Walla Walla River Fish Passage Operations Program

Annual Report
2002 - 2003

DOE/BP-00012779-2

March 2004

This Document should be cited as follows:

Bronson, James, Bill Duke, "Walla Walla River Fish Passage Operations Program", 2002-2003 Annual Report, Project No. 200003300, 35 electronic pages, (BPA Report DOE/BP-00012779-2)

Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

This report was funded by the Bonneville Power Administration (BPA), U.S. Department of Energy, as part of BPA's program to protect, mitigate, and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. The views in this report are the author's and do not necessarily represent the views of BPA.

Walla Walla River Fish Passage Operations Project
Annual Progress Report
October 2002 – September 2003

Prepared by

James P. Bronson
Fisheries Program, Department of Natural Resources
Confederated Tribes of the Umatilla Indian Reservation

And

Bill B. Duke
Oregon Department of Fish and Wildlife

Funded by

U.S. Department of Energy
Bonneville Power Administration
Division of Fish and Wildlife

P.O. Box 3621
Portland, OR 97208-3621

Project No. 2000-033-00
Contract No. 12779

March 2004

Table Of Contents

ACRONYMS

AOP – Annual Operations Plan
AWS – auxiliary water supply
BPA – Bonneville Power Administration
COE – Army Corps of Engineers
CTUIR – Confederated Tribes of the Umatilla Indian Reservation
DOE – Washington Department of Ecology
ESA – Endangered Species Act
FACPSA – Final Amended Civil Penalty Settlement Agreement
GFID – Gardena Farms Irrigation District
HBDIC – Hudson Bay District Improvement Company
NOAA – National Oceanic and Atmospheric Administration
ODFW – Oregon Department of Fish and Wildlife
PNNL – Pacific Northwest National Laboratory
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey
WWBNPME – Walla Walla Basin Natural Production Monitoring and Evaluation Project
WWFPO – Walla Walla Fish Passage Operations
WWRID – Walla Walla River Irrigation District

ACKNOWLEDGEMENTS

This program was funded by Bonneville Power Administration (BPA). The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Oregon Department of Fish and Wildlife (ODFW) thank Ben Zelinsky of BPA for his project assistance.

Thanks are also extended to the Pendleton District Office and Brian Kilgore of ODFW; Washington Department of Fish and Wildlife; Larry Swenson of National Marine Fisheries Service; Oregon Water Resources Department; Washington Department of Ecology, Walla Walla District of the U.S. Army Corps of Engineers; and Little Walla Walla River, Hudson Bay, and Gardena Farms irrigation districts.

Thanks to CTUIR staff for their cooperation and contributions in developing this report. In particular, Larry Cowapoo and Brian Conner, project technicians; Brian Zimmerman, technical oversite and report review; and Michelle Thompson, agreement administrator. Julie Burke, Celeste Reves, and Esther Huesties provided secretarial assistance.

ABSTRACT

In the late 1990's, the Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife, along with many other agencies, began implementing fisheries restoration activities in the Walla Walla Basin. An integral part of these efforts is to alleviate the inadequate fish migration conditions in the basin. The migration concerns are being addressed by removing diversion structures, constructing fish passage facilities, implementing minimum instream flow requirements, and initiating trap and haul efforts.

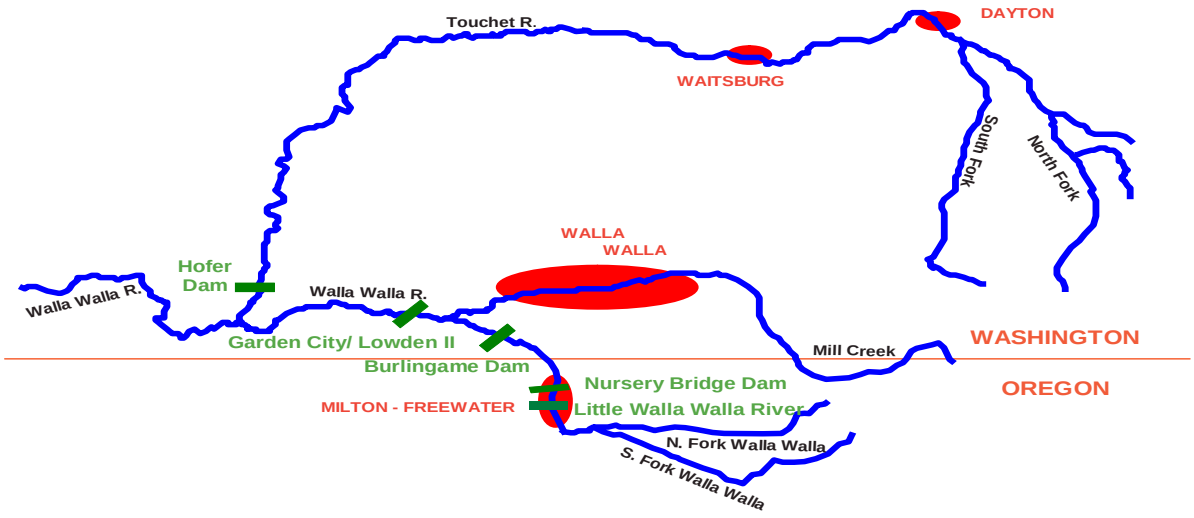
The objective of the Walla Walla River Fish Passage Operations Project is to increase the survival of migrating adult and juvenile salmonids in the Walla Walla River basin. The project is responsible for coordinating operation and maintenance of ladders, screen sites, bypasses, trap facilities, and transportation equipment. In addition, the project provides technical input on passage criteria and passage and trapping facility design and operation. Operation of the various passage facilities and passage criteria guidelines are outlined in an annual operations plan that the project develops.

During the 2002-2003 project year, there were 545 adult summer steelhead (*Oncorhynchus mykiss*), 29 adult bull trout (*Salvelinus confluentus*); 1 adult and 1 jack spring chinook (*O. tshawytscha*) enumerated at the Nursery Bridge Dam fishway adult trap between January 1 and June 23, 2003. Summer steelhead and spring chinook were observed moving upstream while bull trout were observed moving both upstream and downstream of the facility. Operation of the Little Walla Walla River juvenile trap for trap and haul purposes was not necessary this year.

The project transported 21 adult spring chinook from Ringold Springs Hatchery and 281 from Threemile Dam to the South Fork Walla Walla Brood Holding Facility. Of these, 290 were outplanted in August for natural spawning in the basin.

INTRODUCTION

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Oregon Department of Fish and Wildlife (ODFW), and Washington Department of Fish and Wildlife (WDFW) are conducting numerous fisheries activities associated with the rehabilitation of summer steelhead and bull trout populations in the Walla Walla River Basin (Figure 1) (Zimmerman and Duke 2002). In addition, reintroduction efforts are also in progress for spring chinook in the basin (COE 1997, CTUIR 1998, Zimmerman and Duke 2002). The Bonneville Power Administration (BPA) and U.S. Army Corps of Engineers (COE), along with other local, state, and federal agencies, are funding several projects related to the restoration of these populations (Zimmerman and Duke 2002). Included among these is the Walla Walla River Fish Passage Operations Project.



The Walla Walla River is heavily diverted for agricultural use. Passage constraints associated with these diversions are one of the major factors limiting fisheries restoration efforts in the basin (CTUIR & ODFW 1990, COE 1997, Zimmerman and Duke 2002). Low flows and diversion structures can delay or preclude the migration of both adult and juvenile salmonids. Fish passage improvement efforts, including maintenance of instream flows, dam removal, ditch consolidation, juvenile screens and bypasses, adult ladders, and trap and haul capabilities are being implemented to enhance passage conditions.

The Walla Walla River Fish Passage Operations Project was implemented in 1998 to assist fish passage in the basin. The goal of the project is to maximize survival of migrating adult and juvenile salmonids in the Walla Walla River. The project has four primary areas of responsibility to meet this objective: 1) Monitor flow and passage conditions; 2) Operate passage facilities, trapping facilities, and transportation equipment;

3) Provide technical input on passage improvement projects; and 4) Coordinate passage improvement efforts.

METHODS

Objective 1 – Passage Conditions Monitoring

Task 1.1 – Monitoring of River Conditions

There are over 100 temperature recorders deployed throughout the Walla Walla Basin by a multitude of agencies including the CTUIR. The temperature data from these recorders are used by the project to help identify temperature related passage constraints and to refine operating guidelines. Temperature data is accessed as needed for various locations in the basin through the local irrigation districts' monthly river monitoring reports and other agencies' temperature monitoring efforts.

Daily river flow is monitored for the South Fork Walla Walla River and North Fork Walla Walla River in Oregon. Daily irrigation usage is monitored for Little Walla Walla River in Oregon. Flow and diversion data for these sites is provided by the Oregon Department of Water Resources. In addition, the local irrigation districts monitor river flow in the reach from Nursery Bridge Dam to the state line. These data are available from their monthly river monitoring reports.

Flows are also monitored at mainstem locations in Washington. Flow data are recorded at a United States Geological Survey (USGS) gauging station located on the lower mainstem Walla Walla River (RM 18), below the confluence with the Touchet River. Seasonal flow data is also recorded by Department of Ecology (DOE) at multiple sites located in the mid mainstem Walla Walla River. This data is also available through the local irrigation districts' monthly river monitoring reports and through the DOE web site.

Task 1.2 – Inspection of Passage Facilities

Juvenile fish screens/bypasses and adult ladder facilities, located at four major diversions (Little Walla Walla River, Nursery Bridge, Burlingame and Garden City/Lowden II) and several smaller diversions, were monitored weekly throughout the year to ensure that adequate passage conditions exist for upstream and downstream migrants. Inspections include checking for proper installation and operation of screens, gaps and holes in screens or seals, debris buildup on screens and trash racks, proper flows to smolt bypasses and adult ladders, adequate access and exit conditions at bypasses and ladders, and signs of fish activity.

Objective 2 – Adult and Juvenile Trapping Facilities Operation

Task 2.1 – Little Walla Walla Juvenile Trapping

A juvenile bypass and trapping facility is located at the Little Walla Walla River diversion. The facility consists of vertical plate screens along with a fish bypass and trap (Figure 2). It is designed to bypass outmigrating juveniles during periods of adequate flow or trap them during periods of low flow.

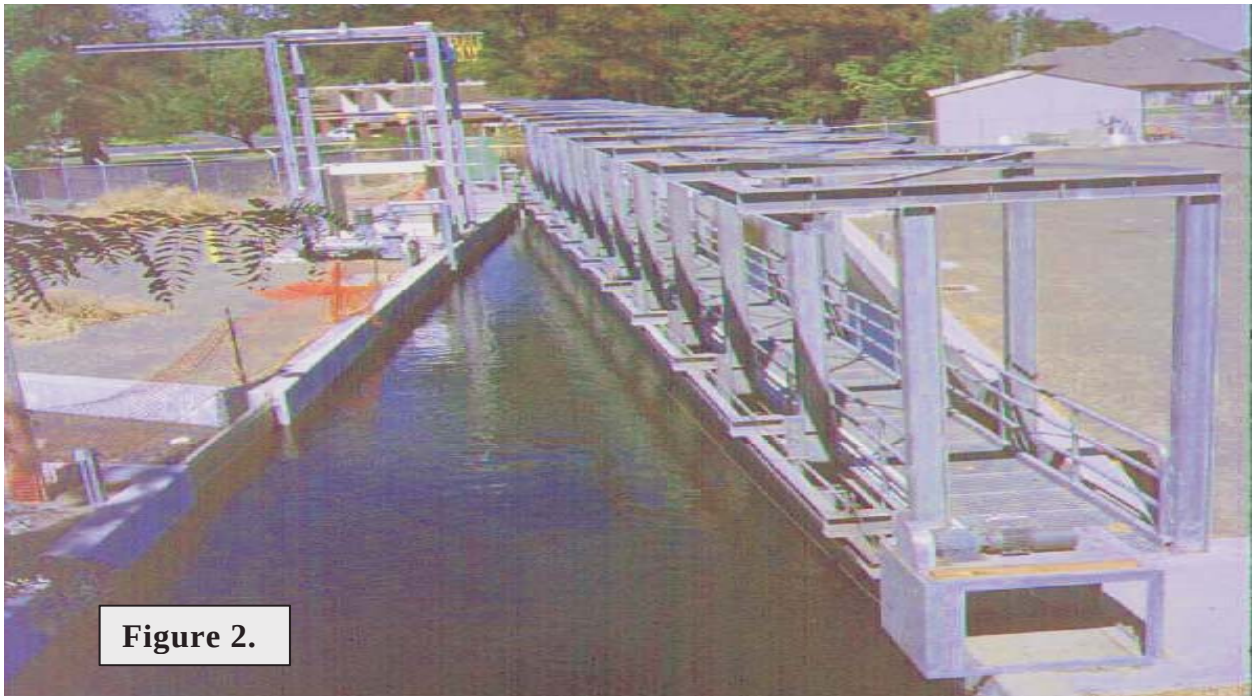


Figure 2.

The 2002/2003 Annual Operations Plan (AOP, Appendix B) outlined the following criteria for operating the Little Walla Walla River diversion bypass and trap: If flows are continuous from Nursery Bridge Dam through to the state line until June 15, then the juvenile bypass is to remain open. If flows in this reach become intermittent prior to June 15, the juvenile bypass will be closed and the trap opened. At the point during trapping where resident salmonids outnumber migratory juveniles, the trap will be shut off and the bypass reopened.

Information collected at the Little Walla Walla River facility includes dates of canal operation and facility operational modes. Data related to trapping and hauling of juveniles and adults from the facility was also collected.

Task 2.2 – Nursery Bridge Adult Enumeration

An adult trap and video counting station were incorporated into the new ladder that was constructed on the east bank at Nursery Bridge Dam in 2001. The new ladder consists of a vertical slot fishway with a video counting window located in the upper exit channel of the fishway. The adult trapping component of the ladder consists of a denil steeppass and holding pond. According to the 2002/2003 AOP, no trapping was to be

conducted this year. Enumeration of adults occurred from December through June by video counting.

Data collected from the video counting includes number, species, and marks. In addition, the number of summer steelhead kelts, jack and adult spring chinook, and size range and migration direction for bull trout were recorded. Notations were also made of other species encountered and general fish condition.

Objective 3 – Adult and Juvenile Transportation

Task 3.1 – Safely transport and release juveniles from the Little Walla Walla trap as required to prevent accumulation of smolts at the facility.

Criteria for the transport and release of juveniles captured at the Little Walla Walla River trapping facility are also outlined in the AOP. Transportation data collected will include date, transport unit, number of pounds of fish hauled, species composition, an estimate of mortality, and release location. The same transportation units and liberation protocols identified in the adult section are used for juveniles.

Task 3.2 – If available outside project priority requirements, provide adult and juvenile transportation assistance for other basin project efforts on an as needed basis.

The Walla Walla Fish Passage Operations Project has a 3,500 gallon, one 3000, one 750 gallon, and two 370 gallon fish liberation units available for use. The 3,500 gallon unit is a diesel operated tractor-trailer equipped with a 12 inch discharge opening and a single holding chamber. The 3,000 gallon unit is a diesel operated tractor-trailer equipped with a 12 inch discharge opening and two holding chambers capable of isolating two groups in the same load. Both tractor-trailer units are equipped with liquid oxygen and electric aeration to reduce fish stress during transport. The 750 gallon unit is mounted on a flatbed truck and consists of a single compartment with a 12 inch discharge opening. It has both compressed oxygen and electric aeration. The two 370 gallon transport tanks are mounted on dual axle trailers and are pulled by pick-up trucks. Both are equipped with compressed oxygen aeration and a re-circulation system. Both units have an eight inch discharge opening. These transportation units are used in both the Umatilla and Walla Walla basins.

ODFW liberation protocols are used as the basic guideline for hauling operations. The 3,500 and/or 3,000 gallon unit are used to haul spring chinook adults. In addition, the 750 gallon unit may be used to haul spring chinook adults. A 12 inch discharge opening is needed for releasing fish of this size. The trailers, with eight inch discharge openings, are adequate for hauling kelts. Criteria for the transport and release of kelts captured at the Little Walla Walla River trapping facility is outlined in the AOP. Transportation data collected includes date, transport unit, number of pounds or fish hauled, species composition, and an estimate of mortality.

Objective 4 – Coordination of Passage Program

Task 4.1 – Passage Facilities Operation and Maintenance Oversight

The physical passage portion of the program includes juvenile fish screens, bypasses, and adult ladders. Operation of passage facilities are coordinated with local irrigation district operation and maintenance personnel using criteria developed during facility design and construction and with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries – formerly National Marine Fisheries Service) as a general guideline for facility operations.

Task 4.2 – Passage and Trapping Facilities Design Review

A number of juvenile and adult passage improvement projects are being implemented, or planned for, in the Walla Walla Basin. Development of these passage projects has been tasked to various engineering consulting firms by the funding agencies. The project provides technical input on both design and operating criteria for these passage facilities based on operating expertise developed with similar type projects in the Umatilla and Walla Walla basins. One additional trapping facility has also been identified for development in the Walla Walla Basin.

Task 4.3 – Annual Operations Plan Development

Many different passage improvement projects have been implemented as part of the fisheries restoration efforts in the Walla Walla Basin. These include juvenile screens, bypasses, and traps and adult ladders and traps. In addition, minimum instream flows for summer steelhead and bull trout have been required by NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA).

It is essential that operation of facilities be coordinated with river conditions and diversion activities to maximize survival for migrating adults and juveniles as well as resident salmonids. One vehicle for coordinating these passage efforts is through an annual operations plan (AOP) developed by the project in late summer. This plan receives input from state, federal, and tribal fisheries biologists, irrigation district personnel, and other entities involved with daily operation and maintenance activities, water issues, and fisheries management decisions in the basin.

RESULTS

Objective 1 – Passage Conditions Monitoring

Task 1.1 – Monitoring of River Conditions

Again this year, water temperatures exhibited extreme seasonal fluctuation throughout the project year. Poor land use practices have accelerated the degradation of once pristine river conditions. In the reach from Nursery Bridge Dam to the state line, water temperatures approached a low of approximately 39° in the winter months and a high of 73° in July 2003. Below Burlingame Dam, temperatures ranged from a low of approximately 39° in December 2002 to 72° in July 2003.

Flows measured for the South Fork Walla Walla River ranged from 89 to 855 cfs and flows in the North Fork Walla Walla River ranged from 4 cfs to 712 cfs. Flows measured at the USGS site in the lower Walla Walla River ranged from a low of approximately 5 cfs in summer of 2003 to a high of approximately 11,100 cfs in February 2003.

Flows in the reach from Nursery Bridge Dam to the state line were field measured by the local irrigation districts from September 2002 through February 2003 and again from June through August. With the increased instream flow requirement of 25 cfs immediately below Nursery Bridge Dam for 2003, there was continuous flow through this stream reach this year. However, this flow was observed at diminished levels approaching 9 cfs at the state line reach. The reduced levels are typical for the river “loss” area below Nursery Bridge to the state line.

Flows were measured in the mainstem Walla Walla River below Burlingame Dam at Beet Road. Flows ranged from a low of approximately 23 cfs in June 2003 to approximately 2800 cfs in early February. Flows and temperatures reported for all sites have not been finalized by all parties responsible for them.

Task 1.2 – Inspection of Passage Facilities

A number of operational problems were observed during monitoring of the juvenile and adult passage facilities. These include gravel and debris deposition at the facilities, incorrect screen submergences, insufficient maintenance, and inability to operate facilities within criteria.

Both the Nursery Bridge Dam and Garden City/Lowden II screening facilities were evaluated by Battelle PNNL to determine how these new facilities were operating and to provide a baseline in relation to design criteria. The Nursery Bridge Dam evaluation concluded that 29% of the measured velocities on the west screen exceeded the NOAA Fisheries criteria while the Garden City/ Lowden II site was within the criteria regarding approach velocities (Vucelick and McMichael, 2003). The report also evaluated the rock weirs downstream of Nursery Bridge and concluded that they are not expected to

preclude juvenile salmonids' upstream migration during low flow conditions (Vucelick and McMichael, 2003).

Objective 2 – Adult and Juvenile Trapping Facilities Operation

Task 2.1 – Little Walla Walla Juvenile Trapping

The juvenile trap at Little Walla Walla River was not operated for trap and haul purposes by the project again this year. The trap was operated by the CTUIR Walla Walla Basin Natural Production Monitoring and Evaluation Project (WWBNPME) personnel for sampling and tagging. Results from that project may be found in the WWBNPME annual report.

Task 2.2 – Nursery Bridge Dam Adult Enumeration

Video enumeration occurred at the new Nursery Bridge Dam ladder from December 6, 2002 to June 30, 2003. A total of 528 summer steelhead were counted by video as they passed through the new ladder from January 1 to June 23, 2003. No differentiation of marks were made. A total of 17 summer steelhead were trapped from March 12, 2003 to March 27, 2003, at the old ladder by the WWBNPME project. Date trapped, sex composition, and marks were collected from those summer steelhead trapped in the old ladder. Peak return month was March when 45.5% (248/545) of adults were enumerated at both the new and old ladders. There were also 11 summer steelhead kelts observed between April 10 and June 2, 2003. The highest monthly number occurred in May when 54.5% (6/11) of the kelts were enumerated.

There were 29 bull trout enumerated at the Nursery Bridge Dam ladder. Of these, 27 were observed moving upstream and 2 were observed moving downstream. Upstream movement was noted between January 21, 2003 and June 23, 2003. The highest monthly number recorded was nine fish in June, 2003. Bull trout were observed migrating downstream on May 24 and May 27, 2003. A total of 1 adult and 1 jack spring chinook were enumerated on May 24 and June 3, 2003. Appendix A contains the daily adult salmonid enumeration record for Nursery Bridge Dam video taping and trapping during 2002/2003.

Objective 3 – Adult and Juvenile Transportation

Task 3.1 – Juvenile Hauling

No juveniles were transported from Little Walla Walla River by the project this year. However, approximately 59 spring chinook and 436 summer steelhead juveniles were transported to the South Fork Walla Walla River at Harris Park during the fish salvage on June 17 above Nursery Bridge Dam to Eastside Ditch berm. One of the 370 gallon units was used during this transport.

Task 3.2 – Adult Hauling

No kelts were transported from basin trapping facilities this year due to sustained flows to the state line. The project did transport spring chinook adults for the Walla Walla outplanting program in 2003. There were 21 spring chinook adults transported from Ringold Springs Hatchery and 281 from Threemile Dam to the South Fork Walla Walla Spring Chinook Holding and Spawning Facility. One trip was made from Ringold Springs on June 6, 2003 with the 750 gallon unit. Eleven trips were made from Threemile Dam between April 25 and May 15 using the 3,000 gallon tanker. No mortalities were observed upon unloading at the South Fork facility. Further details are identified in the WWBNPME, Umatilla Hatchery Satellite Facilities Operation and Maintenance annual reports.

The surviving adults were transported from the South Fork facility and released into natural spawning habitat in the South Fork Walla Walla River (RM 9) on August 7th. There were 290 adults outplanted in four loads using both the 3,500 gallon tanker and the 3,000 gallon unit. No transport mortalities were observed at release. Results from the outplanting program may be found in the Umatilla Hatchery Satellite Facilities Operation and Maintenance and WWBNPME annual reports.

Objective 4 – Coordination of Passage Program

Task 4.1 – Passage Facilities Operation and Maintenance Oversight

The project coordinated in phone or in person on a weekly basis with personnel from Hudson Bay District Improvement Company (HBDIC) and Gardena Farms Irrigation District (GFID) on both daily operations and facility maintenance throughout the project year at the Little Walla Walla River, Nursery Bridge Dam, Burlingame Canal, and Garden City/Lowden II sites.

Task 4.2 – Passage and Trapping Facilities Design Review

The project provided extensive comments on the O&M manual that was developed for the Nursery Bridge Dam ladder and trap. The manual was finalized in November, 2002. The project participated in conference calls with NOAA, USFWS, ODFW, COE, HBDIC, BPA, and other interested parties regarding the Nursery Bridge gravel deposition concerns and flows to the ladder which led to the formal consultation process with USFWS and NOAA fisheries. A Biological Opinion will be the final outcome, which will point out the necessary actions to address the gravel work. In addition, work zones for future O&M activities were established for Garden City/ Lowden II, Burlingame, Nursery Bridge Dam, and Little Walla Walla River by HBDIC, ODFW, NOAA, and CTUIR.

The project participated in meetings with federal, state, and local agencies and provided comments relative to improving the passage conditions at Mill Creek Dam and

the installation of a trapping facility at the same location. The project also participated in the planning process for the COE flow enhancement study.

Task 4.3 – Annual Operations Plan Development

The project produced a Walla Walla AOP for the 2003/2004 year in August 2003. This AOP, which covers the time period from October 1, 2003 to September 30, 2004, is attached as Appendix B in this report. Minimum instream flows of 25 cfs were established by the USFWS as part of the Amended Final Civil Penalty Settlement Agreement (Civil Penalty Agreement)(2001).

DISCUSSION

Objective 1 – Passage Conditions Monitoring

Task 1.1 – Monitoring of River Conditions

In 2001, the Final Amended Civil Penalty Settlement Agreement (FACPSA) between the USFWS and the local irrigation districts required minimum instream flows be maintained below Nursery Bridge Dam and Burlingame Dam. In addition, it requires that comprehensive flow and temperature monitoring be conducted by the local irrigation districts below Nursery Bridge and Burlingame dams. These locations are important sites for hydrological data from a passage perspective as they are located downstream of major diversions at what are two of the lowest flow points in the river. Data from these locations is a key component in decisions of whether to trap or bypass smolts and adults, how to operate fish passage facilities, and at what flows adults and juveniles can effectively migrate. Another important monitoring location is the stream reach at Detour Road as it is located downstream of the confluence of Mill Creek. Flow and temperature data for this site are monitored by WDFW and DOE but the data have not been available on a timely basis and is not included in this report for that reason.

Temperature and flow data from other, less critical, passage locations in the Walla Walla Basin are being monitored and reported by other agencies. The project continues to make field observations of flow and temperature but no longer collects or reports detailed flow and temperature field data from the Walla Walla Basin as this is redundant with other ongoing efforts in this area. The project accesses data collected and reported by the irrigation districts and other sources for hydrological information relative to passage operations on an as needed basis. The project will continue to monitor river conditions as relates to the operation of passage facilities and fish passage conditions.

The FACPSA identified that the minimum instream flow requirements for the summer of 2002 and each summer thereafter remain at 25 cfs below Nursery Bridge Dam and 18 cfs downstream of Burlingame Dam. For the third year, there was continuous flow from Nursery Bridge Dam all the way through the state line. Maintenance of minimum instream flows extend the opportunity for passage for both adults and

juveniles. In addition, instream flow increases the area available for rearing of resident and non-migratory salmonid life histories. Historically, few fish would be in this river reach by mid summer and large scale salvage operations were conducted to rescue juveniles stranded in this reach. No rescue operations were performed below Nursery Bridge Dam this year.

Task 1.2 – Inspection of Passage Facilities

The evaluation of the Nursery Bridge Dam ladder (Vucelick and McMichael, 2003) concluded that approach velocity measurements on the west auxiliary water supply (AWS) screen exceeded established criteria and immediate adjustments of the existing louvers could not be made to correct the problem. A total of 68% of the initial velocity measurements on the west screen exceeded the NOAA Fisheries criteria of 12.2 cm/s (0.4 ft/s) for approach velocity (Vucelick and McMichael, 2003). Sediment deposition was also observed to be an issue during the evaluation of Nursery Bridge Dam ladder. Gravel accumulation and deposition in the river upstream of the screens exceeded design criteria for the site. Flow conditions will dictate the extent of gravel accumulation and deposition into the facility. Preventing excessive gravel deposition into the facility will require removing gravel accumulations on an as needed basis. The Garden City/ Lowden II site was found to be operating within established criteria. However, manual cleaning of the screens at the site is necessary when there are large amounts of sediment, debris, and algal growth.

The forebay elevations at Little Walla Walla River varied during the project year. Low water surface elevations decrease the amount of wetted screen surface, which may increase velocities at the screen face above criteria levels. Secondly, the lower water surface can reduce flow to the bypass, particularly if the bypass weir gate is not adjusted accordingly. The operating criteria for the facility identify a specific water surface elevation at which the forebay should be maintained. Operating criteria for the rest of the facility were developed under the assumption that the forebay elevation would be maintained at the specified level. Adherence to the operational and maintenance manuals developed for the site will allow the facility to operate smoothly.

In addition, operational problems associated with the rubber dam at Little Walla Walla occurred during the project year. The rubber dam had been scheduled for replacement in the summer of 2002, but was delayed until the summer of 2003 due to permitting issues. The damage to the old rubber dam was caused by beavers and vandals, resulting in numerous air leaks in the rubber dam. This resulted in the air supply system not being able to meet the demand with out risking damage to the air compressor. Large amounts of gravel deposited above the old rubber dam caused water to spill in two locations during the fall. As a result, the Obermeyer gate was raised more than may have been needed or lowered as needed to maintain a minimum canal forebay operating elevation. As specified above, it is imperative that the facility operates within criteria to ensure adequate passage conditions. It is important to actively control the water levels to maintain optimal fish passage in the river and in the screen area. The rubber dam replacement project was completed in the fall of 2003 with reinforced material (ceramic

chips) that should prevent further maintenance issues in the future. The rubber dam is a vital component to the operation of the Little Walla Walla River facility.

Annual high water events in the Walla Walla River in late winter resulted in large amounts of gravel deposition at Garden City/ Lowden II, Burlingame, Nursery Bridge Fishway, and Little Walla Walla facilities. A myriad of problems arose during these high flow events. Gravel accumulation in the channel adjacent to the facility at Little Walla Walla River jeopardized the connecting bypass channel. Anticipated low flow conditions in the late spring would result in the bypass channel being isolated from the main channel. The main channel is on the east side while the bypass outfall exits into the channel on the west side. Low flow conditions would result in the west side channel being isolated from the main channel that continues downstream. Excavating the bypass channel and low flow channel to an elevation that connects to the main channel provided a solution. However, gravel removal may be necessary after each high flow event to ensure adequate bypass conditions.

During high flows, the main river channel upstream from the fish exitway at Nursery Bridge Fishway moved to the west bank, reducing flows to the ladder. Limited flows to the ladder caused the facility to operate out of criteria. In addition, the installation of the boards in the fish exitway to trap gravel resulted in the AWS being unable to provide correct entrance gate differentials without exceeding the differential criteria over the dam boards in the fish exitway. Preventative gravel maintenance at the site is necessary to prevent excessive accumulations of gravel and debris in the fish exitway. Specifics regarding potential solutions will be addressed through the formal consultation process with USFWS and NOAA Fisheries.

During the February high flow event, the approach channel to Eastside ditch blew out and dewatered the lower end of the ditch. As a result, the flow to the Nursery Bridge ladder was essentially eliminated. The Eastside ditch wasteway provides flows to the ladder. The main channel of the river was then directed away from the approach channel toward the Eastside ditch. Gravel work was conducted below the approach channel after the event to redirect water to the new fish ladder. A channel and gravel maintenance strategy needs to be developed that would ensure adequate flows to the facility. Potential alternatives and solutions could be addressed through further Nursery Bridge Ladder coordination meetings with all interested parties.

In addition, the high flow events that occurred in late winter rendered the upper fish entrance (stilling basin entrance) inoperable. The channel morphology upstream of the facility changed forcing the main channel towards the west bank away from the ladder. This resulted in large boulders and cobble being deposited next to the stilling basin entrance. In order to provide an avenue for fish passage, the old ladder at Nursery Bridge was opened on February 21, 2003. Gravel removal was conducted after the high flow events upstream of both the ladder exitways. Due to the large amounts of substrate still present upstream of both ladders, it should be understood that seasonal gravel maintenance will be needed to provide a suitable passage environment.

Severe downcutting of the river channel downstream of the new ladder and stilling basin caused an elevated differential across the lower entrance gates. ODFW constructed rock weirs downstream of the ladder in the spring of 2003; however, elevated differentials out of the fish entrances persisted through the spring. During the summer of 2003 the elevation sills were removed from the entrances and steps in the ladder, providing adequate differential levels.

Couse Creek down cut severely through the existing diversion dam that directs Couse Creek into Milton Ditch. Without the push-up gravel dam in place, the flow from Couse Creek did not flow into Milton Ditch. As flows dropped, the section of Milton Ditch above the fish screens became isolated and did not have continuous flow. In order to rescue stranded fish, a salvage was conducted in mid February resulting in 24 juvenile salmonids being collected and returned to the river. Instream work was completed by WWRID to repair the dam in June 2003.

The middle entrance slot to the Burlingame ladder was not removed when the flash dam section was removed on January 16 to facilitate migration through this stream reach. The middle entrance could not be opened due to the stop logs being wedged in place by gravel accumulations during the high flow events in late January and early February.

There continue to be concerns with the adequacy of the maintenance effort at the Little Walla Walla River and Nursery Bridge passage facilities. Large amounts of debris were noticed on both facilities' trashracks on numerous occasions during high flow events. Removing debris from the trashracks is a daily task that is needed to prevent deleterious effects to fish moving through the system. More timely response and attention to details is needed to correct problems at Nursery Bridge ladder and the Little Walla Walla River facility. Cleaning the trashracks at least twice a day during high flow events will prevent large amounts of debris from piling up on the trashracks. Further maintenance issues arose at Nursery Bridge during the project year. A cable that operates a screen cleaner broke rendering the screen cleaner inoperable and preventing the use of the AWS. This resulted in no attraction water flow out of the stilling basin entrance. Debris continued to build up in the attraction water screen area exacerbating the situation. During that time the facility operated under less than favorable passage conditions. After several weeks, a new cable was re-installed and that problem was addressed. However, the gravel situation in the ladder continued to hinder the operation of the screens. Operational and maintenance manuals developed for each passage facility provide guidelines to follow during the fluctuation of river flows.

During the winter, the juvenile screen facility at Little Walla Walla River was dewatered and the seals were re-inspected. A few gaps were observed and repaired. A new fish screen and bypass outlet were installed by ODFW into Milton Ditch as identified in the FACPSA.

The automated head gates at Burlingame canal malfunctioned in January, 2003, damaging the gate stems. The automated system maintains the proper canal water surface level, and the proper canal diversion rate. As addressed with the Little Walla

Walla River, the correct canal forebay elevation is needed for the rest of the facility to operate within criteria. The gate stems were replaced in late June of 2003. In addition, the Burlingame canal was closed in early January for winter maintenance and the bypass remained open until the fish salvage on January 24. A total of 12 steelhead and 10 spring chinook juveniles were removed from the canal and released into the river. The canal was shut off again on July 8, the juvenile bypass remained open and the canal drained over the next week to allow fish in the canal forebay to leave volitionally.

The Eastside and Milton ditches were not bermed off at the point of diversion and dewatered at the end of the irrigation season for the second consecutive year due to adequate flow conditions. Both ditches were shut off at the headgate only. This eliminates the need to put heavy equipment instream in the fall. Not berming off and dewatering ditches in fall eliminates the problem with stranding of juveniles in both ditches. However, it does expose the head portions of each ditch to damage during high water events as experienced this year at Eastside Ditch. Instream work continues to be conducted by WWRID in the spring/summer as flows decrease in order to divert their full water right. A small gravel berm was constructed in the summer of 2003 to direct flows to Eastside ditch and Nursery Bridge ladder. A fish salvage effort was performed in the area from the berm to the sill of Nursery Bridge. However, a notch in the berm allowed flow to continue downstream to the sill providing sufficient flows to fish not salvaged below the berm.

Screening and bypass problems still exist at smaller sites in many of the Washington tributaries. There are also major adult passage concerns in Mill Creek. The U.S. Army Corps of Engineers' flood control project and irrigation diversions have combined to create multiple passage impediments in Mill Creek. Most specifically, there appear to be potential passage impediments at Gose St. bridge, in lower Mill Creek due to irrigation diversions down Yellowhawk Creek, at the Mill Creek Dam ladder, and at the Bennington Lake diversion. It is not known to what extent passage is delayed or precluded at these various sites. An adult passage evaluation project is underway in the Walla Walla Basin which will hopefully answer some of these Mill Creek passage questions.

Objective 2 – Adult and Juvenile Trapping Facilities Operation

Task 2.1 – Little Walla Walla Juvenile Trapping

The project did not conduct trapping operations this year at Little Walla Walla River to haul fish around dewatered areas. As outlined in the 2002/2003 AOP, the juvenile bypass was to be left open as long as flows from Nursery Bridge Dam to the state line remained continuous through June 15. With the increased minimum flow requirement of 25 cfs below Nursery Bridge Dam, flow remained continuous through this reach all year. It is anticipated that at these levels there will likely always be flow between Nursery Bridge and the state line, eliminating the need to trap at Little Walla Walla River.

Trapping was conducted at the Little Walla Walla River facility by the WWBNPME project for tagging and biological sampling. Sampling was conducted during both the fall and spring. During these periods the facility was operated in the passive trapping mode with the bypass open.

Task 2.2 – Nursery Bridge Adult Enumeration

This was the second season that the new ladder was operational. The 2002/2003 AOP stated that no trapping would be conducted and all enumeration would be by video counting. The video enumeration started on December 6, 2002 and ended on June 30, 2003. The first bull trout was observed on January 21, 2003 and the first steelhead was observed on January 1, 2003 (Appendix A).

In the past, intermittent flows in the reach from Nursery Bridge Dam to the state line and passage problems at Burlingame Dam were thought to preclude adults from reaching Nursery Bridge until late fall or early winter. However, the increased minimum flow levels resulting in continual flow below both Burlingame and Nursery Bridge dams and new ladders at both sites provided a passage corridor all year. Since Nursery Bridge Dam is located high in the watershed, the late arrival of summer steelhead to the trap is likely not as related to passage constraints as it is to natural migration timing into the upper watershed.

According to the AOP, the old ladder was to remain closed all season except in case of emergency where the new ladder was inoperable. An emergency situation did occur during the high flow events in late winter. The stilling basin entrance gate was blocked off by large amounts of gravel during the high river flows and subsequently closed on January 31. In order to provide an avenue for adult steelhead to pass the site, the old Nursery Bridge Dam ladder was opened in mid February. The old ladder was open from February 21 to March 27, 2003. Gravel removal activities required formal consultation with NOAA fisheries and the USFWS, which delayed implementation of necessary corrective actions to improve fish passage. The trap was installed in the old ladder on March 11, 2003 by the WWBNPME project to collect steelhead adults for their radio tagging study. During the period from March 12 to March 27, 2003 the WWBNPME project enumerated seventeen steelhead in the old ladder. No other fish were observed during trapping operations.

Video enumeration was conducted at the new ladder during this time period when the old ladder was opened. Video count at the new ladder enumerated a total of 72 steelhead adults passing the site during the time period when the trap was not installed in the old ladder. In addition, 143 summer steelhead adults were enumerated by video at the new ladder during the period of time that the WWBNPME trapped 17 summer steelhead adults. It is obvious that summer steelhead were using the old ladder, however, only a few adults may have passed prior to installing the trap in the old ladder. It appears that a significant number of summer steelhead adults continued to use the new ladder even though the old ladder was opened (Appendix A). However, passage through the site is still available through the old ladder when the stilling basin entrance is closed.

Objective 3 – Adult and Juvenile Transportation

Task 3.1 – Juvenile Hauling

No juvenile salmonids were transported from Little Walla Walla River by the project this year. Under the criteria outlined in the 2002/2003 AOP for the Little Walla Walla River, the facility was not operated for trap and haul purposes. As stated previously, it is anticipated that flows will remain continuous through this reach year-round in the future. This would eliminate the need for trapping and hauling from the Little Walla Walla River facility as well as for salvage operations which would require transport. We provided transport equipment and personnel during the salvage effort below Eastside berm and Nursery Bridge Dam sill on June 17.

Task 3.2 – Adult Hauling

No steelhead kelts were hauled this year. Once again spring chinook adults were hauled for the outplanting program. Due to the low number of adults available at Ringold Springs again this year, adults were also hauled from Threemile Dam for this program. Only a total of 21 spring chinook adults were hauled from Ringold Springs to the South Fork Walla Walla Facility. A total of 281 adults were hauled from Threemile Dam to the South Fork Walla Walla Facility.

The transport of surplus spring chinook adults for natural spawning in the Walla Walla Basin continues to be a success. Only one mortality was observed on the transports to the South Fork facility and none during the outplanting from the South Fork facility. Fish condition at release appeared good. Results of spawning success will be reported by the WWBNPME project in their annual report.

Objective 4 – Coordination of Passage Program

Task 4.1 – Passage Facilities Operation and Maintenance Oversight

The project coordinated with personnel from HBDIC and GFID on both daily operations and facility maintenance throughout the project year each week at various facilities. The project worked with the HBDIC in using the operational guidelines developed for Nursery Bridge Fishway that were finalized in November, 2002. Numerous meetings and conference calls have been performed in order to ameliorate the problems associated with the O&M activities at the site. The need for a maintenance strategy that would ensure optimal passage conditions at the site is past due. Gravel work may need to be done after each event. Approximate work zones were established by WWFPO and NOAA for the O&M contractors at the Garden City/ Lowden II, Burlingame, Nursery Bridge Dam, and Little Walla Walla River passage facilities. A general Section 7 permit for gravel maintenance at all ladder and bypass

facilities would provide for better response time in correcting passage conditions and maintaining facilities within operating criteria.

There continue to be concerns regarding the O&M at the Oregon facilities, specifically Nursery Bridge Dam and Little Walla Walla River. The O&M during normal operating periods was generally adequate but during high maintenance periods (i.e., high flows or debris loads) the maintenance level many times was insufficient. It is recommended that irrigation district O&M contracts and staff be combined similar to the Umatilla Basin to ensure that additional staff is available during high maintenance periods. It is suggested that GFID take over all the O&M contracts in order to provide personnel that are strictly devoted to O&M tasks.

Task 4.2 – Passage and Trapping Facilities Design Review

There was both an adult trap and video counting station incorporated into the new ladder at Nursery Bridge Dam last year. The operating guidelines for Nursery Bridge Fishway were finalized in November of 2002 and may be updated as necessary to address problems.

The project's oversight project leader participated in a work group looking at passage conditions in Mill Creek. This includes issues in lower Mill Creek, at the Yellowhawk division works, Mill Creek Dam, and Titus Creek. Initial plans for passage improvements at Mill Creek Dam include the inclusion of a trapping or enumeration facility at that location. In addition, the project provided input on potential flow exchange options being evaluated in the COE flow enhancement study.

Task 4.3 – Annual Operations Plan Development

Development of the AOP continues to be a progressive step in working with managers in the basin. It is modified annually to include operational changes identified as needed during the course of operations from the previous year. The major area of modification between the 2003/2004 AOP and the 2002/2003 AOP is the addition of operation information for the Garden City/ Lowden II consolidation project, which came on line in the spring of 2003. The facility is now included in the AOP, which addresses operations for both the ladder and screen. As new facilities come on line, and additional information becomes available, they will be incorporated into future AOPs.

References

Confederated Tribes of the Umatilla Indian Reservation (CTUIR). 1998. Draft Walla Walla Subbasin Master Plan.

Confederated Tribes of the Umatilla Indian Reservation, et al. (CTUIR, et al.). 2001. Draft Walla Walla Subbasin Summary, August 2001. Prepared for the Northwest Power Planning Council, Portland, Oregon.

Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish & Wildlife (CTUIR & ODFW). 1990. Columbia Basin System Planning, Walla Walla Subbasin, September, 1990. Submitted to Northwest Power Planning Council and Columbia Basin Fish and Wildlife Authority, Portland, Oregon.

U.S. Army Corps of Engineers (COE). 1997. *Reconnaissance Report – Walla Walla River Watershed*. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington.

U.S. Fish and Wildlife Service v. Hudson Bay District Improvement Company, et. al. Final Amended Civil Penalty Settlement Agreement. FWS.PN.2731. June 27, 2001.

Vucelick JA and GA McMichael. 2003. Walla Walla River Basin Fish Screen Evaluations, 2003: Nursery Bridge Fishway and Garden City/Lowden II. Prepared by the Pacific Northwest National Laboratory for the Division of Fish and Wildlife, Bonneville Power Administration, Portland, Oregon.

Zimmerman, B.C. and B.B. Duke. 2002. Fish Passage Operations in the Walla Walla River, 2001-2002. Annual Report prepared for Project No. 200003300, Intergovernmental Agreement No. DE-BI79-89BP98636. Bonneville Power Administration, Portland, Oregon.

Appendices

Appendix A. 2002-2003 Nursery Bridge Dam Fish Counts

Date	Total STS	Video STS	Trapped STS	Number Enumerated				
				STS Kelts	Bull Trout		Spring Chinook	
					Up	Down	Adults	Jacks
Dec	0	0	0	0	0	0	0	0
1/01/03	1	1	0	0	0	0	0	0
1/04/03	3	3	0	0	0	0	0	0
1/05/03	4	4	0	0	0	0	0	0
1/06/03	2	2	0	0	0	0	0	0
1/07/03	1	1	0	0	0	0	0	0
1/13/03	2	2	0	0	0	0	0	0
1/15/03	1	1	0	0	0	0	0	0
1/17/03	1	1	0	0	0	0	0	0
1/21/03	3	3	0	0	1	0	0	0
1/23/03	1	1	0	0	0	0	0	0
1/24/03	2	2	0	0	1	0	0	0
1/25/03	2	2	0	0	1	0	0	0
1/26/03	2	2	0	0	2	0	0	0
1/27/03	9	9	0	0	0	0	0	0
1/28/03	3	3	0	0	0	0	0	0
1/29/03	24	24	0	0	0	0	0	0
1/30/03	9	9	0	0	0	0	0	0
Jan	70	70	0	0	5	0	0	0
Cum/Jan	70	70	0	0	5	0	0	0
2/3/03	3	3	0	0	0	0	0	0
2/4/03	8	8	0	0	0	0	0	0
2/5/03	9	9	0	0	0	0	0	0
2/6/03	8	8	0	0	0	0	0	0
2/7/03	2	2	0	0	1	0	0	0
2/8/03	2	2	0	0	0	0	0	0
2/9/03	2	2	0	0	0	0	0	0
2/10/03	2	2	0	0	0	0	0	0
2/12/03	2	2	0	0	0	0	0	0
2/15/03	5	5	0	0	0	0	0	0
2/16/03	2	2	0	0	1	0	0	0
2/17/03	8	8	0	0	1	0	0	0
2/18/03	15	15	0	0	0	0	0	0
2/19/03	16	16	0	0	0	0	0	0
2/20/03	7	7	0	0	0	0	0	0
2/21/03	5	5	0	0	0	0	0	0
2/22/03	10	10	0	0	0	0	0	0

Date	Total STS	Video STS	Trapped STS	Number Enumerated				
				STS	Bull Trout		Spring Chinook	
				Kelts	Up	Down	Adults	Jacks
2/24/03	1	1	0	0	0	0	0	0
2/26/03	1	1	0	0	0	0	0	0
Feb	108	108	0	0	3	0	0	0
Cum/Feb	178	178	0	0	8	0	0	0
3/01/02	0	0	0	0	1	0	0	0
3/03/02	3	3	0	0	0	0	0	0
3/04/02	1	1	0	0	0	0	0	0
3/05/02	2	2	0	0	0	0	0	0
3/08/02	4	4	0	0	1	0	0	0
3/09/02	4	4	0	0	0	0	0	0
3/10/02	5	5	0	0	0	0	0	0
3/11/03	36	36	0	0	2	0	0	0
3/12/03	29	27	2	0	0	0	0	0
3/13/03	13	12	1	0	0	0	0	0
3/14/03	13	11	2	0	0	0	0	0
3/15/03	14	13	1	0	0	0	0	0
3/16/03	4	3	1	0	0	0	0	0
3/17/03	3	2	1	0	0	0	0	0
3/18/03	6	6	0	0	0	0	0	0
3/19/03	2	2	0	0	0	0	0	0
3/20/03	11	11	0	0	0	0	0	0
3/21/03	8	3	5	0	0	0	0	0
3/22/03	15	14	1	0	0	0	0	0
3/23/03	2	2	0	0	0	0	0	0
3/24/03	12	11	1	0	0	0	0	0
3/25/03	9	9	0	0	0	0	0	0
3/26/03	7	6	1	0	0	0	0	0
3/27/03	12	11	1	0	0	0	0	0
3/28/03	5	5	0	0	0	0	0	0
3/29/03	10	10	0	0	0	0	0	0
3/30/03	6	6	0	0	0	0	0	0
3/31/03	12	12	0	0	0	0	0	0
Mar	248	231	17	0	4	0	0	0
Cum/Mar	426	409	17	0	12	0	0	0
4/01/03	14	14	0	0	0	0	0	0
4/02/03	10	10	0	0	0	0	0	0
4/03/03	8	8	0	0	0	0	0	0
4/04/03	0	0	0	0	0	0	0	0

Date	Total STS	Video STS	Trapped STS	Number Enumerated				
				STS	Bull Trout		Spring Chinook	
				Kelts	Up	Down	Adults	Jacks
4/05/03	4	4	0	0	0	0	0	0
4/06/03	2	2	0	0	0	0	0	0
4/07/03	4	4	0	0	0	0	0	0
4/08/03	3	3	0	0	0	0	0	0
4/09/03	4	4	0	0	0	0	0	0
4/10/03	12	12	0	1	0	0	0	0
4/11/03	8	8	0	1	0	0	0	0
4/12/03	2	2	0	0	0	0	0	0
4/13/03	1	1	0	0	0	0	0	0
4/14/03	0	0	0	0	0	0	0	0
4/15/03	4	4	0	1	0	0	0	0
4/16/03	2	2	0	0	0	0	0	0
4/17/03	1	1	0	0	0	0	0	0
4/18/03	2	2	0	0	0	0	0	0
4/19/03	1	1	0	0	1	0	0	0
4/21/03	3	3	0	0	0	0	0	0
4/22/03	3	3	0	0	0	0	0	0
4/23/03	3	3	0	0	0	0	0	0
4/24/03	2	2	0	0	0	0	0	0
4/25/03	1	1	0	0	0	0	0	0
4/26/03	1	1	0	0	0	0	0	0
4/28/03	0	0	0	1	0	0	0	0
4/30/03	1	1	0	0	0	0	0	0
Apr	96	96	0	4	1	0	0	0
Cum/Apr	522	505	17	4	13	0	0	0
5/01/03	2	2		1				
5/02/03	2	2						
5/03/03	2	2						
5/04/03	3	3						
5/06/03	1	1						
5/07/03	0	0		1	1			
5/08/03	1	1						
5/09/03	1	1		1				
5/10/03	1	1		1	1			
5/12/03	2	2						
5/14/03	1	1						
5/16/03	1	1						
5/17/03	1	1						

Date	Total STS	Video STS	Trapped STS	Number Enumerated				
				STS	Bull Trout		Spring Chinook	
				Kelts	Up	Down	Adults	Jacks
5/18/03	0	0		1				
5/22/03	1	1						
5/23/03	1	1			1			
5/24/03	2	2		1		1	1	
5/26/03	1	1						
5/27/03	0	0				1		
5/28/03	0	0			1			
5/31/03	0	0			1			
May	23	23	0	6	5	2	1	0
Cum/May	545	528	17	10	18	2	1	0
6/02/03	0	0	0	1	1	0	0	0
6/03/03	0	0	0	0	2	0	0	1
6/05/03	0	0	0	0	1	0	0	0
6/06/03	0	0	0	0	1	0	0	0
6/12/03	0	0	0	0	1	0	0	0
6/15/03	0	0	0	0	2	0	0	0
6/23/03	0	0	0	0	1	0	0	0
Jun	0	0	0	1	9	0	0	1
Cum/Jun	545	1	0	11	27	2	1	1

Appendix B

Walla Walla Basin Passage
Annual Operations Plan

October 1, 2002 - September 30, 2003

Table of Contents

I. Introduction

Fish restoration efforts in the Walla Walla Basin are ongoing. Part of these efforts includes improvement of fish passage conditions in the basin through facility and instream flow projects. Most of the Bonneville Power Administration (BPA) funded passage facilities are located in the upper mainstem portion of the subbasin. The major facilities specifically identified in the AOP are Burlingame Ladder and Juvenile Screen Site, Nursery Bridge Ladder and Trap, and Little Walla Walla River Juvenile Facility. Instream flow enhancement is ongoing and minimum instream flows have been increased in 2002 to 18 cfs below Burlingame Dam and 25 cfs below Nursery Bridge Dam.

To coordinate the implementation of these passage and flow efforts, a Walla Walla Annual Operations Plan (AOP) is developed. The primary purposes of the AOP are to provide facility operating guidelines and coordinate passage and instream flow enhancement efforts between the various state, tribal, and federal management entities, irrigation districts, and the Walla Walla Fish Passage Operations Project (WWFPO).

The primary focus of this AOP is to provide a guideline for conducting passage activities in the Walla Walla Basin with emphasis on the major BPA funded facilities and those facilities directly related to the Amended Civil Penalty Settlement Agreement (ACPSA). Conditions or biological information may dictate a need to change operations in-season from what is outlined in this document. Any entity operating under this AOP should inform the appropriate groups if operations they are conducting significantly deviate from those outlined here.

II. Trap Operations

A. Nursery Bridge

For 2002-2003, enumeration at the new fish ladder will occur by video counting. The video counting station will be operated by WWFPO in conjunction with Hudson Bay District Improvement Company (HBDIC) staff from December through June. Summer steelhead, bull trout and spring chinook will be enumerated. Additional data to be collected will number of steelhead kelts, direction of bull trout movement, and age class (adults and jacks) for spring chinook. Other species and life history stages video recorded will be noted. It is not anticipated that the adult trap will be operated in 2002-2003. It is not anticipated that the trap in the old ladder at Nursery Bridge Dam will be installed or operated in 2002-2003.

B. Little Walla Walla River

A juvenile trap is located at the Little Walla Walla River screening facility and is operated by WWFPO personnel in conjunction with HBDIC staff. Criteria for operation of the trap will remain the same as past years; if river flows below Nursery Bridge Dam become intermittent prior to June 15, the juvenile bypass will be closed and the trap opened. At a point during trapping when resident salmonids outnumber migratory juveniles, the trap will be shut off and the bypass

reopened. If flows remain continuous in the river reach from Nursery Bridge Dam to the state line, then the trap will not be opened. Based on these criteria and the increased minimum instream flows below Nursery Bridge Dam identified in the ACPSA, it is not anticipated that the trap will be operated for trap and haul purposes.

If trap and haul operations are conducted, attempts will be made to segregate migratory and resident juvenile life histories. Any steelhead or chinook smolts, and all summer steelhead kelts that are trapped will be hauled to the lower mainstem Walla Walla for release. Bull trout, non-migratory rainbow trout, or subyearling chinook will be released at or near the facility. Data to be collected from juveniles trapped at the Little Walla Walla facility will include pounds transported and a subsample of species composition. Data to be collected from kelts trapped at the Little Walla Walla facility will include number hauled and any external marks or punches will be noted.

C. Monitoring and Evaluation

One exception to the criteria listed under II.B. and II.C. is the utilization of traps at the various facilities for monitoring and evaluation (M&E) reasons. The possibility exists that the trap at Nursery Bridge Dam ladder may be operated to capture adult steelhead and bull trout for radio tracking studies. In addition, trapping may occur at both Little Walla Walla River and Burlingame canals to capture juveniles for tagging and to collect biological data. M&E personnel are to coordinate their efforts with both WWFPO and the appropriate O&M staffs. These facilities are designed to optimize fish passage conditions; if it is determined that M&E trapping efforts are adversely affecting fish passage then M&E efforts will be discontinued.

III. Passage Facility Operations

A. Ladders

1. Burlingame Dam

The Burlingame Ladder is operated by WWFPO and Gardena Farms Irrigation District (GID) personnel. The ladder will be open for fish passage year round. When river flows drop to a point where inadequate water is available to properly maintain water levels in both the diversion and ladder, low flow panels will be installed into the ladder. With the low flow panels installed, the ladder should be operable within criteria down to the 10 cfs level which is below the minimum instream flow level identified in the ACPSA. When the canal is off during the summer low flow period, the low flow panels will be removed and the flash dam will remain in to concentrate flows in the ladder and maintain criteria.

Beginning in mid September, the short slot section of the flash dam will be removed to provide an additional passageway for any downstream migrants. This section will remain out through the fall as flows allow. When the canal shuts off for

the winter, a complete section of the flash dam should be removed to facilitate migration through this stream reach. The middle entrance slot to the ladder should be open whenever a full section of the flash dam is out. The upper entrance slot should be open whenever the flash dam is completely in or the just the short slot section is removed.

2. Nursery Bridge Dam

The Nursery Bridge Ladder is operated by WWFPO in conjunction with HBDIC personnel. The ladder will be open for fish passage year round. The ladder will be operated as determined by WWFPO staff until operating criteria is received from NMFS and the Corps of Engineers. The old ladder is still in place but will not be operated in 2002-2003 except for emergency situations where the new ladder is inoperable.

3. Little Walla Walla River

A Denil steeppass is located at the Little Walla Walla River diversion dam and is operated by WWFPO personnel in conjunction with HBDIC staff. Between water left instream for downstream users (Eastside and Smith ditches) and minimum instream flow levels identified in the ACPSA, there is sufficient water available to operate the steeppass year round. This allows for both upstream and downstream volitional migration past the diversion structure no matter what operational status the rubber dam and Obermayer gate are in.

B. Screens and Bypasses

1. Burlingame Canal

The Burlingame Canal screen/bypass facility is operated by WWFPO and GID personnel. The facility will be operated whenever the canal is diverting water. Once flows drop to a point where the low flow panels are installed in the ladder, bypass flows will be regulated in order to maintain operation of both the ladder and screens within criteria. At the increased minimum flow level of 18 cfs identified in the ACPSA for 2003, there should be enough flow available to allow for continual operation of the bypass.

2. Little Walla Walla River

The Little Walla Walla juvenile facility consists of juvenile screens, bypass, and trap and is operated by WWFPO personnel in conjunction with HBDIC staff. Based on facility criteria outlined in Section II.B., the trap will not be operated in 2003 and the juvenile bypass will be open whenever the canal is delivering water. At the increased minimum flow of 25 cfs identified in the ACPSA for 2003, there is enough flow available for continual operation of both the bypass and steeppass.

3. Eastside Ditch

The Eastside Ditch is operated by WWRID. The bypass located at the facility will operate whenever the ditch is delivering water. During the summer period, after the seasonal gravel dam has been pushed up, the ditch will be managed to draw additional flow into the canal over that needed for irrigation. This excess flow will be returned to the river through the ditch wasteway. This will provide better passage conditions for fish moving downstream as there will be supplemental flow for the bypass outfall. In addition, this will provide better flow to the Nursery Bridge Dam ladder and provide fish moving upstream with a passageway which has concentrated flow and that is not blocked by the seasonal gravel dam. The head of the ditch will no longer be bermed off at the end of irrigation season.

4. Milton Ditch

The Milton Ditch is operated by WWRID. The ACPSA stipulates that this ditch would not be used beyond 2001 unless a new set of juvenile screens and bypass were installed. The ditch did operate in 2002 with the old screens and bypass and it is anticipated that the ditch will operate the same way again in 2003. Consolidation into the Little Walla Walla River system does not look like it will occur until 2004. Whenever the ditch is delivering water, the juvenile bypass should be open and the V-notch board should remain in the upper wasteway for adult passage. The lower wasteway shall be boarded off and not used to regulate flow at the headgate. The head of the ditch will no longer be bermed off at the end of irrigation season.

5. Facility Shutdowns/Salvage Operations

All the facilities mentioned above have periods of the year where they are shutdown. Any closures which will result in the stoppage of flow or dewatering of the facilities that may potentially harm or strand fish will be coordinated with WWFPO staff. Salvage operations will be scheduled as needed to rescue fish under these situations.