

Walla Walla River Fish Passage Operations Program

Annual Report 2003 - 2004

December 2004

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Walla Walla River Fish Passage Operations Project
Annual Progress Report
October 2003 – September 2004

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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

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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 oversight and report review; and Michelle Thompson, agreement administrator. Julie Burke, Celeste Reves, and Esther Huesties provided secretarial assistance.

ABSTRACT

In the late 1990s, 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 providing trap and haul efforts when needed.

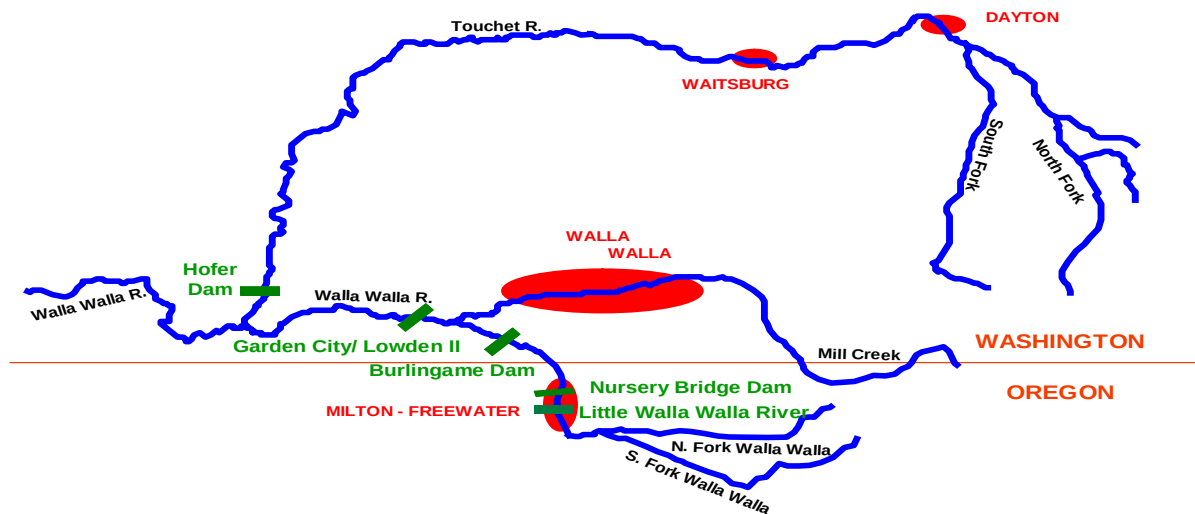
The objective of the Walla Walla River Fish Passage Operations Project is to increase the survival of migrating adult and juvenile salmonids in the Walla Walla River basin. The project is responsible for coordinating operation and maintenance of ladders, screen sites, bypasses, trap facilities, and transportation 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 2003-2004 project year, there were 379 adult summer steelhead (*Oncorhynchus mykiss*), 36 adult bull trout (*Salvelinus confluentus*); 108 adult and 3 jack spring chinook (*O. tshawytscha*) enumerated at the Nursery Bridge Dam fishway video counting window between December 21, 2003, and June 30, 2004. Summer steelhead and spring chinook were observed moving upstream while bull trout were observed moving both upstream and downstream of the facility. In addition, the old ladder trap was operated by the WWBNPME project in order to radio tag spring chinook adults. A total of 2 adult summer steelhead, 4 bull trout, and 23 adult spring chinook were enumerated at the west ladder at Nursery Bridge Dam during the trapping operations between May 6 and May 23, 2004. Operation of the Little Walla Walla River juvenile trap for trap and haul purposes was not necessary this year.

The project transported adult spring chinook from Threemile Dam to the South Fork Walla Walla Brood Holding Facility. A total of 239 spring chinook 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 (WWFPO) 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 and Channel 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.

Channel conditions are monitored throughout the project year to evaluate passage avenues for both downstream and upstream fish movement through the passage facilities. Visual observations are made to determine channel morphology in relation to the facilities and potential for sediment and debris problems. In addition, decisions to perform gravel maintenance work are supported by accessed flow and temperature data. This information is then relayed to co-managers in the basin. Decisions are based on daily morphological observations, available hydrologic data, and fish behavior at the sites.

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.



The 2003/2004 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 would be collected if the trap were used.

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 steppass and holding pond. According to the 2003/2004 AOP, no trapping was to be

conducted this year. Enumeration of adults occurred from December through June by video counting. In addition, the USFWS installed a video camera on the old ladder in attempt to enumerate adult passage through the site.

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's National Marine Fisheries Service (NOAA Fisheries) 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 and Channel Conditions

Annually, water temperatures exhibit extreme seasonal fluctuations in streams that have been degraded throughout the basin. 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 42° in the winter months and a high of 74° in the end of July 2004. Below Burlingame Dam, temperatures ranged from a low of approximately 42° in November 2003 to 72° in July 2004.

Flows measured for the South Fork Walla Walla River and North Fork Walla Walla River are not available at this time pending retrieval issues. Flows measured at the USGS site in the lower Walla Walla River ranged from a low of 13 cfs in August of 2004 to a high of approximately 7,080 cfs in January 2004.

Flows in the reach from Nursery Bridge Dam to the state line were field measured by the local irrigation districts from September 2003 through November 2003 and again from May through August 2004. With the increased instream flow requirement of 25 cfs immediately below Nursery Bridge Dam for 2004, there was continuous flow through this stream reach again this year. However, this flow was observed at diminished levels approaching 9-10 cfs at the state line reach again this year. 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 reached a low of approximately 18 cfs in November 2003 to approximately 2000 cfs in late January and another high flow event in June of 1200 cfs. Flows and temperatures reported for all sites have not been finalized by all parties responsible for them.

Channel conditions were monitored weekly by field observations that were complemented by accessed temperature and flow data. The project documented the channel characteristics in monthly reports for both upstream and downstream passage conditions at the four main passage facilities.

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, and inability to operate facilities within criteria.

For the second year, both Nursery Bridge and Garden City/Lowden II screening facilities were evaluated by Battelle PNNL during the field season in order to identify existing passage issues associated with operation and construction design. The Nursery Bridge and Garden City/Lowden II evaluation final report has not been completed at this time. This year’s preliminary finding from Nursery Bridge supports the 2002/2003 evaluation concluding that the Nursery Bridge auxiliary water system screens are not operating within design criteria. However, low-cost fixes may assist in dispersing the “hot spots” across the entire screen surface and limiting the window of time that the facility is not operating within the designed juvenile fish passage criteria.

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. 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 1, 2003 to July 2, 2004. Species and age class data was collected, no differentiation of marks or sex were made by video observations. Trap operations were also conducted at the old Nursery Bridge ladder from May 5 through the end of May 2004 by the CTUIR M&E personnel to collect adults for the radio tagging study. Date trapped, sex composition, and marks were collected from those adults trapped in the old ladder. However, the old ladder remained open from February 5 throughout the remainder of the project year. The lack of enumeration during that time period at the old ladder affects the ability to account for adult returns in the system.

A total of 381 summer steelhead, 40 bull trout, and 131 adult and 3 jack spring chinook were enumerated at Nursery Bridge this project year. Of these, 2 summer steelhead, 23 adult spring chinook, and 4 bull trout were trapped in the old Nursery Bridge ladder. Further attempts were conducted to enumerate fish passage through the old ladder by the USFWS. The USFWS set up a camera and DVR in April 2004. The data will be available following review by the USFWS.

Summer steelhead were enumerated from December 21, 2003, to June 27, 2004. Peak return month was April when 38.6% (147 of 381 fish) of the total return was counted. There were no summer steelhead kelts observed during the video enumeration period.

Spring chinook were enumerated from April 26 to June 22, 2004. Peak return month for adults and jacks was May when 87% (114 of 131 fish) of the adults and 67% (2 of 3 fish) of the jacks were counted.

There were 36 bull trout enumerated at the Nursery Bridge Dam new ladder. Of these, 32 were observed moving upstream and 4 were observed moving downstream. Upstream movement was noted between January 10, 2004, and June 30, 2004. The highest monthly total for upstream movement of bull trout occurred during June when 65.6% (21 of 32 fish) were observed by video in the new ladder. Downstream movement of two bull trout occurred in both February and March for a total of 4 bull trout moving downstream past the window. A total of 4 bull trout were trapped at the old ladder in May 2004 by the CTUIR M&E project operations. Appendix A contains the daily adult salmonid enumeration record for Nursery Bridge Dam video taping and trapping during 2003/2004.

Objective 3 – Adult and Juvenile Transportation

Task 3.1 – Juvenile Hauling

No juveniles were transported from the Little Walla Walla River trapping facility by the project this year.

Task 3.2 – Adult Hauling

No kelts were transported from basin trapping facilities this year due to sustained flows to the state line. There were 239 spring chinook adults transported from Threemile Dam to the South Fork Walla Walla Spring Chinook Holding and Spawning facility for the Walla Walla outplanting program. There were 11 trips made to the South Fork facility on 11 days between April 24 and June 4, 2004. Of these, 10 trips were made using the 3,000 gallon tanker and the other was made with the 3,500 gallon tanker. No mortalities were observed upon loading at the South Fork facility.

The surviving adults were transported from the South Fork facility and released into natural spawning habitat in the South Fork Walla Walla River on August 10, 2004. There were 233 adults outplanted in the South Fork on two loads using the 3,500 gallon tanker unit. No transport mortalities were observed at release. Holding and natural spawning 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 by 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 reviewed the Biological Assessment (BA) for the Walla Walla River Basin Fish Passage Facilities Operation and Maintenance that was prepared by BPA. The BA identified work zones for future O&M activities and actions needed to operate the Little Walla Walla, Burlingame, and Garden City/Lowden II facilities within criteria throughout the range of the season. Also, the project reviewed Mill Creek Dam and Hofer Dam passage alternatives and provided input on flow exchange options being evaluated in the COE flow enhancement study.

Task 4.3 – Annual Operations Plan Development

The project produced a Walla Walla AOP for the 2004/2005 year in August 2004. This AOP, which covers the time period from October 1, 2004, to September 30, 2005, 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 and Channel Conditions

Beginning in 2001, an agreement 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 they relate to the operation of passage facilities and fish passage conditions. In order to make decisions related to fish passage, temperature and flow data need to be available on a real-time basis.

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. There continues to be continuous flow from Nursery Bridge Dam all the way through the state line. Maintenance of minimum instream flows extends 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.

River channel conditions influence the ability for passage facilities to operate within established or designed criteria. Field observations concluded that passage conditions were adequate at most passage facilities during the project year. However, high flows redistributed gravel bars and redirected the main channel that provides flows to the Nursery Bridge passage facility. The project observed a considerable amount of debris deposition and downcutting at Nursery Bridge. Following the spring high flow events, gravel work was conducted at Nursery Bridge to restore flow and passage through the site.

Task 1.2 – Inspection of Passage Facilities

In order to assess hydraulic conditions at Nursery Bridge Dam ladder auxiliary water supply (AWS) and Garden City/Lowden II screens over the span of the passage season, Battelle performed another round of evaluations of the sites this year. Preliminary results concluded that the Nursery Bridge AWS screens are out of compliance whenever attraction water is being pulled through the screens (personal communication McMichael 2004). A combination of flow direction in the AWS area and the inability to fully close the louvers creates excessive approach velocities. Battelle suggests modifying the existing louvers in order to eliminate the remaining space, allowing iterations to be made during the changes in river conditions. 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 continue to vary year by 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. 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. This also can be done by automation, thereby not being susceptible to the fluctuating flow levels.

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. During high flows, the main river channel upstream from the fish exitway at Nursery Bridge Dam Ladder 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 and low flows 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.

During the January 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 flow to the ladder. The main channel of the river was then directed away from the approach channel toward the west bank. Gravel work was conducted below the approach channel after the event to redirect flow to the new fish ladder. A channel and gravel maintenance strategy needs to be developed that would ensure adequate flows to the facility. A potential strategy for directing the thalweg towards the new fish ladder may be installing rock weirs upstream of Nursery Bridge Dam to maintain the channel on the east bank. Ensuring flows to the ladder would be an initial step in securing passage through the site. However, emergency situations do arise during high flow events and may still require gravel work to maintain passage criteria through the site. In addition, high flows also resulted in Eastside Ditch screens being overtopped. No fish were observed behind the screens.

In addition, for the third subsequent year high flow events that occurred in late winter rendered the upper fish entrance (stilling basin entrance) inoperable. The channel morphology upstream of the facility continues to change during high flows, 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 5, 2004. 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. Normally, May is the peak month for kelts passing downstream through the new ladder. However, no kelts were observed during the video enumeration which may further support the concerns with flow to the ladder.

Severe downcutting of the river channel downstream of the new ladder and stilling basin caused an elevated differential across the lower entrance gates. In October 2003, the concrete sill blocks from the ladder slots and low flow entrance were removed to reduce the differential across the entrances. However, a high flow event in late January deposited large amounts of cobble in front of the stilling basin entrance precluding its operation. It is important that both entrances are open during the high flow periods to provide optimal passage conditions at the site.

In addition, the basin diffuser gate stems were damaged at Nursery Bridge in the spring of 2004, preventing the use of the basin diffuser gates AS-2 and AS-3 that supply auxiliary water to the stilling basin entrance. However, the stilling basin entrance was inoperable from January until gravel work was conducted in the fall of 2004. The gate stems were replaced in mid-summer prior to the gravel work in the fall. It is important that the gate stems be replaced as soon as possible to ensure the ability to operate the stilling basin entrance differential within criteria when conditions permit.

There continue to be concerns with the adequacy of the maintenance effort at the Little Walla Walla River, and Nursery Bridge passage facilities. Also, there were occasions when a considerable amount of debris accumulated on the canal forebay trashracks at Burlingame Canal. Large amounts of debris were noticed at these 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. Cleaning the trashracks at least twice a day during high flow events will prevent large amounts of debris from piling up on the trashracks.

The Burlingame Canal was closed in late December for winter maintenance. A fish salvage was not conducted, fish were flushed for a few days and allowed to volitionally migrate out of the canal. No fish were observed in the canal after being turned off. The canal was shut off again on June 28 for the summer. The juvenile bypass remained open and the canal drained over a few days to allow fish in the canal forebay to leave volitionally. A total of 31 steelhead and 1 spring chinook juveniles were removed from the canal and released into the river during the summer fish salvage.

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. 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 the 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 for the past few years 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 2004 to direct the entire river flows to Eastside ditch and Nursery Bridge ladder. However, a notch in the berm allowed flow to continue downstream to Nursery Bridge Dam providing sufficient instream flows to fish. Fish salvage was not necessary due to adequate flows and youth in the area demolishing the gravel 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 appears 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. In addition, preliminary radio telemetry information collected by the WWBNPME project suggested that there may be passage delays at Burlingame and Nursery Bridge passage facilities. The adult passage evaluation project underway in the Walla Walla Basin may provide some answers associated with fish passage in the basin.

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 2003/2004 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 third season that the new ladder was operational. The 2003/2004 AOP stated that no trapping would be conducted and all enumeration would be by video counting. Video enumeration started on December 1, 2003, and ended on July 2, 2004. The first bull trout was observed on January 10, 2004, and the first steelhead was observed on December 21, 2003. The first spring chinook was observed on April 26, 2004.

The old ladder was opened on February 5, 2004, due to passage concerns at the new ladder and remained open throughout the rest of the project year. However, no enumeration was conducted at the old ladder until trapping was initiated on May 5, 2004, by the WWBNPME project to collect spring chinook adults for their radio tagging study. During the period from May 5 to May 24, 2004, the WWBNPME project enumerated 23 adult spring chinook, 2 summer steelhead, and 4 bull trout in old ladder.

Video enumeration was conducted at the new ladder during this time period when the old ladder was open. Video counts at the new ladder enumerated a total of 346 steelhead adults passing the site during the time period prior to the trap being installed in the old ladder. A total of 88 days passed from when the old ladder was opened and WWBNPME installed the trap. In addition, 8 summer steelhead adults, 83 adult and 2 jack spring chinook were enumerated by video at the new ladder during the period of time that the WWBNPME trapped 23 spring chinook adults, 4 bull trout, and 2 summer steelhead. It is obvious that adults were using the old ladder. Adults will utilize the old ladder upon entering the stilling basin, which is supported by the number of adults observed in May moving through the old ladder. Approximately 1/5 of the observed spring chinook and summer steelhead adults and all the bull trout enumerated during the May trapping period used the old ladder. However, it appears that a significant number of adults continued to use the new ladder even though the old ladder was open (Appendix A).

In addition to the trapping conducted at the old ladder, the USFWS installed a video monitoring system in April 2004. There were numerous concerns with the camera setup; the diffuser passage opening is relatively small and was positioned in extremely close proximity to the head gate. This required fish to negotiate the steep pass section, head gate, and then find the diffuser opening before reaching the resting area. In addition, the diffuser grating is somewhat inaccessible for cleaning and was not cleaned on a frequent basis. Prior to this equipment being installed, fish trapped in the ladder and radio tagged immediately passed the ladder post release. With the equipment in place, noticeable delays with adults leaving the ladder were observed. The USFWS data will be available following review.

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.

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 2003/2004 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.

Task 3.2 – Adult Hauling

No steelhead kelts were hauled this year. The trap at Little Walla Walla River was not operated for trap and haul purposes per criteria outlined in the 2003/2004 AOP. Due to continuous flows below Nursery Bridge Dam it is not anticipated that the trap will be operated for trap and haul reasons.

Once again, spring chinook adults were hauled for the outplanting program. There were no adults available at Ringold Springs this year; all adults were hauled from Threemile Dam for this program. The transport of surplus spring chinook adults for natural spawning in the Walla Walla Basin continues to be a success. No mortalities were 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 the various facilities. The project worked with the HBDIC in using the operational guidelines developed for Nursery Bridge Fishway that were finalized in November, 2002. 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 Fisheries for the O&M contractors at the Garden City/ Lowden II, Burlingame, Nursery Bridge Dam, and Little Walla Walla River passage facilities. The project suggests coverage for all gravel maintenance efforts upstream and downstream at all ladder and bypass facilities which 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. Currently, HBDIC is responsible for the Oregon facilities (Little Walla Walla and Nursery Bridge Fishway) while GFID is handling the Washington facilities (Burlingame and Garden City/Lowden II). 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.

Task 4.2 – Passage and Trapping Facilities Design Review

The project oversight supervisor 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. Also, discussions of both adult and juvenile passage alternatives for Hofer Dam have been reinitiated. In addition, the project provided technical input on minimum flow levels and diversion rates for 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 2004/2005 AOP and the 2003/2004 AOP is the addition of expressed interests to enumerate fish passage through the old Nursery Bridge ladder. As new facilities come on line, and additional information becomes available, they will be incorporated into future AOPs.

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Appendices

Appendix A. 2003-2004 Nursery Bridge Dam Fish Counts

Date	Total STS	Number Enumerated East Ladder						Number Enumerated West ladder					
		STS	STS Kelts	Bull Trout		Spring Chinook		STS	STS Kelts	Bull Trout		Spring Chinook	
				Up	Down	Adults	Jacks			Up	Down	Adults	Jacks
12/21/03	1	1											
12/24/03	1	1											
12/29/03	1	1											
Dec	3	3	0	0	0	0	0	0	0	0	0	0	0
Cum/Dec	3	3	0	0	0	0	0	0	0	0	0	0	0
1/10/04	0			1									
1/15/04	0			1									
1/16/04	1	1											
1/22/04	2	2		1									
1/26/04	3	3											
1/28/04	7	7											
1/31/04	1	1											
Jan	14	14	0	3	0	0	0	0	0	0	0	0	0
Cum/Jan	17	17	0	3	0	0	0	0	0	0	0	0	0
2/1/04	1	1											
2/5/04	1	1											
2/6/04	1	1											
2/8/04	1	1											
2/9/04	0			2									
2/10/04	0			1									
2/11/04	0			1									
2/12/04	2	2											
2/13/04	1	1											
2/14/04	3	3			1								
2/15/04	5	5			1								
2/17/04	2	2		1									
2/18/04	5	5											
2/19/04	13	13											
2/21/04	2	2											
2/22/04	1	1											
2/23/04	6	6											
2/24/04	6	6											
2/25/04	8	8											
2/26/04	4	4											
2/27/04	3	3											
2/28/04	1	1											
2/29/04	7	7											
Feb	73	73	0	5	2	0	0	0	0	0	0	0	0
Cum/Feb	90	90	0	8	2	0	0	0	0	0	0	0	0
3/01/04	4	4											
3/02/04	2	2											
3/03/04	2	2			1								
3/04/04	3	3											
3/05/04	2	2											

Date	Total STS	Number Enumerated East Ladder						Number Enumerated West ladder					
		STS	STS Kelts	Bull Trout		Spring Chinook		STS	STS Kelts	Bull Trout		Spring Chinook	
				Up	Down	Adults	Jacks			Up	Down	Adults	Jacks
3/06/04	2	2			1								
3/07/04	2	2											
3/08/04	6	6											
3/09/04	5	5											
3/10/04	3	3											
3/11/04	7	7											
3/12/04	4	4											
3/13/04	1	1		1									
3/14/04	4	4											
3/15/04	5	5											
3/16/04	2	2											
3/17/04	5	5											
3/18/04	3	3											
3/19/04	3	3											
3/20/04	2	2											
3/22/04	5	5											
3/23/04	9	9											
3/24/04	2	2											
3/25/04	4	4											
3/26/04	3	3											
3/27/04	2	2											
3/28/04	3	3											
3/29/04	9	9											
3/30/04	8	8											
3/31/04	11	11		1									
Mar	123	123	0	2	2	0	0	0	0	0	0	0	0
Cum/Mar	213	213	0	10	4	0	0	0	0	0	0	0	0
4/01/04	5	5											
4/02/04	7	7		1									
4/03/04	11	11											
4/04/04	4	4											
4/05/04	4	4											
4/06/04	18	18											
4/07/04	12	12											
4/08/04	4	4											
4/09/04	4	4											
4/10/04	4	4											
4/11/04	7	7											
4/12/04	3	3											
4/13/04	5	5											
4/14/04	5	5											
4/15/04	3	3											
4/16/04	3	3											
4/17/04	2	2											
4/18/04	4	4											

Date	Total STS	Number Enumerated East Ladder						Number Enumerated West ladder					
		STS	STS Kelts	Bull Trout		Spring Chinook		STS	STS Kelts	Bull Trout		Spring Chinook	
				Up	Down	Adults	Jacks			Up	Down	Adults	Jacks
4/19/04	7	7											
4/20/04	5	5											
4/21/04	4	4											
4/22/04	6	6											
4/23/04	5	5											
4/24/04	3	3											
4/25/04	2	2											
4/26/04	3	3				1							
4/27/04	2	2				1							
4/28/04	3	3											
4/29/04	2	2											
Apr	147	147	0	1	0	2	0	0	0	0	0	0	0
Cum/Apr	360	360	0	11	4	2	0	0	0	0	0	0	0
5/01/04	1	1											
5/02/04	1	1				1							
5/03/04	2	2				7							
5/05/04	3	3				3							
5/06/04	1					3		1		2			
5/07/04	0					4						1	
5/08/04	1	1				3						5	
5/09/04	0					2							
5/10/04	1					3		1					
5/11/04	1	1				3						1	
5/12/04	0					3						2	
5/13/04	0					4						1	
5/14/04	1	1				5							
5/15/04	2	2				0						1	
5/16/04	0					8							
5/17/04	0					2						1	
5/18/04	0					3						0	
5/19/04	0					6	1					6	
5/20/04	0					3	1					2	
5/21/04	0					1						0	
5/22/04	0					10				1		0	
5/23/04	0					6				1		3	
5/24/04	0					3							
5/26/04	0					1							
5/27/04	0					1							
5/28/04	0					1							
5/29/04	0					2							
5/30/04	0					3							
May	14	12	0	0	0	91	2	2	0	4	0	23	0
Cum/May	374	372	0	11	4	93	2	2	0	4	0	23	0

Date	Total STS	Number Enumerated East Ladder						Number Enumerated West ladder					
		STS	STS Kelts	Bull Trout		Spring Chinook		STS	STS Kelts	Bull Trout		Spring Chinook	
				Up	Down	Adults	Jacks			Up	Down	Adults	Jacks
6/02/04	0					3							
6/05/04	0			1		1							
6/06/04	0			1		3							
6/08/04	0					2							
6/09/04	0			1									
6/10/04	0					1							
6/11/04	0					2							
6/12/04	1	1		1									
6/13/04	0			1		1							
6/15/04	1	1		2									
6/16/04	0			1		1	1						
6/17/04	2	2		1									
6/18/04	1	1		2									
6/19/04	0			2									
6/21/04	0			2									
6/22/04	0					1							
6/23/04	0			1									
6/25/04	1	1		1									
6/27/04	1	1		2									
6/28/04	0			1									
6/30/04	0			1									
Jun	7	7	0	21	0	15	1	0	0	0	0	0	0
Cum/Jun	381	379	0	32	4	108	3	2	0	4	0	23	0

NOTES:

The west ladder was opened on February 5 and has remained open through the season

In addition, the tape malfunctioned on February 20 resulting in only 10 minutes of video for the 24hr period.

The tape was not changed on the March 21

***4-27** Tape malfunctioned at the Nursery Bridge new ladder resulting in only 4 hrs of recorded time.

*West ladder trap was installed on May 5, 2004 and operated through May is being operated by the WWBNPME

Appendix B

Walla Walla Basin Passage Annual Operations Plan

October 1, 2004 - September 30, 2005

Prepared by:

Walla Walla Fish Passage Operations Project

For

Bonneville Power Administration

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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 this Annual Operations Plan (AOP) are Burlingame Ladder and Juvenile Screen Site, Nursery Bridge Ladder and Trap, Little Walla Walla River Juvenile Facility, and the Garden City/Lowden No. 2 ladder and screen. Instream flow enhancement and minimum instream flows have been established to ensure 19 cfs below Burlingame Dam and 27 cfs below Nursery Bridge Dam until June 30 of each year, returning to 18 cfs below Burlingame Dam and 25 cfs below Nursery Bridge Dam on July 1 for the remainder of each year. It is anticipated that these flow regimes will remain the same next year.

To coordinate the implementation of these passage and flow efforts, the Walla Walla Fish Passage Operations Project (WWFPO) develops an AOP. The primary purposes of this 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 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 2004-2005, 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 be the 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 2004-2005. Gravel accumulation associated with the new ladder continues to compromise fish passage at the Nursery Bridge Dam. In order to provide passage through the site it is anticipated that the old ladder at Nursery Bridge Dam will be operated in 2004-2005. Interests have been expressed to enumerate fish passage through the old ladder. However, the enumeration strategy at the old ladder has not been decided.

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.

C. Monitoring and Evaluation

One exception to the criteria listed under II.A. and II.B. is the utilization of traps at the various facilities for monitoring and evaluation (M&E) reasons. The possibility exists that the trap in either the old or new 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 WWFPO, state agencies, 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. Garden City/Lowden No. 2

The Garden City/Lowden No. 2 ladder is operated by WWFPO and Gardena Farms Irrigation District (GFID) personnel. Generally, the ladder will be open year-round. Operation of the ladder is determined by stream flow elevation. The intent of this ladder is to provide passage when the rubber dam is raised for irrigation diversions. The ladder is not operational in low to moderate flow conditions when the rubber dam is down. The intent is to maximize the period when the rubber dam is down, allowing fish to volitionally migrate past the structure in the natural stream channel without having to utilize the ladder.

2. Burlingame Dam

The Burlingame Ladder is operated by WWFPO and GFID 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 on or near the first of September, the two short slot sections of the flash dam will be removed to provide an additional passageway for any downstream migrants. These sections 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 and high flows are concentrated near the ladder entrances. These higher flows wash out or mask the attraction flows coming out of the upper entrance

gate. The upper entrance slot should be open whenever the flash dam is completely in or just the short slot section is removed.

3. 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, using the operational guidelines for the Nursery Bridge Fishway. The old ladder is still in place but will not be operated in 2004-2005 except for emergency situations where the new ladder is not adequately providing passage as determined by WWFPO or for monitoring and evaluation purposes (see II.C.).

Annual maintenance on Nursery Bridge will be performed within the ODFW instream work window of July 1 – October 31. Any emergency instream work outside of this period will be coordinated with BPA prior to doing the work to ensure compliance with US Fish and Wildlife Service and NOAA Fisheries Biological Opinions for this facility.

4. Little Walla Walla River

A Denil steppass 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 steppass year round. This allows for both upstream and downstream volitional migration past the diversion structure no matter what operational status the rubber dam and Obermeyer gate are in.

B. Screens and Bypasses

1. Garden City/Lowden No. 2

The Garden City/Lowden No. 2 juvenile screen facility is operated by WWFPO and GFID personnel. It is located at the natural stream bank line, which excludes juveniles or adults from entering any portion of the irrigation canal and precludes the need for a bypass system. The facility will be operated whenever the canals are diverting water. The bladder dam and diversion gate will be operated to maintain passage. There are no bypass requirements at this facility.

2. Burlingame Canal

The Burlingame Canal screen/bypass facility is operated by WWFPO and GFID 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 minimum flow level of 18 cfs identified in the ACPSA for the operating year; there should be enough flow available to allow for continual operation of the bypass.

3. 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 2004 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, there is enough flow available for continual operation of both the bypass and steepass.

4. Eastside Ditch

The Eastside Ditch is operated by the Walla Walla River Irrigation District (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 with concentrated flow 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.

5. Milton Ditch

The Milton consolidation project has been completed and is online; the users that are not fed from the new pipeline could still operate the diversion but have not done so. A mitigation plan has been forwarded to BPA that would help to ensure the users would not exercise their right to divert at that site. WWRID plans to block off the entrance to Milton ditch and consult with tribes and fishery agencies to determine if some instream restoration is beneficial at the entrance of Couse Creek and perform appropriate actions during the instream work window.

C. Facility Shutdowns/Salvage Operations

All the facilities mentioned above have periods of the year where they are shutdown for reasons such as lack of water in the river versus senior water rights, bypass flow maintenance, facility maintenance, irrigation demand, and winter weather. 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.