at LSE-2. The head differential at the main entrances were within the criteria range of 1.0 and 2.0 ft; however, Gate LSE-4 had a differential less than the targeted “head” listed above. On this inspection, LSE-2 met the targeted “head” of 1.25 ft. The velocity at the eastern end of the collection channel was estimated at 2.0 fps and fell within proper criteria range. The exit from the fish ladder was reported clear of debris. The depth over the fish ladder weirs was 1.3 ft and was on the higher end of the desired operation.

Right Bank – Gate RSE-1 operates by maintaining head differential between the channel and tailwater. The “head” measured during the inspection was 1.2 ft. This read fell below the target differential of 1.5 ft. The exit from the fish ladder was clear of debris during the inspection. The depth of water over the ladder weirs was 1.1 ft.

Overall, the adult fish facilities were operating within criteria range regarding head differential reported at the main fishway entrances, but were less than Target at the LSE4 and RSE1 entrance gates. The inspector indicated that Grant County PUD prefers to switch to electronic tapes in place of staff gages. This item should be approved before changes are made.

Wanapum Dam –Melissa Jundt, NMFS, inspected the fish facilities at Wanapum Dam on April 17. Project Q was 100.1 kcfs with seven main turbine units operating for power production; no spill was occurring during the inspection. Water temperature at Wanapum and Priest Rapids was 44°F with the turbidity reading 5.7 ft. Ten orifice gates were operating along the powerhouse collection channel.

Left Bank – The gravity water (forebay) and two turbine-driven fish pumps supply flow to the Left Bank fishway. The pumps were at 170-175 rpm during the inspection. Head differential at Gate LSE-2 is targeted for 1.5 ft and LSE-3 at 1.25 ft. The LSE-2 and LSE-3 gates had 1.4 ft and 1.2 ft head differential respectively for the inspection. The collection channel velocity was estimated at 2.5 fps and was within the proper criteria range of 1.5 to 4.0 fps. The trash rack located at the exit from the fish ladder was clear of debris. The depth of water over the fish ladder weirs was 1.1 ft. As noted, the head differential was close to the targeted ΔH . The orifice gates were operating satisfactorily on this initial inspection.

Right Bank – A single fishway entrance, RSE-2, is the main opportunity for fish to enter the fishway at the Project. Flow is supplied through a gravity flow system; the valve was open 100%, albeit the recording equipment was not working on this inspection. The head differential recorded at Gate RSE-2 was 1.2 ft and met the targeted head of 1.25 ft. The exit from the fish ladder was reported clear of debris. The depth of water over the ladder weirs was 1.0 ft.

Overall, the adult fish passage system was operating either within or close to targeted head at all entrances. All staff gages were apparently readable on this initial inspection

Rock Island Dam – Steve Gacek, WDFW, completed an inspection of the fish facilities on April 24. River Q was 149.9 kcfs with flow passing through eight turbine units at the new powerhouse and five units at the old powerhouse. Spill for juvenile fish was ongoing with about 20% of the river being spilled during this inspection. Turbidity was reported at 8.0 ft with the water temperature reading 48°F.

Left Bank fishway – Water from the immediate forebay supplies flow through the diffusion system to the two downstream entrances. The criteria ranges for gate depth (6.0 ft minimum) and head differential (1-2 ft) are normally met under any river flow scenario. The gates were submerged 6.8 ft below tailwater with the ΔH at 1.3 ft. The exit from the fish ladder and the picket lead section at the counting station were clear of debris. The depth of water over the ladder weirs was 1.1 ft. The research boat for the release of fish during the survival studies is moored in the tailwater next to the old powerhouse (same as previous years).

Middle fishway – Gravity-flow water is directed through the diffusion system to the downstream gate and the side entrance. The downstream gate was submerged 8.5 ft (criteria = 8.5 ft or >) with the ΔH reported at 1.1 ft. The side entrance is fixed-open and depends on “head” only to stay within criteria. The gate depth and head differential were within criteria on this initial inspection. The exit from the fish ladder and the picket lead section at the counting window was reported clear of debris during the inspection. The depth of water over the ladder weirs was 1.1 ft.

Right Bank fishway – The gravity flow water (100% open) plus three fish pumps supply water to the Right Bank fishway. The main entrances are fixed-open at 3-ft and require a head differential greater than 1.0 ft to be within criteria. The RPEs were reported with 1.5 ft “head”, 1.3 ft “head” at the LPE, and 1.1 ft at the TRE (downstream) entrance. The velocity in the left powerhouse collection channel was estimated at 4.3 fps. The Attraction Water jet was operating as is normal for the Right Bank fishway. The exit from the fish ladder and the picket lead section at the counting station was clear of debris during the inspection. The depth of water recorded over the fish ladder weirs was 1.1 feet.

Overall, the adult fish passage facilities were operating at satisfactory levels during the initial April 01 inspection.

Rocky Reach Dam – The adult fish passage facilities were inspected by Steve Gacek, WDFW, on April 24. Project discharge during the inspection was 75.1 kcfs with flow directed through seven main turbine units. No spill was occurring during this inspection and Unit 11 was off-line. The water temperature was 45.7°F with the turbidity reading 11 ft. Three fish pumps were operating at 40% open and supplying flow to the fishway. The main spillway entrance was off-line with the normal start date May 1 or when spill occurs. I later received a call from Thad Mosey, biologist for Chelan PUD who indicated that the spillway entrance would not be operated while there was no spill at the project. The left powerhouse entrance gates are operated to maintain a minimum gate depth of 10 feet or more, while the right powerhouse entrances are fixed-open at 3-ft. Two entrance gates were operating at the right powerhouse (RPE-1 and RPE-2) and two at the left powerhouse (LPE-1 and LPE-2). The LPEs were submerged 11.4 ft with a head differential of 1.3 ft; while the right powerhouse entrances had satisfactory “head” with 1.0 ft recorded. Velocity through the transportation channel was 1.7 fps. The exit from the fish ladder and picket lead section was clear of debris. The depth of water over the ladder weirs was 1.0 ft. Orifice gates operating along the collection channel were in slots 1, 2, 3, 14, 16, and 20.

Overall, the fishway was operating at satisfactory criteria levels relating to gate depth and head differentials at the main entrance gates. The surface collector was operating with some sampling occurring at the bypass during this inspection .

Wells Dam – Stewart Mitchell, WDFW, completed an inspection of the adult fish facilities on May 1. Project discharge was 93 kcfs, with seven of ten main turbine units operating. Spill for juvenile fish protection was 8.8 kcfs for the inspection. River temperature was 48°F with the turbidity reading 8.7 ft.

East and West fishways – At the Wells project, both the east and west fishways are of similar design. Two fish pumps are located on each shore and supply attraction flow to the fishway entrances. The downstream gate operates at 8-ft open at both fishways, with the Side entrances closed. The orifice jets that supply attraction flows (underwater) from near the side entrances will also be closed for the year.

At the **East** fishway, the head differential measured from the Control Room, the deck gage, and the staff gage were within 0.2 ft of the other and potentially could have been calibrated. The readings gave a head differential of 1.5 ft for the computer, 1.4 ft for the deck gage and 1.1 ft for the staff

gage. Depth of water over the ladder weirs was 1.2 ft. The east fish ladder reported a differential through the exit pool to the forebay of 0.74 ft. The normal head through that area ranges between 0.5 ft to 0.8 ft.

At the **West** fishway, the deck gage, the computer reading, and the staff gage were within 0.1 ft with the head differential measured at 1.5 ft. The staff gage reading of depth of water over the weirs was 0.9 ft. The exit from the west bank fish ladder recorded a 0.76 ft differential, similar to the east exit reading and was within the normal range.

Overall, the fish facility operation was within the desired flow range through the main fishway entrances but the system needed some calibration at the West entrance. Depth over fish ladder weirs was 0.1 ft low on the West ladder.

Ice Harbor Dam - Steve Richards, WDFW, completed an inspection of the fish facilities on April 9. Project discharge was 55.4 kcfs with four main turbines operating to pass inflow; there was no spill occurring during the inspection. The turbidity reading was 3.5 ft with the water temperature 46°F.

South Shore Fishway – All eight electric pumps and 200-cfs flow from the juvenile bypass system supply water to the south shore fishway. The South shore entrance was operating with 2.0 ft of “head” and the gate submerged 8.3 ft. The north powerhouse gate was recorded with 1.1 ft of “head” and the gate submerged 9.4 ft below tailwater. The channel velocity was about 2.4 fps at the electronic gage. Seven orifice gates were operating along the powerhouse collection channel. The exit from the south fish ladder and picket lead section near the counting station was clear of debris on this inspection. The depth of water over the south fish ladder weirs was 1.0 ft.

North Shore fishway – Three fish pumps were operating at the north shore and supplying water to the north shore fishway entrance. The entrance gate was submerged 6.7 ft below tailwater elevation with the head differential at 1.2 ft using the staff gage, and 6.6 ft submerged with 1.2 ft head differential using the display (LED). This was excellent compared to more recent years when the North shore readings were normally out of sync. The exit from the north fish ladder and the picketed lead section at the counting station was also clear of debris. The depth of water over the fish ladder weirs was 1.0 ft.

Overall, the adult fish facilities were operating at satisfactory levels at the points checked during this initial inspection. The juvenile fish facility and components appeared to be operating satisfactorily on this inspection.

Lower Monumental Dam – Steve Richards, WDFW, inspected the fish facilities on April 9. River Q was 50.2 kcfs with Units 1-3 operating and no spill occurring during this inspection. River temperature was 46°F, with the turbidity reading 3.4 feet.

North Shore fishway – Three turbine driven fish pumps operating at 74 rpm average and about 200 cfs excess juvenile bypass flow were supplying water to the north and south shore fishway entrances and powerhouse collection channel. The north shore entrances were submerged 8.05 ft average depth with the “head” measured at 1.6 ft. No orifice gates will be operated along the collection channel in 2001. The collection channel velocity was visually estimated at more than 2.0 fps. The south powerhouse entrances were **on sill** and submerged 7.5 ft with 1.3 ft of “head”.

The exit from the north fish ladder was reported clear of debris, as was the picket lead section at the counting station. The depth of water over the fish ladder weirs was 1.1 ft.

South Shore Fishway – The north shore fish pumps supply flow to the south fishway entrances along with about 80 cfs flow from the fish ladder. One entrance is a fixed-open gate that remains 6 ft open while the other gate is to be submerged 8.0 ft or more to be within criteria. On this inspection the adjustable gate was submerged 8.3 ft and had 1.5 ft “head”. The digital display

showed the gate at 8.0 ft submerged with 1.9 ft head differential. The exit from the south fish ladder and the picket lead section at the fish counting station was clear of debris. The depth of water recorded over the fish ladder weirs was 1.1 ft on the south ladder.

Overall, the adult fish passage facilities were found operating with head differentials within the criteria range of 1.0 to 2.0 ft. The Juvenile fish facilities were operating satisfactorily on this inspection with gatewells clear of debris and no report of other problems such as blocked orifices, etc.

Little Goose Dam – Josh Hanson, ODFW, inspected the adult fish facilities on May 2. River Q was 52.1 kcfs with flow through Units 1-3. Water temperature was 53.4°F with the turbidity reading 4.8 ft. Three turbine-driven pumps operating at 73-rpm average, and excess flow from the juvenile bypass system, were supplying water to the adult fishway. The South Shore fishway entrances [SSE-1 and SSE-2] were submerged about 8.6 ft average depth with the head differential at 2.0 ft using the FSC Board reading; Note – Staff gage was unreadable. Channel velocity recorded at the south end of the channel registered about 1.0 fps, with the velocity up to 2.5 fps at the north shore channel. Orifice gates along the powerhouse collection channel remained closed for the 2001 adult migration season. The North Powerhouse entrances were on sill with the gates submerged an average of 7.45 ft with the “head” at 1.6 ft using the FSC Board reading. The North Shore Entrances were submerged 6.0 ft deep with the “head” at 1.3 ft using the staff gage reading. The FSC Board reading was about 0.3 ft different from the staff gage on tailwater elevation and 0.1 ft on the channel elevation; the head differential was 1.5 ft with the FSC reading. The exit from the fish ladder and the picket lead section at the counting station was visually clear of debris on this inspection. The depth of water over the ladder weirs was 1.1 ft.

Overall, the velocity reported at the South end of the collection channel was 1.0 fps and was less than the 1.5 fps called for in the FPP.

Lower Granite Dam – Josh Hanson, ODFW, completed an inspection of the adult fish facilities at Lower Granite Dam on May 3. River Q was 61.3 kcfs with four main turbine units (1, 4-6) operating. Water temperature was 51.6°F with the turbidity reading at 2.8 ft. Two electric fish pumps were supplying flow to the adult fishway entrances and powerhouse collection channel.

The South Shore entrances were submerged 8.0 ft average with ΔH of 1.8 ft using the staff gage readings. The North Powerhouse entrances were submerged an average of 6.2 ft with ΔH of 1.4 ft using the staff gage reading. The FSC Board reading was within 0.2 ft of the staff gage readings at the NPEs. The velocity in the powerhouse collection channel was about 1.0 fps at the south end of the powerhouse collection channel and 2.0 fps at the North Shore. Four orifice gates operate along the powerhouse collection channel [1, 4, 7 and 10].

Note: The NPE gates were on sill so no further depth could be attained.

At the North Shore, Gates NSE-1 and NSE-2 were submerged 6.1 ft below tailwater elevation, using the FSC Board reading with the head differential reading 0.9 ft.

The exit from the fish ladder was reported clear of debris. The picket lead section at the counting station was building as 0.1 ft head was measured across the pickets. The depth of water over the fish ladder weirs was 1.1 ft.

Overall, the initial inspection showed the adult facilities operating at or near satisfactory conditions given the tailwater elevations. There is still no staff gage or other gage to measure the North Shore entrance (tailwater elevation). The velocity at the south end of the powerhouse collection channel was about 1.0 fps, below the expected 1.5 fps minimum criteria.