Lewis River Upstream Transport Plan

Interim Final

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1.0 Introduction

On November 30, 2004, PacifiCorp and twenty-five other parties signed the Lewis River Settlement Agreement. The Settlement Agreement includes provisions for the Utilities to construct fish passage facilities at each of the projects. As a part of the fish passage requirements, the Settlement Agreement and FERC Licenses require the Utilities to develop an Upstream Transport Plan and specifically for PacifiCorp to develop an Upstream Transport Plan for the Merwin project for the first phase of the Lewis River anadromous fish reintroduction program (shown below).

4.1.8 Mode of Transport and Transport Plans.

c. Upstream Transport Plan. The Licensees (PacifiCorp for the Merwin Upstream Transport Facility and Yale Upstream Facility; and PacifiCorp and Cowlitz PUD for the Swift Upstream Facility) shall develop, in Consultation with the ACC and with the approval of the Services, subject to Section 15.14, a plan that shall describe the frequency and procedures to achieve safe, timely, and effective upstream passage (the "Upstream Transport Plan").

The Federal Energy Regulatory Commission (FERC) issued new licenses for the Lewis River projects (Figure 1.0-1) on June 26, 2008. The Merwin license requires submission of the Upstream Transport plan within 18 months of the license issuance (by December 26, 2009). Development of subsequent Upstream Transport Plans for the Yale and Swift hydroelectric projects will occur when the upstream passage facilities for those projects are complete. The following is a general description of fish passage implementation sequence. As stated in the Settlement Agreement, this Plan will address the first phase of anadromous fish reintroduction program which is upstream trapping and transport at Merwin dam. The Settlement Agreement describes the fish to be transported upstream (transport species) as spring Chinook, winter steelhead, coho, bull trout, and sea-run cutthroat. There is also a provision in the Settlement Agreement for the Utilities to allow for transport of fall Chinook and summer steelhead, if directed by the Services, and after Consultation with the ACC.

This document is considered an interim Upstream Transport Plan. This plan will be modified as needed to incorporate adaptive management upon request of one of the Services or if deemed necessary by the ACC. The intent of the Transport Plans is to identify safe and effective means of transporting fish. Specific changes or improvements in the Plan will become evident as PacifiCorp carries out transportation (e.g. steps taken to dewater the Merwin trap to ensure minimal affects to fish). Therefore, this Plan is a living document that changes as necessary and with Services' approval of changes.

As the remaining upstream passage facilities are constructed at Yale and Swift (June 26, 2025), this plan will be modified to include those additional passage components.

1.1 Sequence of Fish Passage Implementation on the Lewis River

Introduction of salmon and steelhead into the upper Lewis River is a phased approach that occurs over a period of seventeen years following issuance of the new FERC licenses with completion of the reintroduction and passage program scheduled for June 26, 2025. The fish

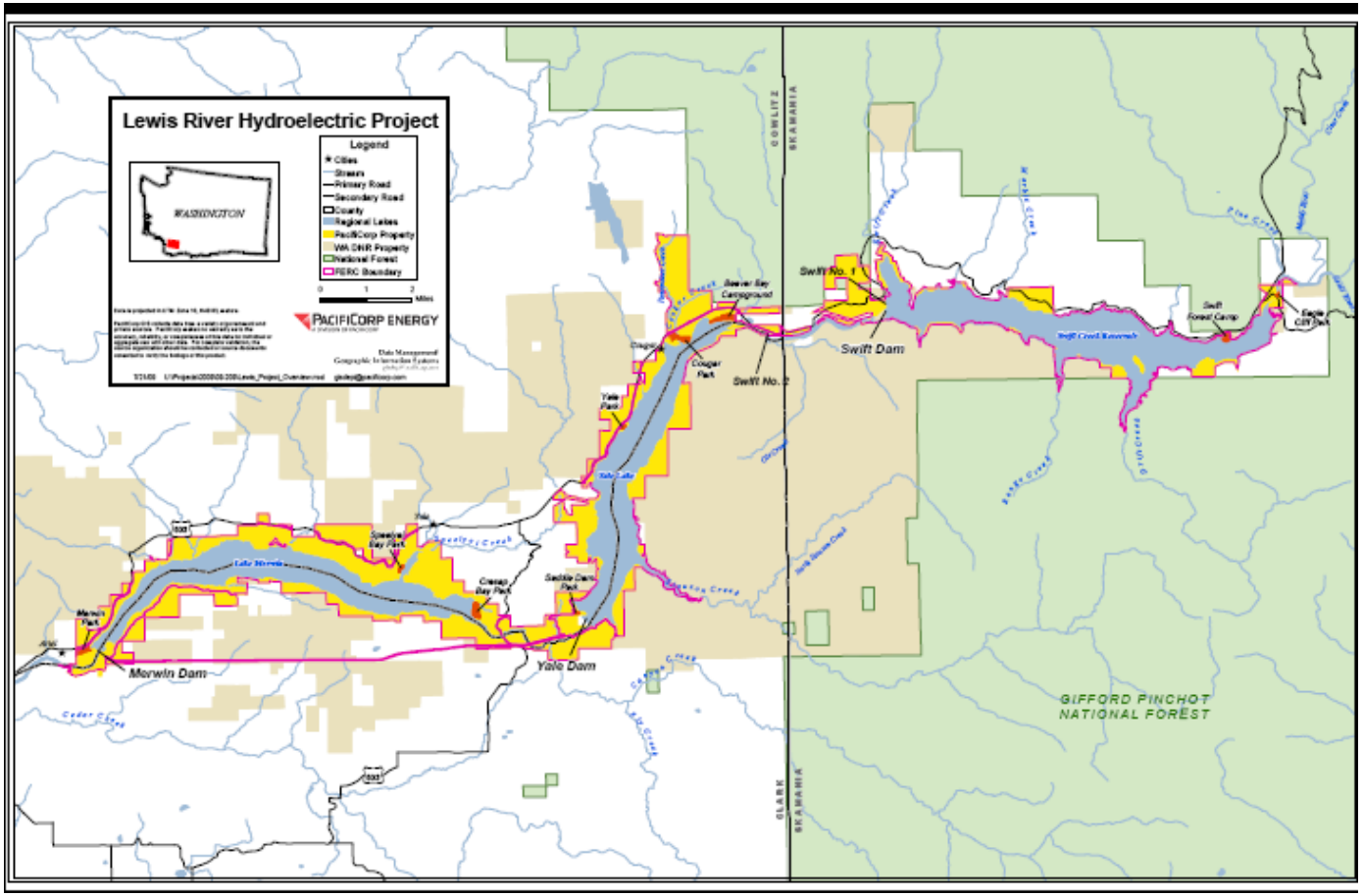


Figure 1.0-1. Area map of PacifiCorp's Lewis River hydroelectric project.

passage program will operate, at a minimum, for the life of the FERC licenses which expire on June 26, 2058.The phased approach provides for a carefully devised plan to protect the listed species and to learn from results at previously installed facilities before designing additional passage facilities. This approach also allows for the Utilities to spread the costs. For the first 3 years following issuance of the new FERC licenses, anadromous fish will continue to be collected at the Merwin trap in the same manner they are today and will not be transported to the upper watershed. These fish will remain in the lower Lewis River and either contribute to the fishery, be used for the broodstock program for hatchery production and initiation of the Supplementation Program, or the fish will be allowed to spawn naturally in the lower river. An exception to the previously described program is that adult hatchery salmonids are to be transported above Swift Dam (depending on availability) for habitat preparation. Juveniles that result from the Habitat Preparation Plan adult spawning will not be collected until the Swift downstream collector is in place (described later). The following is a description of the first phase of the reintroduction program.

1.1.1 Swift Habitat Preparation Plan (HPP)

In October 2005, PacifiCorp began an annual hauling program to release 2,000 salmon into the upper watershed (termed the Habitat Preparation Plan or HPP) for the purpose of distributing nutrients and stirring up gravel in preparation for the formal reintroduction program. These fish may spawn and produce fry but PacifiCorp is not responsible to collect the downstream migrants up until the Swift Downstream Collector is constructed and in operation. Once Phase One reintroduction of adult transport species begins at Swift (one year before the Swift Downstream collector is to be completed), the HPP ceases above Swift dam. The HPP program at Yale will begin in year 2016 unless NOAA Fisheries (NMFS) and U.S. Fish and Wildlife Service (collectively referred to as 'The Services') decide against reintroduction of salmon and steelhead into Yale and Merwin. That decision must be confirmed by the Services prior to June 26, 2016. Transport and handling of the HPP fish is described in that respective plan and will not be repeated in this document.

1.1.2 Fish Hauling Trucks

Related to fish hauling needs, PacifiCorp and Cowlitz PUD are required to provide two new fish hauling trucks. The first truck was purchased in 2008. The second truck is currently in a design phase and will be a modified hauler designed to carry up to six 250-gallon tanks for transporting small numbers of adult fish from either the Merwin trap or the newly constructed Lewis River Hatchery ladder and sorting facility. Due to constraints on the hauling process (mainly travel time) and the number of fish anticipated, PacifiCorp will supply a third conventional hauling truck when Phase One fish passage is implemented on December 26, 2012.

1.1.3 Merwin Trap Upgrade

Upgrades to the Merwin trap and a rebuild of the Lewis River adult sorting facility have been completed and are operational. For the next two years, trapping operations will involve collection of upstream migrants at the existing Merwin trap and the Lewis River Hatchery ladder and sorting facility (known as Pond 15). Beginning in July 2010, fish captured at the existing Merwin trap will be transported daily to the Lewis River Hatchery Sorting Facility until construction begins on the new Merwin Fish Trap in July 2012. Daily trapping at Merwin will resume when the new Trap and Sorting facility is constructed and operational by December 26, 2012. At that time, both trapping facilities will collect and haul the transport species to Swift.

1.1.4 Merwin Upstream Collection and Transport Facility

Section 4.3 of the Settlement Agreement states that PacifiCorp shall construct and provide for the operation of an adult trap and transport facility that shall collect, sort, and transport hatchery fish and upstream migrating adult Transported Species (termed the "Merwin Upstream Transport Facility" or UTF). Initially, PacifiCorp shall provide for the transfer of adult Transported Anadromous Species to above Swift No. 1 Dam. The upstream passage facility is required to be complete and operational by December 26, 2012. For the first 13 years of the reintroduction program, the Upstream Transport Plan will primarily focus on this facility and its function.

1.1.5 Swift Floating Surface Collector and Sorting/Hauling Facility

The Settlement Agreement also calls for a Swift modular surface collector (SDF) to be complete and operational by December 26, 2012. The same fish hauling trucks used for the Merwin UTF will serve this facility since they are designed to haul adults upstream from Merwin and smolts and adults downstream from Swift on their return trips (collection and transport of steelhead kelts and adult bull trout at Swift dam is anticipated). Though there are not likely to be large numbers of steelhead kelts or adult bull trout, the bull trout will be transported to Yale Lake and the steelhead will be returned to the river below Merwin dam most likely with the modified hauling truck (with six 250-gal. tanks). Since the majority of the downstream migrants will not be handled, juvenile bull trout that are captured by the SDF cannot be sorted out of the capture and will therefore be transported to below Merwin along with the salmon and steelhead smolts.

1.1.6 Lower River Release Pond

A release pond must be constructed and in operation by December 26, 2012. This facility will be located on the south side of the Lewis River about a half-mile downstream of the county bridge. The purpose of this facility is to provide a place for transported fish to recover from the transport process. It also allows for a determination of fish transport survival prior to volitional release into the lower Lewis River.

1.1.7 Acclimation Ponds

Three acclimation ponds will be constructed in the upper Lewis watershed at Crab Creek, Muddy River and Clear Creek. These ponds must be completed and in operation by December 26, 2012. The purpose of these facilities is to hold young salmon for approximately six weeks to acclimate them to the upper watershed so that, when they return as adults, they will have a propensity to move into the upper watershed. The acclimation facilities will operate for a minimum of 15 years following the initial Swift fish reintroduction unless the Aquatic Coordination Committee (ACC) decides to extend the acclimation program based on the need for supplementation.

This completes Phase One of the fish passage program.

1.2 Phase Two Passage Implementation

In the second phase of the fish passage program, passage into Yale Lake is anticipated. This action will take place unless the Services consider new information and decide against passage at Yale and Merwin. This decision is to be made by June 26, 2016 and could modify the original agreement to reintroduce salmon and steelhead into Yale Lake and Lake Merwin. If the Services decide that it is not prudent to reintroduce adult salmon and steelhead to Yale and Merwin based on new information (SA Section 4.1.9), then PacifiCorp must pay the Services $30 million in installments (termed the in lieu fund) to be used to enhance habitat mitigation measures that collectively contribute to meeting the objective of achieving benefits to anadromous fish

populations equivalent or greater than benefits that would have occurred with passage (SA 7.6.3). In addition, a bull trout entrainment reduction net will remain in place at Yale and Merwin and a floating net pen collector will be attached to collect any bull trout attempting to migrate downstream. A fish passage crew will need to check the floating trap daily and remove any bull trout present and transport them to a location specified by the USFWS. Also, a bull trout upstream passage facility for Yale and Swift will need to be constructed on a smaller scale than the salmon facility. If, however, the Services decide to not make any changes to the passage program as identified in the Settlement Agreement then the following will occur.

1.2.1 Yale Habitat Preparation Plan (HPP)

In fall 2016, PacifiCorp will begin an annual hauling program to release adult hatchery salmonids (number to be determined by ACC) into Yale Lake for the purpose of spreading nutrients and stirring up gravel in preparation for the formal reintroduction program. These fish may spawn and produce fry but PacifiCorp is not responsible to collect the downstream migrants until the Yale Downstream collector is completed. The HPP will continue until full adult transport begins on June 26, 2021.

1.2.2 Adult Transport to Yale Lake

Beginning June 26, 2020, a portion of adult spring Chinook, Type-S coho and winter steelhead collected at the Merwin Upstream Trap facility will be transported and released into Yale Lake. The number of fish to be placed in Yale will be determined by the ACC since the Lewis River Fish Planning Document does not specifically recommend the number of spring Chinook, coho and steelhead to be transported. However, the Ecosystem Diagnosis and Treatment (EDT) model (S.P. Cramer and Associates 2004) identified that the adult habitat capacity of Yale Lake and its tributaries is 164 spring Chinook, 189 steelhead and 3,556 coho. These numbers are not absolute but can serve as a guide for introduction into Yale Lake rather than a limitation.

1.2.3 Yale Floating Surface Collector and Sorting/hauling Facility

The Yale floating surface collector (FSC) will be complete and operational by June 26, 2021. The same fish hauling trucks used for the Merwin Trap and Sorting Facility will serve this facility since they are designed to haul adults upstream from Merwin and smolts and adults downstream from Yale on their return trips. Downstream migrants that result from natural production above Yale dam will all be uniquely marked so that the returning adults are transported and released to Yale Lake. Since all fish will be handled, it is possible to return juvenile bull trout to Yale Lake. However, if the juvenile bull trout have a “smolt-like appearance” those fish will be transported to below Merwin. Collection and transport of steelhead kelts and adult bull trout at Yale dam is anticipated. The adult bull trout will be returned to Yale Lake and adult steelhead will be returned to the river below Merwin dam most likely with the modified hauling truck (with six 250-gal. tanks). There are not likely to be large numbers of kelts or adult bull trout.

Once the Yale FSC is installed, the bull trout entrainment nets will be removed or modified for use with the FSC.

1.2.4 Yale Acclimation Facility

When anadromous fish reintroduction occurs within Yale, PacifiCorp will provide instream enclosures in Yale tributaries one year prior to completion of the Yale FSC. The enclosures will

serve to acclimate juvenile salmonids for the supplementation program. The resultant production is expected to home in to Yale when they return as adults. Therefore the Yale supplementation fish will be uniquely marked so that the resultant adults are returned to Yale Lake. This is intended to be a temporary instream structure like a net system that will be removed from the tributary when not in use. The ACC Supplementation subgroup will determine the best method and location to accomplish this goal. The holding time is limited and feeding is not anticipated at this time. The fry or pre-smolts will be released from the enclosure into the tributary after a predetermined acclimation period. The Settlement Agreement calls for the acclimation facility to operate for a minimum of 15 years following the initial Yale fish introduction.

This completes Phase Two of the reintroduction project.

1.3 Phase Three Passage Implementation

In the third phase of the fish passage program, passage into Lake Merwin is anticipated. This action will take place unless the Services consider new information and decide against passage at Yale and Merwin. This decision is to be made by June 26, 2016 and could modify the original agreement to reintroduce salmon and steelhead into Yale Lake and Lake Merwin. If the Services decide that it is not prudent to reintroduce adult salmon and steelhead to Merwin based on new information (SA Section 4.1.9) then fish transport to Merwin would not occur. In that case, PacifiCorp would have already paid the Services $30 million to be used to fund habitat enhancement mitigation measures that collectively contribute to meeting the objective of achieving benefits to anadromous fish populations equivalent or greater than benefits that would have occurred with passage (SA 7.6.3). In addition, the bull trout entrainment reduction net (if it is installed) will remain in place and a floating net pen collector will be attached to collect any bull trout attempting to migrate downstream. The floating trap will be checked daily and any bull trout present will be removed and transported to a location specified by the USFWS. Also a bull trout upstream passage facility for Yale and one for Swift will need to be constructed on a smaller scale than the salmon facility. In another scenario, the Services may decide to reintroduce anadromous salmonids into Yale but not Merwin. In this case, PacifiCorp would pay the Services $15 million in installments to be used to enhance habitat in the lower Lewis River basin because Merwin downstream collection and full upstream passage would not occur. So in this scenario, returning adults would be transported to Yale and Swift from the Merwin Upstream Fish Trap and juveniles would be transported downstream from the Yale and Swift Floating Surface Collectors to the Release Pond. If, however, the Services decide to not make any changes to the passage program as identified in the Settlement Agreement then the following will occur.

Introduction into Lake Merwin includes installation of a downstream collector and full upstream passage at each dam. Adults collected at the Merwin trapping and sorting facility will be either trucked or transported via alternative technology to Lake Merwin and allowed to either remain and seek spawning there or swim through Lake Merwin to the Yale adult fish collector. Any adult fish that are collected and sorted at the Yale Upstream trap will be either trucked or transported via alternative technology to Yale Lake. Adults that pass into Yale Lake will be allowed to either remain and seek spawning there or swim through Yale Lake to the Swift adult upstream fish collector. Any adult fish that are collected and sorted at the Swift Upstream trap will be either trucked or transported via alternative technology to Swift Reservoir and allowed unobstructed access to the upper watershed tributaries. If an upstream passage technology, other than hauling, is chosen then the truck fleet will only be needed to perform downstream transportation and to provide back-up transport should the alternative passage technology fail.

1.3.1 Habitat Preparation Plan (HPP)

In June 2020, PacifiCorp will begin an annual hauling program to release adult hatchery salmonids into Lake Merwin (number to be determined by ACC) for the purpose of spreading nutrients and stirring up gravel in preparation for the formal reintroduction program. These fish may spawn and produce fry but PacifiCorp is not responsible to collect the downstream migrants until the Merwin Downstream collector is completed. The HPP will continue until full adult transport begins.

1.3.2 Adult Transport to Lake Merwin

Beginning June 26, 2024, a portion of adult spring Chinook, Type-S coho and winter steelhead collected at the Merwin Upstream Trap facility will be transported and released into Lake Merwin. The number of fish to be placed in Lake Merwin will be determined by the ACC since the Lewis River Fish Planning Document does not specifically recommend the number of spring Chinook, coho and steelhead to be transported. However, the Ecosystem Diagnosis and Treatment (EDT) model (S.P. Cramer and Associates 2004) identified that the adult habitat capacity of Lake Merwin and its tributaries is zero spring Chinook, 197 steelhead and 887 coho. This was assuming upstream passage at Speelyai Creek and fish production from that habitat. These numbers are not absolute but can serve as a guide for introduction into Lake Merwin rather than a limitation. Once full passage is established, all transport species will be moved to Lake Merwin to begin their upstream migration.

1.3.3 Merwin Floating Surface Collector and Sorting/Hauling Facility

The Merwin floating surface collector (FSC) will be complete and operational by June 26, 2025. If trucks remain as the primary means of upstream transport, the same fish hauling trucks used for the Merwin Trap and Sorting Facility will serve this facility since they are designed to haul adults upstream from Merwin and smolts and adults downstream from Merwin on their return trips. Collection and transport of steelhead kelts and adult bull trout at Merwin dam is anticipated. There are not likely to be large numbers of kelts or adult bull trout. These adult steelhead and bull trout will be returned to the river below Merwin dam most likely with the modified hauling truck (with six 250-gal. tanks). However, there is a provision in the Settlement Agreement to potentially bypass downstream migrants (including kelts) to the river downstream of Merwin dam rather than collect, sort, and transport them to the Release Pond (SA 4.1.8(d)). If a downstream bypass system is utilized, then there will not be active downstream truck transport from Merwin.

Once the Merwin FSC is installed, if bull trout entrainment nets were installed, they will be removed or modified for use with the Merwin FSC.

1.3.4 Merwin Acclimation Facility

When anadromous fish introduction occurs at Merwin, instream enclosures will be installed in Merwin tributaries one year prior to completion of the Merwin Floating Surface Collector. The enclosure will serve to acclimate juvenile salmonids for the supplementation program. The resultant production is expected to home-in to Merwin when they return as adults but, with full passage, PacifiCorp does not anticipate the need to uniquely mark Merwin fish. This is intended to be a temporary instream structure (such as a net system) that will be removed from the tributary when not in use. The ACC Supplementation sub-group will determine the best method

and location to accomplish this goal. The holding time is limited and feeding is not anticipated although it could occur if needed. The fry or pre-smolts will be released from the enclosure into the tributary after a predetermined acclimation period. Per the Settlement Agreement, the acclimation facility will operate for a minimum of 15 years following the initial Merwin fish introduction.

1.3.5 Upstream Passage at Yale dam

Simultaneous with completion of the Merwin Floating surface collector, a Yale Upstream anadromous fish passage facility must be constructed and in operation by June 26, 2025. Depending on the technology selected, adult fish will either be trucked or transported by tram or fish lift to the top of Yale dam and released. There remains the need to collect and sort fish entering this trap due to the presence of northern pikeminnow (*Ptychocheilus oregonensis*) and tiger muskellunge (*Esox lucius x E. masquinongy*) in Lake Merwin.

1.3.6 Upstream Passage at Swift dam

Simultaneous with completion of the Merwin Floating surface collector, a Swift Upstream passage facility must be constructed and in operation by June 26, 2025. Depending on the technology selected, adult fish will either be trucked or transported by tram or fish lift to the top of Swift dam and released.

1.3.7 Upstream Passage at Merwin dam

Simultaneous with completion of the Merwin Floating surface collector, the Merwin Upstream passage facility will need to be modified (if an alternative to trucking is selected) and in operation by June 26, 2025. Depending on the technology selected, adult fish will either be trucked or transported by tram or fish lift to the top of Merwin dam and released.

This completes all the phases of fish passage. There will be extensive monitoring occurring at the projects for the life of the license and potential for facility modifications if the facilities are not performing to the Services' standards. There will also be the need to upgrade, repair, or replace components of the fish passage facilities on a periodic basis during the life of the FERC licenses.

This completes the third and final phase of the reintroduction project.

2.0 Upstream Transport Plan

The following describes the Lewis River upstream passage process and includes details of fish collection, fish sorting and handling and transport procedures and protocol. As stated earlier, Phase One adult upstream passage begins one year prior to completion of the Merwin trap which would be December 26, 2011. However, because fish return timing does not align perfectly with the Settlement Agreement trap and transport schedule (due to the FERC license issuance date), the transport species will be passed upstream according to the following schedule.

In the first year of reintroduction, spring Chinook and winter steelhead will be collected at the Lewis River Hatchery Ladder and the Merwin Fish Collection Facility and transported upstream daily beginning in April 2012. Note the existing Merwin Fish Collection Facility will collect fish until June 30, 2012 when construction closes this trap and will re-open in December 2012.

Early coho will be collected and transported daily beginning in August 2012. This timing is related to when the Swift FSC will be available to collect offspring from this first year of reintroduction. Following initiation of collection and transport and for the life of the FERC licenses, adults will be transported daily at any time of the year when they enter the Merwin Upstream Transport Facility or the Lewis River Hatchery Ladder.

2.1 Fish Collection

Merwin Trap fish collection, sorting and transport will begin as soon as the new facility is complete (no later than December 26, 2012). Once initiated, fish collection, sorting and transport will occur daily. The trap will operate 24/7 but actual sorting and hauling will occur at least once daily during a regular eight-hour day unless the daily fish return numbers are too high to be safely retained overnight at the Merwin facility. In those cases, the trapping crew will work longer hours and begin working the trap earlier in the day to accommodate the higher number of fish. Expected run sizes and daily peak returns are displayed in Table 2.0.1.

Current run timing, for what are essentially hatchery fish, is shown in Figure 2.0-1. Generally two peaks occur each year. In the spring and summer the peak begins with spring Chinook while summer steelhead account for the bulk of the returns in that time period. Coho are the most numerous species returning to the Lewis River in the fall. The coho return is usually the dominant run though this was not true in 2006 when summer steelhead dominated all the returns.

Table 2.0.1. Expected peak numbers of fish per day by species and expected total run numbers by species.

Species/ Metric	Spring Chinook	Summer Steelhead	Fall Chinook	Type S Coho	Type N Coho	Winter Steelhead	Sea-run Cutthroat	Non-Target species
Expected Natural Run Size*	250-9,855	15-500	5,000-18,000	100-11,000	100-11,000	100-7,018	100-3,101	UNK
Expected Natural Peak daily	10	300	40	30	30	12	1	UNK
Expected Hatchery Run Size	1,300-4,000	4,000-12,000	0	3,000-12,000	3,200-7,600	850-2,200	0	UNK
Expected Hatchery Peak daily	160	12	0	700	30	140	0	UNK

*maximum current daily run ranging up to EDT predicted average return

2.2 Fish Sorting Facility

The Lewis River M&E Plan (M&E Plan) identifies four tasks to be accomplished at the Merwin Fish Sorting Facility. These are:

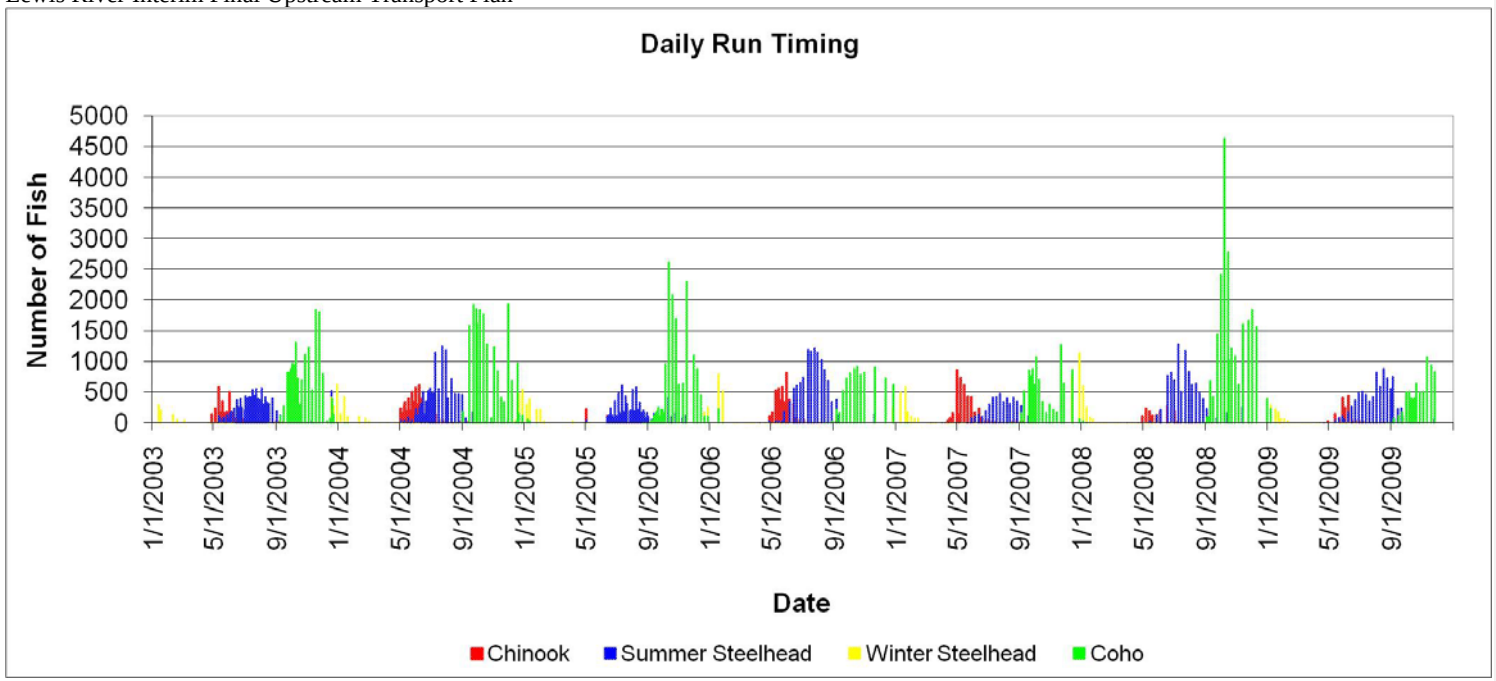
1) Count all adult fish by species that are collected at the Trap;
2) Determine the Merwin Upstream Trap Adult Trap Efficiency (ATE);
3) Determine the Upstream Passage Survival (UPS); and,
4) Assess adult migration, distribution and spawning.

Of these four tasks, the ATE determination and the adult migration, distribution, and spawning will require procedures in addition to the counting and sorting at the work table.

2.2.1 Determining Daily Number of Fish Entering the Trap

All fish that enter the trap are eventually crowded into the electro-anesthetic (EA) basket, anesthetized, and transferred to the sorting table (Figure 2.0-2). Stunned fish will initially be processed to determine whether or not they have their adipose fin intact. Fish will then be scanned with a coded-wire tag (CWT) detector. If there is no CWT, or if the fish is specifically marked as an acclimation fish (or later a Yale fish), then the fish will be sent to a dedicated transfer tank (or tanks depending on the tank loading density).

The current Hatchery and Supplementation Plan calls for a winter steelhead supplementation program that involves rearing wild offspring for one year and releasing them with adipose fin intact so that they return as unmarked Natural Origin Recruit (NOR) steelhead. Each of these fish will, however, be marked with a CWT and will be the only NOR steelhead in the river that have a wire tag. The tag will facilitate selection of these fish for transport to the upper watershed and will prevent selecting them for wild broodstock. Continuing down the sorting


Daily Run Timing
Number of Fish
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1/1/2003
5/1/2003
9/1/2003
1/1/2004
5/1/2004
9/1/2004
1/1/2005
5/1/2005
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9/1/2009
Date
Chinook
Summer Steelhead
Winter Steelhead
Coho

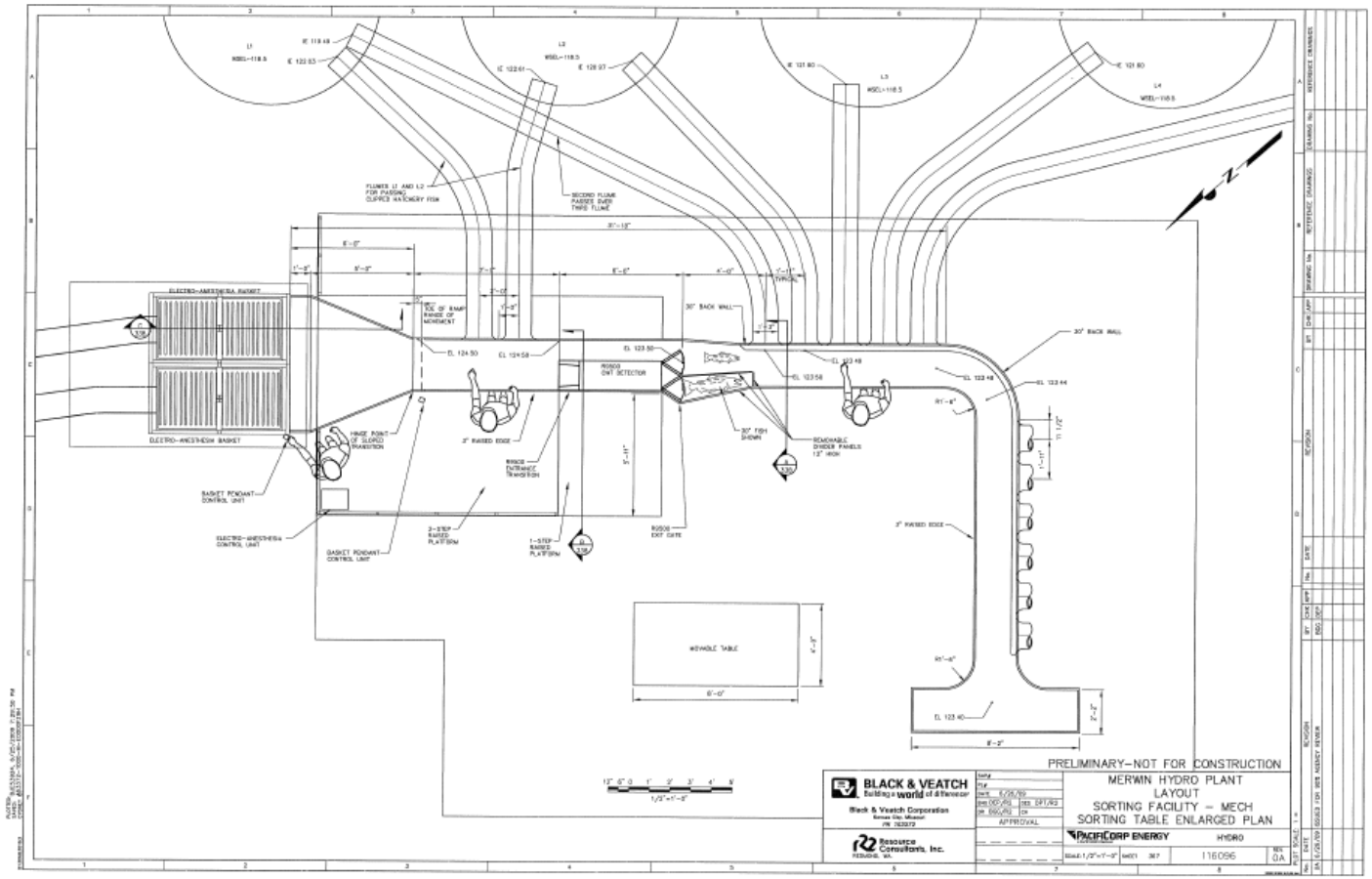

Figure 2.0-2. Sorting table layout for the Merwin Upstream passage facility.

table, if fish are needed for the wild broodstock, they will be sent down to a smaller 250-gal. transfer tank and transported to the hatchery for spawning.

If a fish does not have an adipose fin, it will be sent to a hatchery broodstock tank if needed, sent to a recycle tank for return to the river, or surplused. If there is direction from WDFW to stop returning fish to the river, then fish will be sent to a holding tank as potential surplus which will be trucked to the Lewis River Hatchery holding pond or, depending on the time of year, these fish could be used for the Habitat Preparation Plan (HPP). All non-target fish will be sent to the recycle tank and returned to the river. Any sea-run cutthroat or bull trout will be sent to one of the smaller transfer tanks and trucked upstream.

The potential exists for a daily return peak exceeding 3,700 fish, although this is considered to be a very conservative estimate and would only likely occur if eighty percent of the returning adults bypass the Lewis River Hatchery ladder and enter the Merwin UTF. Since all fish will be handled and counted, it is estimated that a crew of three plus a truck driver can process up to 3,700 fish in a 9-hour day and that all of those fish could be transported with the available fish hauling trucks. The overall goal for upstream collection and transport is that fish entering the trap will not be held for more than twenty-four hours. Fish destined to be transported will be held in either 3,000 gallon circular tanks or 250 gallon transport tanks. The 3,000-gal tanks will be loaded to a fish density that can be accommodated when transferred to the 1,800-gal hauling trucks. Specifically, the 1,800-gal transport tank density will follow NMFS and WDFW guidelines which call for one pound of fish per one gallon of water. The number of fish will vary by species. For spring Chinook, assuming fifteen pounds per fish, each 3,000 gallon tank would contain approximately 106 fish. Coho loading (assuming ten pounds per fish) would be 160 fish per tank and steelhead (assuming eight pounds per fish) would be loaded at 200 fish per tank. For the 250 gallon tanks (loaded at 0.25 cu. ft/lb), the loading capacity is 134 pounds of fish. This would equate to nine adult Chinook, thirteen adult coho, or seventeen adult steelhead.

2.2.2 Determine Adult Trap Efficiency

Fish that are to be used to evaluate the adult trap efficiency (ATE) will be sent to the sampling area at the end of the sorting table for inspection and marking and will be sent to one or two of the small transfer tanks for transport to the Merwin boat ramp and release back to the Lewis River for evaluation. Details of the ATE determination procedures are included in the Lewis River Monitoring and Evaluation Plan (M&E Plan).

2.3 Fish Transport

The Utilities will provide two 1,800 gallon fish hauling trucks. One additional hauling truck will be modified to carry six 250 gallon tanks for smaller lots of fish. The larger tank trucks are designed such that they can drive underneath any one of the 3,000 gallon holding tanks at Merwin or the Lewis River Hatchery sorting facility. Once in position, the truck driver will execute a water-to-water transfer of fish into the truck. Drivers are responsible for knowing the capacity of their truck before accepting any fish in the truck tank. The fish hauling trucks are equipped with oxygen tanks which are to be opened with oxygen flowing through the air stones prior to fish transfer into the truck tank. Each truck also has a recirculating system to help manage dissolved oxygen levels during transport. Oxygen will be initially set to meter about two liters per minute. Dissolved oxygen should be checked within fifteen minutes of

completion of fish transfer and monitored regularly until fish are released at the designated location.

Fish that are identified as hatchery broodstock, wild broodstock, or surplus will be transported to the Lewis River Hatchery and transferred to the appropriate pond. Recycled fish will be hauled either to the Lewis River Hatchery ponds or downstream and released to the Lewis River as directed by the WDFW. At the onset of Phase One reintroduction, the Utilities anticipate hauling Hatchery Origin Recruit (HOR) adult Chinook, marked NOR winter steelhead, and HOR coho to the upper watershed in the approximate numbers shown in Table 2.0.2. These are the EDT estimates for maximum number the habitat will support. However, time and experience will help determine numbers to be transported. The winter steelhead protocol may be modified if the current supplementation plan is successful enough to allow passage of unmarked NOR winter steelhead. Once there are at least as many natural returns as shown previously in Table 2.0.1, all HOR fish will be transported downstream of Merwin dam and any and all NOR spring Chinook, early coho, and winter steelhead will be transported upstream. The Utilities expect that harvest will not be allowed on adults released upstream of Merwin until the natural returns are stable and self-sustaining.

Table 2.0.2. EDT estimated adult capacity for habitat upstream of Swift Dam.

Spring Chinook	2,452
Early coho	11,203
Winter Steelhead	1,920

It is expected that transit time will be 1 to 1.5 hours for fish destined for the Swift release sites. Transit time between Merwin UTF and the Lewis River Hatchery is about 20 minutes. Each truck is capable of transporting fish at least three times per day. This will depend on the number of adult fish available for upstream transport and the number of adult and juvenile fish available for downstream transport. As long as trucks are hauling fish within basin, there is no need to disinfect the truck tanks between trips. At the end of the day, however, it would be prudent to disinfect each truck tank with 12.5 percent chlorine bleach at a concentration of 1 quart/1,500 gallons of water for thirty minutes and neutralized with sodium thiosulphate at a concentration of 900g/1,500-gallons for thirty minutes. A colorimetric chlorine test kit will be used to determine that chlorine is neutralized prior to discharging the tank water to a drain.

If there is a problem and fish are in distress the driver must turn up the oxygen level and return to the hatchery or proceed to the release site depending on which is closer. At no time should dead fish be released to the river but, instead, should be returned to the hatchery. The WDFW has a hauling procedures document that provides tips for successful, safe hauling practices (see attached).

2.3.1 Determining UPS

Upstream passage survival will be determined by recording the number of live fish that are transferred to the hauling truck and the percent of those fish that survive the transportation upstream and release into the reservoir. This is explained in further detail in the M&E Plan.

2.4 Fish Release

Three locations on Swift Reservoir will be used to release adult fish captured in the Merwin Upstream Facility as well as those adults captured in the Swift FSC. The first location is at the north abutment of Swift dam, the second is the boat ramp at Swift Forest Camp, and the third is Eagle Cliffs Park which is located at the head of Swift Reservoir.

The Swift dam location will have a chute to allow adult fish to be released into the reservoir when the water level is between elevations 990 and 1,000 ft-msl. The fish truck would discharge the fish and water into a fabricated entrance piece at the dam crest. The fish would slide down the chute and be discharged at an elevation just above 1,000 ft-msl (full pool). Observation of fish entry into the reservoir could result in setting a higher limiting elevation if necessary to prevent injury. In addition, if too many adult fish are recaptured (fallback) by the FSC or if the reservoir level constraint limits the Swift operational flexibility, this site may be deemed unsuitable.

The Swift Forest Camp boat ramp (Swift boat ramp) is the preferred release site and would be used to release adult fish into the reservoir as long as the reservoir water level is between elevation 972 ft-msl and full pool (1,000 ft-msl). Elevation 972 ft-msl corresponds to the bottom of the boat ramp. The Swift boat ramp would be used for all elevations above 972 ft-msl except when snow prevents access or ice conditions create a driving risk.

The Eagle Cliffs Park location would be used to release adult fish if the reservoir water level is below elevation 972 ft-msl and the Swift Dam chute is not useable or if snow or ice prevents access to the other two locations. The release of adult fish would be similar to the chute on the north side of Swift Dam, but the chute would be longer and would be a temporary, seasonal installation or, possibly a permanent buried pipe. Fish will be released into the deep pool at the base of Eagle Cliffs.

Prior to release at any site, water temperature will be checked. The receiving water temperature measured 1 foot below the water surface should be less than 18˚C. Also, there should not be more than a 3˚C change from the holding water to the receiving water. If there is a greater than 3˚C difference then the water in the truck should be tempered, but this can also cause stress to the fish and therefore should be limited to 3 times per year. If there is a large difference between truck water and receiving water (stream water), tempering may not be able to resolve this issue in a timely manner. Rather than tempering the water at all, it is better to locate a different release site where the unacceptable water temperature differences from truck to release do not occur.

Once adult fish are released the fish truck driver will record visual observations, documented with notes containing the date of release, any unusual release conditions (e.g. water temperature differential, predators in the area, etc.) orientation and general observation about the fish trajectory including approximate impact angle relative to the water surface, and any observations of fish once they enter the water. The driver will then proceed to the Swift FSC to pick up downstream transport species or return to Merwin UTF for another load of upstream migrants.

2.4.1 Assess Adult Migration, Distribution and Spawning

The methods for determining the statistics associated with this monitoring requirement is described fully in the M&E Plan. For the most part, this effort involves data collection in the

field. However, it is possible that a sample of the adult transport species may be tagged to facilitate this evaluation in which case these fish will be marked at the Merwin sorting facility. The need for this step will be determined after at least one field season.

3.0 Reporting

Results of the fish hauling effort and all relevant data analyses will be provided as part of the ACC/TCC Annual Report.

4.0 References

S.P. Cramer and Associates. 2005. Lewis River Fish Planning Document. Prepared for PacifiCorp by S.P. Cramer and Associates.

Attachments

Fish Hauling Notes

- Dissolved oxygen (D.O.) will go down at first then recover
- Have re-circ. motor and oxygen running prior to loading
- Re-circ pump will reduce site glass measurement when running
- Loading fish on uneven ground will effect sight glass
- <u>If something goes wrong:</u>
  Stay calm-Try to repair- Don't drive fast-No fish worth personal injury
  Turn up oxygen-Proceed or return- Don't dump dead fish
- Always know what time first fish has entered the tank
- When hauling fry-check tank often-may need to be stirred
- Inspect inside of tank including pump intake screen area
- Is drain valve screened?
- Fish in distress will be light in color, riding high in tank, lethargic, assess, return to hatchery, dump in another acceptable location
- Make sure when loading from fish pump that there is very little water entering tank-can seriously effect didsplacement
- Carry some tools and spare fuses in glove box
- Have all safety equipment in cab:
  Flairs, Reflective Triangles, First Aid Kit, Fuel Spill Supplies
- If an oxygen bottle has been emptied, replace right away
- Make sure you turn off oxygen when fish are out
- Do not load water above spray bar
- When releasing fish put truck in first gear, set brake, and turn engine off
- Driver is responsible for what goes into the truck:
  Do not ever overload truck. If anything, be a little under
- Before you leave, read milliliters, convert to pounds, and tell someone how many pounds you are transporting
- Set oxygen to 1.5 L/minute on all gages
- Do not run re-circ pump wide open
- Long haul limiting factor will be buildup of metabolites not D.O.
  Have hauled fish for almost 8 hours (yearling coho)
- Certain species of fish will allow for greater poundage (consult guidelines)
- Have chocks on truck
- Do a walk around before each use of truck, drain air tanks
- Make sure there is enough water under end of truck before release
- When using hoses to plant fish, point discharge end up slightly (takes 2 people)
- Prior to loading fish, make sure slide gate is shut
- When ordering hoses for truck make sure downstream fittings are chamferred
- Service re-circ motors 2 times/year
- Service truck 2 times/year (include inspection 1 time/year)
- Haul spring Chinook with salt (1 bag of hay salt per load)
- Observe interior tank conditions indicators often
- Check Oregon sources for fish hauling guidelines
- Set oxygen delivery gage at 60 psi
- Observe all disinfection protocols when required

- There are rules established for fish movement by W.D.F.W.
- Bring a bucket and broom for flush the last of fry, fingerlings and yearlings
- Shim slide gate slot, if there is one
- Size of planting hose is important- 6" for yearlings, 5" for the rest (6" to heavy for 1 person)
- Safety cones and reflective vest for planting fish from a well traveled road surface
- Carry a notepad, calculator and small metric ruler
- All displacement calculations are metric
- Every time you fuel truck, top off re-circ motor fuel supply as well
- Too much oxygen and the fish will skip across the water when released
- Make sure screens are fry proof
- Even with baffles, sloshing water will make your truck unstable-only travel with full tank
- Make sure all cam fittings on hoses are secure before releasing fish
- Have the displacement clearly marked in the cab of the truck
- Never haul a half of a tank, even if you are hauling only one fish
- Temper water to within 10 degrees of river, lake and tank
- Check truck at weigh station to assure you are not overloaded

Comments on the draft Upstream Transport Plan with responses

State of Washington
Department of Fish and Wildlife
2108 Grand Blvd. Vancouver WA 98661 (360) 696-6211

December 14, 2009

Frank Shrier
PacifiCorp
825 NE Multnomah Street, Suite 1500
Portland, Oregon 97232

SUBJECT: Draft Lewis River Upstream and Downstream Plans

Dear Mr. Shrier,

Washington Department of Fish and Wildlife is providing comments on the Lewis River Upstream and Downstream Plans.

Upstream Transport Plan:

1.1.3 Merwin Trap Upgrades The plan states that the Merwin Trap upgrades are complete. Allow most of the upgrades are complete, the installation of a permanently mounted actuator valves on the bridge have not been replaced as per the Final Design letter dated February 7, 2007.
While this is correct, the actuator valve will be installed prior to implementing the Upstream and Downstream Transport Plans so PacifiCorp chose to not be too specific since Section 1 is just a recap of the fish passage timeline.

2.0 Upstream Transport Plan The text states **"**In the first year of reintroduction, spring Chinook and winter steelhead will be collected at the Lewis River Hatchery Ladder and transported upstream daily beginning in April 2012". Keep in mind that the Merwin Trap will also be used during this reintroduction until the construction window starts in July.

PacifiCorp will add the clarification

2. 2.1 Determining Daily Number of Fish Entering the Trap WDFW anticipates the use of PIT tags in selective groups of fish. There is no reference to PIT tag detection in this facility or in the capture process. It needs to be incorporated into the facility.

PacifiCorp does not intend to use PIT tags to determine the daily number of fish entering the trap so this comment does not seem to fit the subject matter of this section.

The text states, "Since all fish will be handled and counted, it is estimated that a crew of three can process up to 3,700 fish in a 9-hour day and that all of those fish could be transported with the available fish hauling trucks". The new sorting facility at Lewis River Hatchery has shown

that operating a facility like this may require four to five crewmembers when sorting fish. Are truck drivers included in the three person crew?

Since the sorting crew will not be processing and sorting surplus fish, PacifiCorp believes a three person crew can handle the expected number of fish at the Merwin Trap. The truck driver is not included in the crew count.

2.3 Fish Transport Need to include that the fish hauling truck are also equipped with re-circulating systems to help manage the dissolved oxygen level during transport.

That information was added to the plan.
2.4 Fish Release **WDFW questions the 7ºC differential in water temperature between the transport truck and receiving water. 7ºC approximately equals 13ºF. WDFW believes this would be too great a strain on fish physiology. 7ºF would be more appropriate.**

WDFW's fish hauling notes do not provide for which temperature scale to use. The Fahrenheit symbol will be inserted in the text.

Downstream Transport Plan:

1.1.5 Swift Floating Surface Collector and Sorting/Hauling Facility Why would bull trout captured at the SDF be transported to Yale Reservoir? It seems like they should remain in Swift Reservoir or returned to the river below Merwin Dam if they appear smolt like (silvered up).

Section 4.4.1 of the Settlement Agreement (SA) states that any bull trout captured in the Swift Downstream facility will be transported to Yale Lake. This section also goes on to state that any bull trout juvenile with "smolt-like appearance" shall be transported to below Merwin. The Plan will be modified to accommodate the juvenile requirement.

1.2 Phase II Passage Implementation states, "Also, a bull trout upstream passage facility for Yale and Swift will need to be constructed on a smaller scale than the salmon facility." This is vague. Can you provide more detail? What will the facility contain?

The SA is just that vague and left it up to the ACC and the Services to determine the nature of these facilities.

1.2.3 Yale Floating Surface Collector and Sorting/hauling Facility Why would bull trout captured at the FSC be transported to Lake Merwin, rather than the river below Merwin Dam? What is the rationale?

Actually the Plan is incorrect. Section 4.5 is clear about the destination of bull trout captured in the Yale downstream facility. The Plan will be modified to say adult bull trout are returned to Yale Lake. Unlike Swift, all the Yale downstream migrants will need to be uniquely marked. In that case, it is possible to sort out bull trout juveniles and return the ones that do not have a smolt–like appearance to Yale Lake and transport the smolt-like bull trout to downstream of Merwin.

1.2.4 Yale Acclimation Facility. If an instream enclosure (net system) is installed in one Yale tributary, to encourage fish homing to Yale Reservoir; it seems likely the majority of fish will return to that tributary and not disperse throughout the reservoir, swamping that tributary system. It would not be desirable to have returning coho in Cougar Creek, spawning in competition with bull trout. How was the 15 year lifespan for operation period for the acclimation facility determined?

SA Section 8.8.2 states that, "PacifiCorp shall provide in-stream enclosures to confine juvenile salmonids in tributaries to Yale Lake and Lake Merwin." The sites are selected in Consultation with the ACC and the Services' approvals. So the plan will be modified to reflect that Section. The SA also clearly states that the acclimation program duration is at least 15 years after the completion of downstream passage facilities at each project.

1.3.4 Merwin Acclimation Facility **Again, one tributary stream is chosen for a net enclosure. It is not clear if the location will rotate among tributaries, or remain consistent on one tributary. It may be beneficial to rotate if possible.**

See response to previous comment

1.3.5 Upstream Passage at Yale dam **It is imperative that a sorting area be provided to exclude northern pikeminnow (*Ptychocheilus oregonensis*) from Swift Reservoir.**

We believe your comment relates to upstream passage at Swift dam. This Transport Plan does not address trap design. The question of the need for a sorting facility will be addressed during the Swift upstream passage design activities.

1.3.7 Upstream Passage at Merwin dam **It seems we would need a sorting facility to exclude tiger muskellunge (*Esox lucius x E. masquinongy*) from Yale Reservoir and prevent additional inputs of northern pikeminnow (*Ptychocheilus oregonensis*) into Yale.**

We believe your comment relates to upstream passage at Yale dam. This Transport Plan does not address trap design. The question of the need for a sorting facility will be addressed during the Yale upstream passage design activities.

2.2.1.2 Smolt Separation **The text states that the 10% subsample will be used to provide a ten percent coded wire tag (CWT) sample to be used for determining the Ocean Recruits. This is not currently how the H&S plan reads. WDFW understands that the double index fish released from the hatcheries will be used as a surrogate.**

The methods for determining Ocean Recruits and techniques for achieving marked subsamples (including use of double-index fish) are not specifically defined in this transport plan. These determinations will be made by the M&E Plan and the H&S Plan.

2.2.2 Determine juvenile and adult collection survival (CS) and Overall Downstream Survival (ODS) the text states, "**The procedure for determining Overall Downstream Survival (ODS) is described in the M&E Plan." The methodology, tags, release location and sample sizes have yet to be resolved within the M&E Plan.**

While this is true, this Plan will assume the methodology will be complete by the time this plan is implemented.

2.3 Fish Transport The document states, "The Utilities expect that harvest regulation will offer some protection for the anadromous juveniles that elect to remain in the upper watershed until they reach smolt condition in order to promote natural production from the upper watershed." This text is confusing. What is PacifiCorp requesting? A vibrant rainbow fishery occurs within Swift Reservoir. All fish (hatchery and wild) possess adipose fins. Presently, naturally produced rainbow are available for harvest.

PacifiCorp is requesting that WDFW consider temporary regulation changes when the reintroduction program is initiated to allow for the program to become successful.

Thank you for the opportunity to comment on this design phase. If you have any questions or comments, please contact me at 360-906-6747.

Sincerely,

Eric Kinne
Region 5 Hatchery Reform Coordinator

Comments from Michelle Day – NMFS
Title page
Each plan should have a statement in it like: Upon request of one of the Services or if deemed necessary by the ACC, this plan will be modified as needed to incorporate adaptive management. The intent of the Transport Plans is to identify safe and effective means of transporting fish. Specific areas/items that should be highlighted will become evident as we carrying out transportation (e.g., steps taken to dewater the Merwin trap to ensure minimal affects to fish). Therefore, these are to be living documents that change as necessary, but always have the Services approval of changes.
Changes incorporated within the document
Page 5
The Federal Energy Regulatory Commission (FERC) issued new licenses for the projects on June 26, 2008. The Merwin license requires submission of the Upstream Transport plan within 18 months of the license issuance (by December 26, 2009). Development of subsequent Upstream Transport Plans for the Yale and Swift hydroelectric projects will occur when the upstream passage facilities for those projects are complete. The following is a general description of fish passage implementation sequence. As stated in the Settlement Agreement, this Plan will address the first phase of anadromous fish reintroduction program which is upstream trapping and transport at Merwin dam. The Settlement Agreement describes the fish to be transported upstream (transport species) as spring Chinook, winter steelhead, coho, bull trout, and sea-run cutthroat. As the other passage facilities are constructed or modifications to this plan are needed, this plan will be updated to include the additional upstream passage components.

Commented [M1]: Per SA 4.1.7, could later include fall Chinook and summer steelhead.

Included suggested change
1.1 Sequence of Fish Passage Implementation on the Lewis River

Introduction of salmon and steelhead into the upper Lewis River is a phased approach that occurs over a period of seventeen years following issuance of the new FERC licenses with completion of the reintroduction and passage program scheduled for June 26, 2025. The fish passage program will operate, at a minimum, for the life of the FERC licenses which expire on June 26, 2058.

The phased approach provides for a carefully devised plan to protect the listed species and to verify effectiveness of the passage facilities while allowing for the reintroduction program to take affect.

Changes made to the Plan

Page 7

1.1.2 Fish Hauling Trucks

Related to fish hauling needs, PacifiCorp and Cowlitz PUD are required to provide two new fish hauling trucks. The first truck was purchased in 2008. The second truck is currently in a design phase and will be a modified hauler designed to carry up to six 250-gallon tanks for transporting small numbers of adult fish from either the Merwin trap or the newly constructed Lewis River Hatchery ladder and sorting facility. Due to constraints on the hauling process (mainly travel time) and the number of fish anticipated, PacifiCorp will supply a third conventional hauling truck when full fish passage is implemented on December 26, 2012.

Changed reference from 'full' to 'Phase One'

1.1.3 Merwin Trap Upgrade

Upgrades to the Merwin trap and a rebuild of the Lewis River adult sorting facility have been completed and are operational. For the next two years, trapping operations will involve collection of upstream migrants at the existing Merwin trap and the Lewis River Hatchery ladder and sorting facility (known as Pond 15). Beginning in July 2010, fish captured at the existing Merwin trap will be transported daily to the Lewis River Hatchery Sorting Facility until the new Merwin Fish Trap is constructed and operational by December 26, 2012. At that time, both trapping facilities will collect and haul the transport species to Swift.

Added clarification

Page 8

1.1.6 Lower River Release Pond

A release pond must be constructed and in operation by December 26, 2012. This facility will be located on the south side of the Lewis River about a half-mile downstream of the county bridge. The purpose of this facility is to allow for a determination of fish transport survival prior to volitional release into the lower Lewis River.

Changes made to the Plan

1.1.7 Acclimation Ponds

Three acclimation ponds will be constructed in the upper Lewis watershed at Crab Creek, Muddy River and Clear Creek. These ponds must be completed and in operation by December 26, 2012. The purpose of these facilities is to hold young salmon for approximately six weeks to acclimate them to the upper watershed so that, when they return as adults, they will have a propensity to move into the upper watershed. The acclimation facilities will operate for a minimum of 15 years following the initial Swift fish reintroduction unless the Aquatic Coordination Committee (ACC) decides to extend the acclimation program based on the need for supplementation.

This completes Phase I of the fish passage program.

1.2 Phase II Passage Implementation

In the second phase of the fish passage program, passage into Yale Lake is anticipated. This is predicated by a Services' decision to be made by June 26, 2016. The decision will be based any new information which may modify the original agreement to reintroduce salmon and

Commented [M2]: Not this but rather to learn from results before designing additional passage facilities and to spread costs (JES section 3.2.5).

Commented [M3]: Throughout the two transport plans the use of full is a little confusing since it does not mean full throughout all the projects. Maybe defining it in a footnote would help clarify. It means complete upstream and downstream passage at the relevant facility not complete passage throughout all of the projects.

Commented [M4]: Does this match with the timeframe PacifiCorp recently requested for the start of daily transport from the Merwin Trap?

Commented [M5]: While this info will be gained, the JES states that the stress release ponds provide a place for transported fish to recover from the transport efforts. This should be given as the purpose.

Commented [M6]: No, it is not. It is scheduled to go online unless otherwise directed by the Services. SA 4.1.9. This is a very important point.

steelhead into Yale Lake and Lake Merwin. If the Services decide that it is not prudent to reintroduce adult salmon and steelhead to Yale and Merwin based on new information (SA Section 4.1.9), then PacifiCorp must pay the Services $30 million in installments (termed the in lieu fund) to be used to enhance habitat in the lower Lewis River basin. In addition, a bull trout entrainment reduction net will remain in place at Yale and Merwin and a floating net pen collector will be attached to collect any bull trout attempting to migrate downstream. A fish passage crew will need to check the floating trap daily and remove any bull trout present and transport them to a location specified by the USFWS. Also, a bull trout upstream passage facility for Yale and Swift will need to be constructed on a smaller scale than the salmon facility. If, however, the Services decide to move forward with the fish passage phase into Yale, then the following will occur.

Wording was changed to reflect comment

Page 9

1.2.2 Adult Transport to Yale Lake

Beginning June 26, 2020, a portion of adult spring Chinook, Type-S coho and winter steelhead collected at the Merwin Upstream Trap facility will be transported and released into Yale Lake. The number of fish to be placed in Yale will be determined by the ACC since the Lewis River Fish Planning Document does not specifically recommend the number of spring Chinook, coho and steelhead to be transported. However, the Ecosystem Diagnosis and Treatment (EDT) model identified that the adult habitat capacity of Yale Lake and its tributaries is 164 spring Chinook, 189 steelhead and 3,556 coho. These numbers are not absolute but can serve as a guide for introduction into Yale Lake rather than a limitation.

Citation added

1.3 Phase III Passage Implementation

In the third phase of the fish passage program, passage into Lake Merwin is anticipated. This is predicated by a Services' decision to be made by June 26, 2016 as to whether or not any new information changes the original agreement to introduce salmon and steelhead into Lake Merwin. If the Services decide that it is not prudent to introduce adult salmon and steelhead to Yale then it goes without saying that anadromous salmonids would not be introduced to Merwin.

Wording was changed to reflect comment

Page 10

bull trout attempting to migrate downstream. The floating trap will be checked daily and any bull trout present will be removed and transported to a location specified by the USFWS. Also a bull trout upstream passage facility for Yale and one for Swift will need to be constructed on a smaller scale than the salmon facility. In another scenario, the Services may decide to reintroduce anadromous salmonids into Yale but not Merwin. In this case, PacifiCorp would pay the Services $20 million in installments to be used to enhance habitat in the lower Lewis River basin because Merwin downstream collection and full upstream passage would not occur. So in this scenario, returning adults would be transported to Yale and Swift from the Merwin Upstream Fish Trap and juveniles would be transported downstream from the Yale and Swift Floating Surface Collectors to the Release Pond. If, however, the Services decide to continue the fish passage phase into Merwin, then the following will occur.

$20 includes $5 million in lieu of upstream ladder at Swift

1.3.3 Merwin Floating Surface Collector and Sorting/Hauling Facility

The Merwin floating surface collector (FSC) will be complete and operational by June 26, 2025. If trucks remain as the primary means of upstream transport, the same fish hauling trucks used for the Merwin Trap and Sorting Facility will serve this facility since they are

Commented [M7]: This should be replaced with "mitigation measures that collectively contribute to meeting the objective of achieving benefits to anadromous fish populations equivalent or greater than benefits that would have occurred . . . with passage." SA 7.6.3

Commented [M8]: Again, this is not accurate and is a change to the SA. It is an affirmative that passage will be provided to Yale and Merwin unless directed otherwise by the Services. Please change this language to reflect that. Maybe something like "When there is fish passage into Yale, then the following will occur." If you desire, you could footnote with "unless otherwise directed by the Services."

Commented [M9]: Add citiation

Commented [M10]: Same comment as for 1.2

Commented [M11]: 15 – Merwin FSC $10 million plus Upstream collector at base of Yale $5 million.

designed to haul adults upstream from Merwin and smolts and adults downstream from Merwin on their return trips. Collection and transport of steelhead kelts and adult bull trout at Merwin dam is anticipated. There are not likely to be large numbers of kelts or adult bull trout. These adult steelhead and bull trout will be returned to the river below Merwin dam most likely with the modified hauling truck (with six 250-gal. tanks). However, there is a provision in the Settlement Agreement to potentially bypass downstream migrants (including kelts) to the river downstream of Merwin dam rather than collect, sort, and transport them to the Release Pond. The decision on this action will need to be determined by the ACC prior to the design phase of the Merwin FSC. If a downstream bypass system is utilized, then there will not be active downstream truck transport from Merwin.

Changed language but added footnote that it would be more prudent to make this decision during design phase rather than after construction has started

1.3.4 Merwin Acclimation Facility

When anadromous fish introduction occurs at Merwin, an instream enclosure will be installed on one of Merwin's tributaries one year prior to completion of the Merwin Floating Surface Collector. The enclosure will serve to acclimate juvenile salmonids for the supplementation program. The resultant production is expected to home in to Merwin when they return as adults but, with full passage, we do not anticipate the need to uniquely mark Merwin fish. This is intended to be a temporary instream structure like a net system that will be removed from the tributary when not in use. The Supplementation sub-group will determine the best method and location to accomplish this goal. The holding time is limited and feeding is not anticipated. The fry or pre-smolts will be released from the enclosure into the tributary after a predetermined acclimation period. The acclimation facility will operate for a minimum of 15 years following the initial Merwin fish introduction.

No need to mark because at that stage all wild fish will be transported upstream so there's no need to distinguish the fish

Page 13

Of these four tasks, the ATE determination and the adult migration, distribution, and spawning will require procedures in addition to the counting and sorting at the work table.

Fish destined to be transported will be held in either 3,000 gallon circular tanks or 250 gallon transport tanks. The 3,000-gal tanks will be loaded to a fish density that can be accommodated when transferred to the 1,800-gal hauling trucks. Specifically, the 1,800-gal transport tank density will follow NMFS~~WDFW~~ guidelines

Changes made but included WDFW along with NMFS

Page 15

Figure 2.0-1. Merwin Trap capture timing by species (last update 11/3/2009).

Figure was repaired and updated

Page 16

Once there are at least as many natural returns as listed in Table 2.0.1, all HOR fish will be transported downstream of Merwin dam and any and all NOR spring Chinook, early coho, and winter steelhead will be transported upstream.

No this is actually referring to the previous table 2.0.1.

Commented [M12]: This is not correct. Look at SA 4.1.8.d.

Commented [M13]: How will we know lower R fish (below Merwin) from Merwin fish?

Commented [M14]: Although it could occur as per SA 8.8.2.

Commented [M15]: Figure needs legend for yellow and green. One of those colors is coho, right?

Commented [M16]: Is this really Table 2.0.2 instead?

Page 18

2.3.1 Determining UPS

Upstream passage survival will be determined by recording the number of live fish that are transferred to the hauling truck and the percent of those fish that survive the transportation upstream and released into the reservoir. This is explained in further detail in the M&E Plan.

Change made

2.4 Fish Release

Three locations on Swift Reservoir will be used to release adult fish captured in the Merwin Upstream Facility as well as those adults captured in the Swift FSC. The first location is at the north abutment of Swift dam, the second is the boat ramp at Swift Forest Camp, and the third is located at Eagle Cliffs Park.

Eagle Cliffs is the top end of Swift Reservoir

Prior to release at any site, water temperature will be checked. If the difference between receiving water and the tank water is greater than 7°C, the water in the tank needs to be tempered until the difference is less than 7°C.

Changes made

Commented [M17]: Is the Eagle Cliff Park location part of the Swift Reservoir?

Commented [M18]: Please change this. The receiving water temperature measured 1 foot below the water surface should be less than 18˚C. Also, there should not be more than a 3˚C change from the holding water to the receiving water. If there is a greater than 3˚C difference then the water in the truck should be tempered, but this can also cause stress to the fish and therefore should be limited to 3 times per year. If there is a large difference between truck water and receiving water (stream water), tempering may not be able to resolve this issue in a timely manner. Rather than tempering the water at all, it is better to locate a different release site where the unacceptable water temperature differences from truck to release do not occur.

Page 22

- There are rules established for fish movement by W.D.F.W.
- Bring a bucket and broom for flush the last of fry, fingerlings and yearlings
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- Size of planting hose is important- 6" for yearlings, 5" for the rest (6" to heavy for 1 person)
- Safety cones and reflective vest for planting fish from a well traveled road surface
- Carry a notepad, calculator and small metric ruler
- All displacement calculations are metric
- Every time you fuel truck, top off re-circ motor fuel supply as well
- Too much oxygen and the fish will skip across the water when released
- Make sure screens are fry proof
- Even with baffles, sloshing water will make your truck unstable-only travel with full tank
- Make sure all cam fittings on hoses are secure before releasing fish
- Have the displacement clearly marked in the cab of the truck
- Never haul a half of a tank, even if you are hauling only one fish
- Temper water to within 10 degrees of river, lake and tank
- Check truck at weigh station to assure you are not overloaded

Commented [M19]: Approximately 2/3 of the way down on the previous page it mentions "Do a walk around before each use of truck, drain air tanks" Air tanks?

Commented [M20]: See earlier comment on the tempering of water in the truck it differs from what is here in the second to the last bullet.

These are WDFW guidelines so no edits can be made to this document