Regional Information Report 5J16-08

An Evaluation of the Whitman Lake Salmon Hatchery for Consistency with Statewide Policies and Prescribed Management Practices

by
Mark Stopha

October 2016

Alaska Department of Fish and Game **Division of Commercial Fisheries**

Symbols and Abbreviations

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

REGIONAL INFORMATION REPORT NO. 5J16-08

AN EVALUATION OF THE WHITMAN LAKE SALMON HATCHERY FOR CONSISTENCY WITH STATEWIDE POLICIES AND PRESCRIBED MANAGEMENT PRACTICES

by

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The Regional Information Report Series was established in 1987 and was redefined in 2006 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at http://www.adfg.alaska.gov/sf/publications/

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ABSTRACT

The salmon hatchery program in Alaska is governed by policies, plans, and regulations that emphasize protection of wild salmon stocks. A rotational series of hatchery evaluations will examine each hatchery for consistency with those policies and prescribed management practices. The evaluation includes a review of hatchery management plans and permits, an assessment of each hatchery program's consistency with statewide policies, and recommendations to address any deficiencies found. Management plans and permits were examined to determine whether they were current, consistent with each other, and accurately described hatchery operations.

This report reviews the Whitman Lake Salmon Hatchery operated by the Southern Southeast Regional Aquaculture Association (SSRAA), a private nonprofit corporation. The facility is located in Ketchikan, Alaska, and currently rears chum salmon *Oncorhynchus keta,* coho salmon *O. kisutch,* and Chinook salmon *O. tshawytscha*. The facility was constructed by SSRAA in 1979.

The original broodstock for chum, coho and Chinook salmon were from area stocks. Juvenile salmon are released from the hatchery and release sites in Southern Southeast Alaska. Some projects were not properly permitted in earlier years, and recommendations for clarification of outstanding issues are included in this report. The basic management plan for the hatchery should be updated with a description of current permit conditions and operations.

Key words: Whitman Lake salmon hatchery, hatchery evaluation, hatchery, Chinook salmon, chum salmon, coho salmon

INTRODUCTION

Alaska's constitution mandates that fish are harvested sustainably under Article 8, section 4: "Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the state shall be utilized, developed and maintained on the sustained yield principle, subject to preferences among beneficial uses."

Due in part to historically low salmon harvests, Article 8, section 15 of Alaska's Constitution was amended by popular vote in 1972 to provide tools for restoring and maintaining the state's fishing economy: "No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State. This section does not restrict the power of the State to limit entry into any fishery for purposes of resource conservation, to prevent economic distress among fishermen and those dependent upon them for a livelihood and to promote the efficient development of aquaculture in the State." Alaska's salmon hatchery program was developed under this mandate and designed to supplement—not replace—sustainable natural production.

Alaska's modern salmon fisheries enhancement program began in 1971 when the Alaska Legislature established the Division of Fisheries Rehabilitation Enhancement and Development (FRED) within the Alaska Department of Fish and Game (ADF&G; FRED Division 1976). In 1974, the Alaska Legislature expanded the program, authorizing private nonprofit (PNP) corporations to operate salmon hatcheries: "It is the intent of this Act to authorize the private ownership of salmon hatcheries by qualified nonprofit corporations for the purpose of contributing, by artificial means, to the rehabilitation of the state's depleted and depressed salmon fishery. The program shall be operated without adversely affecting natural stocks of fish in the state and under a policy of management which allows reasonable segregation of returning hatchery-reared salmon from naturally occurring stocks" (Alaska Legislature 1974).

Salmon fishery restoration efforts came in response to statewide annual salmon harvests of just 22 million fish in 1973 and 1974, among the lowest catches since 1900 (Figure 1). The FRED Division and PNPs engaged in a variety of activities to increase salmon production. New hatcheries were built to raise salmon, fish ladders were constructed to provide adult salmon access to previously nonutilized spawning and rearing areas, lakes with waterfall outlets too high

for adult salmon to ascend were stocked with salmon fry, log jams were removed in streams to enable returning adults to reach spawning areas, and nursery lakes were fertilized to increase the available feed for juvenile salmon (FRED 1975). A combination of favorable environmental conditions, limited fishing effort, abundance-based harvest management, habitat improvement and protection, and hatchery production gradually boosted salmon catches, with recent commercial salmon harvests (2004–2013) averaging 180 million fish.[1]

In Alaska, the purpose of salmon hatcheries is to supplement natural stock production for public benefit without adversely affecting natural stocks (Duckett et al. 2010). Hatcheries are efficient in improving survival from the egg to fry or smolt stage. In natural production, estimates for pink salmon *Oncorhynchus gorbuscha* egg to fry survival in 2 Southeast Alaska creeks ranged from less than 1% to 22%, with average survivals from 4% to 9% (Groot and Margolis 1991). Under hatchery conditions, egg to fry survival is usually 90% or higher.

Alaska hatcheries do not grow fish to adulthood, but incubate fertilized eggs and release resulting progeny as juveniles. Juvenile salmon imprint on the release site and return to the release location as mature adults. Per state policy, hatcheries generally use stocks taken from close proximity to the hatchery so that any straying of hatchery returns will have similar genetic makeup as the stocks from nearby streams. Also per state policy, Alaska hatcheries do not selectively breed. Large numbers of broodstock are used for gamete collection to maintain genetic diversity, without regard to size or other characteristic. In this document, *wild* fish refer to fish that are the progeny of parents that naturally spawned in watersheds and intertidal areas. *Hatchery* fish are fish reared in a hatchery to a juvenile stage and released. *Farmed* fish are fish reared in captivity to market size for sale. Farming of finfish, including salmon, is not legal in Alaska (Alaska Statue 16.40.210). In addition, *egg takes* or *egg collections* denote eggs that are fertilized with milt from a male from the same stock unless otherwise noted.

Hatchery production is limited by freshwater capacity and freshwater rearing space. Soon after emergence, all pink and chum salmon *O. keta* fry can be transferred from fresh water to salt water. Most Chinook *O. tshawytscha*, sockeye *O. nerka*, and coho salmon *O. kisutch* must spend a year or more in fresh water before fry develop to the smolt stage and can tolerate salt water. These 3 species require a higher volume of fresh water, a holding area for freshwater rearing, and daily feeding. They also have a higher risk of disease mortality due to the extended rearing phase. There are economic tradeoffs between the costs of production versus the value of fish at harvest. Although Chinook, sockeye, and coho salmon usually garner higher prices per pound in the commercial harvest, chum and pink salmon are more economical to rear in the hatchery setting and generally provide a higher economic return.

[1] Data from http://www.adfg.alaska.gov/index.cfm?adfg=CommercialByFisherySalmon.exvesselquery (Accessed 08/12/14).

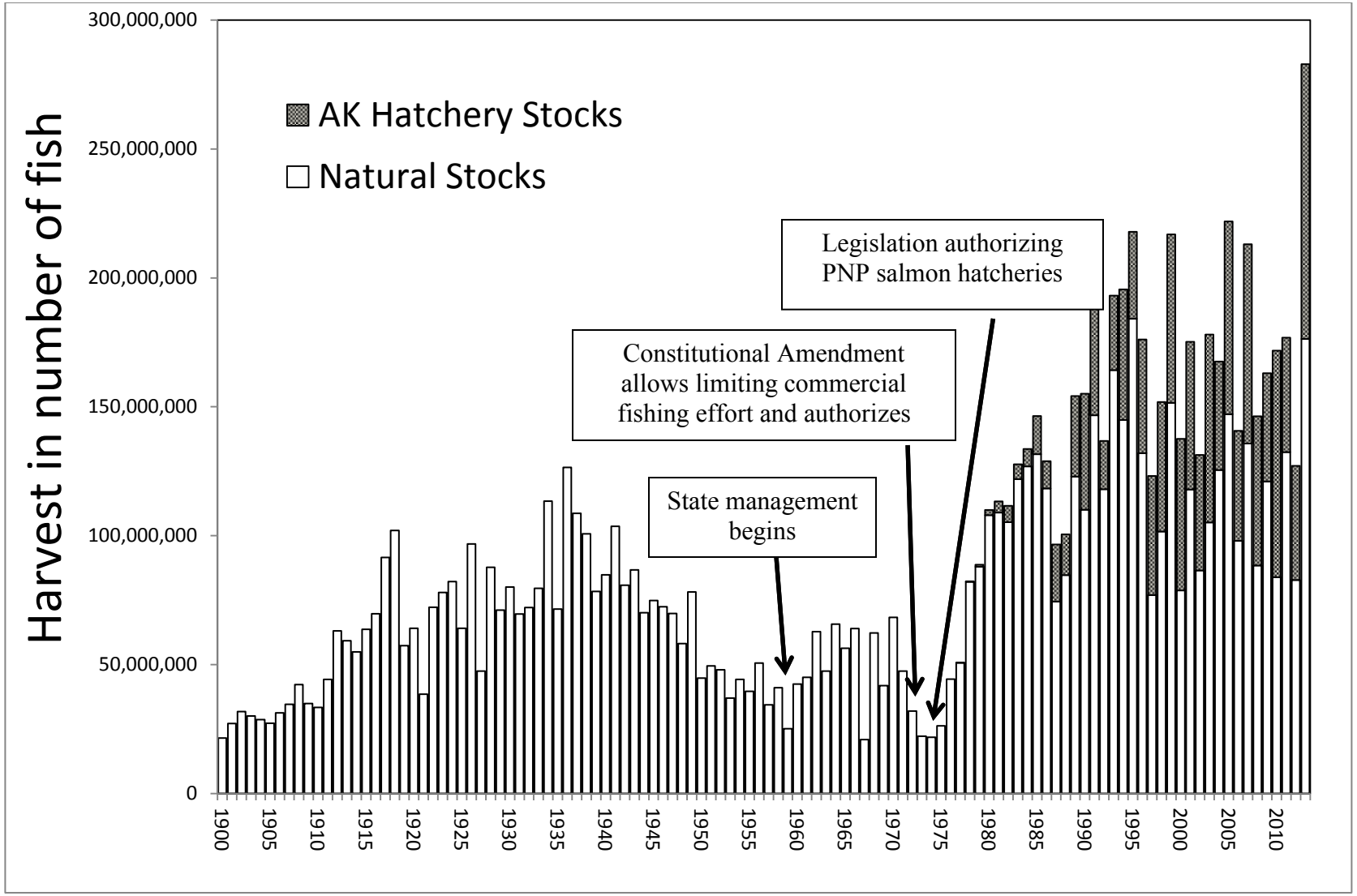

Figure 1.–Commercial salmon harvest in Alaska, 1900–2013.

Source: 1900–1976 from Byerly et al. (1999). 1977–2013 from Vercessi (2015).

Pink salmon have the shortest life cycle of Pacific salmon (2 years), provide a quick return on investment, and provide the bulk of Alaska hatchery production. From 2004 to 2013, pink salmon accounted for an average 74% of Alaska hatchery salmon returns by number, followed by chum (20%), sockeye (4%), coho (2%) and Chinook salmon (<1%; White 2005–2011; Vercessi 2012–2014).

The salmon marketplace has changed substantially since the hatchery program began. As the first adult salmon were returning to newly built hatcheries in 1980, Alaska accounted for nearly half of the world salmon supply, and larger harvests in Alaska generally meant lower prices to fishermen. Some believed the increasing hatchery production in some parts of the state was depressing salmon prices in others (Knapp et al. 2007). By 1996, rapidly expanding farmed salmon production surpassed the wild salmon harvest for the first time (Knapp et al. 2007) and wild salmon prices declined precipitously as year-round supplies of high-quality fresh farmed salmon flooded the marketplace in the U.S., Europe, and Japan. The Alaska fishing industry responded by improving fish quality and implementing intensive marketing efforts to differentiate Alaska salmon from farmed salmon. By 2004, these efforts paid off through increasing demand and prices.

Today, Alaska typically accounts for just 12% to 15% of the global supply of salmon (Alaska Seafood Marketing Institute 2011). Alaska's diminished influence on world salmon production means that Alaska's harvest volume has little effect on world salmon prices. Prices paid to fishermen have generally increased over the past decade (2004–2013) despite large fluctuations in harvest volume (ADF&G 2014, Stopha 2013a).

Exvessel value[2] of the commercial hatchery harvest increased from $45 million in 2004 to $191 million in 2013, with a peak value for the decade of $204 million in 2010. First wholesale value[3] also showed an increasing trend, with the value of hatchery fish increasing from $138 million in 2004 to a decadal high value of $532 million in 2013. Pink and chum salmon combined accounted for about 80% of both the exvessel value and the first wholesale value of the hatchery harvest from 2004 to 2013.

From 2004 to 2013, hatcheries contributed about a third of the total Alaska salmon harvest, in numbers of fish (White 2005–2011; Vercessi 2012–2014). As world markets supported a trend of increasing prices for salmon during this period, interest in increasing hatchery production by Alaska fishermen, processors, support industries, and coastal communities increased as well. In 2010, Alaska salmon processors encouraged hatchery operators to expand pink salmon production to meet heightened demand (Industry Working Group 2010).

Alaska's wild salmon populations are sustainably managed by ensuring adequate numbers of adults spawn, and the wild harvest is arguably at its maximum, given fluctuations due to environmental variability and imperfect management precision. Unlike Pacific Northwest systems, such as the Columbia River, where habitat loss, dam construction and urbanization led to the decline of salmon stocks to the point of endangered species listings, Alaska's salmon habitat is largely intact. ADF&G, with the assistance and sacrifice of commercial, sport, personal

[2] Exvessel value for hatchery harvest is the total harvest value paid by fish buyers to fishermen for all salmon from http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmoncatch (accessed 02/04/2012), multiplied by the hatchery percent of the commercial harvest in Farrington 2003, 2004; White 2005–2011, and Vercessi 2013.

[3] First wholesale value is the price paid to primary processors for processed fish from ADF&G Commercial Operators' Annual Reports obtained from Shellene Hutter, ADF&G, multiplied by the hatchery percent of the commercial harvest.

use and subsistence users, has been successful in recovery of several populations identified as *stocks of concern* through restricted fishing and intensive spawning assessment projects. Other than regulatory actions, such as reductions of salmon bycatch in other fisheries or changes in fishing methods that would allow more precise management of escapement, hatchery production is the primary opportunity to substantially increase the harvest.

Alaska's salmon fisheries are among the healthiest in the world. The 2013 season was a record harvest overall, with the 283 million fish commercial harvest comprised of the second highest catch for wild stocks (176 million fish) and the highest catch for hatchery stocks (107 million fish) in history (Figure 1). The 2013 season was the first year the hatchery harvest exceeded 100 million fish. The 2013 hatchery harvest alone was greater than the entire statewide commercial salmon harvest in 1987 and every year prior to 1980 except for 6 years (1918, 1934, 1936–1938 and 1941; Figure 1).

Part of the reason for the rise in price of Alaska salmon was a message of the state's sustainable fisheries management to a growing audience of discriminating buyers. The Alaska Seafood Marketing Institute applied to the Marine Stewardship Council (MSC) for certification as a sustainably managed fishery. In 2000, the MSC certified the salmon fisheries managed by ADF&G as sustainably managed, and the state's salmon fisheries remained the only MSC certified salmon fishery in the world for nearly a decade. Salmon fisheries elsewhere (Annette Islands Indian Reserve salmon; British Columbia pink and sockeye salmon; and Iturup Island, Russia, pink and chum salmon) were later certified for much smaller geographic areas, and in some cases, only for specific salmon species (MSC 2012). Alaska's certification was MSC's broadest and most complex, covering all 5 salmon species harvested by all fishing gear types in all parts of the state. Achievement of statewide certification was a reflection of the state's commitment to abundance-based fisheries management and constitutional mandate to sustain wild salmon populations.

MSC-certified fisheries are reviewed every 5 years. When Alaska salmon fisheries were recertified in 2007 (Chaffee et al. 2007), a condition of certification was to "Establish and implement a mechanism for periodic formal evaluations of each hatchery program for consistency with statewide policies and prescribed management practices. This would include a specific evaluation of each program relative to related policies and management practices." (Knapman et al. 2009).

The Alaska Seafood Marketing Institute changed to a new sustainable fishery certification under the Food and Agriculture Organization in 2011 (Global Trust Certification Ltd. 2011). The hatchery evaluations started under the MSC certification program continued as an important systematic assessment of Alaska salmon fishery enhancement and its relation to wild stock production at a time of heightened interest in increased hatchery production and its potential impacts on wild salmon production. ADF&G established a rotational schedule to review PNP hatchery programs. Musslewhite (2011a, 2011b) completed hatchery reviews for the Kodiak region in 2011, Stopha and Musslewhite (2012) completed the hatchery review for Tutka Bay Lagoon Hatchery in Cook Inlet, and Stopha (2012a, 2012b, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2014a, 2014b, 2014c, 2015a, 2015b, 2015c, 2015d, 2015e, 2015f, 2016b, 2016c) completed reviews of the Trail Lakes, Port Graham and Eklutna hatcheries in Cook Inlet; the Solomon Gulch, Gulkana, Main Bay, Cannery Creek, Wally Noerenberg and Armin F. Koernig hatcheries in Prince William Sound; the Macaulay, Sheep Creek, Snettisham, Sawmill Creek, Haines Projects, Sheldon Jackson, Port Armstrong, Medvejie Creek, and Hidden Falls hatcheries

in northern Southeast Alaska; and the Klawock River and Port St. Nicholas hatcheries in Southern Southeast Alaska. This report is for the Whitman Lake Hatchery located in Ketchikan, Alaska. Following completion of review of this facility, reviews of the remainder of the PNP hatcheries in Southern Southeast Alaska will follow.

OVERVIEW OF POLICIES

Numerous Alaska mandates and policies for hatchery operations were specifically developed to minimize potential adverse effects to wild stocks. The design and development of the hatchery program is described in detail in McGee (2004): "The success of the hatchery program in having minimal impact on wild stocks can be attributed to the development of state statutes, policies, procedures, and plans that require hatcheries to be located away from significant wild stocks, and constant vigilance on the part of ADF&G and hatchery operators to improve the program through ongoing analysis of hatchery performance." Through a comprehensive permitting and planning process, hatchery operations are subject to continual review by a number of ADF&G fishery managers, geneticists, pathologists, and the ADF&G commissioner.

A variety of policies guide the permitting of salmon fishery enhancement projects. They include *Genetic Policy* (Davis et al. 1985), *Regulation Changes, Policies, and Guidelines for Fish and Shellfish Health and Disease Control* (Meyers 2014), and fisheries management policies, such as the Sustainable Salmon Fisheries Policy (5 AAC 39.222). These policies are used by ADF&G staff to assess hatchery operations for genetic, health, and fishery management issues in the permitting process. Regional comprehensive salmon enhancement plans provide goals and objectives for enhancement planning, and are described in a later section.

The State of Alaska ADF&G genetic policy (Davis et al. 1985; Davis and Burkett 1989) sets out restrictions and guidelines for stock transport, protection of wild stocks, and maintenance of genetic variance. Policy guidelines include banning importation of salmonids from outside the state (except US/Canada transboundary rivers); restricting transportation of stocks between the major geographic areas in the state (Southeast, Kodiak Island, Prince William Sound, Cook Inlet, Bristol Bay, Arctic-Yukon-Kuskokwim, and Interior); requiring the use of local broodstock with appropriate phenotypic characteristics; maintaining genetic diversity by use of large populations of broodstock collected across the entire run; and limiting the number of hatchery stocks derived from a single donor stock.

The genetic policy (Davis et al. 1985) also requires the identification and protection of *significant and unique* wild stocks: "Significant or unique wild stocks must be identified on a regional and species basis so as to define sensitive and non-sensitive areas for movement of stocks." In addition, Davis et al. (1985) suggests that drainages be established as wild stock sanctuaries where no enhancement activity is permitted except for gamete removal for broodstock development. The wild stock sanctuaries were intended to preserve a variety of wild types for future broodstock development and outbreeding for enhancement programs.

These stock designations are interrelated with other restrictions of the genetic policy (Davis et al. 1985), including (1) hatchery stocks cannot be introduced to sites where the introduced stock may have interaction or impact on significant or unique wild stocks; (2) a watershed with a significant stock can only be stocked with progeny from the indigenous stocks; and (3) fish releases at sites where no interaction with, or impact on, significant or unique stock will occur, and which are not for the purposes of development, rehabilitation, or enhancement of a stock (e.g., releases for terminal harvest or releases in landlocked lakes) will not produce a detrimental

genetic effect. Davis and Burkett (1989) suggest that regional planning teams (RPTs) are an appropriate body to designate significant and unique wild stocks and wild stock sanctuaries. To date, only the Cook Inlet RPT has established significant stocks and wild stock sanctuaries. The Southeast Alaska RPT has issued a *stock appraisal tool*, which identifies criteria to be used for evaluating the significance of a wild stock that may potentially interact with hatchery releases (Duckett et al. 2010).

Salmon fishery enhancement efforts are guided by comprehensive salmon plans for each region. These plans are developed by the RPTs, which are composed of 6 members: 3 from ADF&G and 3 appointed by the regional aquaculture association Board of Directors (5 AAC 40.310). According to McGee (2004), "Regional comprehensive planning in Alaska progresses in stages. Phase I sets the long-term goals, objectives and strategies for the region. Phase II identifies potential projects and establishes criteria for evaluating the enhancement and rehabilitation potentials for the salmon resources in the region. In some regions, a Phase III in planning has been instituted to incorporate Alaska Board of Fisheries approved allocation and fisheries management plans with hatchery production plans."

The Alaska Fish Health and Disease Control Policy (5 AAC 41.080) is designed to protect fish health and prevent spread of infectious disease in fish and shellfish. The policy and associated guidelines are discussed in *Regulation Changes, Policies, and Guidelines for Fish and Shellfish Health and Disease Control* (Meyers 2014). It includes regulations and guidelines for fish transports, broodstock screening, disease histories, and transfers between hatcheries. The *Alaska Sockeye Salmon Culture Manual* (McDaniel et al. 1994) also specifies practices and guidelines specific to the culture of sockeye salmon. As with Davis et al. (1985), these regulations and guidelines are used by ADF&G fish pathologists to review hatchery plans and permits.

The Alaska Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) mandates protection of wild salmon stocks in the management of salmon fisheries. Other applicable policies include the Policy for the Management of Mixed-Stock Salmon Fisheries (5 AAC 39.220), the Salmon Escapement Goal Policy (5 AAC 39.223), and local fishery management plans (5 AAC 39.200). These regulations require biologists to consider the interactions of wild and hatchery salmon stocks when reviewing hatchery management plans and permits.

The guidance provided by these policies is sometimes very specific, and sometimes less so. For example, the Alaska Fish Health and Disease Control Policy (5 AAC 41.080) mandates the use of an iodine solution on salmon eggs transported between watersheds—a prescribed practice that requires little interpretation. In contrast, several policies prioritize the protection of wild stocks from the potential effects of fisheries enhancement projects without specifying or mandating how to assess those effects. These less specific policies provide principles and priorities, but not specific direction, for decision making.

The initial rotation of these evaluation reports will assess the consistency of individual hatcheries with state policies by (1) confirming that permits have been properly reviewed using applicable policies, and (2) identifying information relevant to each program's consistency with state policies. Future reports may assess regional effects of hatcheries on wild stocks and fishery management.

OVERVIEW OF HATCHERY PERMITS AND PLANS

The FRED Division built and operated several hatcheries across the state in the 1970s and gradually transferred operations of most facilities to PNP corporations. Regional aquaculture associations (RAAs), whose membership is comprised of the commercial salmon fishing permit holders in that region, operate most of the PNP hatcheries in Kodiak, Cook Inlet, Prince William Sound, and Southeast Alaska. Each RAA's board of directors establish goals for enhanced production, oversee business operations of the hatcheries, and work with ADF&G staff to comply with state permitting and planning regulations. RAA membership may vote to impose a salmon enhancement tax on sale of salmon in their region to finance hatchery, enhancement, and rehabilitation activities. Independent PNP corporations, not affiliated with an RAA, also operate hatcheries in several areas of the state. Both the RAAs and independent PNP hatchery organizations may harvest salmon returning to their release sites to pay for operations. Such harvests by hatchery operators are called *cost-recovery* fisheries, and are in contrast to *common property* fisheries, which are fisheries open to all commercial fishing permit holders, as well as subsistence, personal use, and sport harvesters. Several organizations have tourist and educational programs that may contribute to the financial support of their programs as well.

RAAs do not receive a blanket permit for their hatcheries. Each hatchery is permitted separately. Application for a hatchery permit is an extensive process (5 AAC 40.110–230). A preliminary application is submitted to ADF&G. The application consists of the goals of the hatchery, production goals, hatchery site information, water flow and chemistry data, land ownership and water rights, hatchery design, proposed broodstock, and a financial plan. ADF&G staff review the application with the applicant, address any deficiencies, and finalize the application. The RPT reviews the hatchery plan to determine if the hatchery operation is compatible with the regional comprehensive salmon plan. A public hearing is then held, where the applicant describes the proposed hatchery and ADF&G staff present the basic management plan for the hatchery. Public oral and written testimony and questions follow the presentations, and ADF&G must respond in writing to any specific objections.

Following review by the RPT and the public hearing, the application is sent to the ADF&G commissioner[4] for final consideration. By regulation (5 AAC 40.220) the commissioner's decision is based on the following considerations: (1) the suitability of the site for making a reasonable contribution to the common property fishery, not adversely affect management of wild stocks, and not require significant alterations of traditional fisheries; (2) the operation of the hatchery makes the best use of the site's potential to benefit the common property fishery; (3) the harvest area size at the hatchery is sufficient in size to provide a segregated harvest of hatchery fish of acceptable quality for sale; (4) proposed donor sources can meet broodstock needs for the hatchery for the first cycle; (5) water sources for the hatchery are secured by permit and are of appropriate quality and quantity; and (6) the hatchery has a reasonable level of feasibility and success.

Public participation is an integral part of the PNP hatchery system. Hearings are held before a hatchery is permitted for operation. RPTs comprised of ADF&G and RAA staff hold public meetings to define desired production goals by species, area, and time, and document these goals in comprehensive salmon plans (5 AAC 40.300). RPTs hold public meetings to review applications for new hatcheries and to make recommendations to the ADF&G commissioner

[4] In this document, *commissioner* refers to the ADF&G commissioner or the commissioner's designee.

regarding changes to existing hatchery operations, new hatchery production, and new hatchery facilities. Municipal, commercial, sport, and subsistence fishing representatives commonly hold seats on both RAA and independent PNP hatchery organization boards, providing broad public oversight of operations.

Alaska PNP hatcheries operate under 4 documents required in regulation (5 AAC 40.110–990 and 5 AAC 41.005–100) and statute (AS 16.05.092): hatchery permit with basic management plan (BMP), annual management plan (AMP), fish transport permit (FTP), and annual report (Figure 2).

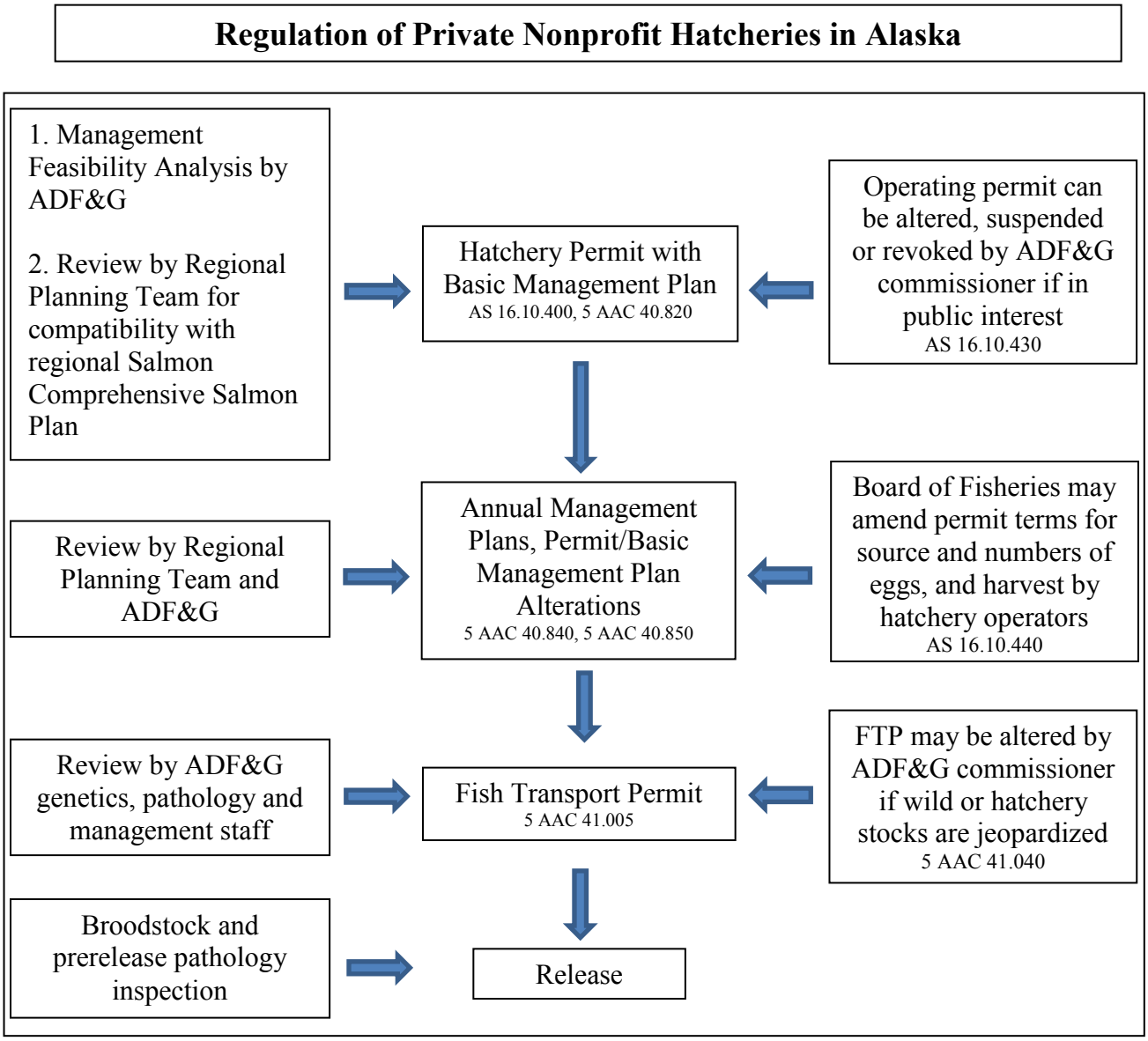

Figure 2.–Diagram of Alaska hatchery permitting process.

The hatchery permit authorizes operation of the hatchery, specifies the maximum number of eggs of each species that a facility can incubate, specifies the authorized release locations, and may identify stocks allowed for broodstock. The BMP is an addendum to the hatchery permit and outlines the general operations of the hatchery. The BMP may describe the facility design, operational protocols, hatchery practices, broodstock development schedule, donor stocks, harvest management, release sites, and consideration of wild stock management. The BMP functions as part of the hatchery permit and the 2 documents should be revised together if the permit is altered. The permit and BMP are not transferrable. Hatchery permits remain in effect unless relinquished by the permit holder or revoked by the ADF&G commissioner.

Hatchery permits/BMPs may be amended through a permit alteration request (PAR). Requested changes are reviewed by the RPT and ADF&G staff and any recommendations are sent to the ADF&G commissioner for consideration. If approved by the commissioner, the permit is amended to include the alteration. Reference to a *permit* or *hatchery permit* in this document also includes approved PARs to the hatchery permit unless otherwise noted.

The AMP outlines operations for the current year. It should "organize and guide the hatchery's operations, for each calendar year, regarding production goals, broodstock development, and harvest management of hatchery returns" (5 AAC 40.840). Typically, AMPs include the current year's egg-take goals, fry or smolt releases, expected adult returns, harvest management plans, FTPs (described below) required or in place, and fish culture techniques. The AMP must be consistent with the hatchery permit and BMP.

An FTP is required for egg collections, transports, and releases (5 AAC 41.001–100). The FTP authorizes specific activities described in the hatchery permit and management plans, including broodstock sources, gamete collections, and release sites. All FTP applications are currently reviewed by the ADF&G fish pathologist, fish geneticist, regional resource development biologist, and other ADF&G staff as delegated by the ADF&G commissioner. Reviewers may suggest conditions for the FTP. Final consideration of the application is made by the ADF&G commissioner or commissioner's delegate. An FTP is issued for a fixed time period and includes both the specifics of the planned operation and any conditions added by ADF&G.

Each hatchery is required to submit an annual report documenting egg collections, juvenile releases, current year run sizes, contributions to fisheries, and projected run sizes for the following year (AS 16.05.092). Information for all hatcheries is compiled into an annual ADF&G report to the Alaska Legislature (e.g., Vercessi 2014).

The administration of hatchery permitting, planning, and reporting requires regular and direct communication between ADF&G staff and hatchery operators. The serial documentation from hatchery permit/BMP to AMP to FTP to annual report spans generations of hatchery and ADF&G personnel, providing an important history of each hatchery's species produced, stock lineages, releases, returns, and pathology.

WHITMAN LAKE HATCHERY OVERVIEW

Whitman Lake Hatchery is located in George Inlet near Ketchikan, Alaska (Figure 3). Southeast Regional Aquaculture Association (SSRAA) applied for a permit for the Whitman Lake Hatchery in 1977. The preliminary application requested a hatchery capacity of 40 million chum salmon eggs and 3 million coho salmon eggs. Whitman Lake is the water source for the hatchery. SSRAA applied for water rights for Whitman Lake Hatchery to the Alaska Department of

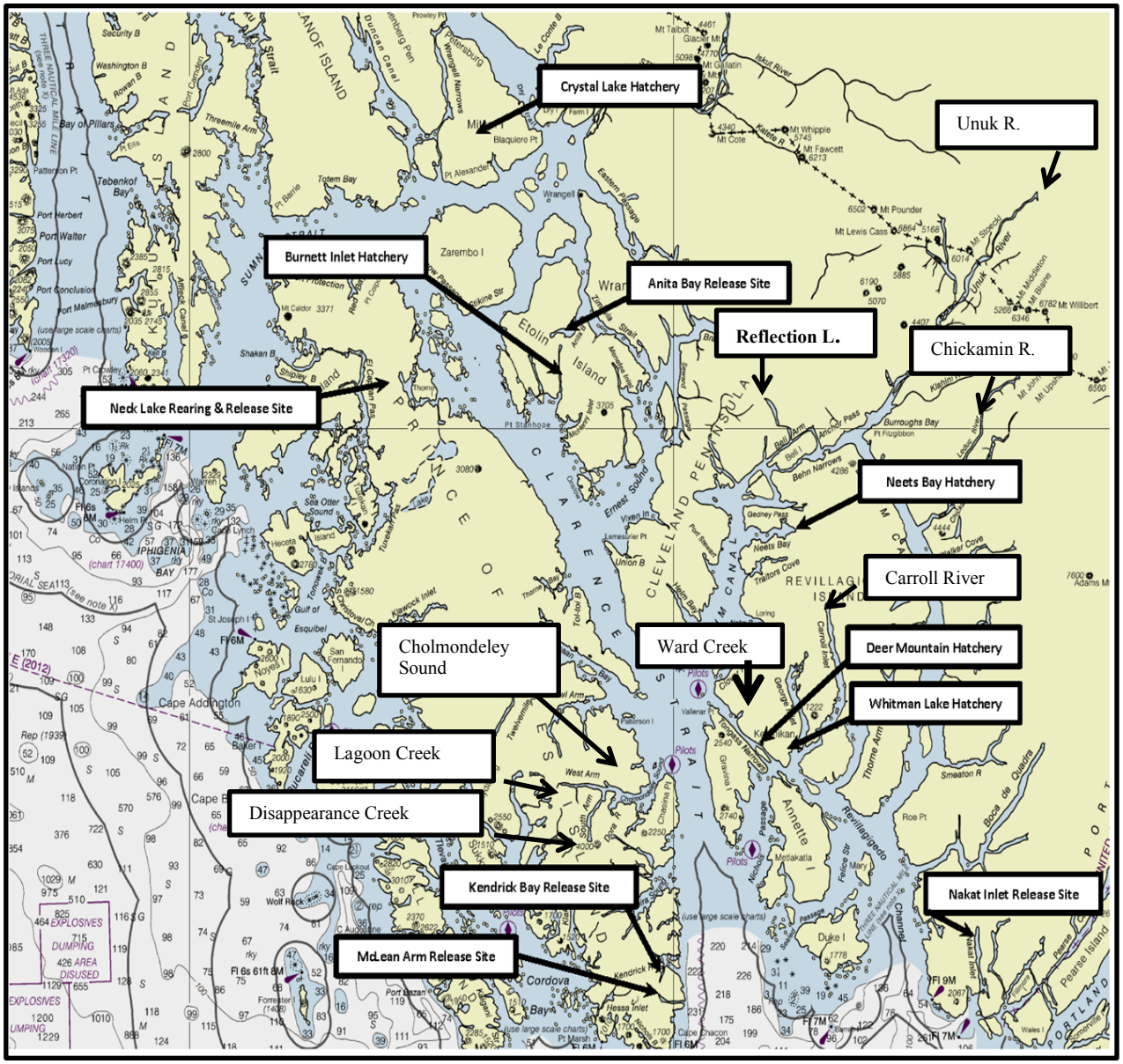

Figure 3.–Release sites and wild stock donor systems associated with Whitman Lake Hatchery.

Whitman Lake Hatchery was initially proposed as a central incubation facility. Eggs would be incubated at the hatchery and juveniles released off site. Potential release sites included Nakat Inlet, Neets Bay, and Kendrick Bay near Ketchikan; and Eastern Passage near Wrangell. No fish would be released from the hatchery because returns would comingle with returns to Beaver Falls Hatchery, a nearby facility already in operation.[5]

In reviewing the Whitman Lake Hatchery application, ADF&G genetics staff indicated that the facility could work in theory, as long as stocks were separated in the hatchery. Genetic problems would be minimized if release sites contained no significant indigenous stocks and if released fry

[5] Memorandum from M. Kaill to Distribution (ADF&G staff) dated Oct. 25, 1977. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

were successfully imprinted to the release site.[6] ADF&G Divisions of Commercial Fisheries and Sport Fish staff indicated that releasing all fish off site or limiting site releases to fall-run fish would create the least amount of fishery management complications for the Beaver Falls Hatchery returns and the significant salmon runs in the outer George Inlet area. Staff-recommended release sites for chum salmon in descending priority were: Neets Bay,[7] Nakat Inlet, Eastern Passage, Anita Bay, Kendrick Arm, and Thorne Arm. Snip Island and Keta River areas would not be acceptable sites because of conflicts with major natural runs.[8] For coho salmon, staff recommended Mahoney Lake (George Inlet), Neets Bay and Nakat Inlet.[9]

ADF&G FRED Division staff commented that it was unknown if chum salmon released from a remote release site would return to that release site. The FRED Division was conducting studies on the issue at Disappearance Creek. Staff recommended against fry releases where major local stocks would be impacted. [10]

ADF&G fish pathology staff advised that stocks be segregated in the facility to prevent disease transmission. They recommended disinfecting all eggs and a disease survey of all donor and hatchery stocks entering the facility.[11]

The RPT reviewed the permit application and generally approved the concept of the central incubation facility.[12] Donor streams selected by the RPT included Oerns Creek and Harding River for summer-run chum salmon, Keta River for summer-run and fall-run chum salmon, and Disappearance Creek for fall-run chum salmon. A creek near Whale Pass on Prince of Wales Island was recommended for coho salmon. Release site recommendations included Nakat Inlet, Neets Bay and Eastern Passage.[13] The RPT later refined the recommendations, recommending Disappearance Creek as a fall-run chum salmon donor stock for release at Neets Bay and Walker Creek as a summer-run chum salmon donor stock for release at Nakat Inlet.[14]

A public hearing was held in March 1978 in Ketchikan. The Herring Bay Water Users Association stated that they were not opposed to the hatchery, providing (1) the water level of their source was not adversely affected, particularly in the winter, and (2) the quality of their water would not be adversely affected, particularly during hatchery construction.[15] There was

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[6] Memorandum from R. Davis, FRED Division chief geneticist, to M. Kaill, ADF&G, dated Oct. 25, 1977. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[7] Pink salmon were also considered as an acceptable release species from Neets Bay.

[8] (1) Memorandum from D. Cantillon, ADF&G Region I Division of Commercial Fisheries regional supervisor, to M. Kaill, ADF&G, dated Oct. 12, 1977. (2) Memorandum from D. Stewart, ADF&G Region I Division of Sport Fish regional supervisor, to M. Kaill, ADF&G, dated Oct. 12, 1977. Both unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[9] Memorandum from J. Valentine and D. Seidelman, ADF&G Ketchikan area biologists, to D. Cantillon and D. Stewart, ADF&G Region I regional supervisors, dated June 29, 1977. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[10] Memorandum from S. Moberly, FRED Division regional program manager, to M. Kaill, ADF&G, dated Oct. 10, 1977. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[11] Memorandum from A. Didier, ADF&G Fish Pathology Lab, to M. Kaill, ADF&G, dated Oct. 6, 1977. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[12] Memorandum from M. Kaill, ADF&G, to R. Skoog, ADF&G commissioner, dated Feb. 1, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[13] Memorandum from J. Milnes, SSRAA executive director, to M. Kaill, ADF&G, dated Feb. 7, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[14] Letter from R. Skoog, ADF&G commissioner, to J. Milnes, SSRAA, dated April 21, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[15] Minutes of the public hearing for the Whitman Lake Hatchery permit. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

extended discussion during the meeting regarding the return on investment by fishermen. A troller questioned whether he would get 3% or more back in income for the taxes he paid to produce the hatchery fish.[16] Another troller questioned the need for coho salmon hatchery releases when wild returns were in good condition.[17] Another person asked what would happen if the fish did not return as planned and the association could not repay the loans—would fishermen be held liable for repayment through the assessment on their harvest? The National Oceanic and Atmospheric Administration salmon aquaculture experts at the Auke Bay Lab[18] in Juneau and ADF&G FRED staff[19] had reservations and doubts about the proposed central incubation facility, as well.

SSRAA representatives responded that coho salmon could be remotely released and return to the release site based on several examples of similar programs in the Pacific Northwest. Return of chum salmon to remote release sites was not yet known.

Following the public hearing, the ADF&G commissioner requested additional information. In his letter to SSRAA, the commissioner wrote: "If the Whitman Lake application involved a traditional, single stock hatchery, the application and review process would not be nearly as time consuming and detailed. However, you and the SSRAA Board of Directors have opted for a program which, if not carefully planned and executed, (because of numerous unknowns) may pose a high risk of biological and financial failure."[20] The commissioner listed "serious biological risks" related to 3 problems: (1) handling of mixed stocks at the hatchery, (2) transport and logistics associated with remote egg take and fish release sites, and (3) imprinting and homing of releases.

At the time, remote releasing of juvenile salmon was considered at the "research" stage, with few results regarding homing to the release site and survival of the released fry. The commissioner stated that the program SSRAA proposed was more of a research effort than a hatchery production program, and that the results of the research would determine if the program was biologically and financially viable.

The commissioner requested brood stock capture plans for initial donor stock egg takes, plans for eggs takes from adults retuning to the release sites, details for hatchery design and operations, and planned fish rearing schedules. In addition, a plan was requested for evaluation of releases imprinting to release sites. The commissioner also indicated that coho salmon would not be included in the initial hatchery permit, but could be added later.

SSRAA submitted the requested information, and in May 1978, the ADF&G commissioner approved Alaska PNP hatchery permit number 8 to Whitman Lake Hatchery. Whitman Lake Hatchery was permitted to incubate up to 26 million chum salmon eggs. Donor sources were fall-run stocks. Disappearance Creek stock was approved for release at Neets Bay and Walker Creek stock approved for release at Nakat Inlet. Hatchery construction was completed in August 1979.

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[16] Ibid.

[17] Ibid.

[18] Letter from W. Smoker, Auke Bay Fisheries Laboratory to R. Skoog, ADF&G commissioner dated March 2, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[19] Letter from M. Kaill, ADF&G FRED Division, to R. Skoog, ADF&G commissioner, dated March 13, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[20] Letter from R. Skoog, ADF&G commissioner, to J. Milnes, SSRAA, dated April 21, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

ADF&G established an egg removal schedule in systems where broodstock were collected that provided sufficient escapement to the donor system before eggs were taken for the hatchery. Coho salmon were added to the permit in September, 1978, with a capacity of 1.3 million eggs. Chinook salmon were added to the permit in 1983 with a capacity of 400,000 eggs. A draft BMP was issued in 1982. Another BMP was located that may have been the official BMP, but the document was not dated nor signed.

SSRAA programs are exceptionally integrated among the Whitman Lake, Neets Bay, Burnett Inlet, Crystal Lake and Port St. Nicholas hatcheries.[21] Chum salmon returns to Neets Bay Hatchery serve as broodstock for all SSRAA chum salmon programs. Coho and Chinook salmon returns to Whitman Lake Hatchery serve as broodstock for multiple SSRAA programs.

In 2015, returns to SSRAA facilities, including harvest and broodstock, totaled about 2.7 million salmon. Returns by brood year and release site are available from the most current SSRAA annual management plan.[22] Returns by year are available from the most current Alaska Salmon Fisheries Enhancement Program annual report (e.g., Stopha 2016a).

This report is sectioned by species with details about broodstock development, permitting and release sites. Hatchery permit/BMP, AMP, and FTP documents for Whitman Lake Hatchery operations were reviewed to determine that they met the following guidelines:

- They are current.
- They are consistent with each other.
- They are an accurate description of current hatchery practices.

The hatchery permit and BMP do not expire. The BMP should be updated when any PARs are approved. FTPs for all egg takes and transfers are in place and current. Occurrences where permitting was not consistent are discussed under the permitting history for each species and release site.

CHUM SALMON PROGRAM

Whitman Lake Hatchery serves as a central incubation site for chum salmon for many of SSRAA's release sites. The primary source of broodstock for SSRAA's chum salmon programs is returns to Neets Bay Hatchery. Chum salmon are not released from Whitman Lake Hatchery because harvest of returns could impact important wild stocks near the hatchery.

DONOR STOCKS

Summer-run Chum Salmon

The summer-run chum salmon donor stock was from Carroll River (Figure 3). SSRAA collected summer-run chum salmon eggs from Carroll River from 1979 through 1982 for incubation at Whitman Lake Hatchery and release at Nakat Inlet and Neets Bay. From 1982 to 1985, summer-run chum salmon eggs were collected from returns to Nakat Inlet for release at Nakat Inlet.

[21] SSRAA owns Whitman Lake, Neets Bay, and Burnett Inlet hatcheries. Crystal Lake Hatchery is owned by the state and operated by SSRAA.

[22] For example, the 2014 Annual Management Plan, Southern Southeast Regional Aquaculture Association. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Returns to Neets Bay were used for all of SSRAA's summer-run chum salmon programs beginning in 1986. Eggs were incubated to the eyed stage at Neets Bay Hatchery (FTP 85J-1064), transferred to Whitman Lake Hatchery for incubation and rearing, and then transferred to Nakat Inlet for release (FTP 82J-1058).

Fall-run Chum Salmon

The fall-run chum salmon stock was primarily from 2 systems in Cholmondeley Sound: Disappearance Creek and Lagoon Creek (Figure 3). The stock has been collectively referred to as Cholmondeley Sound stock[23] or Disappearance Creek stock. Cholmondeley Sound stock eggs were collected from 1979 to 1983, incubated at Whitman Lake, and released at Neets Bay. Beginning in 1983, Neets Bay returns were used as the broodstock for SSRAA's fall-run chum salmon program, with egg incubation at Whitman Lake Hatchery and release at a number of release sites.

HATCHERY PERMITTED CAPACITY HISTORY

This section summarizes the permitting history of changes to the number of chum salmon eggs permitted for incubation at Whitman Lake Hatchery. Detailed descriptions of permitting for each release site are described after this section.

The hatchery permit was issued with a capacity of 26 million chum salmon eggs. Fall and summer run stocks were approved. In August 1981, a PAR was approved to increase chum salmon capacity from 26 million to 26.8 million eggs, adding additional fall chum salmon capacity (Appendix A).

The next permit alteration occurred in 1983, when a PAR was approved allowing additional production of 5 million summer-run chum salmon eggs from Nakat Inlet returns for incubation at Whitman Lake Hatchery and release at Neets Bay. This increased the permitted chum salmon production at Whitman Lake Hatchery to 31.8 million eggs.

In 1990, chum salmon permitted capacity increased from 31.8 to 45.8 million eggs when a PAR was approved for collection of an additional 14 million summer-run chum salmon eggs for release at Kendrick Bay.

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[23] Initial donor sources approved with the hatchery permit were both fall-run stocks: Disappearance Creek for release at Neets Bay, and Walker Creek for release at Nakat Inlet. Chum salmon donor stock sources were added to the permit through permit alteration request (PAR) as SSRAA searched for systems that had a large enough return to allow for surplus broodstock to be taken to establish a hatchery stock (letter from R. Skoog, ADF&G commissioner, to J. Milnes, SSRAA, dated April 21, 1978. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau). In 1978, seine fleet skippers expressed concerned about the potential impact to their harvest of fall chum salmon caused by use of Disappearance Creek as a donor stock. As a result, a PAR was approved in 1978 adding fall-run donor stocks including Hetta Portage Stream for release at Kendrick Bay, and 3 Walker Cove streams for release at Nakat Inlet or Neets Bay. No chum salmon eggs were collected in 1978 due to poor escapements in the donor systems.

[23] A permit amendment in 1979 allowed the taking of up to 23 million chum salmon eggs in 1979 from either summer or fall-run stocks (Appendix A). The permitted capacity of the hatchery remained at 26 million chum salmon eggs. The primary sources for summer-run donor broodstock were the Keta and Carroll Rivers, with King Creek serving as a secondary source. Summer-run chum salmon egg takes after 1979 would be restricted to the donor sources used in 1979. The primary source for fall-run donor broodstock was the Karta River, with Disappearance Creek serving as a secondary source. The ADF&G commissioner encouraged SSRAA to consider using Disappearance Creek stock, despite SSRAA's reluctance due to concerns of purse seiners mentioned earlier. Disappearance Creek had a weir in place, and the stock had a later run timing than the other approved donor stocks. ADF&G had a long track record of escapement and management data for the stock, and could manage the return as a single stock fishery such that the fishery could be closed by emergency order to increase escapement to the river for broodstock for the hatchery.

In 2000, a PAR was approved to reduce the chum salmon permitted capacity at Whitman Lake Hatchery from 45.8 million eggs to 35.8 million eggs, which was the total number of eggs required for Whitman Lake Hatchery programs at the time. The PAR was part of a regionwide initiative by ADF&G to remove unused capacity from PNP hatchery permits.

In 2001, a PAR was approved to transfer 8 million eggs of chum salmon capacity from Neets Bay Hatchery to Whitman Lake Hatchery in order to increase Whitman Lake Hatchery releases at Anita Bay from 8 million to 16 million fry. The permit amendment increased chum salmon capacity at Whitman Lake Hatchery from 35.8 million eggs to 43.8 million eggs.

In 2003, the last PAR to date for chum salmon capacity at Whitman Lake Hatchery was approved to increase chum salmon capacity by 500,000 eggs. This permit alteration increased Whitman Lake hatchery chum salmon capacity from 43.8 to 44.3 million eggs. The increase was for increased chum salmon releases at Kendrick Bay, Anita Bay and Neets Bay.

Each chum salmon release site is discussed below.

Nakat Inlet summer-run chum salmon

SSRAA operates a summer-run chum salmon release at Nakat Inlet which is permitted under the Whitman Lake Hatchery permit. Eggs are collected at Neets Bay Hatchery, incubated to the eyed-stage at Neets Bay Hatchery, transferred to Whitman Lake Hatchery for hatching and rearing, and then transferred to Nakat Inlet for imprinting and release.

When the Whitman Lake Hatchery PNP permit was issued in 1978, ADF&G management staff indicated that Nakat Inlet provided an excellent terminal harvest area (THA). Staff recommended that if summer-run chum salmon stocks were used, fishing effort in the Tree Point gillnet fishery should not be expanded to harvest the hatchery returns in order to protect migrating Chinook salmon stocks.[24]

In 1979, Carroll River in Carroll Inlet was added to the Whitman Lake Hatchery permit as a summer-run donor system. SSRAA collected summer-run chum salmon eggs from Carroll River broodstock in 1979 (FTP 79-92), 1980 (FTP 80-93), 1981 (FTP 81-14), and from Carroll River and Nakat Inlet hatchery returns of Carroll River stock (FTP 82J-1058) in 1982. Eggs were incubated at Whitman Lake Hatchery and resulting progeny transferred to Nakat Inlet for imprinting and release. From 1982 to 1985, summer-run chum salmon eggs were collected from returns to Nakat Inlet and Neets Bay for release at Nakat Inlet.

In August 1983, chum salmon returns to Nakat Inlet were not going to meet broodstock needs. SSRAA submitted a PAR to obtain 20 million green chum salmon eggs from Hidden Falls Hatchery return females. SSRAA planned to use milt from Nakat Inlet return males for fertilization. SSRAA indicated that their proposal was in order to avoid a "potential financial disaster for SSRAA".[25] Returns from this release would not be used for broodstock. Based on

[24] Memo from J. Valentine, ADF&G, to D. Cantillon, ADF&G, dated June 29, 1977. This document was part of the comments of the Whitman Lake Hatchery PNP application. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[25] Letter from W. Griffioen, SSRAA, to J. Madden, ADF&G. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

ADF&G staff concerns regarding the large distance from the Hidden Falls Hatchery stock and risk of straying that could reduce genetic diversity, the request was denied.[26]

SSRAA submitted a second PAR to obtain chum salmon eggs directly from Carroll River broodstock for 1983. This PAR was approved for collection of up to 1 million eggs and FTP 80-93 was amended to permit the egg take. It does not appear, however, that any eggs were collected from Carroll River in 1983.

Returns to Neets Bay were used for the Nakat Inlet summer-run chum salmon program beginning in 1986. Eggs were incubated to the eyed stage at Neets Bay Hatchery (FTP 85J-1064), transferred to Whitman Lake Hatchery for incubation, and the resulting progeny transferred to Nakat Inlet for release (FTP 82J-1058).

Whitman Lake Hatchery was permitted for Nakat Inlet summer-run chum salmon releases for up to 20 million fry from 1985 and 1999 under FTP 85J-1064. When FTP 85J-1064 was renewed in 1999, the permitted release was reduced to 8 million eggs. Eggs were collected at Neets Bay as part of the total summer-run chum salmon egg take for all of SSRAA's summer-run chum salmon release sites, and not reported separately. Releases regularly exceeded 8 million fry from brood years 1999 to 2013 (Appendix C).

In 2013, FTP 85J-1064 was amended to increase the number of summer-run chum salmon eggs permitted from 8.0 million to 9.2 million eggs. The increase in eggs was to allow a fry release of approximately 8 million fish after accounting for egg to fry mortality.

Nakat Inlet fall-run chum salmon

In the spring of 1984, SSRAA submitted a PAR to add the release of fall-run chum salmon at Nakat Inlet to the Whitman Lake Hatchery permit because of perceived excessive interception of the summer-run chum salmon returns to Nakat Inlet by Canadian fisheries.[27] SSRAA stated that their PAR was consistent with the Comprehensive Salmon Plan and that ADF&G staff had preferred a fall-run stock at Nakat Inlet during the Whitman Lake Hatchery permitting process in 1977. SSRAA wanted to use the Cholmondeley Sound fall-run chum salmon stock from Neets Bay Hatchery because it was already approved by the ADF&G Fish Pathology Section. In addition, the stock was in use at Neets Bay and Klawock River hatcheries, and therefore a third site at Whitman Lake Hatchery would be permissible under Davis et al. (1985).[28]

ADF&G staff supported the fall-run program because the summer-run returns overlapped with Chinook salmon returns during the Tree Point gillnet fishery, and fishing at Tree Point was expected to be restricted for Chinook salmon conservation, limiting access to the summer-run chum salmon hatchery return. A fall-run stock would avoid this overlap. Correspondence between ADF&G staff indicated that the PAR would switch the Nakat Inlet program from summer-run to fall-run chum salmon stocks;[29] however, the permit alteration, when issued,

[26] Draft letter from D. Collinworth, ADF&G commissioner, to D. Amend, SSRAA, dated September 1, 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[27] Memorandum from S. McGee, ADF&G, to S. Pennoyer, ADF&G deputy commissioner, dated June 28, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[28] Letter from SSRAA to Kevin Duff (sic), ADF&G, dated March 30, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[29] Memorandum from S. McGee, ADF&G, to S. Pennoyer, ADF&G deputy commissioner, dated June 28, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

added the fall-run chum salmon program, but did not eliminate the summer-run chum salmon program, which continued.

The permit alteration approved under the Whitman Lake Hatchery permit allowed the collection of 8 million fall chum salmon eggs at Neets Bay Hatchery, incubation of eggs at Whitman Lake Hatchery, and release of fry at Nakat Inlet. Later in 1984, Neets Bay Hatchery/Cholmondeley Sound stock fall-run chum salmon was approved as the donor stock in FTP 84J-1082 (Appendix B).

In 1985, a PAR was approved under the Whitman Lake Hatchery permit to increase releases of fall-run chum salmon fry from Nakat Inlet from 8 million fry to 15 million fry. FTP 84J-1082 was amended for the increased production. SSRAA requested the increase after an evaluation of the summer-run chum salmon program at Nakat Inlet showed significant income to gillnet and seine fishermen. ADF&G commercial fishery managers supported the proposal. They cautioned, however, that because coho salmon stocks in the area were heavily utilized, the harvest of Nakat Inlet fall-run chum salmon would have to occur in a fashion that did not increase impacts to wild coho salmon stocks. Managers indicated that if fishing effort outside the terminal area remained the same, fishing time in those areas would remain the same; however, if fishing effort significantly increased, fishing time would have to decrease to hold fishing effort on coho salmon stocks constant with past levels. The large Nakat Inlet terminal area would allow fall-run chum salmon to be discreetly harvested after net fisheries and troll fisheries closed in the mixed stock areas for coho salmon stock management in September.[30] The Southern Southeast regional planning team (SSERPT) unanimously supported the PAR.

In 1996, the fall-run Nakat Inlet program was transferred from the Whitman Lake Hatchery permit to the Neets Bay Hatchery permit through a PAR under the Neets Bay Hatchery permit, and the program from 1996 and later will be discussed in the Neets Bay Hatchery evaluation.

In 2012, an FTP (FTP 12J-1021) was issued that allowed transport of up to 4 million fall-run chum salmon eggs from Neets Bay to Whitman Lake Hatchery for incubation and release at Nakat Inlet to provide a backup production option for the program.

During the period the program was under the Whitman Lake Hatchery permit, fry releases were below levels permitted in the hatchery permit and FTP (Appendix D).

Neets Bay fall-run chum salmon

The fall-run chum salmon program at Neets Bay began under the Whitman Lake Hatchery permit in 1979. SSRAA collected fall-run chum salmon gametes from Disappearance Creek in 1979, from Disappearance Creek and Lagoon Creek stocks in 1980, 1981, 1982 (FTPs 81-15 and 80-63), and Cholmondeley Sound stock and returns to Neets Bay Hatchery in 1983 (FTPs 82J-1070 and 80-63).[31]

Eggs were incubated at Whitman Lake Hatchery and released in Neets Bay from 1980 to 1982. When Neets Bay Hatchery began operations in 1983, eggs were incubated and released there under the Neets Bay permit. The FTP for fall-run chum salmon releases at Neets Bay was transferred from the Whitman Lake Hatchery permit to the Neets Bay Hatchery permit in 1984.

[30] Memorandum from S. Pennoyer, ADF&G to D. Amend, ADF&G dated February 26, 1985. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[31] No FTP was found for the 1979 Disappearance Creek egg take nor the 1980 Lagoon Creek egg takes in the ADF&G HQ files.

The program from 1984 and later will be discussed in the Neets Bay Hatchery evaluation. (Appendix E).

Neets Bay summer-run chum salmon

In 1982, SSRAA submitted a PAR for Whitman Lake Hatchery to start a summer-run chum salmon program at Neets Bay. SSRAA was in the process of obtaining a hatchery permit for a Neets Bay facility, and returns from this release were to be the founding summer-run chum salmon broodstock for the new hatchery. The summer-run chum salmon production would be in addition to the fall-run chum salmon program already in place at Neets Bay.

ADF&G FRED Division staff indicated that the request was not consistent with good genetic practices, and that a summer-run stock closer to Neets Bay (Traitors Cove) should be used as donor.[32] ADF&G salmon fishery management staff had no concerns with the PAR.[33] The PAR was approved for collection of 5 million Carroll River stock summer-run chum salmon eggs from returns to Nakat Inlet for incubation at Whitman Lake Hatchery and release at Neets Bay. The permit alteration stipulated that when summer-run chum salmon began to return to Neets Bay, they could not be used for broodstock for releases elsewhere until genetic impacts were assessed of any interbreeding between the summer-run and fall-run returns. No record of a genetic impact assessment was found in the files.

In 1984, the summer-run chum salmon releases at Neets Bay Hatchery were transferred from the Whitman Lake Hatchery permit to the Neets Bay Hatchery permit. Releases from Neets Bay permitted under the Neets Bay Hatchery permit from 1984 and later will be discussed in the Neets Bay Hatchery evaluation.

In 1988, Whitman Lake Hatchery had a hatchery capacity of 32 million chum salmon eggs, but only had approved release sites for 23 million eggs (15 million eggs at Nakat Inlet and 8 million eggs for Earl West Cove). SSRAA requested that the 9 million eggs of unallocated summer chum salmon eggs be released at Neets Bay under the Whitman Lake Hatchery permit until another release site could be selected.[34] In reviewing the request, ADF&G staff determined that no permit alteration was necessary, only an amendment to the FTP (FTP 82J-1085) to increase the release level and an extension of the expiration date, which were approved.[35] Following the amendment, brood year 1987 and 1988 summer-run eggs were collected at Neets Bay, incubated and hatched at Whitman Lake Hatchery, and the fry released at Neets Bay.

In March 2003, a PAR was approved allowing production of Neets Bay summer-run releases to come from either Neets Bay Hatchery or Whitman Lake Hatchery, presumably as a backup measure in the event Whitman Lake Hatchery was needed.

Releases at Neets Bay were in agreement with the hatchery permit, AMP, and FTP (Appendix F).

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[32] Memorandum from K. Leon, ADF&G FRED Division, to J. Madden, ADF&G FRED Division, dated Jan. 10, 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[33] Memorandum from B. Wilbur, ADF&G Division of Commercial Fisheries, to J. Madden, ADF&G FRED Division, dated Jan. 12, 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[34] Letter from D. Amend, SSRAA, to J. Madden, ADF&G, dated Oct 11, 1988. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[35] Letter from J. Madden, ADF&G, to D. Amend, SSRAA, dated Oct. 24, 1988. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Earl West Cove summer-run chum salmon

In December 1983, SSRAA submitted a PAR to release Whitman Lake Hatchery/Cholmondeley Sound stock fall-run chum salmon fry at Earl West Cove near Wrangell, which was denied. ADF&G salmon management staff recommended against the release of fall-run chum salmon at Earl West Cove because returns would overlap with natural returns of coho salmon. Fishing would be restricted to manage for natural runs of coho salmon and most of the hatchery returns would have to be harvested in the terminal area.[36] ADF&G FRED Division staff objected because the stock was already in use at Whitman Lake, Neets Bay, Beaver Falls and Klawock hatcheries. They recommended use of a stock originating near Earl West Cove.[37]

Following denial of the PAR, SSRAA submitted a PAR in the spring of 1984 to establish a summer-run chum salmon release at Earl West Cove. SSRAA was in the process of planning a hatchery site at Virginia Lake in Eastern Passage near Wrangell. In preparation for hatchery construction,[38] SSRAA wanted to begin broodstock development so that when the hatchery was constructed, returns to nearby Earl West Cove would allow the new hatchery to begin operation at full capacity.

Several stocks were discussed as donor stocks, including Hidden Falls Hatchery/Chatham Strait stock, Whitman Lake Hatchery/Carroll River stock, and development of a new broodstock from the Harding River. Harding River was considered the best stock for the site by ADF&G staff because it was the nearest summer chum stock to the hatchery location (but still about 30 miles away). SSRAA was concerned, however, that development of the Harding River stock would be expensive and indicated that if required to use that stock, they would need further financial assistance or have to abandon their plans for the Virginia Lake Hatchery until another source was available.[39] SSRAA rejected using the Hidden Falls stock because of the small average size of the fish and poor quality when harvested in the terminal area.[40] SSRAA settled on requesting the Carroll River stock from their Whitman Lake Hatchery.

ADF&G staff supported use of summer-run chum salmon released from Earl West Cove. FRED Division staff had no objection to the PAR with regard to pathology. They would have preferred a more local stock from a biological and genetic rationale, but understood the difficulty in acquiring the necessary numbers of eggs from a local stock.[41] The PAR was approved for incubation of 8 million summer-run chum salmon eggs at Whitman Lake Hatchery for release at Earl West Cove, with the donor stock to be decided when SSRAA applied for an FTP. Carroll River stock returns to Neets Bay were approved as the broodstock in 1985 (FTP 85J-1065). Burnett Inlet Hatchery/Harding River stock summer chum salmon served as a backup in 1990 when returns to Neets Bay were not sufficient (FTP 90J-1051). In 2000, SSRAA moved the release site from Earl West Cove to Anita Bay, which is described in the next section.

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[36] Memorandum from J. Madden, ADF&G, to S. Pennoyer, ADF&G deputy commissioner, dated April 2, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[37] Memorandum from PNP hatchery review team, ADF&G, to S. McGee, ADF&G, dated Feb. 14, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[38] The hatchery was never built.

[39] Letter from D. Amend, SSRAA, to S. Pennoyer, ADF&G deputy commissioner, dated May 4, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[40] Letter from D. Amend, SSRAA, to S. Pennoyer, ADF&G deputy commissioner, dated May 17, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[41] Memo from K. Leon, ADF&G, to S. McGee, ADF&G, dated June 15, 1984. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

FTPs for egg takes and releases appear to have been in place for all transports. The reported egg and release numbers were within permitted levels for nearly all years. The FTP, AMP, and hatchery permitted levels were also in agreement (Appendix G).

Anita Bay summer-run chum salmon

In 2000, SSRAA submitted a PAR to move releases of summer chum salmon from Earl West Cove to Anita Bay. The SSRAA Board of Directors believed moving the release site to Anita Bay would provide a higher interception rate of returns in the common property fisheries and provide better quality in the harvest. The permitted release number would remain the same as at Earl West Cove (8 million fry). ADF&G staff had no concerns for the release site move, and the PAR was approved (FTP 01J-1003).

In March 2001, a PAR was approved to increase the Anita Bay release from 8 million to 16 million fry. This was done through a transfer of 8 million chum salmon egg capacity from the Neets Bay Hatchery permit to the Whitman Lake Hatchery permit. ADF&G staff were not concerned with the increase because the Anita Bay site was previously permitted for release of up to 50 million chum salmon fry by an earlier PNP hatchery operator, and most of the returns from those releases were caught in the traditional fishing areas before reaching the Anita Bay terminal area. ADF&G staff suggested test fishing outside of the THA prior to hatchery returns to determine a baseline indicator of the wild stocks.[42] In addition, staff recommended that to protect wild stocks (including Stikine River Chinook salmon, Thoms Lake sockeye salmon, and Anita Bay/Olive Cove chum salmon), fishing time outside of the terminal area should not be increased above normal time periods. They recommended that targeted harvest of Anita Bay returns occur only in the THA, and that hatchery releases be marked so that straying and fishery affects could be adequately monitored.[43] The ADF&G geneticist initially recommended a stray monitoring program.[44] Later in the FTP review process, the ADF&G geneticist recommended marking, but not stray monitoring, for the project (FTP 01J-1009).

In 2003, a PAR was approved to increase the permitted Anita Bay release from 16 million to 22 million fry. The ADF&G geneticist did not object to the increased release, but cautioned that the incremental increases in chum production could lead to potentially "swamping" local stocks if all the hatchery returns are not harvested and hatchery fish strayed to local streams.[45] The ADF&G commercial fisheries manager commented that since the last increase, ADF&G had conducted test fishing around Anita Bay and very low numbers of wild chum salmon were caught in the terminal area. In addition, hatchery chum salmon escapement into the 4 systems at the head of Anita Bay, which did not have chum salmon runs before hatchery releases, did not subsequently produce any returns from hatchery return strays. The fishery manager indicated that 22 million fry should be the cap for Anita Bay for 5 years to allow observation of the initial returns and determine any effects on fisheries management in the area.[46] FTPs were issued for releases at

[42] W. Bergman, ADF&G, to S. McGee and 11 others, dated April 18, 2001. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[43] R. Holmes, ADF&G, to S. McGee and 6 others, dated April 16, 2001. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[44] D. Moore, ADF&G, to S. McGee, ADF&G, dated April 16, 2001. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[45] D. Moore, ADF&G, to S. McGee, ADF&G, dated Dec.2, 2002. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[46] W. Bergman, ADF&G, to S. McGee, ADF&G, dated Dec. 5, 2002 and Jan. 16, 2003. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Anita Bay to Neets Bay Hatchery (FTP 01J-1009 for release of up to 22 million fry) and Whitman Lake Hatchery (FTP 01J-1003 for release of up to 8 million fry). The total release from both facilities combined could not exceed 22 million fry.

FTPs for egg takes and releases appear to have been in place for all transports. The reported egg and release numbers were within permitted levels for nearly all years. The FTP, AMP, and hatchery permitted levels were also in agreement (Appendix H).

Kendrick Bay summer-run chum salmon

In 1990, SSRAA submitted a PAR to increase the permitted capacity for chum salmon at Whitman Lake Hatchery by 14 million eggs for release at Kendrick Bay. The PAR was to increase harvest opportunity in the District 2 and District 4 net fisheries. The proposed brood source was either Neets Bay Hatchery/Carroll River stock summer chum salmon or Neets Bay Hatchery/Cholmondeley Sound stock fall chum salmon.

The ADF&G Division of Commercial Fisheries area management biologist recommended against release of a fall-run chum salmon stock. An intense commercial net fishery occurred on the east shore of Prince of Wales Island, along the likely route of returns to Kendrick Bay, and a large influx of hatchery fish in the catch would alter the historic catch per unit effort estimates upon which the fishery was managed. The port sampling program conducted during the summer fisheries did not operate in the fall, so accurate hatchery and wild stock catch estimates were not possible.

The area manager did support a summer-run chum salmon release. A hatchery return in late June through mid-July could be harvested in District 2 during openings managed for pink salmon and could draw boats away from the stocks harvested during the same period in the District 104 fishery. In addition, the return timing of summer-run chum salmon was expected to overlap little with the natural pink salmon runs in Kendrick Bay. If the hatchery return drew a larger fleet that intensified pressure on pink stocks, the lower portion of the District 2 area would need to be managed more conservatively in years of weak pink salmon returns.[47]

The ADF&G fish pathologist indicated there were no disease concerns. In May 1990, the deputy commissioner approved the PAR for up to 14 million summer-run chum salmon eggs for release at Kendrick Bay under the Whitman Lake Hatchery permit. The FTP for the program (FTP 90J-1052) permitted eggs to be collected at Neets Bay, transported to Whitman Lake Hatchery for incubation and hatching, and the fry transported to Kendrick Bay for imprinting and release.

In 2003, SSRAA submitted a PAR to increase the number of summer chum salmon eggs for the project from 14 million to 20 million eggs. At the time, the Whitman Lake Hatchery permitted capacity was 43.8 million eggs, of which 38 million eggs were being used for the current programs at the time, including Kendrick Bay. Therefore, the PAR request for additional production of 6 million eggs would result in an overall increase of 500,000 eggs, and bring the hatchery capacity to 44.3 million eggs. SSRAA requested that production from either Whitman Lake Hatchery or Neets Bay Hatchery could be used for any of the 3 release sites (Kendrick Bay, Anita Bay and Neets Bay Hatchery), as the same stock was used at both hatcheries. The PAR was intended to provide more chum salmon harvest opportunity for commercial fishermen in the Wrangell and Ketchikan areas, and provide backup egg options for SSRAA release sites. The

[47] Memo from P. Doherty, ADF&G, to G. Gunstrom, ADF&G, dated 4/24/89. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

PAR was approved for increased releases at Kendrick Bay (FTPs 03J-1008, 08J-1020 and 08J-1022) under either the Neets Bay or Whitman Lake hatchery permits.

In 2010, a PAR was submitted under the Neets Bay Hatchery permit to increase releases at Kendrick Bay from 20 million fry to its current release level of about 30 million fry (the resulting progeny of 34.7 million eggs). The increased release was intended to increase the purse seine and troll harvests to address an imbalance in the allocation of Alaska hatchery fish between drift gillnet, purse seine, and troll gears. The SSERPT recommended approval of the PAR by a vote of 5-1. The opposition vote cited the need for more time to evaluate management concerns and a commitment of money for long term assessment of straying. The deputy commissioner approved the PAR in June, 2010.[48] FTP 12J-1013 issued to Neets Bay Hatchery became the sole FTP for the project, replacing FTPs 03J-1008, 08J-1020 and 08J-1022, which all expired by 2013.

FTPs for egg takes and releases appear to have been in place for all transports. The reported egg and release numbers were within permitted levels for nearly all years. The FTP, AMP, and hatchery permitted levels were also in agreement (Appendix I).

McLean Arm summer-run chum salmon

In November 2010, SSRAA submitted a PAR to add McLean Arm as an alternative release site to Kendrick Bay under the Whitman Lake Hatchery permit. McLean Arm is located about 5 miles south of Kendrick Bay, has more available fishing area than Kendrick Bay, and is a better rearing site than Kendrick Bay. Releases from the 2 sites could be alternated annually to spread out the fishing fleet as chum salmon of multiple age classes would be returning simultaneously to both release sites. ADF&G staff did not consider McLean Arm as a significant new release site.[49] The SSERPT unanimously recommended approval of the PAR, as did the ADF&G PNP hatchery program coordinator. In February 2011, the ADF&G deputy commissioner approved the PAR (FTP 11J-1003).

When the FTP for the increase in production at Kendrick Bay mentioned above was approved in 2012 (FTP 12J-1013), an FTP was also issued for release of some or all of this fry production at McLean Arm (FTP 12J-1019). The annual aggregate release at both sites could not exceed the resultant progeny of 34.7 million eggs approved for Kendrick Bay (about 30 million fry).

Disappearance Creek chum salmon rehabilitation (denied)

In December 1983, SSRAA submitted a PAR for a one-time release of 2 million Whitman Lake Hatchery/Cholmondeley Sound stock chum salmon fry into Disappearance Creek to rebuild and augment the system's natural production. FRED Division staff recommended against the release because of the potential introduction of pathogens or possible genetic effect from introducing mixed stock origin fry. They recommended that the Disappearance Creek run be rebuilt through increased escapements. The PAR was denied.

[48] Draft minutes by Garold Pryor from the Northern/Southern Southeast Regional Planning Team Meeting, Monday, April 26, 2010. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[49] Memorandum from F. Pryor, ADF&G, to C. Campbell, ADF&G commissioner, dated Dec. 20, 2010. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

COHO SALMON PROGRAM

Whitman Lake Hatchery is the primary egg collection site for SSRAA fall-run coho salmon programs. Coho salmon eggs are incubated at Whitman Lake Hatchery and released from the hatchery and other release sites. Eggs are also transferred to Neets Bay and Burnett Inlet hatcheries for rearing and release from those hatcheries and other sites.

DONOR STOCKS

Fall-run coho salmon

Fall-run coho salmon gametes were collected from Indian Creek, a tributary of the Chickamin River (Figure 3), in 1978, 1979 and 1980. All eggs were incubated at Whitman Lake Hatchery. The offspring were released from Whitman Lake Hatchery and Neets Bay. Beginning in 1981, broodstock from hatchery returns were used for egg takes.

Summer-run coho salmon

Summer-run coho salmon were obtained from Deer Mountain Hatchery and originated from Reflection Lake, which empties into Behm Canal (Figure 3).

HATCHERY PERMITTED CAPACITY HISTORY

This section summarizes the permitting history of changes to the number of coho salmon eggs permitted for incubation at Whitman Lake Hatchery. Detailed descriptions of permitting for each release site are described after this section.

The hatchery permit issued in May 1978 listed the coho salmon permitted capacity at Whitman Lake Hatchery as zero, with the option that it could be added when a satisfactory plan was approved by ADF&G.

Coho salmon capacity was added to the permit in September 1978, with Gene's Lake Creek (Unuk River tributary) as the donor source for 1.3 million eggs for release at Bailey Bay, located about 25 water miles from the mouth of the Unuk River (FTP 78J-0074, Figure 3). No eggs were taken from Gene's Lake Creek.

Another coho salmon donor source stream, Indian Creek, a tributary to the Chickamin River, was added by PAR in October 1978 for release of progeny of up to 1 million eggs at Bailey Bay (FTP 78J-0076 and FTP 78J-0118). Eggs were collected from Indian Creek, incubated at Whitman Lake Hatchery, and smolt released from Whitman Lake Hatchery and from Neets Bay. No releases occurred at Bailey Bay and no FTPs were found for the release at Neets Bay or from the hatchery.

A permit alteration was approved in 1978 for a 2.3 million egg coho salmon capacity. The October 1982 basic management plan discussion draft indicated production goals of 400,000 eggs for release at Whitman Lake Hatchery and 1.85 million eggs for release at Neets Bay.

In the early 1980s, Neets Bay returns had been the source for most or all of SSRAA's fall-run coho salmon production. Neets Bay Hatchery also became the source of fall-run chum salmon eggs for SSRAA's programs. Since the fall-run chum and coho salmon returns overlapped in timing, sorting the 2 species for acquiring broodstock became difficult. Gradually, more coho salmon broodstock was used from Whitman Lake Hatchery returns for SSRAA's programs.

The next increase in coho salmon production on the Whitman Lake Hatchery permit occurred when a PAR was approved in 1983 adding 500,000 eggs for release at Square Cove (aka Earl West Cove) to enhance the fisheries near Wrangell. This increased permitted capacity for coho salmon from 2.3 to 2.8 million eggs.

Later in 1983, a PAR was approved increasing the release from Whitman Lake Hatchery from 400,000 eggs to 1 million eggs. This increased overall coho salmon capacity at the hatchery from 2.8 million eggs to 3.4 million eggs. The increased production of 600,000 eggs was requested after additional space became available at the hatchery due to a short-fall in collection of summer-run chum salmon eggs that year.

Beginning in 1988, several inconsistencies were found with coho salmon permitting for Whitman Lake Hatchery. The 1988 AMP permitted a 3.4 million coho salmon egg take for incubation at Whitman Lake Hatchery. However, the only FTP found in effect at the time was FTP 81-19, which authorized collection of 1 million eggs for release at the hatchery.

From 1989 to 1992, the AMP permitted an annual egg take of 4 million eggs. This exceeded the 1 million eggs permitted by FTP (FTP 81-19, and its replacement, FTP 90J-1010) and exceeded the permitted capacity of the hatchery (3.4 million eggs).

In 1993 and 1994, the AMP permitted a planned egg take of 5 million eggs. From 1995 to 1999, the AMP permitted planned egg takes of 4.5 million eggs. The hatchery permitted capacity remained at 3.4 million eggs during the period.

Permitting inconsistencies continued. An amendment in 2000 to Whitman Lake Hatchery FTP 90J-1010 authorized an egg take of 4.5 million eggs, which was in excess of the permitted hatchery capacity of 3.4 million coho salmon eggs. The FTP amendment request indicated that SSRAA had moved egg-take operations from Neets Bay Hatchery to Whitman Lake Hatchery, and that the increase in the FTP did not represent an increase in SSRAA's overall coho salmon production, but only the site where eggs were taken. The FTP also indicated all of the progeny from the 4.5 million egg take would be released from Whitman Lake Hatchery, which was in error.

When FTP 90J-1010 was renewed in 2005 as FTP 05J-1007, the FTP resolved the earlier error regarding release sites, stating that the eggs were for release from Whitman Lake Hatchery, Nakat Inlet, Anita Bay and Neets Bay. However, FTP 05J-1007 did not specify what portion of the egg take was for release from Whitman Lake Hatchery or Neets Bay Hatchery. The other release sites had separate FTPs stating the release levels from each site (Anita Bay, FTP 01J-1001; Nakat Inlet, FTP 05J-1026).

It appears as coho operations shifted from Neets Bay Hatchery to Whitman Lake Hatchery that permitting did not keep up with the operational changes. FTPs and AMPs appear to have been issued more to guide SSRAA's overall coho salmon program than to guide each hatchery's operations.

In 2010, the Whitman Lake Hatchery permit was amended to increase coho salmon capacity from 3.4 million to 7.0 million eggs. The 2010 permit alteration moved egg collections for all coho salmon projects to Whitman Lake Hatchery. The increase in permitted capacity at Whitman Lake Hatchery did not increase SSRAA's coho salmon production overall, but allowed their 7 million permitted egg total to all come from Whitman Lake Hatchery, with Neets Bay Hatchery

serving as a backup. The permit alteration brought the Whitman Lake Hatchery PNP hatchery permit, FTP, and AMP into agreement.

The history of permitting for each release site follows.

Whitman Lake Hatchery fall-run coho salmon

In 1979, FTP 80-10 was issued that authorized an egg take of up to 1 million eggs from Indian Creek stock coho salmon, and FTP 80-57 authorized a release of up to 225,000 smolts from the hatchery. In 1981, FTP 81-19 was issued and authorized the collection of 300,000 Whitman Lake Hatchery/Indian Creek stock eggs for release of up to 250,000 smolts at the hatchery.

In July 1982, SSRAA submitted a PAR to increase coho salmon egg collection for release of 400,000 smolts from Whitman Lake Hatchery to maximize rearing space. ADF&G staff supported the PAR under the following conditions: (1) no terminal commercial fisheries were planned for the returning coho salmon near the hatchery, and (2) existing management of the special harvest area (SHA) would not be altered because of the increased returns.[50] The ADF&G deputy commissioner approved the PAR as requested. The FTP for the project (FTP 81-19) was amended prior to approval of the PAR, and was only for 350,000 eggs. The approval did not increase hatchery capacity. This is the first PAR approval found under the Whitman Lake Hatchery PNP permit authorizing release from the hatchery. The releases in the preceding paragraph appear to have only been authorized by FTPs.

In September 1983, SSRAA submitted a PAR to increase coho salmon egg collections at Whitman Lake Hatchery from 400,000 eggs to 1 million eggs for release at Whitman Lake Hatchery. ADF&G salmon management staff supported the increased releases from Whitman Lake Hatchery provided there was no increase in the size of the SHA and no terminal commercial fishery. The ADF&G commissioner approved the PAR with the ADF&G staff-recommended conditions. FTP 81-19 was amended to increase Whitman Lake releases from the hatchery to 1 million eggs as well.

In February 1984, SSRAA requested permission to study net pen rearing of coho salmon smolt in Herring Bay near the hatchery. There was no objection from ADF&G staff and the ADF&G deputy commissioner approved a PAR for a test study in March 1984.

In 1990, FTP 90J-1010 was issued to replace **Error! Hyperlink reference not valid.** 81-19, and authorized collection of 1 million coho salmon eggs for release at the hatchery. When FTP 90J-1010. was amended in 2000 to increase the Whitman Lake Hatchery egg take to 4.5 million eggs, the amendment stated that the eggs were for release at the hatchery only, when in fact the eggs were for release at the hatchery, Nakat Inlet, Earl West Cove and Neets Bay as stated in the FTP application.

In 2005, FTP 90J-1010 was renewed as FTP 05J-1007. The FTP resolved the earlier error regarding the release sites, stating that the eggs were for release from the hatchery, Nakat Inlet, Anita Bay and Neets Bay. The other sites had separate FTPs stating the release number from each site, but no FTP was issued specifying the release number from Whitman Lake Hatchery.

[50] Memorandum from J. Madden, ADF&G FRED Division, to D. Collinsworth, ADF&G deputy commissioner, dated Aug. 6, 1982. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

When the expiration date of the FTP was extended for 10 years in 2015, the FTP was amended to state a 1 million fry release limit from Whitman Lake Hatchery (Appendix J).

Whitman Lake Hatchery summer-run coho salmon

In 1996, SSRAA submitted a PAR for release of up to 200,000 summer-run coho salmon smolt from Whitman Lake Hatchery to develop a broodstock to provide eggs for a new release site at Neck Lake on Prince of Wales Island.

Deer Mountain Hatchery was the source of the eggs for the Neck Lake project in 1995. Eggs were transported from Deer Mountain Hatchery to Whitman Lake Hatchery for rearing and release to Neck Lake (FTP 94J-1042). Deer Mountain Hatchery could not provide eggs after 1998 because they intended to begin selling their coho salmon returns for cost recovery.[51] SSRAA intended to collect broodstock from Neck Lake returns but found that high summer water temperatures at Neck Lake did not allow long-term holding of adults.

The PAR provided a hatchery return directly to Whitman Lake Hatchery to replace the Deer Mountain broodstock source for the Neck Lake release. The request did not increase the permitted capacity at Whitman Lake Hatchery.

ADF&G staff had no concerns with the PAR. The deputy commissioner approved the PAR in February 1996 (FTP 96J-1002). The ADF&G geneticist recommended approval of the FTP with the condition that an evaluation program be implemented to confirm that the summer-run and fall-run coho broodstocks returning to Whitman Lake Hatchery did not interbreed. Summer coho salmon were only released from Whitman Lake Hatchery in 1997 (brood year 1995), after which the program moved to Burnett Inlet Hatchery.

In 2015, a PAR was approved to return the summer-run coho salmon broodstock program from Burnett Inlet Hatchery to Whitman Lake Hatchery. SSRAA was establishing a summer chum salmon program at Burnett Inlet Hatchery to serve as an alternate broodstock source for Neets Bay Hatchery summer chum salmon. Summer chum salmon would return at the same time as the summer-run coho salmon, and it was not feasible to separate and hold the 2 species for broodstock. The ADF&G fish pathologist recommended approval of the PAR.[52] The PAR permitted release of up to 200,000 smolts from Whitman Lake Hatchery and did not increase the permitted capacity for coho salmon.

Neets Bay fall-run coho salmon

From 1978 to 1980, fall-run coho salmon eggs were collected from broodstock at Indian Creek,[53] transferred to Whitman Lake for incubation and rearing, and transported to Neets Bay for rearing and release under the Whitman Lake Hatchery permit (FTPs 80-9, 81-11).[54] From 1981 to 1983, returns to Neets Bay were used for broodstock, the eggs incubated at Whitman Lake Hatchery, and smolt released at Neets Bay.

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[51] Memorandum from S. McGee, ADF&G, to D. Benton, ADF&G, dated Feb 22, 1996. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[52] Emailed comments from T. Meyers, ADF&G, to L. Vercessi, ADF&G, dated Oct 14, 2014. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[53] Chickamin River tributary.

[54] Eggs were temporarily incubated and hatched at Beaver Falls Hatchery in 1978, then the fry transported to Whitman Lake Hatchery after the facility was completed in 1979.

Beginning in 1983, Neets Bay Hatchery was operational. An FTP permitted coho salmon eggs to be collected at Neets Bay, and incubated and released from Neets Bay under the Neets Bay Hatchery permit. Another FTP permitted eggs to be collected at Whitman Lake Hatchery and transferred to Neets Bay for incubation and release at Neets Bay under the Whitman Lake Hatchery permit. No FTP was found that permitted eggs to be taken and incubated at Whitman Lake Hatchery and transferred to Neets Bay Hatchery for release until 2013 (FTP 13J-1004).

In 2011, an additional program for Neets Bay releases was approved under the Whitman Lake Hatchery permit (FTP 11J-1024). Coho salmon eggs were taken at Whitman Lake Hatchery, incubated and reared to the fry stage, and then transported to net pens in Neck Lake for rearing to the smolt stage. The smolts were then transported to Neets Bay for imprinting and release. In 2012, a PAR was approved to move this program from the Whitman Lake Hatchery permit to the Burnett Inlet Hatchery permit. Eggs would continue to be collected at Whitman Lake Hatchery. Eyed eggs are then transferred from Whitman Lake Hatchery to Burnett Inlet Hatchery, the resulting progeny transferred for rearing to Neck Lake, and the surviving smolt released at Neets Bay.

Egg take and release permitting issues with the Neets Bay release site are described in the "Hatchery Permitted Capacity History" section above (Appendix K).

Earl West Cove (Eastern Passage) fall-run coho salmon

SSRAA submitted a PAR in August 1982 to add Eastern Passage (aka Earl West Cove or Square Cove) near Wrangell as a remote release site for fall-run coho salmon, using Whitman Lake Hatchery/Indian Creek stock returns to Neets Bay as broodstock. ADF&G staff had concerns about the release site and use of Indian Creek stock. Returns of hatchery releases from the Earl West Cove site would transit through fisheries harvesting wild stocks of coho salmon. In an earlier assessment for release of coho salmon from the site for another proposed hatchery, ADF&G staff indicated that returns from releases of up to 500,000 coho salmon smolt were within management constraints, but releases over 500,000 smolt could result in returns that impacted fisheries management unless there was an adequate tagging and tag recovery program to provide inseason estimates of hatchery contribution. Some staff were concerned about the predatory impact of coho salmon releases on chum and pink salmon fry in the area. Staff were also concerned with the distance that the proposed donor stock was from the release site and suggested using a donor stock closer to the release site.

The ADF&G commissioner approved the PAR in May 1983 for release of fall coho at Earl West Cove. The release could not occur until impacts to indigenous stocks were assessed. The permit amendment also recommended that a local coho donor stock be used.

SSRAA submitted an FTP application to use the Whitman Lake Hatchery/Indian Creek stock for release at Earl West Cove. The application was initially denied after several ADF&G staff expressed concern about the distance between the donor stock and release location. These staff believed a suitable broodstock source was available near the release site. In addition, the fish pathologist expressed concern that Enteric Redmouth disease was seen in earlier pathological examinations[55] of the Indian Creek stock. After the ADF&G commissioner denied the FTP

[55] It appears from the comments on the PAR that Enteric Redmouth disease was found in samples submitted in 1978.

application, SSRAA staff presented escapement information indicating local stocks were probably not large enough to provide broodstock for release at Earl West Cove.[56] In addition, more recent specimens of Whitman Lake Hatchery/Indian Creek stock coho salmon were tested by ADF&G and showed no presence of Enteric Redmouth disease.

In light of the new information, the FTP application was recirculated among ADF&G staff reviewers. The ADF&G geneticist (without comment) and FRED Division biologist recommended denial of the FTP. The FRED Division biologist commented that if there were not adequate stocks to use in those surveyed, there should be an adequate stock in the Stikine River. He also stated that economics were becoming a decision maker that was overriding biology. He was in favor of SSRAA's enhancement program expansion, but only when done in a manner that met ADF&G's first mandate to perpetuate wild stocks. He concluded that what looks to be economically sound in the short term could be counterproductive in the long term, and cited stock transfers in Washington and Oregon as examples.[57] Other reviewers recommended approval of the FTP.

The ADF&G PNP coordinator recommended approval of the FTP to the ADF&G commissioner, provided the release be limited to 300,000 smolt pending further evaluation of any effects on indigenous coho stocks, and that local stocks would be secured in the future, if possible, for milt to fertilize eggs from Whitman Lake Hatchery/Indian Creek stock female broodstock.[58] The commissioner approved the FTP (FTP 82J-1083, subsequently renewed as FTP 90J-1006) for a release of progeny from 500,000 eggs.

In March 2000, a PAR was approved to move the release site of coho salmon from Earl West Cove to Anita Bay.

Egg takes and releases were within permitted limits each year for Earl West Cove releases, and the FTP, AMP, and hatchery permit levels were in agreement (Appendix L).

Anita Bay fall-run coho salmon

In March 2000, SSRAA submitted a PAR under the Whitman Lake Hatchery permit to move the release site of coho salmon from Earl West Cove to Anita Bay. The SSRAA Board of Directors believed Anita Bay would provide a higher interception rate of returns in the common property fisheries and provide better quality fish. ADF&G staff had no concerns for moving the release site. The ADF&G Regional Resource Biologist indicated that any neighboring wild coho salmon stocks that might be impacted should be identified and baseline escapement surveys conducted prior to expected returns of the brood year 1999 releases in 2001. Surveys for marked strays were then recommended to occur during the first 3 years of returns to Anita Bay.[59] The permitted release for coho salmon was 225,000 smolts (FTP 01J-1001).

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[56] Letter from W. Griffioen, SSRAA, to J. Madden, ADF&G, dated Jan. 11, 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[57] Comments from K. Leon, ADF&G, for FTP 82J-1083, dated 2/1/83. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[58] Memo from J. Madden, ADF&G, to D. Collinsworth, ADF&G, dated Jan. 27, 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[59] Comments on FTP 01J-1001 by Carol Denton, ADF&G, dated 2/9/2001. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

When the permit came up for renewal in 2008, the ADF&G geneticist requested information on the study recommended in the original FTP. There was discussion among ADF&G staff and SSRAA staff as to whether the straying survey recommended on the original FTP was a "recommendation" or a "condition" of the permit.[60] In the end, there was concurrence that no straying study was done as recommended in the original FTP. The ADF&G geneticist commented that very little work was occurring specifically looking for hatchery strays in wild systems, and that it was difficult to know the fate of unharvested hatchery returns to remote-release sites. He also stated that looking for coho salmon hatchery strays was problematic because only a portion of the fish were tagged, and poor fall weather conditions made stream surveys difficult or impossible. He recommended that the FTP be extended for 5 years, rather than the requested 10-year extension, and that straying assessment be done before the next extension period. [61] The FTP was approved for a 5-year extension.

The FTP came up for extension again in 2013. SSRAA staff indicated they were not informed of the straying study recommended in 2008.[62] When the FTP extension application went out for comment, reviewers were requested to provide direction if they believed a straying study was needed. The ADF&G geneticist indicated that although the study would be of interest, in this case it was not feasible to collect spawners in spawning areas late in the season, and therefore, he did not recommend a straying study for the permit.[63] The FTP was approved for a 10-year extension.

In July 2013, SSRAA submitted a PAR to move some coho salmon releases from Neets Bay to Nakat Inlet and Anita Bay. The PAR would increase the release at Nakat Inlet from 300,000 smolts to 600,000 smolts, increase the release at Anita Bay from 225,000 smolts to 600,000 smolts, and reduce the release at Neets Bay from 5 million smolts to 4.325 million smolts. At the previous release levels, neither the Nakat Inlet nor Anita Bay release sites attracted much fishing effort, according to SSRAA's PAR application. The changes in release numbers were intended by the SSRAA Board of Directors to allow for a wider distribution of harvest opportunity and to spread out releases among sites to buffer poor marine survival at any one site.[64]

The SSERPT recommended approval of the PAR by a vote of 4 in favor and 2 opposed. One reason for opposition to the PAR was the potential for straying into Hugh Smith Lake, an important coho salmon indicator stock located about 50 water miles from Nakat Inlet, the nearest release site. A wild coho salmon coded wire tagging program had been conducted at Hugh Smith Lake since the early 1980s (Shaul et al. 2009).

A letter to the ADF&G directors of the Divisions of Commercial Fisheries and Sport Fish[65] summarizing the PAR indicated there was little evidence of straying of Nakat Inlet returns into Hugh Smith Lake based on recovery of coded wire tags from the Hugh Smith Lake weir.

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[60] Comments on FTP 01J-1001 renewal by Bruce White, dated May 01 and May 02, 2008. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[61] Comments on FTP 01J-1001 by Chris Habicht, ADF&G, dated July 18, 2008. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[62] Comments to reviewers on FTP 01J-1001 by Michelle Morris, ADF&G, dated 3/12/2013. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[63] Comments on FTP 01J-1001 by Chris Habicht, ADF&G, dated 2/25/2013. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[64] From the PAR application.

[65] Memorandum from S. Rabung, ADF&G, to J. Regnart and C. Swanton, ADF&G, dated January 15, 2015. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

The minutes from the RPT meeting indicated that ADF&G staff presented data indicating that from 1982 to 2013, a total of 213 coded wire tags of the same length as those used for hatchery releases were recovered at Hugh Smith Lake weir. All but 2 of the recovered tags were from Hugh Smith Lake releases. One tag was from Fort Babine Hatchery in Canada and the other from Whitman Lake Hatchery.

The author examined the sampling protocols at Hugh Smith from Shaul et al. (2009) over the time period presented at the RPT meeting (1982–2013). During 1982–1985, a sample of 20 to 50 adipose finclipped adult coho salmon were collected from the Hugh Smith Lake weir annually. The coded wire tags were removed from the heads, and the tags read. About 77% of the 213 tags cited at the RPT meeting were collected during this period (1982–1985).

From 1986 to 2002, adipose finclipped fish were examined with a metal detector, and only those fish that did not elicit a signal were sacrificed and their heads sent to the ADF&G Mark, Tag and Age Laboratory for further examination to determine if a tag was present. Results from the study indicated that if there was no signal from the metal detector, then there was no tag in the fish. As a result, beginning in 2003, fish missing an adipose fin that did not trigger a signal on the metal detector were assumed not to have tags and were released.

Coho salmon returning to Hugh Smith Lake from 2008 to 2013 included fish that were tagged with half-length tags as fry. These tags give off a weak signal from the metal detector. From 2008 to 2013, only heads of fish with an adipose finclip that gave off a weak signal were collected for tag recovery.

The project at Hugh Smith Lake, therefore, did not collect heads from fish that were likely to be from Nakat Inlet or Anita Bay. In review of the tag data, the author found that most of the tags sampled were collected before the first Nakat Inlet releases returned in 1987, and well before the first Anita Bay returns in 2001. During the time period when Nakat Inlet and Anita Bay returns could have been present (1987–2015), only heads from those fish which did not trigger the metal detector, or fish that registered a weak signal indicating a half-length tag was present, were collected. Fish from both Nakat Inlet and Anita Bay hatchery releases were tagged with full-length tags and would elicit a strong signal from the metal detector that would mimic the finclip and tagging of Hugh Smith smolts, and so they were not likely to be retained for tag recovery.

In addition, the Hugh Smith Lake weir is removed the first week in November. Late-returning fish to Nakat Inlet and Anita Bay would be the most likely fish of the population to stray since there would be little or no fishing effort on these fish. These late-returning fish would obviously not be seen if they entered Hugh Smith Lake after the weir was removed.[66]

Some ADF&G staff at the RPT meeting indicated they would like to see more information gathered from coded wire tag and otolith marks at the current level of production. SSRAA staff indicated that they would rather test the increased production at Nakat Inlet and reduce production levels if significant straying was evident. There was no discussion found for the increase to Anita Bay.

ADF&G pathology staff had no concern with the PAR. The ADF&G PNP hatchery program coordinator recommended approval of the PAR. Although a memo to the directors of ADF&G Sportfish and Commercial Fisheries divisions indicated that the ADF&G genetics staff reviewed

[66] Draft minutes from the Fall 2013 Southeast Alaska RPT meeting. Unpublished electronic file obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

the PAR and had no objection,[67] no evidence was found that the genetics staff responded to a request to review the PAR. In May 2014, the ADF&G directors of the Divisions of Commercial Fisheries and Sport Fish approved the PAR. The permit alteration stipulated that SSRAA remove unharvested fish from the THA if a significant number remain after common property fishing efforts end. The permit also required a plan for marking and evaluation of the release to be described in the AMP. The 2015 AMP stated that releases would be marked and coded wire tag recoveries used to assess contribution to fisheries and survival rates.

After the permit amendment was approved, FTP 01J-1001 had to be amended for the increased release at Anita Bay. The ADF&G geneticist and regional Division of Sport Fish[68] indicated there was concern that the large increase in the release number at Anita Bay would lead to straying and affect local wild populations of coho salmon. The FTP amendment was approved for the increased production.

In review of permitting for Anita Bay releases, egg takes and releases were within permitted limits in most years (Appendix M). The FTP, AMP, and hatchery permits are in agreement for the project.

Nakat Inlet fall-run coho salmon

In November 1985, SSRAA submitted a PAR to release up to 100,000 coho salmon smolt from Nakat Inlet to offset some of the production at the hatchery that was being replaced with Chinook salmon production. ADF&G staff concerns included the need for a comprehensive harvest of the return to limit straying, release of coho salmon smolt at the appropriate time and size to limit predation on chum salmon fry,[69] and a notice that because the terminal fishery at Nakat Inlet would be managed for the wild fall chum salmon return, broodstock needs and cost recovery goals for coho salmon from Nakat Inlet returns might not be met.[70] The FTP was approved by the ADF&G deputy commissioner (FTP 86J-1005).

In September 1994, SSRAA submitted a PAR to increase release of coho salmon smolts from Nakat Inlet from 100,000 fish to 200,000 fish. The ADF&G chief of technology and development highly recommended Nakat Inlet as an ideal site as it was a narrow 10-mile inlet with 2 or 3 pink and chum salmon systems and very minor coho salmon production. He asserted that that the release program had been occurring for 8 to 10 years and he assessed that it had little impact on wild coho salmon.[71] The regional coho salmon biologist recommended a stray monitoring program.[72] Other ADF&G staff had no concerns with the PAR and the deputy commissioner approved the PAR in December 1994. Staff expressed concerns for straying in comments on the FTP application for the project in 1995. The ADF&G geneticist did not believe

[67] Memo from S. Rabung, ADF&G, to J. Regnart and C. Swanton, dated January 15, 2015. Unpublished electronic file obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[68] Comments on FTP 01J-1001 by W. Grant, ADF&G, dated 2/10/214 and by J. Lum, ADF&G, dated 2/11/2014. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[69] Memorandum from K. Leon, ADF&G, to S. McGee, ADF&G, dated Dec. 23, 1985. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[70] Memorandum from D. Cantillon, ADF&G, to S. McGee, ADF&G, dated Dec. 26, 1985. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[71] R. Burkett, ADF&G, comments on FTP 94J-1044 application dated 3/15/95. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[72] Memorandum from L. Shaul, ADF&G, to D. Mecum, ADF&G, dated January 25, 1995. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

it was appropriate that ADF&G approved requests for projects identified as "risky" without requiring assessment of the risk and recommended denial of the FTP as written.[73] He recommended a shorter-term FTP that included a detailed plan to evaluate any straying from the release, and that 2 recovery years should be adequate for such an evaluation.[74] FTP 94J-1044 was approved for a 10-year period with a requirement for marking to allow harvest contribution estimate but no requirement for stray monitoring.

In March 2000, SSRAA submitted a PAR to increase the release of coho salmon smolts from Nakat Inlet from 200,000 to 300,000 fish annually. ADF&G staff had some concerns for adequate homing to the site and for the stocks in 11 streams in the general area with historical presence of coho salmon. SSRRA had released coho salmon from Nakat Inlet since 1985. Straying had not been evaluated per the recommendations noted above, and staff suspected that any natural production in Nakat Inlet would already have interbred with Nakat Inlet returns based on reports of substantial numbers of coho salmon remaining in Nakat Inlet after the terminal fishery. [75] In June 2000, the ADF&G deputy director approved a PAR to increase coho salmon smolt releases at Nakat Inlet from 200,000 to 300,000 fish (FTP 94J-1044 amended).

In 2005, FTP 05J-1026 was issued to replace FTP 94J-1044 for the same release level of 300,000 smolts. There were no concerns for the renewal from ADF&G staff. The ADF&G geneticist[76] commented that the project was reviewed in 1994 and "a determination was made that there would be minimal impact to wild stocks." Statements of concern are noted above by some staff for both the 1994 PAR and FTP 94J-1044 application. No documented "determination" was found in the files, and perhaps the statement was simply in reference to approval of the PAR in 1994 and FTP in 1995. The FTP was renewed again without concern in 2011.

In July 2013, SSRAA submitted a PAR to move some Neets Bay coho salmon releases to Nakat Inlet and Anita Bay as described in the Anita Bay release site section. The SSERPT analysis and ADF&G staff comments are described in the Anita Bay release site section. Comments for the amendment to FTP 05J-1026 for the increased release at Nakat Inlet included concerns by the ADF&G staff that the increase could lead to increased levels of straying that would impact wild populations.[77]

In review of permitting for the Nakat Inlet release site, egg takes and releases were within permitted limits in most years (Appendix N). The FTP, AMP, and hatchery permits are in agreement for the project.

Bakewell Lake coho salmon release site

In February 2006, SSRAA submitted a PAR to stock up to 1 million coho salmon into Bakewell Lake under the Whitman Lake Hatchery permit. A fish ladder was constructed at Bakewell Lake

[73] J. Seeb, ADF&G, comments on FTP 94J-1044 application dated 3/6/95. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[74] FTP 94J-1044 appeared only valid for 1995, but from a later amendment, it appears that the permit was intended to be valid until 2005.

[75] Email from C. Denton, ADF&G, to S. McGee, ADF&G, dated Feb. 10, 2000. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[76] Comments by D. Moore, ADF&G, dated 9/19/2005, on FTP application 05J-1026

[77] Comments on FTP 05J-1026 by W. Grant, ADF&G, dated 2/10/214 and by J. Lum, ADF&G, dated 2/11/2014. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

in about 1960, and the lake was stocked with coho salmon from Washington and Oregon state stocks.[78] No substantial, self-perpetuating returns occurred. The SSERPT recommended approval of the project with a stipulation that the project be re-evaluated in 5 years to assess overall survival of releases and any impacts on other fisheries.[79] No ADF&G staff comments were found in the files. In June 2006, the ADF&G deputy commissioner approved the PAR with an expiration date of December 2012. FTP 06J-1032 was issued to permit stocking Whitman Lake Hatchery/Indian Creek fall-run coho salmon, and no reviewers had concerns with the project. The first release to the lake was in 2008 with the release of brood year 2007 smolts from net pens in the lake. The last release was of brood year 2010 smolts in 2011. The program was discontinued after 2011 when the U.S. Forest Service did not renew the special use permit for SSRAA to continue pen-rearing coho salmon smolt in Bakewell Lake. [80] Releases into the lake were within permitted levels each year (Appendix O).

CHINOOK SALMON PROGRAM

Donor Stocks

In 1980, SSRAA collected Chinook salmon eggs from the Unuk River system (Cripple Creek; Figure 3) for release from the hatchery as part of a Chinook salmon research project to evaluate Chinook salmon survival of releases of freshwater-age-0 and freshwater-age-1 smolts (FTP 80-59). Little Port Walter Hatchery/Unuk River stock eggs were also received from Little Port Walter Hatchery in 1981 (FTP 81-59). Brood year 1980 fish were released in 1982 from the hatchery for the study. Brood year 1981 and 1982 Unuk River stock Chinook salmon were transferred to Neets Bay and released in in 1983.

Eggs from Unuk River stock hatchery returns were collected from 1985 to 1987. Some eggs were transferred to Neets Bay for release (FTP 84J-1005). Some eggs were hatched at Whitman Lake Hatchery for release at Carroll Inlet (FTPs 85J-1061 and 87J-1020).

Eggs were collected from Chickamin River (Figure 3) broodstock from 1983 to 1987, and progeny released from the hatchery.[81] Beginning in 1988, hatchery returns were used for broodstock.

Hatchery Permitted Capacity History

This section summarizes the permitting history of changes to the number of Chinook salmon eggs permitted for incubation at Whitman Lake Hatchery. Detailed descriptions of permitting for each release site are described after this section.

In 1979, SSRAA requested adding Chinook salmon production to the hatchery permit. The request was denied because of low donor stock availability, allocation of the donor stocks to

[78] From draft minutes of the spring 2006 SSERPT meeting. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[79] Memorandum from C. Farrington, ADF&G, to D. Bedford, ADF&G, dated May 31, 2006. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[80] From 2012 Annual Management Plan, SSRAA. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[81] Chickamin River stock eggs were also received from Little Port Walter Hatchery in 1981 (FTP 81-251) and 1987 (FTP 87J-1021) for release at Carroll Inlet. The broodyear 1981 Little Port Walter Hatchery/Chickamin River stock Chinook salmon eggs received by Whitman Lake Hatchery and released into the Carroll River in 1982 were apparently as a study to evaluate in-stream fry plants (FTP 82J-1006).

other agencies (National Marine Fisheries Service and ADF&G), the potential for physical plant problems in a new facility, and management complications of another release[82] in the Ketchikan area potentially increasing fishing effort and negatively impacting already depressed wild stocks.

In July 1982, a PAR was approved adding 400,000 Chinook salmon eggs to the Whitman Lake Hatchery permit to develop a broodstock.

In 1985, a PAR was approved adding 1.1 million Chinook salmon eggs to the Whitman Lake Hatchery permit for release at Carroll Inlet. This approval brought the total Chinook salmon capacity at Whitman Lake Hatchery to 1.5 million eggs.

In 1990, a PAR was approved to allow incubation of 1.5 million eggs for transfer to other hatcheries, in addition to the 1.5 million egg capacity at the hatchery. The PAR was submitted so that SSRAA could supply eggs to the Northern Southeast Regional Aquaculture Association's (NSRAA) Medvejie Creek Hatchery.

A similar PAR was approved in 2010, allowing the collection of an additional 700,000 eggs for transfer to Port St. Nicholas Hatchery in Craig.

In 2014, a PAR was approved increasing the Chinook salmon hatchery capacity from 1.5 million to its current permitted capacity of 2.1 million eggs. The increase was requested so that SSRAA could continue releases at Deer Mountain Hatchery in Ketchikan, which had recently closed operations under another operator.

The history of permitting for each release site follows.

Whitman Lake Hatchery Chinook salmon release site

In July 1982, a PAR was approved adding 400,000 Chinook salmon eggs to the Whitman Lake Hatchery permit to develop a broodstock. ADF&G staff supported the PAR provided no terminal commercial fisheries were planned near the hatchery for the returning Chinook salmon, existing management of the SHA would not be altered because of the increased returns, and approval of the PAR did not guarantee the availability of Chinook salmon broodstock for Whitman Lake Hatchery.[83] Two FTPs were issued for collection of broodstock from Chickamin River for release from the hatchery.

FTP 83J-1017 was issued in 1983 for collection of 100,000 eggs from Chickamin River stock Chinook salmon for incubation and release from the hatchery. The FTP was effective from 1983 to 1989. ADF&G staff comments indicated there were no concerns with the permit.

FTP 84J-1044 was issued in 1984 for collection of 200,000 eggs from Chickamin River broodstock for incubation and release from the hatchery. The FTP was amended prior to the 1985 season, and increased the allowable egg take to 400,000 eggs. The FTP was effective from 1984 to 1990. ADF&G staff comments indicated there were no concerns with the permit.

It is unclear why 2 FTPs were issued. Perhaps the 1984 FTP was simply intended to increase the allowable egg take from the 1983 FTP.

Egg takes from Chickamin River stock returning to Whitman Lake Hatchery began in 1988. No FTP was found authorizing the egg take and release from the hatchery until 1995, when FTP

[82] Deer Mountain Hatchery in Ketchikan was already releasing Chinook salmon near Ketchikan.

[83] Memorandum from J. Madden, ADF&G FRED Division, to D. Collinsworth, ADF&G deputy commissioner, dated Aug. 6, 1982. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

95J-1021 was issued for release of up to 250,000 smolt from Whitman Lake Hatchery. ADF&G staff comments indicated there were no concerns with the permit.

No further hatchery permit alterations were found for releases from the Whitman Lake Hatchery, but releases from the hatchery increased. In 1998, SSRAA staff requested an amendment to FTP 95J-1021 to increase releases from Whitman Lake Hatchery from 250,000 to 750,000 smolts. In their application for the increase, SSRAA staff indicated that they were permitted to collect 1.5 million eggs under FTP 91J-1039, and that the eggs were used to provide eggs to Crystal Lake Hatchery, 250,000 smolts to Neets Bay, and 750,000 smolts for release from Whitman Lake Hatchery. However, FTP 91J-1039 (issued to Neets Bay Hatchery) permitted 1.5 million eggs for release at Neets Bay only.

In 2014, the permitting issues were clarified. A PAR was approved that increased the Whitman Lake Hatchery egg capacity to 2.1 million eggs. FTP 14J-1022 was issued allowing the collection of up to 2.1 million eggs for incubation at the hatchery, with up to 750,000 smolts released from the hatchery, and the remainder of the progeny released elsewhere (Neets Bay and Ketchikan Creek) under separate FTPs. ADF&G staff comments indicated there were no concerns with the permit for releases at Whitman Lake Hatchery.[84]

Since 2003, the total egg take at Whitman Lake Hatchery for all projects regularly exceeded the levels authorized by the AMP until 2014. The numbers of smolts released from the hatchery were generally close to or below the number authorized by the FTP (Appendix P).

Neets Bay Chinook salmon release site

A PAR approved in May 1983 under the Whitman Lake Hatchery Permit allowed the transfer of up to 200,000 Unuk River (Cripple Creek) and Little Port Walter Hatchery/Unuk River stock Chinook salmon smolt from Whitman Lake Hatchery to Neets Bay for rearing and release in 1983 only (FTP 83J-1015). Eggs from Unuk River fish and eyed eggs from Little Port Walter Hatchery/Unuk River stock fish were incubated and reared at the hatchery, and smolt transferred to Neets Bay for imprinting and release. No staff comments of concern were found for the PAR or FTP. Releases at the Neets Bay Hatchery after 1983 and later were permitted under the Neets Bay Hatchery permit and will be reviewed in that hatchery's evaluation document at a later date.

In 2014, SSRAA submitted a PAR to increase the Whitman Lake Hatchery Chinook salmon permitted capacity by 600,000 green eggs, of which production from 500,000 of the eggs would be released at Neets Bay. At the time, the Neets Bay release site was already permitted under the Neets Bay Hatchery permit for the release of the progeny from up to 1 million Chinook salmon eggs transferred from Whitman Lake Hatchery (FTP 05J-1010).[85] Transfers of smolt or fry reared at Whitman Lake Hatchery and transferred to Neets Bay were also permitted (FTP 91J-1039).[86] This PAR under the Whitman Lake Hatchery permit would permit the progeny of up to an additional 500,000 Whitman Lake Hatchery/Chickamin River stock eggs to be hatched at Whitman Lake Hatchery, the fry reared at Deer Mountain Hatchery, and smolt released at Neets

[84] ADF&G staff were concerned indicated concern about releases from Neets Bay under an FTP that were related to this FTP, but staff did not have concerns with the release from Whitman Lake Hatchery, which was the location of release for this permit.

[85] These eggs were collected at Whitman Lake, reared at Crystal Lake Hatchery, and released at Neets Bay Hatchery.

[86] These eggs were collected at Whitman Lake, and initial incubation and/or rearing at Whitman Lake and transferred to Neets Bay Hatchery for subsequent incubation and/or rearing and then released from Neets Bay.

Bay. The remainder of the requested production under the PAR (100,000 eggs) would be reared and released from Deer Mountain Hatchery and is described in a later section.

Although the PAR was recommended for approval by the RPT, there were some concerns about increasing releases at Neets Bay.[87] One RPT member indicated that the Unuk River system was not meeting escapement goals in recent years, and increased returns to Neets Bay would likely lead to increased effort, which might mean implementing management restrictions to limit harvest of Chinook salmon to protect Unuk River fish. In addition, the member did not feel that terminal area harvests were being adequately sampled to know if Unuk River fish were being harvested during the hatchery harvest. Another meeting participant noted that the Clover Pass to Bushy Point sport fishery was also lightly sampled. A SSRAA representative pointed out that the commercial fisheries in Neets Bay are targeting chum salmon and the additional returns from the release of 400,000 Chinook salmon smolts would not attract more effort there. In addition, it was noted that the Unuk River was the only system in the area not meeting Chinook salmon escapement goals, which may indicate that the problem is not tied to a specific fishery. ADF&G staff acknowledged that there was demand for increased Chinook salmon harvest, and as the number of returning hatchery fish increased, so would fishing effort and the number of wild fish caught may increase as well.[88]

The 2012 escapement count to the Unuk River was well below goal and the lowest since escapement counts began in 1977. Escapement numbers to the river improved in 2013 and 2014, but were still below goal. In 2015, escapement was within the escapement goal range (Table 1).

[87] Most of Neets Bay Hatchery releases are permitted under the Neets Bay Hatchery Permit and will be discussed in a Neets Bay Hatchery Evaluation document that is in progress.

[88] Draft Minutes of the Joint Northern/Southern Southeast Regional Planning Team Meeting, Tuesday, April 8, 2014 from Flip Pryor, ADF&G. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Table 1.–Escapement estimates of Chinook salmon to Southeast Alaska rivers, 1975–2015.

Year	Situk River	Chilkat River	King Salmon River	Andrew Creek	Unuk River	Chickamin River	Blossom River	Keta River	Alsek River	Taku River	Stikine River
1975	–	–	64	507	–	370	565	611		12,920	7,571
1976	1,421	–	99	404	–	157	263	253	5,282	24,582	5,723
1977	1,732	–	204	465	4,706	363	433	692	12,706	29,496	11,445
1978	808	–	87	388	5,344	308	553	1,180	12,034	17,124	6,835
1979	1,284	–	134	327	2,783	239	209	1,282	17,354	21,617	12,610
1980	905	–	106	282	4,909	445	344	578	10,862	39,239	30,573
1981	702	–	154	536	3,532	384	615	990	8,502	49,559	36,057
1982	434	–	394	672	6,528	571	1,335	2,270	9,475	23,847	40,488
1983	592	–	245	366	5,436	599	2,279	2,474	10,344	9,795	6,424
1984	1,726	–	265	389	8,876	1,102	1,966	1,836	7,238	20,778	13,995
1985	1,521	–	175	622	5,721	956	2,744	1,878	6,127	35,916	16,037
1986	2,067	–	255	1,379	10,273	1,745	4,946	2,077	11,069	38,110	14,889
1987	1,379	–	196	1,537	9,533	975	5,221	2,312	11,141	28,935	24,632
1988	868	–	208	1,100	8,437	786	1,486	1,731	8,717	44,524	37,554
1989	637	–	240	1,034	5,552	934	1,331	3,477	10,119	40,329	24,282
1990	628	–	179	1,295	2,856	564	995	1,824	8,609	52,143	22,619
1991	889	5,897	134	780	3,165	487	925	819	11,625	51,645	23,206
1992	1,595	5,284	99	1,517	4,223	346	581	653	5,773	55,889	34,129
1993	952	4,472	266	2,067	5,160	389	1,173	1,090	13,855	66,125	58,962
1994	1,271	6,795	213	1,115	3,435	388	623	921	15,863	48,368	33,094
1995	4,330	3,790	147	669	3,730	356	840	527	24,772	33,805	16,784
1996	1,800	4,920	292	653	5,639	422	851	894	15,922	79,019	28,949
1997	1,878	8,100	362	571	2,970	272	511	740	12,494	114,938	26,996
1998	924	3,675	134	950	4,132	391	364	446	6,833	31,039	25,968
1999	1,461	2,271	304	1,180	3,914	492	820	968	14,597	16,786	19,947
2000	1,785	2,035	138	1,346	5,872	801	894	914	7,905	34,997	27,531
2001	656	4,517	149	2,055	10,541	1,010	789	1,032	6,705	46,554	63,523
2002	1,000	4,051	155	1,708	6,988	1,013	867	1,237	5,569	55,044	50,875
2003	2,117	5,657	119	1,160	5,546	964	786	969	5,904	36,435	46,824
2004	698	3,422	135	2,991	3,963	798	734	1,132	7,083	75,032	48,900
2005	595	3,366	143	1,979	4,742	924	926	1,496	4,478	38,725	40,501

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Year	Situk River	Chilkat River	King Salmon River	Andrew Creek	Unuk River	Chickamin River	Blossom River	Keta River	Alsek River	Taku River	Stikine River
2006	295	3,039	150	2,124	5,645	1,330	1,270	2,248	2,323	42,296	24,405
2007	677	1,442	181	1,736	5,668	893	522	936	2,827	14,854	14,560
2008	413	2,905	120	981	3,104	1,111	995	1,093	1,885	27,383	18,352
2009	902	4,429	109	628	3,157	611	476	659	6,239	22,801	11,086
2010	167	1,815	158	1,205	3,835	1,156	1,405	1,430	9,518	29,302	15,180
2011	240	2,688	192	936	3,195	852	569	671	6,668	27,523	14,569
2012	322	1,627	155	587	956	444	793	725	2,660	19,429	22,671
2013	912	1,683	94	920	1,135	468	987	1,484	5,044	17,025	18,172
2014	475	1,290	68	1,261	1,691	652	840	1,321	3,384	23,532	20,000
2015	174	2,453	50	796	2,623	567	642	915	5,728	30,000	22,500
Goals:											
Lower	450	1,750	120	650	1,800	450	565	525	3,500	19,000	14,000
Upper	1,050	3,500	240	1,500	3,800	900	1,160	1,200	5,300	36,000	28,000

Source: 1975–2014 data from Skannes et al. 2015. 2015 data is preliminary and from Phil Richards, ADF&G, personal communication.

The RPT and the ADF&G PNP hatchery program coordinator recommended approval, and the directors of the Divisions of Sport Fish and Commercial Fisheries approved the PAR to increase Whitman Lake Chinook salmon capacity by 600,000 eggs.

In 2015, FTP 15J-1006 was issued under the Whitman Lake Hatchery permit and permits the release at Neets Bay of up to 250,000 smolts from eggs collected, incubated and reared at Whitman Lake Hatchery. There were no ADF&G staff concerns with the FTP.

Nearly all of the releases from Neets Bay Hatchery were permitted under the Neets Bay Hatchery permit. The relationship between permitted and actual egg takes and releases will be reviewed in the Neets Bay Hatchery evaluation.

Long Lake Chinook salmon release site

In 1999, SSRRA submitted a PAR to develop a trial study at Long Lake. SSRAA had attempted to overwinter Chinook salmon fingerlings received from Whitman Lake Hatchery in saltwater net pens in Neets Bay, but survival was poor. SSRAA planned to rear fry over the summer in freshwater net pens in Long Lake, which drains into Neets Bay, and then release the fingerlings into the lake, where they were expected to continue to grow and volitionally migrate to sea in Neets Bay. A similar SSRAA coho salmon project had been successful at Neck Lake.

A trial project of 25,000 fry were transferred from Whitman Lake Hatchery to net pens in Long Lake for rearing over the summer, and then released into the lake in October (FRP P-98-103), with no apparent fish health issues.[89] A PAR to increase production to 250,000 fry at Long Lake met no concerns from ADF&G staff, and the deputy commissioner approved the PAR in April 1999. There were no ADF&G staff concerns with the FTP for the project (FTP 00J-1005).

The project did not produce satisfactory adult returns. An outbreak of a parasitic infection caused significant mortality in rearing fry, leading to early release in 2 consecutive years.[90] These factors caused SSRAA to abandon the project after the last transfer of brood year 2003 fry were released in 2005.

With regard to permitting, it appears that the first transfer of increased numbers of fry to Long Lake in 1999 occurred after approval of the hatchery permit alteration authorizing the increase, but before the FTP authorizing the transfer (FTP 00J-1005) was approved. In addition, the fry transfer number in brood year 2000 (308,666 fry) significantly exceeded the number authorized in the FTP of 250,000 fry (Appendix Q).

Carroll Inlet Chinook salmon release site

In June 1985, SSRAA submitted a PAR to establish Carroll Inlet as a release site for Chinook salmon. Up to 1.1 million Whitman Lake Hatchery/Unuk River stock Chinook salmon eggs would be reared at the hatchery and transferred to net pens in Carroll Inlet for release of age-0 smolts. In the PAR, SSRAA requested that the SHA for the release site encompass all of Carroll Inlet. ADF&G commercial fisheries staff recommended approval of the PAR with stipulations that only age-0 smolt be released, as these would be smaller and have less predatory impact than would standard age-1 smolt on the major pink and chum salmon stocks in Carroll Inlet. Staff also recommended that the SHA be reduced in size to lessen the impact to traditional sport, troll, and

[89] The trial research did not require a hatchery permit alteration and was conducted under a fish resource permit (FRP). When SSRAA decided to increase the project to production level, it did require a permit alteration.

[90] B. Gass, SSRAA, personal communication.

net fisheries in Carroll Inlet. In addition, they recommended that SSRAA install a weir in the Carroll River to prevent hatchery Chinook salmon returns from straying into the river. ADF&G FRED Division recommended approval of the project for 1 year as an experiment,[91] and recommended the SHA be limited in size to what was necessary for cost recovery. In August 1985, the ADF&G deputy commissioner approved the PAR to increase permitted capacity at Whitman Lake Hatchery by 1.1 million Chinook salmon eggs for release in Carroll Inlet as age-0 smolts, and limited the SHA to the area suggested by fishery managers. The FTP for the project (FTP 85J-1061) was approved with no concerns.

In 1986, SSRAA submitted a PAR to increase releases at Carroll Inlet. SSRAA had an additional 60,000 Chickamin River stock age-1 smolts that were excess to the release needs at Whitman Lake Hatchery. Although not part of this PAR, SSRAA staff indicated that SSRAA wanted to release 1.1 million age-1 Chinook salmon smolt in Carroll Inlet as part of the expansion of their Chinook salmon program.[92] SSRAA had received funding from ADF&G[93] to increase the release of Chinook salmon smolts from Carroll Inlet under the 1985 Pacific Salmon Treaty.[94] ADF&G staff reviewing the PAR were not concerned with the increased 60,000 age-1 smolt release, but had the same concerns for the future release of 1.1 million age-1 smolts as they did for the 1985 PAR described above. When the deputy commissioner approved the PAR for the 60,000 smolt release for 1 year only, he also indicated that ADF&G would conduct a study of pink and chum salmon fry emigration from Carroll Inlet in 1986 to better determine potential impacts and optimal timing of age-1 Chinook salmon smolt releases in the future. There were no ADF&G staff concerns with the FTP for the project (FTP 87J-1020[95]).[96]

In 1987, SSRAA submitted a PAR to permit the release of up to 800,000 age-1 Chinook salmon smolt from Carroll Inlet. This PAR was in addition to the 1.1 million age-0 Chinook salmon smolt releases approved in 1985. Although ADF&G staff generally agreed that release of age-1 smolt showed better survival to adult than age-0 smolt,[97] staff recommended approval of the PAR for 1 year only so that predation on pink and chum salmon fry by Chinook salmon smolt could be monitored. They also recommended a release date of June 1 or later to minimize the impacts on pink and chum salmon fry.[98] The ADF&G deputy commissioner approved the PAR for 1 year only for release of 800,000 age-1 Chinook salmon smolt and a release date of June 1 or later (FTP 87J-1020).

In 1988, FTP 88J-1096 was issued to allow up to 1.5 million Neets Bay Hatchery/Unuk River stock eggs to be incubated to the eyed stage at Neets Bay Hatchery, transferred to Whitman Lake

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[91] Presumably, because funding for the project was from the legislature and only for 1 year.

[92] Letter from D. Amend, SSRAA, to K. Duffy, ADF&G, dated March 6, 1986. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[93] Funding from ADF&G was "pass through" funding from the federal government.

[94] Comprehensive Salmon Plan, Phase II Update: 1986. Southern Southeast Alaska. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[95] This FTP was issued retroactive to 1985 according to a letter accompanying the FTP 87J-1020 application from K. Johnson, SSRAA, to J. Madden, ADF&G, dated March 17, 1987. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[96] Letter from S. Pennoyer, ADF&G, to D. Amend, SSRAA, dated March 17, 1986. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[97] Memorandum from K. Leon, ADF&G, to S. McGee, ADF&G, dated Jan. 28, 1987. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[98] Memorandum from J. Madden, ADF&G, to S. Pennoyer, ADF&G, dated April 2, 1987. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Hatchery for hatching and rearing, and then transferred to Carroll Inlet for imprinting and release. Release of the Unuk River stock under this FTP would only be used as a backup in the event there was not sufficient broodstock for release of Whitman Lake Hatchery/Chickamin River stock under FTP 87J-1020. An ADF&G staff reviewer was concerned that a weir had not been installed on the Carroll River in the previous 5 years. He stated that this was not a big concern during those years because returns were low, with usually less than 50 Chinook salmon seen in the river. With increased returns anticipated, the reviewer believed the weir was important to protect the sockeye, chum, and coho salmon stocks returning to the Carroll River.[99]

In January 1988, SSRAA submitted a PAR for the release of up to 1 million age-1 Chinook salmon smolt from Carroll Inlet. Previous permit alterations had been for 1 year only. SSRAA requested a permanent amendment for the release—pending a study of chum and pink salmon fry presence in Carroll Inlet and the potential predation impacts on these fry by the Chinook smolt release. The ADF&G Division of Commercial Fisheries area manager objected to a permanent permit alteration. He had concerns about incidental harvests of naturally spawning chum, pink, and coho salmon in the Carroll Inlet SHA, and for straying of returning hatchery-produced Chinook salmon to Carroll River, an important system for chum and pink salmon production.[100] The ADF&G Division of Sport Fish manager did not object to the PAR provided sport fishers were not excluded from the SHA unless there was a broodstock shortfall, and provided SSRAA installed a weir in the Carroll River to prevent straying.[101] The ADF&G deputy commissioner approved the PAR in May 1988 for 1 year only (FTP 87J-1020). The permit was amended annually for this release in 1989, 1991 and 1992 (FTP 87J-1020; no Chinook salmon were released in 1990).

Beginning in 1991, the AMP stated that Chinook salmon would be harvested by a commercial fishing vessel using seine, gillnet, or other legal gear to minimize escapement into Carroll River. Foot surveys would also be conducted to determine the magnitude of any hatchery Chinook salmon straying into Carroll River.

In April 1993, a PAR was approved for 5 years. The permit amendment allowed release of up to 1.3 million Chinook salmon smolt, with stipulations that ADF&G and SSRAA cooperatively monitor Carroll River for Chinook escapement, that SSRAA make every effort to harvest Chinook salmon in the SHA, and that the SHA could be closed to cost-recovery harvest if the incidental harvest of chum salmon became excessive (FTP 87J-1020). Little Port Walter Hatchery/Chickamin River stock Chinook salmon were also authorized as a backup broodstock source if returns to Whitman Lake Hatchery did not meet broodstock needs (FTP 87J-1021). Chinook salmon releases at Carroll Inlet were terminated after brood year 1995 because of poor returns. Release numbers complied with AMP and FTP limits (Appendix R).[102]

In 2015, the program was renewed. A permit alteration was approved for Whitman Lake Hatchery to release up to 600,000 Chickamin River stock Chinook salmon smolts from Carroll Inlet, with no concerns for the project expressed by ADF&G pathology, ADF&G genetics staff,

[99] G. Sanders, ADF&G. Comments on FTP 88J-1096 an unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[100] Memorandum from P. Doherty, ADF&G, to S. McGee, ADF&G, dated March 1, 1988. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[101] Memorandum from S. Hoffman, ADF&G, to S. McGee, ADF&G, dated Feb 8, 1988. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[102] Bill Gass, SSRAA, personal communication.

or the RPT. In reviewing the FTP application for the project (FTP 15J-1019), 1 ADF&G staff member commented that bycatch of pink and chum salmon stocks during the targeted harvest of hatchery returns should be monitored.[103]

The program at Carroll Inlet was requested so that new Chinook salmon production reared at Deer Mountain Hatchery could be released at Carroll Inlet, instead of Neets Bay, due to concerns for Unuk River not meeting its Chinook salmon escapement goal.

Earl West Cove Chinook salmon release site

In January 1986, SSRAA submitted a PAR to release up to 500,000 Crystal Lake Hatchery/Andrew Creek stock Chinook salmon smolts from Earl West Cove near Wrangell. Andrew Creek is a tributary to the Stikine River, which terminates near Wrangell. ADF&G staff supported the PAR and the ADF&G deputy commissioner approved the PAR. The entire egg-to-smolt production occurred at Crystal Lake Hatchery. The permitting under the Whitman Lake Hatchery appears to have occurred because the project was funded by SSRAA and was a release that primarily benefitted the commercial salmon fleet.

The project at Earl West Cove was to replace a Crystal Lake Hatchery project at Ohmer Creek, which is located between Petersburg and Wrangell. Earl West Cove was seen as a superior THA that could be made available to commercial troll, gill net, and seine gear[104] and better provide Chinook salmon harvest to the Wrangell area.[105]

In April 1987, SSRAA submitted a PAR to establish an SHA for the Earl West Cove release site. The boundaries were developed through conversation with members of the SSRAA Board of Directors, the ADF&G area manager, and the Wrangell ADF&G Advisory Board. ADF&G Division of Sport Fish staff were concerned that wild stock Chinook salmon might be caught in the SHA during cost recovery, and they were opposed to closing of the SHA to sport fishing.[106] The ADF&G geneticist indicated he expected no genetic effect and that the terminal harvest would be consistent with genetic policy (FTP 86J-1012).[107] No other ADF&G staff had concerns for the area. The ADF&G deputy commissioner approved the PAR in May 1987. Andrew Creek stock was released for brood years 1986 to 1995.

From 1996 to 2000, releases were of Whitman Lake Hatchery/Chickamin River stock Chinook salmon. Eggs were collected from Whitman Lake Hatchery returns, incubated to the eyed stage at Whitman Lake Hatchery, transported and reared to smolt at Crystal Lake Hatchery, and then transferred to net pens for final rearing and release at Earl West Cove. No FTP was found for these releases.

In 2001, the project was moved from Earl West Cove to Anita Bay at the request of the Wrangell gillnet fleet.[108]

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[103] Comments to FTP 15J-1019 application from G. Pryor, ADF&G, dated 7/2/15. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[104] Memorandum from S. Pennoyer, ADF&G, to J. Madden, ADF&G, dated March 4, 1986. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[105] FTP 86J-1012 application Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[106] Memorandum from D. Siedelman, ADF&G, to S. McGee, ADF&G, dated May 5, 1987. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[107] Comments by Bob Davis, ADF&G geneticist for **Error! Hyperlink reference not valid.**. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[108] Bill Gass, SSRAA, personal communication.

Releases for brood years 1984 to 1992 were in agreement with the AMP and FTP limits (Appendix S).

Anita Bay Chinook salmon release site

In March 2000, SSRAA submitted a PAR for the Whitman Lake Hatchery permit to relocate the Chinook salmon released at Earl West Cove to Burnett Inlet. Also included in the PAR was relocation of chum and coho salmon releases from Earl West Cove to Anita Bay. The SSRAA board of directors requested the move from Earl West Cove to Anita Bay for chum and coho salmon to improve interception rates and quality of returning adults, but it was not stated in the PAR application if this was the same reason for requesting the move of Chinook salmon to Burnett Inlet. Although the Chinook salmon releases were originally planned to be moved to Burnett Inlet, ADF&G pathology staff recommended against this because sockeye salmon were reared at the Burnett Inlet hatchery, and there was risk that Infectious Hematopoietic Necrosis Virus (IHNV) could be passed on if Chinook salmon were reared there. The PAR was apparently amended to change the release site from Burnett Inlet to Anita Bay for all 3 species, and this was approved in June 2000.

The entire egg-to-smolt production occurred at Crystal Lake Hatchery. As mentioned above for the Earl West Cove release site, the permitting under the Whitman Lake Hatchery appears to have occurred because the project was funded by SSRAA and was a release that primarily benefitted the commercial salmon fleet. The FTP for the Chinook salmon project was issued to Crystal Lake Hatchery (FTP 01J-1002). The FTP allowed transfer of smolts from Crystal Lake Hatchery to Anita Bay for imprinting and release. The ADF&G resource biologist recommended approval of the FTP, and indicated that Anita Bay was preferable to Earl West Cove because Anita Bay was further distance from wild stocks.

In 2008, changes to the program were requested. Cold winters and significant snow pack at Crystal Lake Hatchery caused low water temperatures, resulting in insufficient growth of Chinook salmon fry and failure to reach adequate size for smoltification. An alternate FTP (FTP 08J-1018) allowed the Chinook salmon juveniles bound for Anita Bay to be transported to Neets Bay in their first fall of life, where warmer water temperatures would allow better growth to reach an appropriate size for transport and release at Anita Bay the following spring. ADF&G reviewers had no issues with the program change.

Releases were in compliance with the hatchery permit, FTP, and AMP for most years (Appendix T).

Port St. Nicholas Hatchery Chinook salmon

In 2005, FTP 05J-1015 was approved to transfer Whitman Lake Hatchery/Chickamin River stock eggs, fry, or smolt to the Port St. Nicholas Hatchery in Craig for rearing and release from the Port St. Nicholas River. The FTP allowed 380,000 green eggs, 308,000 eyed eggs, 300,000 fry or 250,000 smolt to be transferred. SSRAA did not apply for a PAR to increase their egg capacity for the project.

When Port St. Nicholas Hatchery requested to expand production of Chickamin River stock to 770,000 eggs, SSRAA submitted a PAR to increase their allowable Chinook salmon egg collection by 700,000 eggs, in addition to the hatchery's permitted egg take number of 1.5 million Chinook salmon eggs, to accommodate the request. The SSERPT and ADF&G PNP coordinator recommended approval of the PAR. No other ADF&G staff comments were found in

the files. In May 2010, the ADF&G deputy commissioner approved the PAR. The FTP was issued to the Port Saint Nicholas Hatchery (FTP 10J-1021) and remains in effect. See Stopha (2016c) for a review of the Port St. Nicholas Hatchery.

Deer Mountain Hatchery Chinook Salmon

In June 2013, the Deer Mountain Hatchery in Ketchikan closed. It had been in operation since 1955 and was most recently operated by the Ketchikan Indian Community. In February 2014, a PAR was approved to establish a remote release site under the Whitman Lake Hatchery permit at Deer Mountain Hatchery. The PAR increased Chinook salmon capacity at Whitman Lake Hatchery from 1.5 million eggs to 2.1 million eggs. The progeny of the 600,000 egg increase at Whitman Lake Hatchery would be reared at Deer Mountain Hatchery. Up to 100,000 smolts would be released from Deer Mountain Hatchery to maintain the run there. The remaining smolts would be transported to Neets Bay for release. There was no objection to the PAR from the SSERPT, genetics staff, or pathology staff. The FTP for the project (FTP 14J-1019) was approved to release Whitman Lake Hatchery/Chickamin River stock fish with no concerns.

SSRAA planned to develop Chickamin River stock as the broodstock at Deer Mountain Hatchery. Unuk River stock had been in use at Deer Mountain Hatchery prior to closure. Therefore, SSRAA will not use eggs from returns to Deer Mountain Hatchery until Unuk River stock returns end. The last Unuk River stock fish were released in 2013.

SOCKEYE SALMON PROGRAM

SSRAA submitted a PAR to begin sockeye salmon production in January 1984, when sockeye salmon hatchery production was still in its infancy in Alaska. The primary goal of the program was to increase the sockeye salmon harvest in Southeast Alaska as identified in the Comprehensive Salmon Plan Phases I and II. SSRAA initially requested a permitted capacity of 20 million sockeye salmon eggs for Whitman Lake Hatchery. After SSRAA and ADF&G staff met to discuss how a viable program could work, SSRAA decided to evaluate a smaller project with a permitted capacity of 2.5 million eggs. ADF&G salmon management staff supported the venture with several recommendations, including retaining the current SHA boundaries at the hatchery, continuing the provision of no terminal common property fishery to protect wild stocks in the area, and holding production to 2.5 million eggs for release at the hatchery. The ADF&G commissioner approved the PAR in April 1984 with additional contingencies that related primarily to prevention of infection and spread of IHNV.

Sockeye salmon were never cultured at Whitman Lake Hatchery. Gametes were collected from Karta River Sockeye salmon in 1985 and incubated at Beaver Falls Hatchery, a satellite facility of Whitman Lake Hatchery at the time. In 1986, Beaver Falls Hatchery received its own hatchery permit, and the sockeye program transferred to the Beaver Falls Hatchery permit. Beaver Falls Hatchery operated from 1986 to 1997, when it moved operations to the Burnett Inlet Hatchery. Burnett Inlet Hatchery operations will be discussed in a separate hatchery evaluation.

COMPREHENSIVE SALMON ENHANCEMENT PLAN

Three phases of Comprehensive Salmon Plans (CSP) have been developed to date in Southeast Alaska. Phase I[109] set goals for salmon production in Southeast Alaska. The Phase II CSP[110]

[109] Joint Southeast Alaska regional planning teams. 1981. Comprehensive salmon enhancement plan for Southeast Alaska: Phase I. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

provided planning to achieve the goals of the Phase I CSP. The Phase III CSP (Duckett et al. 2010) focused on integrating hatchery production increases with natural production to sustainably manage fisheries.

The long-range (year 2000) harvest objectives for the Phase I CSP were to increase the harvest in Southeast Alaska by 537,000 Chinook, 2.1 million sockeye, 2.65 million coho, 30.0 million pink salmon and 9.7 million chum salmon. Gaps between the increases available by better management and the current hatchery capacity at the time were 134,000 Chinook, 1.4 million sockeye, 1.1 million coho, 14 million pink, and 4.6 million chum salmon. Whitman Lake Hatchery operated in support of filling these desired production gaps.

In the Phase I Plan, SSRAA established goals to increase salmon production for commercial, sport, and subsistence users in Southern Southeast Alaska (commercial salmon fishing districts 1–8) to provide fishermen more time and area to fish, and reduce gear crowding and intergear conflicts.

SSRAA held workshops for stakeholders for input on the plan. Participants' top 5 values included making a decent living from salmon fishing, maintaining an independent lifestyle, reducing costs and becoming more efficient, enjoying catching salmon and the challenges of the sea, and fishing more days during the season. Some of the problems mentioned regarding fishing included the harvest management decision-making process, not enough salmon in the water, area closures, and crowding of gear. Regarding increased production, seiners preferred chum, pink, sockeye, and coho salmon, gillnetters preferred chum, coho, and sockeye salmon, and trollers preferred Chinook and coho salmon. When asked if they felt favorable, unfavorable, or had mixed feelings towards 3 restoration options—management,[111] rehabilitation,[112] and supplemental production (hatcheries)[113]—for increasing stocks, 36% of SSRAA respondents were favorable towards supplemental production, compared to 73% of NSRAA respondents. For the remainder, 32% of SSRAA respondents had unfavorable feelings about supplemental production, and the remaining 32% had mixed feelings. Ninety-one percent of SSRAA respondents were favorable towards rehabilitation and 72% were favorable towards management.

Processors indicated a preference for increased production of coho, Chinook, and chum salmon. Chum salmon was preferred to pink salmon and sockeye salmon because it's relatively large size made it ideal for processing as salmon steaks. A special demand was expressed for bright fall chum salmon for the fresh/frozen market because it filled a gap after the fall coho season waned. Processors indicated their major problems processing salmon was the unpredictable and widely fluctuating supplies of salmon. They desired more reliable harvests extended over longer periods which would allow more efficient use of existing capacities and production of higher quality products.

From a management perspective, pink salmon hatchery production was not recommended because wild pink salmon stocks were managed on harvest data, and if hatchery-produced fish

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[110] Comprehensive Salmon Plan, Phase II: Southern Southeast Alaska, by the SSERPT. September 1983. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

[111] Management refers to managing harvest to obtain spawning escapements needed for optimum production.

[112] Rehabilitation refers to rebuild a depressed stock to former levels of production through hatchery produced supplementation.

[113] Supplemental production, or "enhancement" refers to building a hatchery stock to production levels that exceed natural or wild production capability.

returned with wild stocks, management precision would decrease. Thermal marking of hatchery stocks had not yet been developed, and stock separation from tagging alone was not practical for inseason management because of the large number of releases that would need to be tagged and the large sampling effort required for tag recovery.

Like pink salmon, coho salmon was managed on harvest data. Tagging and harvest sampling, however, was seen as a practical tool for coho salmon due to the lower volume of releases and returns. Coho salmon hatchery production was expected to contribute in increasingly larger numbers to the coho salmon harvest.

Hatchery production of sockeye salmon consisted primarily of fresh water egg plantings and fry stockings, as rearing to the smolt stage was limited due the species' susceptibility to IHNV.

Chinook salmon hatchery production was expected to be a vital component in attaining desired production levels, but at the time there was a lack of data on producing Southeast Alaska Chinook salmon. In addition, depressed wild stocks provided few options for obtaining necessary broodstock until stocks recovered.

Chum salmon was the most preferred species for hatchery production. Summer-run chum salmon would be caught during existing fisheries managed for pink and sockeye salmon so their presence would not affect wild stock management. Fall-run chum salmon produced at hatcheries could generally be discretely managed and harvested in most areas of Southeast Alaska, except where significant stocks occurred naturally and were specifically managed for. According to the CSP, half of world production of chum salmon was coming from hatcheries, and thus production techniques were well-established.

Phase II CSP planning identified projects and plans to meet the Phase I harvest objectives, and the RPTs for northern and Southern Southeast Alaska developed separate plans. The Southern Southeast Alaska CSP Phase II was issued in 1983.[114] Subsequent Phase II CSP plan updates were issued yearly through 1995.

In the initial Phase II CSP, hatchery opportunities were prioritized from A (high priority) to B (medium priority) to C (lower priority). Priorities were based on such things as feasibility, wild stock management concerns, and potential for harvest in the commercial fisheries. The initial Phase II CSP document made no mention of Whitman Lake Hatchery, but mentioned projects that the hatchery would serve for as an incubation and rearing facility. Earl West Cove (aka Square Cove) was a high priority project as a chum salmon release site. Nakat Inlet was a medium priority coho salmon release site. Maximizing production of Chinook salmon at existing hatchery facilities and production of Chinook salmon at Neets Bay were mentioned as high priority projects.

The 1984 Phase II CSP update added the Whitman Lake sockeye salmon program to test an isolation incubation technique for developing a broodstock free of IHN virus as a priority project.

Beginning in 1985, the Phase II CSP update began tracking progress of the plan towards achieving the harvest gaps identified in the Phase I CSP. Also in 1985, the Carroll Inlet Chinook salmon release project was proposed by the SSERPT as part of the CSP.

[114] Ibid.

The next Whitman Lake Hatchery project proposal was seen in the 1989 Phase II CSP Update. The SSERPT endorsed Kendrick Bay as a chum salmon release site. In the 1993 update, the Neck Lake coho salmon release site project was listed in the development phase, and listed as a high priority project in the 1994 update.

With the maturation of the salmon enhancement program, the harvest target objectives and programs in the Phase I and Phase II CSPs were replaced with objectives in the Phase III CSP[115] that supported an overriding goal to enhance the salmon fishery while minimizing the impact of enhancement on wild stocks. These new objectives included (1) minimizing the impact of hatchery stocks on wild stocks, (2) maintaining existing production potential for wild and enhanced stocks, (3) assuring that increases in hatchery production are consistent with regionwide goals and allocation plans, and (4) updating the RPT process periodically to provide status reports and recommendations in a timely manner.

The Phase III CSP provided "best practice" guidelines for enhancement planning to provide a systematic approach to project formulation and the decision-making process. Guidelines were developed for fishery supplementation, wild stock supplementation, and colonization. Four standards are to be documented in developing a fishery supplementation project: (A) the release site has an adequate freshwater supply for imprinting and is not in close proximity to significant wild stocks; (B) fish are adequately imprinted to the release site; (C) releases are marked and contribute to the harvest without jeopardizing the sustainability of wild stocks; and (D) the terminal area enables harvest or containment of all returning adults. These standards were to meet the Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) developed by the Alaska Board of Fisheries and ADF&G.

The Phase III CSP provided a stock appraisal tool for assessing the *significance* of stocks for assessment of projects with regard to the significant stock references in Davis et al. (1985). The Phase III CSP states that *significance* is more complex than a simple production number because some of the region's most viable fisheries depend on aggregates of wild stocks, each of which is not very large. Diversity among wild stocks is a key factor in maintaining both the production capacity and the potential to maximize harvest opportunities over time. The tool identified the 6 characteristics of consideration: wildness, uniqueness, isolation, population size, population trend, and the stock's economic and/or cultural significance.

The Phase III CSP also provided a framework for assessment of new projects: "All projects will have an approved evaluation plan to assess impacts and measure success. This plan will describe how the project benefits will be measured and include a method for detecting negative or unintended impacts. An evaluation plan includes (A) fish identification (marking) method to be used; (B) mark–recovery plan for common property and terminal site harvests; (C) identification of potential ecological and genetic impacts that might warrant evaluation, a strategy to detect them, and criteria to determine when measured impacts would warrant project modification; (D) a description of how impacts to fishery management will be evaluated; and (E) a plan for dispersing information about the project. Proposals for new projects should document all evaluation agreements between the hatchery corporation or agency and the department, including any agreements for funding evaluation activities."

[115] Phase III CSP was issued in 2004.

Projects permitted under the Whitman Lake Hatchery permit since 2004 under the Phase III CSP include Bakewell Lake coho salmon, Whitman Lake Hatchery summer-run coho salmon, and the addition of McLean Arm (chum salmon), Ketchikan Creek (Chinook salmon) and Carroll Inlet (Chinook salmon) release sites.

For the Bakewell Lake coho salmon program, the SSERPT assessment[116] of the project covered much of the assessment framework described above, and the FTP described marking for assessment of marine survival and contribution to fisheries. Carroll Inlet and Ketchikan Creek release sites were both used as release sites in the past and could be evaluated with historical data. For McLean Arm, ADF&G did not consider the McLean release site a significantly new site due to its proximity to Kendrick Bay, an established release site, and did not deem an evaluation plan necessary. SSRAA addressed the new project criteria in the PAR application for the Whitman Lake summer coho salmon program.

PROGRAM EVALUATIONS

CONSISTENCY WITH POLICY

The policies governing Alaska hatcheries were divided into 3 categories for this review: genetics, fish health, and fisheries management. The key elements of the policies in each of those categories are summarized in Tables 1-3. These templates identifying the key elements of state policies used to assess compliance of the Whitman Lake Hatchery salmon program with the policy elements. Discussion of application of the policies in hatchery operations follows each table.

Genetics

See Table 2.

Chum Salmon

Summer-run broodstock originated from Carroll River at the head of Carroll Inlet near Ketchikan, with initial releases from Nakat Inlet. A total of 117,100 returning adults were used for broodstock in 2015. This stock is currently only in production at Neets Bay Hatchery.

The fall-run chum salmon broodstock originated from Disappearance Creek and Lagoon Creek in Cholmondeley Sound on Prince of Wales Island, with initial releases from Neets Bay (Figure 3). Original broodstock were collected under a removal schedule approved by ADF&G staff in the FTPs to ensure adequate spawning escapement to the systems. A total of 33,137 returning adults to Neets Bay were used for broodstock in 2015. This stock is currently in production at Neets Bay and Burnett Inlet hatcheries.

Piston and Heinl (2012) conducted chum salmon straying studies from 2008 to 2010. Additional chum salmon straying studies are underway by the Sitka Sound Science Center, and the results have not been published to date.

Chum salmon released at Nakat Inlet were recovered in the Hugh Smith Lake escapement and at the Beaver Falls and Whitman Lake hatcheries (Appendix U). Chum salmon released from Neets Bay were recovered in the Hugh Smith Lake and Ward Lake/Ward Creek escapements and at the

[116] Minutes of the Joint Northern/Southern Southeast Regional Planning Team Meeting, Wed., April 12, 2006. Unpublished document obtained from Lorraine Vercessi, ADF&G PNP coordinator, Juneau.

Beaver Falls and Whitman Lake hatcheries. Kendrick Bay releases were recovered at Neets Bay Hatchery. It is unknown if these fish spawned or intended to spawn at these sites.

Coho Salmon

Fall-run broodstock originated from Indian Creek, a tributary of the Chickamin River that empties into Behm Canal (Figure 3). Wild stock broodstock were collected under a removal schedule approved by ADF&G staff in the AMPs to ensure adequate spawning escapement. A total of 2,120 adult returns were used for broodstock in 2015. This stock is currently in production only at Whitman Lake Hatchery.

Summer-run coho salmon were obtained from Deer Mountain Hatchery and originated from Reflection Lake, which empties into Behm Canal (Figure 3). This stock is currently in production only at Whitman Lake Hatchery.

Straying[117] is monitored at other hatcheries but not routinely monitored at most wild stock systems where weirs or intensive sampling programs are used for coho salmon stock assessment. Wild stock juvenile coho salmon are coded-wire-tagged on these systems. A portion of the returns to these systems are therefore expected to be marked; therefore, to avoid sacrificing large numbers of wild stock, fish are not sacrificed for tag or otolith removal on these systems. Systems are usually sampled for strays only during dedicated straying studies.

Coho salmon releases at Bakewell Lake were retrieved in the Hugh Smith Lake escapement and at the Deer Mountain and Whitman Lake hatcheries (Appendix U). Releases from Earl West Cove were found in the Stikine River escapement and at the Crystal Lake, Whitman Lake and Neets Bay hatcheries. Whitman Lake Hatchery releases were recovered in the Hugh Smith Lake escapement and at Burnett Inlet Hatchery. Nakat Inlet releases were recovered at Whitman Lake Hatchery. Neck Lake coho salmon releases were recovered at Burnett Inlet Hatchery. Neets Bay coho salmon releases were recovered at Deer Mountain Hatchery and Whitman Lake Hatchery. Anita Bay releases were recovered at Whitman Lake Hatchery.

As detailed in the Nakat Inlet and Anita Bay coho salmon release site sections, directives from ADF&G staff for monitoring of straying of coho salmon returning to these sites went unfulfilled, even when the directives appear to have been a requirement of the permit.

Chinook Salmon

Chinook salmon stocks originated from the Unuk and Chickamin river drainages, both which empty into Behm Canal (Figure 3). Original broodstock were collected under a removal schedule approved by ADF&G staff in the AMPs to ensure adequate spawning escapement. Unuk River stock is no longer in use at Whitman Lake Hatchery.

Straying[118] is monitored at other hatcheries and at some escapement projects where adipose finclipped fish may be collected for tag recovery.[119] A total of 832 Whitman Lake Hatchery/Chickamin River stock adult returns were used for broodstock in 2015. The Chickamin River ancestral stock is currently in production only at Whitman Lake Hatchery.

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[117] Straying here is simply recovery of a tagged fish in a "terminal location" such as a hatchery or in a freshwater system. Whether these fish would spawn at these locations or were merely "exploring" and would have left these sites for their site of release is unknown.

[118] Ibid.

[119] Ed Jones, ADF&G, personal communication.

Carroll Inlet releases were recovered in the Carroll River escapement, and at Deer Mountain and Whitman Lake hatcheries (Appendix U). Releases from the Whitman Lake Hatchery were recovered in the Hugh Smith Lake, Unuk River, and Ketchikan area escapements, and at the Deer Mountain, Hidden Falls, Medvejie Creek and Port Armstrong hatcheries. Releases from the Neets Bay release site were recovered in the Chickamin River, McDonald Lake, Unuk River, and Naha River escapements and at the Deer Mountain and Whitman Lake hatcheries.

Table 2.–Key elements of the ADF&G *Genetic Policy*.

I. Stock Transport	
Use of appropriate local stocks	This element addresses Section I of the *Genetic Policy*, covering stock transports. The policy prohibits interstate or inter-regional stock transports, and uses transport distance and appropriate phenotypic characteristics as criteria for judging the acceptability of donor stocks.
II. Protection of wild stocks	
Interaction with or impact on significant wild stocks	Priority is given to protection of significant wild stocks from harmful interactions with introduced stocks. Stocks cannot be introduced to sites where they may impact significant or unique wild stocks.
	No significant stocks have been recommended in Southeast Alaska by the RPT. The Phase III CSP denotes guidelines for significant stock determination.
Establishment of wild stock sanctuaries	Wild stock sanctuaries should be established on a regional and species basis. No enhancement activities would be allowed, but gamete removal would be permitted. The guidelines and justifications describe the proposed sanctuaries as gene banks of wild type variability.
	No wild stock sanctuaries have been established in Southeast Alaska.
Straying Impacts	Prevention of detrimental effects of gene flow from hatchery fish straying and interbreeding with wild fish.
	Straying in wild systems is monitored for Chinook and chum salmon, but rarely for coho salmon.
III. Maintenance of genetic variance	
Maximum of three hatchery stocks from a single donor stock	A maximum of three hatchery stocks can be derived from a single donor stock. Offsite releases, such as for terminal harvest, should not be restricted by this policy if the release sites are selected so that they do not impact significant wild stocks, wild stock sanctuaries, or other hatchery stocks.
	Whitman Lake Hatchery stocks are not used at more than 2 other facilities.
Minimum effective population size	The policy recommends a minimum effective population size of 400. It also recognizes that small population sizes may be unavoidable with Chinook and steelhead.
	All Whitman Lake Hatchery programs use well over the 400 fish minimum for broodstock.
Genetics review of Fish Transport Permits (5 AAC 41.010 – 41.050)	
Review by geneticist	Each application is reviewed by the geneticist, who then makes a recommendation to either approve or deny the application. The geneticist may also add terms or conditions to the permit to protect wild or enhanced stocks.
	The ADF&G geneticist reviewed the FTPs.

Fisheries Management

See Table 3.

Whitman Lake Hatchery release sites are located near Ketchikan and Clarence Strait. Management plans are in place at all release sites to harvest Whitman Lake Hatchery chum salmon returns and protect overharvest of wild stocks. Purse seining occurs in Clarence Strait for hatchery chum salmon returns to Kendrick Bay beginning in mid-June—a time when few wild stock salmon are in the area. This is the only seine fishery in Southern Southeast Alaska that targets hatchery fish outside of a THA. The fishery is managed to maximize the quality of the hatchery chum salmon returns. When pink salmon management begins in July, purse seine openings in Clarence Strait are based on pink salmon abundance and escapements.

Other areas of purse seining are managed for wild sockeye, pink, and fall-run chum salmon stocks. Except for targeted openings for hatchery chum salmon in the THAs directly in front of the hatchery release sites, Whitman Lake Hatchery chum salmon are caught primarily in purse seine and drift gillnet fisheries during fishing periods managed for other salmon species.

Southeast Alaska chum salmon escapement index streams are grouped into stock groups by area and run-timing based on marine tagging and genetic studies (Eggers and Heinl 2008). Whitman Lake Hatchery summer-run chum salmon returns are harvested primarily in the Southern Southeast summer-run chum salmon index area. The goal is a lower-bound sustainable escapement goal, rather than a range, because summer-run chum salmon are harvested during periods managed for pink and sockeye salmon, and therefore cannot be managed to fall within a lower and upper range. Escapement levels have been well above the current escapement goal since about 1984, with the exception of 2008, 2009, and 2010 (Figure 4).

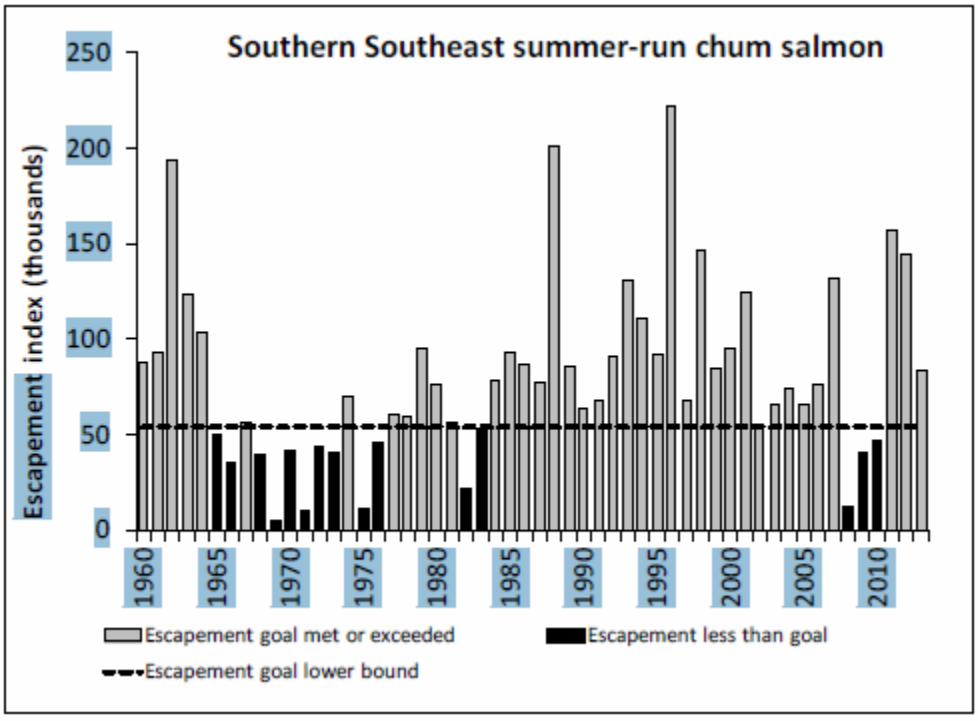

Figure 4.–Southern Southeast Alaska summer-run chum salmon escapement index.
Source: Heinl et al. (2014).

For fall-run chum salmon, Whitman Lake Hatchery returns would be intermingled with returning fall-run chum salmon stocks in Southern Southeast Alaska. The Cholmondeley Sound index grouping area is the only fall-run chum salmon stock group in Southern Southeast Alaska that supports a directed commercial fishery. Naturally spawning chum salmon returning to Cholmondeley Sound are managed inseason based on return strength, and an escapement range has been established (Eggers and Heinl 2008). Escapements have been within or above the escapement goal range in most years since 1984 (Figure 5). Hatchery strays were estimated to represent less than 1% of the escapement at Disappearance Creek (one of primary spawning streams in Cholmondeley Sound) based on otolith sampling conducted from 2008 to 2010 (Piston and Brunette 2011).

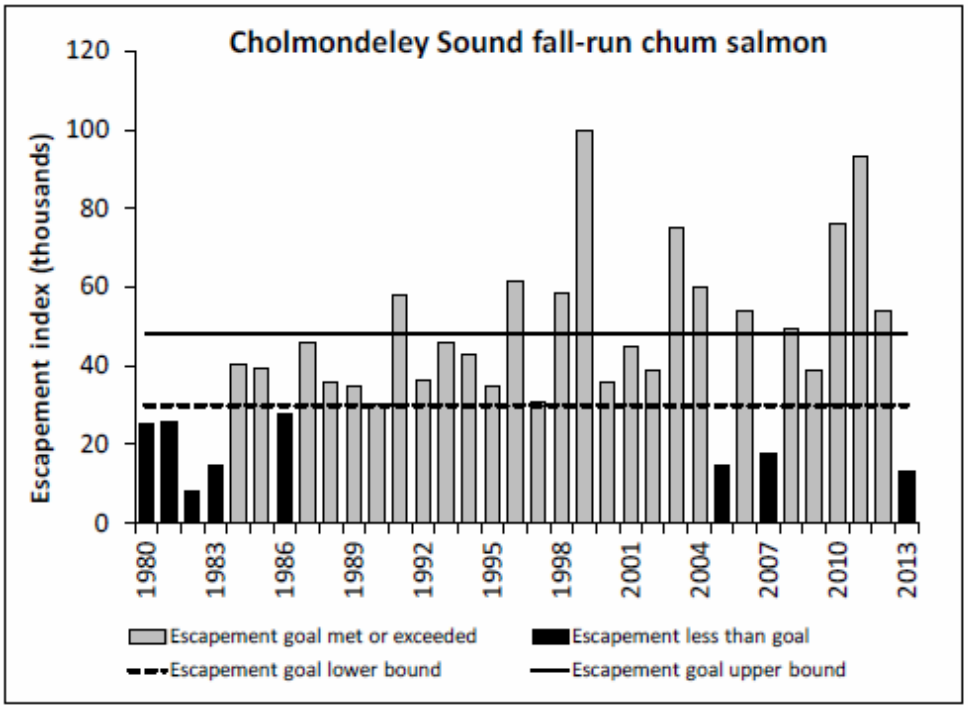

Figure 5.–Cholmondeley Sound fall-run chum salmon escapement index.
Source: Heinl et al. (2014).

Whitman Lake coho salmon are harvested primarily in mixed stock coho salmon fisheries. Regional coho salmon management is supported by long-term tagging of several wild indicator stocks in the region. The harvest is sampled for coded wire tags, providing inseason estimates of hatchery and wild stock abundance to guide management. Coho salmon escapement for the Southern Southeast Alaska coho salmon indicator stock (Hugh Smith Lake) has been met or exceeded in every year from 1982 to 2014 except 1 (Skannes et al. 2015). The escapement goal for the Ketchikan area survey index, which includes an aggregate of 14 streams on the mainland near Neets Bay, has been met annually since 1990 (Heinl et al. 2014).

Chinook salmon in Southeast Alaska are managed under the Pacific Salmon Treaty. Whitman Lake Hatchery Chinook salmon are primarily caught in the mixed stock troll and sport fisheries and terminal area net fisheries.

In recent years, concern has arisen regarding the impact of hatchery harvests on the depressed Unuk River Chinook salmon stock. During discussion at the spring 2014 RPT meeting of the Whitman Lake Hatchery PAR to increase Chinook salmon releases, ADF&G staff expressed concern that increased Chinook salmon hatchery releases in the Ketchikan area would create increased fishing effort and potentially increase the harvest of Unuk River Chinook salmon. Concern was also raised about the incidental harvest of Unuk River Chinook salmon during the terminal commercial fishery for returning chum salmon at Neets Bay Hatchery. The low returns to the Unuk River are part of a regional pattern in Southeast Alaska, where most wild Chinook salmon stocks are in a low state of production in recent years—particularly those that empty into Behm Canal, which include the Unuk, Chickamin and Blossom Rivers (Table 1). A SSRAA representative pointed out that of the several streams assessed in the area for Chinook salmon escapement, only the Unuk River was not meeting its escapement goal, suggesting that the problem is not tied to a specific fishery. The Unuk River escapement bottomed out in 2012, improved in 2013 and 2014, and in 2015 the system escapement goal was met (Table 1).

Table 3.–Key elements of Alaska fisheries management policies and regulations relevant to salmon hatcheries and fishery enhancement.

Sustainable Salmon Fishery Policy (5 AAC 39.222)	
I. Management principles and criteria	
Assessment of wild stock interaction and impacts	As a management principle, the effects and interactions of introduced or enhanced salmon stocks on wild stocks should be assessed. Wild stocks should be protected from adverse impacts from artificial propagation and enhancement efforts. Salmon escapement is monitored in representative systems in the region. Straying of Chinook and chum salmon occurs on select systems.
Use of precautionary approach	Managers should use a conservative approach, taking into account any inherent uncertainty and risks. Salmon fisheries are based on wild stock abundance.
Salmon Escapement Goal Policy (5 AAC 39.223)	
Establishment of escapement goals	Management of fisheries is based on scientifically based escapement goals that result in sustainable harvests. Escapement goals are established for representative stocks or groups of stocks in Southern Southeast Alaska.
Mixed Stock Salmon Fishery Policy (5 AAC 39.220)	
Wild stock conservation priority	The conservation of wild stocks consistent with sustained yield is the highest priority in management of mixed stock fisheries. Escapement goals have been met in most years in systems impacted by hatchery production at Whitman Lake Hatchery.
Fisheries management review of FTPs (5 AAC 41.010 – 41.050)	
Review by management staff	All proposed FTPs are reviewed by the regional supervisors for the Divisions of Commercial Fisheries and Sport Fish, the deputy director of Commercial Fisheries, and the local regional resource development biologist before consideration by the commissioner of ADF&G. Department staff may recommend approval or denial of the permit, and recommend permit conditions.

Fish Health and Disease- all species

See Table 4.

FTPs for the Whitman Lake Hatchery program were approved by the ADF&G pathologist. Pathology records showed no inconsistencies with fish health and disease policies.

The hatchery was inspected regularly from 1978 to 1999 and again in 2014 by ADF&G Pathology Lab staff. The inspector remarked in the 2014 report that the facility was very well run, with knowledgeable staff and high fish survival. The inspector remarked that fish health continued to be a high priority for the facility, with good fish survival rates and large production being direct indicators of good fish health and successful fish culture.

The inspector noted no disease issues for chum salmon. Chinook and coho salmon at various times experienced Trichodina, bacterial coldwater disease, and bacterial kidney disease. The inspector indicated that staff had taken appropriate measures for isolating and treating the diseases. The inspector also recommended that Whitman Lake Hatchery staff maintain more complete records of some pathogens, and encouraged prompt reporting of serious pathogens to the ADF&G Fish Pathology Section.

Table 4.–Key elements of Alaska policies and regulations pertaining to fish health and disease.

Fish Health and Disease Policy (5 AAC 41.080)	
Egg disinfection	Within 48 hours of taking and fertilizing live fish eggs or transporting live fish eggs between watersheds, all eggs must be treated with an iodine solution. This requirement may be waived for large scale pink and chum salmon facilities where such disinfection is not effective or practical.
	Eggs are disinfected when necessary.
Hatchery inspections	According to AS 16.10.460, inspection of the hatchery facility by department inspectors shall be permitted by the permit holder at any time the hatchery is operating.
	Hatchery inspections were conducted regularly during the first 2 decades of operation.
Disease reporting	The occurrence of fish diseases or pathogens listed in 5 AAC 41.080(d) must be immediately reported to the ADF&G Fish Pathology Section.
	There have been no chronic disease issues at the hatchery with chum salmon.
Pathology requirements for Fish Transport Permits (FTPs) (5 AAC 41.005–41.060)	
Disease history	Applications for FTPs require either a complete disease history of the stock or a broodstock inspection and certification if the disease history is not available.
	The disease history is completed as necessary.
Isolation measures	Applications must list the isolation measures to be used during transport, including a description of containers, water source, depuration measures, and plans for disinfection.
	Isolation measures, transport methods and containers are described in FTPs.
Pathology review of FTPs	Each application is reviewed by the pathologist, who then makes a recommendation to either approve or deny it. The pathologist may also recommend to the commissioner terms or conditions to the permit to protect fish health. Transports of fish between regions are discouraged.
	The ADF&G fish pathologist reviewed and approved the FTPs.

RECOMMENDATIONS

1. The 2014 AMP indicates that there is no sockeye salmon capacity on the Whitman Lake Hatchery permit. However, the author did not find that sockeye salmon had been removed from the Whitman Lake Hatchery permit. This should be clarified.
2. A 1990 permit alteration allowed 1.5 million Chinook salmon eggs to be collected for transfer to other PNP or state hatchery facilities, in addition to the 1.5 million eggs permitted for smolt production at Whitman Lake Hatchery.

   A similar permit alteration was added in 2010, when 700,000 eggs were allowed to be collected for Port Saint Nicholas Hatchery, in addition to the hatchery capacity at the time of 1.5 million eggs. It is unclear if this permit alteration was necessary, since the 1990 permit alteration already allowed for 1.5 million additional eggs to be collected for other facilities.

   When the permit alteration was issued in 2014 that increased Chinook salmon capacity at the hatchery from 1.5 million eggs to 2.1 million eggs, it noted that the permit was also conditioned for the additional 700,000 eggs for Port Saint Nicholas Hatchery. However, there was no mention of the 1.5 million additional eggs allowed to be collected for transfer to other facilities that was approved in 1990. This should be clarified.
3. A BMP should be written for Whitman Lake Hatchery that describes current operations.

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Appendix A.–Whitman Lake Hatchery permit and permit alterations.

Key: WLH=Whitman Lake Hatchery, EWC=Earl West Cove, PSNH=Port St. Nicholas Hatchery

Date	Description	Green Eggs Chum Salmon[a]	Coho Salmon[a]	Chinook Salmon[a]	Sockeye Salmon[a]
05/09/1978	PNP hatchery permit number 8 and BMP issued to SSRAA for Whitman Lake Hatchery in Ketchikan. Hatchery permitted for 26 million chum salmon eggs. A temporary egg eyeing station at Beaver Falls was permitted for use for 1 year.	26			
	Approved donor streams include Disappearance and Walker creeks. Release sites included Neets Bay and Nakat Inlet.				
	A draft BMP was found from 1982. It does not appear that a final, signed BMP was ever issued.				
09/20/1978	Permit alteration added 3 Walker Cove streams and Hetta Portage Stream as chum salmon donor stocks. Added 1.3 million Gene's Lake Creek stock coho salmon eggs for release at Bailey Bay.	26	1.3		
10/26/1978	Permit alteration allowed 1 million eggs from Indian Creek (Chickamin River system). Smolt release to a Bailey Bay system. Coho permitted capacity for hatchery unclear.	26	2.3		
11/9/1978	PAR approved providing for a 2.3 million coho salmon egg capacity.	26	2.3		
10/02/1981	SSRAA requested using Beaver Falls facility. ADF&G FRED staff opposed to a permanent use. PAR was not approved, but not officially denied, either.	26	2.3		
08/03/1981	Increase chum salmon capacity from 26 million to 26.8 million eggs.	26.8	2.3		
04/30/1982	SSRAA requested PAR to use Beaver Falls facility when problems arose at Whitman Lake Hatchery. PAR later withdrawn.	26.8	2.3		
08/18/1982	PAR approved to increase coho salmon smolt release from the hatchery from 250,000 to 400,000 smolt and added Chinook salmon to the permit, up to 400,000 Chinook salmon eggs for release from the hatchery.	26.8	2.3	0.4	
01/21/1983	PAR approved to collect 5 million summer chum salmon eggs from Carroll River/Nakat Inlet broodstock for incubation at WLH.	31.8	2.3	0.4	
05/12/1983	PAR approved to allow release of up to 200,000 Unuk River stock/Little Port Walter Hatchery smolt from Neets Bay saltwater net pens for 1 year only.	31.8	2.8	0.4	
	Also increased coho salmon capacity from 2.3 million to 2.8 million eggs for release of increased production at Square Cove (Earl West Cove).				

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Date	Description	Green Eggs Chum Salmon[a]	Coho Salmon[a]	Chinook Salmon[a]	Sockeye Salmon[a]
08/29/1983	PAR approved to collect 1 million chum salmon eggs from Carroll River for incubation at WLH and release at Nakat Inlet.	31.8	2.8	0.4	
09/1/1983	PAR to allow transfer of Hidden Falls chum salmon gametes for incubation at Whitman Lake Hatchery and rearing and release at Nakat Inlet denied due to genetic concerns.	31.8	2.8	0.4	
10/26/1983	PAR approved to increase coho salmon egg take for release at Herring Bay from 400,000 to 1 million	31.8	3.4	0.4	
7/3/1984	PAR approved to allow incubation of 8 million fall-run chum salmon eggs at WLH for release at Nakat Inlet and 8 million summer-run chum salmon eggs at WLH for release at EWC.	31.8	3.4	0.4	
3/16/1984	PAR approved to allow net pen rearing of coho salmon smolts for release in Herring Bay.	31.8	3.4	0.4	
4/13/1984	PAR approved to incubate, rear and release up to 2.5 million sockeye salmon eggs at WLH. Donor sources were Karta River and McDonald Lake.	31.8	3.4	0.4	2.5
8/15/1985	PAR approved to incubate and rear up to 1.1 million Chinook salmon eggs at WLH for release at Carroll Inlet.	31.8	3.4	1.4	2.5
7/3/1984	PAR approved to allow incubation of 8 million fall-run chum salmon eggs at WLH for release at Nakat Inlet and 8 million summer-run chum salmon eggs at WLH for release at EWC.	31.8	3.4	1.4	2.5
2/26/1985	PAR approved to allow increase from 8 million to 15 million fall-run chum salmon eggs at WLH for release at Nakat Inlet.	31.8	3.4	1.4	2.5
02/13/1986	PAR approved for release of 100,000 coho salmon smolt from Nakat Inlet.	31.8	3.4	1.4	2.5
3/13/1986	PAR approved to allow rearing and release of 500,000 Chinook salmon smolts from EWC.	31.8	3.4	1.5	
3/17/1986	PAR approved for release of 60,000 Chinook salmon smolt from Carroll Inlet marine net pens for 1986 only.	31.8	3.4	1.5	2.5
04/09/1987	PAR approved for release of 800,000 Chinook salmon smolt from Carroll Inlet marine net pens for 1987 only.	31.8	3.4	1.5	2.5
05/14/1987	PAR approved to establish and EWC SHA.	31.8	3.4	1.5	2.5
05/27/1988	PAR approved for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 1988 only.	31.8	3.4	1.5	2.5
05/27/1988	PAR to increase Nakat Inlet coho salmon release from 100,000 to 200,000 for 1 year only. No approval nor denial for the request found.	31.8	3.4	1.5	2.5

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Date	Description	Green Eggs Chum Salmon[a]	Coho Salmon[a]	Chinook Salmon[a]	Sockeye Salmon[a]
06/20/1989	PAR approved for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 1989 only.	31.8	3.4	1.5	2.5
02/09/1990	PAR for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 1990 only. No approval of PAR found.	31.8	3.4	1.5	2.5
05/31/1990	PAR approved for incubation of 14 million summer chum salmon eggs at WLH for release at Kendrick Bay.	45.8	3.4	1.5	2.5
08/10/1990	PAR approved for incubation to eyed stage of up to an additional 1.5 million Chinook salmon eggs for transfer to other hatcheries. These eggs are in addition to the 1.5 million eggs for release from the hatchery.	31.8	3.4	1.5	2.5
02/24/1991	PAR approved for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 1991 only.	45.8	3.4	1.5	2.5
04/05/1992	PAR approved for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 1992 only.	45.8	3.4	1.5	2.5
04/05/1993	PAR approved for release of 1 million Chinook salmon smolt from Carroll Inlet marine net pens for 5 years.	45.8	3.4	1.5	2.5
12/18/1994	PAR approved to increase release from 100,000 to 200,000 coho salmon smolt from Nakat Inlet. This did not increase WLH permitted capacity.	45.8	3.4	1.5	2.5
02/23/1996	PAR approved to initiate release of up to 200,000 summer-run coho salmon at Herring Cove. This did not increase WLH permitted capacity.	45.8	3.4	1.5	2.5
04/22/1999	PAR approved for release of up to 250,000 Chinook salmon smolts from net pens at Neets Bay hatchery. This did not increase WLH permitted capacity.	45.8	3.4	1.5	2.5
6/26/2000	PAR approved to move all EWC releases to Anita Bay. Permitted releases from Anita Bay were 8 million summer chum, 300,000 fall coho, and 500,000 Chinook. Also approved increase of fall coho salmon release at Nakat from 200,000 to 300,000 smolts.	45.8	3.4	1.5	2.5
12/27/2000	PAR approved for reduce WLH chum salmon capacity from 45.8 million to 35.8 million eggs. This would allow for fry releases of 8 million fry each at Nakat Inlet and Anita Bay and 14 million fry at Kendrick Bay.	35.8	3.4	1.5	2.5
06/21/2001	PAR approved for transfer 8 million chum salmon egg capacity from Neets Bay Hatchery to WLH and increase release at Anita Bay from 8 million to 16 million fry.	43.8	3.4	1.5	2.5
05/21/2003	PAR approved for increase of 500,000 chum salmon egg capacity at WLH.	44.3	3.4	1.5	2.5

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Date	Description	Green Eggs Chum Salmon[a]	Coho Salmon[a]	Chinook Salmon[a]	Sockeye Salmon[a]
06/09/2006	PAR approved to release 1 million coho salmon pre-smolt into Bakewell Lake annually until 2012. Permitted capacity did not change.	44.3	3.4	1.5	2.5
05/17/2010	PAR approved to allow collection of an additional 700,000 Chickamin River stock Chinook salmon eggs for incubation to eyed stage and transfer to PSNH. Permitted capacity at WLH remained at 1.5 million plus the 700,000 eggs for transfer to PSNH. The PAR showed capacities for chum, coho and Chinook salmon, but not sockeye salmon; however, sockeye salmon was not found to have been removed from the permit.	44.3	3.4	1.5	2.5
05/26/2010	PAR approved to increase coho salmon egg capacity from 3.4 million to 7.0 million eggs.	44.3	7.0	1.5	2.5
02/07/2011	PAR approved to add McLean Arm as an alternative chum salmon release site for Kendrick Bay.	44.3	7.0	1.5	2.5
01/16/2014	PAR approved to increase coho salmon releases from 300,000 to 600,000 smolt at both Nakat Inlet and Anita Bay. Hatchery capacity remained the same.	44.3	7.0	1.5	2.5
05/16/2014	PAR approved to increase Chinook salmon egg capacity from 1.5 million to 2.1 million eggs, plus an additional 700,000 eggs for transfer to PSNH. In addition, Ketchikan Creek was added as a remote release site for up to 100,000 Chinook salmon smolt.	44.3	7.0	2.1	2.5
05/20/2015	PAR approved to allow up to 200,000 summer-run coho salmon smolt released at Whitman Lake Hatchery, adds Carroll Inlet as remote release site for up to 600,000 Chickamin River stock Chinook salmon smolt and creates an SHA in Carroll Inlet.	44.3	7.0	2.1	2.5

[a] Numbers in millions.

Appendix B.–Summary of fish transport permits for Whitman Lake Hatchery.

Key: WLH=Whitman Lake Hatchery, LPW=Little Port Walter Hatchery, CLH=Crystal Lake Hatchery, NBH=Neets Bay Hatchery, BIH=Burnett Inlet Hatchery.

FTP No.	Issued	Expiration	FTP summary and reviewer comments
78J-1047	1978	1978	Transfer 100 fry from Beaver Falls or Deer Mountain hatcheries to determine effects of pH level of water at Whitman Lake prior to construction of the hatchery.
78J-1074	1978	1978	Collect gametes from Gene Creek coho salmon for incubation at Beaver Falls/WLH facilities and release fry at a Bailey Bay site.
78J-1075	1978	1978	Collect gametes from Portage chum salmon for incubation at Beaver Falls/WLH facilities and release fry at Kendrick Bay/McLean Arm.
78J-1076	1978	1978	Collect gametes from Indian Creek coho salmon for incubation at Beaver Falls/WLH facilities and release fry at Kendrick Bay/McLean Arm.
78J-1078	1978	1978	Collect gametes from Walker Cove chum salmon for incubation at Beaver Falls/WLH facilities and release fry at Nakat Bay.
78J-0118	1978	1978	Collect gametes from Indian Creek coho salmon for incubation at Beaver Falls/WLH facilities and release fry at Bailey Bay.
92	1979	1979	Collect up to 11.5 million eggs from Carroll River chum salmon for incubation and release.
93	1979	1979	Collect up to 11.5 million eggs from King Creek chum salmon for incubation and release.
94	1979	1979	Collect up to 11.5 million eggs from Keta River chum salmon for incubation and release.
95	1979	1979	Collect up to 11.5 million eggs from Karta River chum salmon for incubation and release.
80-10	1980	1980	Collect up to 1 million eggs from Indian Creek coho salmon for incubation at WLH to develop broodstock.
80-56	1980	1980	Collect up to 1 million eggs from Carroll River chum salmon for incubation at WLH and release fry at Nakat Bay.
80-57	1980	1980	Collect up to 225,000 eggs from Indian Creek coho salmon for incubation at WLH and release fry at Herring Bay.
80-59	1980	1980	Collect up to 130,000 eggs from Cripple Creek Chinook salmon for incubation at WLH.
80-63	1980	1980	Collect eggs from up to 7,181 Disappearance Creek female chum salmon for incubation WLH then rearing and releases from net pens in Neets Bay.
80-89	1980	1980	Collect up to 11.5 million eggs from Karta River chum salmon for incubation at WLH then rearing and releases from net pens in Neets Bay.
80-90	Withdrawn		Collect up to 11.5 million eggs from King Creek chum salmon for incubation at WLH. FTP application was withdrawn by SSRAA.
80-91	1980	1980	Collect up to 1.2 million eggs from Indian Creek coho salmon for incubation at WLH and release of up to 250,000 at Whitman Lake and 950,000 at Neets Bay.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
80-92	1980	1980	Collect up to 11.5 million eggs from Keta River chum salmon for incubation at WLH.
80-93	1980	1984	Collect up to 11.5 million eggs from Carroll River chum salmon for incubation at WLH and release fry at Nakat Bay. In 1983, FTP was renewed effective August 19, 1983 to June 30, 1984.
80-114	1980	1980	Collect up to 1 million eggs from Herring Bay Creek pink salmon for incubation at WLH and release back to the creek.
81-10	1981	1981	Collect up to 1 million eggs from Carroll River chum salmon for incubation at WLH and release fry at Nakat Bay.
81-11	1981	1981	Collect up to 225,000 eggs from Indian Creek coho salmon for incubation at WLH and release at WLH.
81-12	1981	1981	Collect up to 563,800 eggs from Indian Creek coho salmon for incubation at WLH and release at Neets Bay.
81-13	1981	1984	Collect eggs from up to 14,758,000 Disappearance Creek chum salmon eggs for incubation WLH then rearing and releases from net pens in Neets Bay. In 1982, FTP renewed through 1984 and egg number increased to 15 million eggs.
81-14	1981	1990	Collect up to 11 million eggs from Carroll River chum salmon for incubation at WLH and release fry at Nakat Bay. In 1982, FTP renewed through 1990 and egg number decreased to 8 million eggs.
81-15	1981	1990	Collect eggs from up to 7,181 Lagoon Creek female chum salmon for incubation WLH then rearing and releases from net pens in Neets Bay. In 1982, FTP renewed through 1990 and egg number limit at 15 million eggs.
81-16	1981	1987	Collect up to 200,000 eggs from Unuk River Chinook salmon for incubation at WLH. In 1982, FTP renewed through 1987.
81-17	1981	1981	Collect eggs from up to 7,181 Disappearance Creek female chum salmon for incubation WLH then rearing and releases from net pens in Neets Bay.
81-18	1981	1990	Collect between 1.2 and 2 million Neets Bay/Indian Creek stock coho salmon eggs for incubation WLH then rearing and releases from net pens in Neets Bay. In 1982, FTP renewed through 1990 and egg number limit of 1.95 million eggs. In 1983, egg number increased to 5 million eggs.
81-19	1981	1990	Collect up to 300,000 coho salmon eggs from returns to WLH for incubation and release at WLH. In 1982, FTP renewed through 1990 and egg number limit of 350,000 eggs. In 1983, egg number increased to 1 million eggs.
81-59	1981	1990	Transfer up to 200,000 Chinook salmon eggs from LPW for incubation and release at WLH. In 1982, FTP renewed through 1987.
81-85	1981	1981	Collect up to 1.2 million eggs from Indian Creek coho salmon for incubation at WLH and release at WLH and Neets Bay.
81-165	1981	1981	Transfer up to 100,000 Chinook salmon eggs (Unuk River stock) from LPW for incubation and rearing at WLH and release in Behm Canal.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
81-251	1981	1981	Transfer up to 200,000 Chinook salmon eggs (Chickamin River stock) from LPW for incubation and rearing at WLH and release in Behm Canal.
82J-1005	1982	1982	Transfer up to 84,000 Chinook salmon fry (LPW/Chickamin River stock) from WLH to the south fork of the Chickamin River.
82J-1006	1982	1982	Transfer up to 84,000 Chinook salmon fry (LPW/Chickamin River stock) from WLH to the Carroll River.
82J-1050	1982	1992	Collect up to 8 million eggs from Carroll River stock chum salmon returns to Nakat Inlet for incubation at WLH and rearing and release at Nakat Inlet.
82J-1058	1982	1992	Transfer up 8 million Carroll River stock chum salmon fry from 82J-1050 for rearing and release at Nakat Inlet.
82J-1070	1982	1992	Collect up to 15 million eggs from Disappearance Creek stock returns to Neets Bay for incubation at WLH and rearing and release at Neets Bay.
82J-1079	1982	1990	Collect up to 500,000 eggs from Oerns/Aaron Creek coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage.
82J-1080	1982	1990	Collect up to 500,000 eggs from Bradfield Canal coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage.
82J-1081	1982	1990	Collect up to 500,000 eggs from Tom's Creek coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage.
82J-1082	1982	1990	Collect up to 500,000 eggs from Eagle River coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage.
82J-1083	1982	1990	Collect up to 500,000 eggs from WLH return coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage.
82J-1084	Denied		Collect up to 500,000 eggs from CLH return coho salmon for incubation at WLH and rearing and release at Square Cove in Eastern Passage. FTP application denied because ADF&G staff believed stocks more local to the release site would be better suited.
83J-1015	1983	1983	Collect up to 200,000 eggs from LPW/Unuk River stock Chinook salmon for incubation at WLH and release at Neets Bay.
83J-1016	1983	1989	Collect up to 100,000 eggs from Keta River Chinook salmon for incubation at WLH and release at WLH.
83J-1017	1983	1989	Collect up to 100,000 eggs from Chickamin River Chinook salmon for incubation at WLH and release at WLH.
83J-1033	1983	1986	Collect up to 1 million Deer Mountain Hatchery/Unuk River stock Chinook salmon eggs for incubation at Beaver Falls Hatchery and release at Neets Bay. It is unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit.
83J-1044	Denied		Transfer 20 million Hidden Falls Hatchery/Kadashan Creek stock chum salmon eggs from Hidden Falls for incubation at WLH and release at Nakat Inlet. Denied for genetic reasons.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
83J-1053	Denied		Transfer 8 million WLH/Neets Bay release/Disappearance Creek stock chum salmon fry from WLH and release at Square Cove/Earl West Cove. Denied for genetic reasons.
83J-1058	1983	1984	Transfer 100,000 LPW/Unuk River stock Chinook salmon fry from LPW to Neets Bay for release.
84J-1005	1984	1984	Transfer 200,000 LPW/Unuk River stock Chinook salmon smolt from WLH to Neets Bay for release.
84J-1044	1984	1990	Transfer 400,000 LPW/Chickamin River stock Chinook salmon eggs to WLH for incubation and release at WLH.
84J-1082	1984	1999	Collect up to 8 million NBH/Cholmondeley stock fall chum salmon eggs for incubation at WLH and release at Nakat Inlet. In 1985, egg number increased to 15 million eggs.
85J-1015	1985	1990	Collect up to 300,000 Karta River sockeye salmon eggs for incubation at Beaver Falls Hatchery. It's unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit or not.
85J-1016	1985	1990	Collect up to 300,000 McDonald Lake sockeye salmon eggs for incubation at Beaver Falls Hatchery. It's unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit or not.
85J-1026	1985	1985	Hold 60 LPW/Unuk River stock Chinook salmon pre-smolts in live-boxes to evaluate stress or mortality by potential gas supersaturation at Carroll Inlet to evaluate it as a rearing site.
85J-1061	1985	1999	Collect up to 1 million eggs from WLH/Unuk River Chinook stock for incubation at WLH and release at Carroll Inlet.
85J-1065	1985	1999	Collect up to 8 million eggs from NBH/Carroll Inlet stock chum salmon for incubation at NBH to eyed stage, transfer to WLH to hatching, the release at Earl West Cove.
86J-1012	1986	1995	Release up to 500,000 Crystal Lake Hatchery/Andrew Creek stock smolt at Earl West Cove. The project was permitted via a Whitman Lake Hatchery hatchery permit alteration approved in 1986.
86J-1037	1986	1990	Collect up to 300,000 Karta River sockeye salmon eggs for incubation at Beaver Falls Hatchery and release at George Inlet. It's unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit or not.
88J-1072	1988	1991	Release up to 50,000 Karta River sockeye salmon smolts from Beaver Falls Hatchery at Shrimp Bay. It's unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit or not. In 1991, permit amended to increase release to 400,000 smolt and make the expiration date 1991.
88J-1072	1988	1991	Release up to 50,000 Karta River sockeye salmon smolts from Beaver Falls Hatchery at Shrimp Bay. It's unclear if this FTP was issued under the Whitman Lake Hatchery PNP permit or not. In 1991, permit amended to increase release to 400,000 smolt and make the expiration date 1991.
90J-1006	1990	2000	Collect up to 500,000 WLH/Indian Creek stock coho salmon eggs for incubation at WLH and release at EWC. Renewal of 82J-1083.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
90J-1007	1990	2000	Collect up to 5 million WLH/Indian Creek stock coho salmon eggs at Neets Bay for incubation at WLH and release at Neets Bay. Renewal of 81-18.
90J-1010	1990	2005	Collect up to 4.5 million WLH/Indian Creek stock coho salmon eggs for incubation at WLH and release at WLH, Neets Bay, Nakat Inlet and Earl West Cove. In 2000, FTP renewed and expiration date extended to 2005. Renewal of 81-19.
91J-1016	Denied		Collect up to 1.5 million WLH/Chickamin River stock Chinook salmon eggs at WLH for incubation at WLH and release at Neets Bay. Denied for genetic reasons.
91J-1039	1991	2014	Same as FTP 91J-1016 but approved second time application was submitted in 1991. Collect up to 1.5 million WLH/Chickamin River stock Chinook salmon eggs at WLH for incubation at WLH and NBH and release at Neets Bay. FTP renewed in 1999 through 2009, and in 2009 through 2014.
91J-1059	1991	1991	Return 900,000 WLH/Chickamin River stock Chinook salmon eggs sent to Medvejie Hatchery in 1991 back to WLH replace losses at WLH.
94J-1040	1994	1997	Transfer 1.3 million Medvejie Hatchery/Chickamin River stock Chinook salmon eggs to WLH when WLH returns were poor and additional eggs were needed.
94J-1042	1994	2004	Transfer 1.3 million eggs from Ward Lake summer-run coho salmon (Ward Lake return was started with Reflection Lake coho salmon) for incubation at WLH and Beaver Falls Hatchery for release in Neck Lake.
94J-1044	1995	2005	Collect 200,000 WLH/Chickamin River stock coho salmon from WLH returns for incubation at WLH and release at Nakat Inlet. This FTP was requesting an increase from 100,000 to 200,000 of an ongoing program. In 2000, the release was increased to 300,000 smolt. Straying study recommended.
95J-1021	1995	2005	Collect 250,000 WLH/Chickamin River stock Chinook salmon from WLH returns for incubation at WLH and release at WLH. In 1998, the release was increased to 750,000 smolt.
95J-1022	1995	2005	Transfer up to 300 female and 150 male adult summer-run Deer Mt. Hatchery/Reflection Lake stock coho salmon from Deer Mt. Hatchery returns to WLH for maturation, collection of eggs, incubation, and release at Neck Lake. Purpose of FTP was because there were not enough Reflection Lake stock coho returning to Ward Lake for broodstock for the Neck Lake release.
95J-1023	1995	1997	Collect up to 1.5 million eggs from Reflection Lake stock coho salmon as a backup brood source for the Neck Lake program. Eggs eyed at Beaver Falls Hatchery, transferred to WLH, and fry transferred to Neck Lake net pens for release.
95J-1024	1995	1997	From the egg take under 95J-1023, return 6,000 smolts to Reflection Lake in mitigation for the egg take for the Neck Lake program.
95J-1027	1995	2005	Collect up to 1 million eggs from WLH/Chickamin River stock Chinook salmon for incubation at WLH, transfer to CLH for rearing, then transfer to Neets Bay for release.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
95J-1032	1995	1996	Collect 200,000 eggs from Indian Creek coho salmon, the original donor stock for WLH for a study of marine survival between wild and hatchery crosses.
95J-1045	1995	1996	Collect 300,000 eggs from Karta River coho salmon for incubation at WLH hatchery and release to the Old Franks Lakes system to colonize area above a constructed fish pass.
96J-1001	1996	2006	Collect adult Deer Mt. Hatchery/Reflection Lake stock coho salmon, transfer to WLH, collect gametes, incubate at Beaver Falls Hatchery to eyed stage, transfer to WLH for rearing and release of up to 2 million smolt from WLH to establish a summer-run coho broodstock for fly plant to Neck Lake. Geneticist conditionally approved if a program to monitor that summer and fall run stocks at the hatchery were not interbred.
96J-1002	1996	2006	Collect up to 500 tagged female and 300 tagged male adult Ward Lake/Reflection Lake stock coho salmon, transfer to WLH, collect gametes, incubate at Beaver Falls Hatchery to eyed stage, transfer to WLH for rearing and release of up to 2 million smolt from WLH to establish a summer-run coho broodstock for fly plant to Neck Lake.
97J-1028	1997	1998	Collect adult Deer Mt. Hatchery/Reflection Lake stock coho salmon, transfer to WLH, collect gametes, incubate at WLH to eyed stage, transfer to Burnette Inlet Hatchery for rearing and release of up to 250,000 smolts. This was to transfer summer coho program from WLH to Burnett Inlet Hatchery.
01J-1001	2001	2008	Transfer 225,000 WLH coho salmon smolts from WLH to Anita Bay for release. In 2008, FTP renewed through 2013. In 2013, FTP renewed through 2023. Also in 2013, FTP amended to increase release number to 600,000 smolt.
01J-1003	2001	2008	Release up to 8 million Carroll River stock summer chum salmon fry in Anita bay. Eggs are collected from returns to Neets Bay, incubated at WLH, and released to Anita Bay. This FTP transferred this release from Earl West Cove to Anita Bay. Renewal of FTP 85J-1065.
05J-1007	2005	2015	Allows for collection of up to 4.5 million coho salmon eggs at WLH for release at Neets Bay, Nakat Inlet, Anita Bay and WLH. Renewal of FTP 90J-1010.
05J-1008	2005	2015	Allows for collection of up to 4.5 million coho salmon eggs at NBH and serves as a backup brood source for WLH. Renewal of FTP 90J-1007.
05J-1009	2005	2015	Allows for release of up to 750,000 WLH/Chickamin River stock Chinook salmon smolt from WLH. Renewal of FTP 95J-1021.
05J-1010	2005	2015	Allows for transfer of up to 1 million WLH/Chickamin River stock Chinook salmon eyed eggs to CLH, then transfer of resulting smolt to Neets Bay for release. Renewal of FTP 95J-1027.
05J-1026	2005	2015	Release of up to 300,000 WLH/Indian River stock coho salmon smolt from Nakat Inlet. In 2011, expiration date extended from 2010 to 2015. In 2013, release number increased to 600,000 smolt. Renewal of FTP 94J-1044.
06J-1032	2007	2017	Release of up to 1 million WLH/Indian River stock coho salmon smolt into Bakewell Lake.

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FTP No.	Issued	Expiration	FTP summary and reviewer comments
08J-1020	2008	2013	Collect up to 22 million NBH/Carroll River stock summer chum salmon for incubation to eyed stage at NBH and transfer to WLH. FTP issued under NBH permit.
08J-1022	2008	2013	Transfer up to 20 million fry from FTP 08J-1020 from WLH to Kendrick Bay for release. FTP issued under NBH permit.
11J-1002	2011	2016	Transfer up to 450,000 WLH/Chickamin River stock fall run coho salmon eggs or fry from WLH to CLH for rearing and later transfer and release of up to 400,000 smolt at NBH.
11J-1003	2012	2017	Collect up to 24.7 million NBH/Carroll Inlet stock chum salmon for incubation to eyed stage at NBH, transfer to WLH to hatching, then transfer to McLean Arm for rearing and release. FTP issued under WLH permit.
11J-1024	2012	2017	Transfer up to 1.2 million WLH/Indian River/Chickamin River fry from WLH to Neck Lake, then yearling transport from Neck Lake to Neets Bay for release. In 2012, permit amended to increase number to 2.0 million fry.
12J-1021	2012	2022	Transport up to 4.0 million NBH/Disappearance creek chum salmon from Neets Bay to WLH for incubation, then transfer to Nakat Inlet for release.
13J-1002	2013	2023	Transport eyed eggs from WLH to BIH and transport resultant fry to Neck Lake and release the smolt at Neets Bay. FTP 11J-1024 allows transfer from WLH to Neck Lake and release at Neets Bay.
13J-1005	2013	2023	Transport of Whitman Lake Hatchery/Indian Creek stock fall-run coho salmon of up to 2.6 million eyed eggs in winter and additional 600,000 pre-smolt in the spring from WLH to NBH. FTP for egg take at WLH is 05J-1007.
14J-1014	2014	2024	Transport up to 350,000 WLH/Chickamin River stock Chinook Salmon fry from Port St. Nicholas Hatchery to WLH as a backup brood source.
14J-1015	2014	2024	Transport up to 520,000 WLH/Chickamin River stock Chinook Salmon fry from WLH to Crystal Lake Hatchery for rearing and eventual release at Neets Bay.
14J-1019	2014	2024	Transport up to 105,000 WLH/Chickamin River stock Chinook Salmon fry from WLH to Deer Mountain Hatchery for rearing and release into Ketchikan Creek. FTP for egg take is 91J-1039.
14J-1022	2014	2024	Collect up to 2.1 million WLH/Chickamin River stock Chinook salmon eggs for incubation and release at WLH.
15J-1002	2015	2025	Egg take of up to 6.0 million Carroll River stock summer run chum salmon eggs at Neets Bay Hatchery, transfer to Burnett Inlet for incubation and release.
15J-1006	2015	2025	Transport 250,000 Whitman Lake Hatchery/Chickamin River stock Chinook salmon smolts to Neets Bay for rearing and release.
15J-1018	2015	2018	Transport up to 222,000 Burnett Inlet Hatchery/Reflection Lake stock eyed-eggs from Burnett Inlet Hatchery to Whitman Lake Hatchery from 2015 to 2018 to transfer the existing summer-run coho salmon program from Burnett Inlet Hatchery to Whitman Lake Hatchery.
15J-1019	2015	2025	Transport up to 420,000 Whitman Lake Hatchery, Chickamin River stock Chinook salmon fry from Whitman Lake Hatchery to Deer Mountain Hatchery for rearing and transfer of smolt to Carroll Inlet for release.
15J-1021	2015	2025	Transport up to 1 million Whitman Lake Hatchery/Chickamin River stock Chinook salmon eggs to Crystal Lake Hatchery for incubation and rearing and then to Neets Bay for rearing and release.

Appendix C.–Comparison of permitted and reported summer-run (Carroll River stock) chum salmon egg takes, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fish transport permits and annual reports for Nakat Inlet release site.

The program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, CR=Carroll River, NI=Nakat Inlet, NB=Neets Bay Hatchery.

Brood Year	Hatchery Permit Egg Limit[a]	Egg Source	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1979	26	CR	11.5	79-92	11.5	4.4	1.0	None	1.2	1.3
1980	26	CR	11.5	80-93	11.0	5.6	10	80-93	3.3	3.2
1981	26	CR	11.0	81-14	11.0	6.0	8	81-14	5.0	5.1
1982	26.8	NI/CR	8.0	82J-1058	8.0	1.5	8	82J-1058	6.2	
		CR	8.0	81-14		7.4	8	81-14		6.2[b]
1983	26.8	NI/CR	8.0	82J-1058	20.0	3.7	[c]			
1984	26.8	NI/CR	8.0	84J-1082	5.0	7.5				4.8
1985	26.8	NI/CR	8.0	84J-1082	5.0[d]	8.6[e]	4.1[f]			4.1
1986	26.8	NB/CR	8.0	84J-1082	5.0	8.5	4.1			4.1
1987	33.8	NB/CR	20.0	85J-1064	16.0[g]	23.5[h]	8.0	82J-1058	3.5	2.3
1988	33.8	NB/CR	20.0	85J-1064	20.0[g]	22.5[g]	8.0	82J-1058	7.3	3.9
1989	33.8	NB/CR	20.0	85J-1064	24.0[g]	4.2[g]	8.0	82J-1058	2.0	2.1[i]
1990	47.8	NB/CR	20.0	85J-1064	8.0	0.7[j]	8.0	82J-1058	6.0	6.0
1991	47.8	NB/CR	20.0	85J-1064	24.0[g]	24.1[k]	8.0	82J-1058	4.8	9.7
1992	47.8	NB/CR	20.0	85J-1064	26.0[g]	23.8[k]	20.0	85J-1064	8.0	8.3
1993	47.8	NB/CR	20.0	85J-1064	26.0[g]	25.6[k]	20.0	85J-1064	8.0	7.9
1994	47.8	NB/CR	20.0	85J-1064	8.0	24.4[k]	20.0	85J-1064	8.0	8.2
1995	47.8	NB/CR	20.0	85J-1064	9.0	25.1[k]	20.0	85J-1064	8.0	8.5
1996	47.8	NB/CR	20.0	85J-1064	9.0	28.9[k]	20.0	85J-1064	8.0	8.1
1997	47.8	NB/CR	20.0	85J-1064	9.0	29.2[g]	20.0	85J-1064	8.0	8.5
1998	47.8	NB/CR	20.0	85J-1064	8.5	30.2[g]	20.0	85J-1064	8.0	8.2
1999	47.8	NB/CR	8.0	85J-1064	8.0	29.3[g]	8.0	85J-1064	8.0	8.4
2000	35.8	NB/CR	8.0	85J-1064	8.0	32.3[g]	8.0	85J-1064	8.0	8.5
2001	43.8	NB/CR	8.0	85J-1064	8.0	29.0[g]	8.0	85J-1064	8.0	8.3
2002	43.8	NB/CR	8.0	85J-1064	8.0	32.2[g]	8.0	85J-1064	8.0	8.5
2003	44.3	NB/CR	8.0	85J-1064	8.0	26.2[g]	8.0	85J-1064	8.0	8.2
2004	44.3	NB/CR	8.0	85J-1064	8.0	33.8[g]	8.0	85J-1064	8.0	7.9
2005	44.3	NB/CR	8.0	85J-1064	8.0	37.1[g]	8.0	85J-1064	8.0	8.4
2006	44.3	NB/CR	8.0	85J-1064	8.0	39.8[g]	8.0	85J-1064	8.0	8.2
2007	44.3	NB/CR	8.0	85J-1064	8.0	37.0[g]	8.0	85J-1064	8.0	7.7
2008	44.3	NB/CR	8.0	85J-1064	8.0	37.7[g]	8.0	85J-1064	8.0	9.4
2009	44.3	NB/CR	8.0	85J-1064	8.0	38.9[g]	8.0	85J-1064	8.0	8.3
2010	44.3	NB/CR	8.0	85J-1064	8.0	35.5[g]	8.0	85J-1064	8.0	8.4
2011	44.3	NB/CR	8.0	85J-1064	8.0	0	8.0	85J-1064	8.0	0
2012	44.3	NB/CR	8.0	85J-1064	8.0	41.4[g]	8.0	85J-1064	8.0	8.0
2013	44.3	NB/CR	9.2	85J-1064	8.0	41.6[g]	8.0	85J-1064	8.0	8.2
2014	44.3	NB/CR	9.2	85J-1064	8.0	40.8[g]	8.0	85J-1064	8.0	8.4
2015	44.3	NB/CR	9.2	85J-1064	8.0	42.0[g]				

[a] Egg take limit is for all Whitman Lake Hatchery Carroll River stock summer chum salmon release sites, not just Nakat Inlet.

[b] Combined release of CR and NI/CR stocks.

[c] SSRAA switched from summer run to fall run at NI in 1984, and released BY 1983 at NB instead of at NI.

[d] Egg take number is for NI or Earl West Cove.

[e] Includes eggs for Earl West Cove.

[f] Additional 1.2 million fry transported to Earl West Cove.

[g] Egg take number is for all release sites, including NI.

[h] Includes eggs for NI, EWC and NB.

[i] No release reported on the 1990 AR. This figure taken from the 2012 AMP.

[j] And additional 13.9 million eyed eggs transferred from NB. Egg take number is for all release sites, including NI.

[k] Eyed eggs from NB. Egg take number is for all release sites, including NI.

Appendix D.–Comparison of permitted and reported fall-run chum salmon egg takes, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for fall-run chum salmon releases from Nakat Inlet.

The program was permitted under the Whitman Lake Hatchery permit from 1984 until 1996, when the program was transferred to the Neets Bay Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, NB=Neets Bay Hatchery, CS= Cholmondeley Sound (Disappearance Creek and/or Lagoon Creek), NI=Nakat Inlet.

Brood Year	Hatchery Permit Egg Limit	Egg Source	FTP Fry Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1984	26.8	NB/CS	8.0	84J-1082	12.0	12.3	15.0	84J-1082	12.0	10.0
1985	33.8	NB/CS	15.0	84J-1082	12.0	2.5	15.0	84J-1082	12.0	2.4
1986	33.8	NB/CS	15.0	84J-1082	12.0	5.7	15.0	84J-1082	4.0	4.6
1987	33.8	NB/CS	15.0	84J-1082	12.0[a]	3.9	15.0	84J-1082	3.5	3.5
1988	33.8	NB/CS	15.0	84J-1082	12.0[a]	12.4[a]	15.0	84J-1082	6.7	4.8
1989	33.8	NB/CS	15.0	84J-1082	8.0	12.2[b]	15.0	84J-1082	2.0	2.1[c]
1990	47.8	NB/CS	15.0	84J-1082	24.0[a]	11.5[b]	15.0	84J-1082	8.0	5.8
1991	47.8	NB/CS	15.0	84J-1082	8.0	4.1[d]	15.0	84J-1082	9.5	4.1
1992	47.8	NB/CS	15.0	84J-1082	8.0	8.1[d]	15.0	84J-1082	8.0	7.9
1993	47.8	NB/CS	15.0	84J-1082	8.0	8.1[d]	15.0	84J-1082	8.0	7.7
1994	47.8	NB/CS	15.0	84J-1082	8.0	8.0[d]	15.0	84J-1082	7.9	7.5
1995	47.8	NB/CS	15.0	84J-1082	8.5	8.2[d]	15.0	84J-1082	0.8	7.8
1996	47.8	NB/CS		None[e]	8.5	31.1[a]	15.0		8.0	8.0
1997	47.8	NB/CS		None	8.5	31.2[a]	15.0		8.0	7.2
1998	47.8	NB/CS		None	9.0	30.7[a]	15.0	None	8.0	7.2
1999	47.8	NB/CS		None	8.0	31.3[a]	8.0	00J-1004	8.0	7.6
2000	35.8	NB/CS	8.0	00J-1004	8.0	23.2[a]	8.0	00J-1004	8.0	8.2
2001	43.8	NB/CS	8.0	00J-1004	8.0	28.9[a]	8.0	00J-1004	8.0	8.2
2002	43.8	NB/CS	8.0	00J-1004	8.0	22.5[a]	8.0	00J-1004	8.0	5.3
2003	44.3	NB/CS	8.0	00J-1004	8.0	28.1[a]	8.0	00J-1004	8.0	8.7
2004	44.3	NB/CS	8.0	00J-1004	8.0	33.4[a]	8.0	00J-1004	8.0	9.8
2005	44.3	NB/CS	8.0	00J-1004	8.0	0	8.0	00J-1004	0	0
2006	44.3	NB/CS	8.0	00J-1004	8.0	27.7[a]	8.0	00J-1004	8.0	6.6
2007	44.3	NB/CS	8.0	00J-1004	8.0	38.2[a]	8.0	00J-1004	8.0	8.4
2008	44.3	NB/CS	8.0	00J-1004	8.0	30.0[a]	8.0	00J-1004	8.0	8.0
2009	44.3	NB/CS	8.0	00J-1004	8.0	27.3[a]	8.0	00J-1004	8.0	8.7
2010	44.3	NB/CS	8.0	00J-1004	8.0	0	8.0	00J-1004	8.0	0
2011	44.3	NB/CS	8.0	00J-1004	8.0	2.1	8.0	00J-1004	8.0	7.8[f]
2012	44.3	NB/CS	8.0	00J-1004	8.0	29.4[a]	8.0	00J-1004	8.0	6.8
2013	44.3	NB/CS	8.0	00J-1004	8.0	0	8.0	00J-1004	8.0	0
2014	44.3	NB/CS	8.0	00J-1004	8.0	26.0[a]	8.0	00J-1004	8.0	9.3

[a] Egg take number is for all release sites, including NI.

[b] Eyed eggs from NB, and number is for all release sites, including NI.

[c] No release reported on the 1990 AR. This number taken from the 2012 AMP.

[d] Eyed eggs from NB.

[e] No FTP found for fall chum eggs collected and incubated to hatching at NB and transfer to NI.

[f] Of the total, 1.9 million reared at WL and 5.9 million reared at NB.

Appendix E.–Comparison of permitted and reported fall-run chum salmon egg takes, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports production from Neets Bay release site.

From 1979 to 1981, the program was permitted under the Whitman Lake Hatchery permit, after which the program was permitted under the Neets Bay Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, CS= Cholmondeley Sound (Disappearance Creek and/or Lagoon Creek), NB=Neets Bay Hatchery, NF=Not Found, WL=Whitman Lake Hatchery, NI=Nakat Inlet.

BY	Hatchery Permit Egg Take	Egg Source[a]	FTP Egg Take	FTP No	AMP Egg Take	AR Egg Take	FTP Release	FTP No	AMP Release	AR Release
1979	26	CS	[b]	NF	11.5	1.5	15.8	80-63	1.2	1.3
1980	26	CS	15.8	80-63	15.8	16.8	15.8	80-63	15.3	15.4
1981	26	CS	14.8	81-13	15.8	11.2	14.8	81-13	10.0	8.3
1982	26	CS		NF	15.0	16.0			15.0	14.6
1983	26	CS	15	81-15	15.0	28.8[c]	15	81-15	25.0	24.6[c]
		NB/CS	15	82J-1070			15	82J-1070		
1984	60	NB/CS	60	84J-1032	30.0	36.6	60	84J-1032	35.0	31.9
1985	60	NB/CS	60	84J-1032	30.0	28.7[d]	60	84J-1032	23	17.0
1986	60	NB/CS	60	84J-1032	30	42.6[e]	60	84J-1032	34	22.7
1987	60	NB/CS	60	84J-1032	27	27.1[f]	60	84J-1032	20	9.5
1988	60	NB/CS	60	84J-1032	25	32.1[g]	60	84J-1032	20	17.2
1989	60	NB/CS	60	84J-1032	20	29.4[h]	60	84J-1032	23	23.6
1990	60	NB/CS	60	84J-1032	28	38.5[i]	60	84J-1032	26	23.9[j]
1991	60	NB/CS	60	84J-1032	28	34.3[k]	60	84J-1032	28	25.2
1992	60	NB/CS	60	84J-1032	28	36.0[l]	60	84J-1032	25	25.6
1993	80	NB/CS	60	84J-1032	28	36.1[l]	60	84J-1032	26	25.2
1994	80	NB/CS	60	84J-1032	28	30.4[m]	60	84J-1032	20.2	20.2
1995	80	NB/CS		NF[n]	22	30.1[o]		NF	18	18.3
1996	80	NB/CS		NF	22	31.1		NF	20	20.9
1997	80	NB/CS		NF	22	31.2	35	98J-1006	20	20.8
1998	80	NB/CS	35	98J-1006	22	30.7	35	98J-1006	20	19.8
1999	80	NB/CS	35	98J-1006	30.5[p]	31.3	35	98J-1006	20	20.0
2000	80	NB/CS	35	98J-1006	30.5[p]	23.2	35	98J-1006	20	12.5
2001	72	NB/CS	35	98J-1006	32[p]	28.9	35	98J-1006	20	17.4
2002	72	NB/CS	35	98J-1006	32[p]	22.5	35	98J-1006	15	14.1
2003	84	NB/CS	35	98J-1006	32[p]	28.1	35	98J-1006	20	17.0
2004	84	NB/CS	35	98J-1006	32[p]	33.4	35	98J-1006	20	21.4
2005	84	NB/CS	35	98J-1006	32[p]	12.8	35	98J-1006	11	11.8
2006	84	NB/CS	35	98J-1006	32[p]	27.7	35	98J-1006	20	17.3
2007	84	NB/CS	35	98J-1006	32[p]	38.2	35	98J-1006	26.5	26.8
2008	84	NB/CS	35	98J-1006	32[p]	30.0	35	98J-1006	20	19.7
2009	84	NB/CS	35	98J-1006	32[p]	27.3	35	98J-1006	20	16.5
2010	102.7	NB/CS	35	98J-1006	32[p]	23.4	35	98J-1006	11	10.3
2011	102.7	NB/CS	35	98J-1006	32[p]	31.8	35	98J-1006	20	19.4
2012	102.7	NB/CS	35	98J-1006	32[p]	29.4	35	98J-1006	20	19.6
2013	102.7	NB/CS	35	98J-1006	35[p]	21.2	35	98J-1006	14	13.6
2014	102.7	NB/CS	35	98J-1006	35[p]	26.0	35	98J-1006	14	12.6
2015	102.7	NB/CS	35	98J-1006	35[p]	34.8	35			

[a] Noted as the hatchery (if applicable) and the stock, re: hatchery/stock.

[b] No FTP found for the 1979 egg take. FTP 80-63 was not issued until Jan 1980.

[c] It appears eggs were collected both from CS and from returns to NB and incubated at Whitman Lake Hatchery, but the specific number of eggs collected from each location were not specified.

[d] Includes 2.7 million eyed eggs transferred to WL for NI release.

[e] Includes 5.7 million eyed eggs transferred to WL.

[f] Includes 3.9 million eyed eggs transferred to WL.

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[g] Includes 12.4 million eyed eggs transferred to WL.
[h] Includes 12.2 million eyed eggs transferred to WL.
[i] Includes 11.5 million eyed eggs transferred to WL.
[j] Includes 4.9 million fry transferred from WL to NB.
[k] Includes 4.1 million eyed eggs transferred to WL.
[l] Includes 8.1 million eyed eggs transferred to WL.
[m] Includes 8.0 million eyed eggs transferred to WL.
[n] No FTPs found for egg take or release for period 1995–1997.
[o] Includes 8.4 million eyed eggs transferred to WL.
[p] Includes about 8 million eggs for Nakat Inlet.

Appendix F.–Permitted and reported egg take and release, in millions and rounded, of summer-run chum salmon from the Neets Bay release site.

Releases were permitted through the Whitman Lake Hatchery and Neets Bay Hatchery.

Key: IL=Incubation Location, ET=Egg take, FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report; NB=Neets Bay Hatchery, WL=Whitman Lake Hatchery, CR=Carroll River.

Brood Year	IL	Hatchery Permit ET	Egg Source	FTP ET	FTP No.	AMP ET	AR ET	FTP Release	FTP No.	AMP Release	AR Release
1982	NB		WL/CR[a]	8	82J-1058	8	8.9	5	82J-1085	1.4	1.1
1983	NB	60	WL/CR[a]	8	82J-1058	20	3.7	5	82J-1085	3	2.8
1984	NB	60	WL/CR[a]	30	84J-1031	5	10.0	60	85J-1027	12	8.3
1985	NB	60	NB/CR	60	85J-1027	30	11.1	60	85J-1027	10	9.5
			WL/CR[a]	30	84J-1031		2.3		82J-1085	5	
1986	NB	60	NB/CR	60	85J-1027	30	12.4[b]	60	85J-1027	10	8.4
1987	WL	32.0[c]	NB/CR	60	85J-1027	35	28.5[d]	60	85J-1027	[e]	26.7[f]
1988	NB	60	NB/CR	60	85J-1027	35	42.1[g]	60	85J-1027		23.9[h]
1989	NB	60	NB/CR	60	85J-1027	40	14.6[i]	60	85J-1027		9.0
1990	NB	60	NB/CR	60	85J-1027	40	37.7[j]	60	85J-1027		20.7
1991	NB	60	NB/CR	60	85J-1027	40	51.8[k]	60	85J-1027	24	23.3
1990	NB	60	NB/CR	60	85J-1027	40	37.8[j]	60	85J-1027		20.7
1991	NB	60	NB/CR	60	85J-1027	40	51.8[k]	60	85J-1027	24	23.3
1992	NB	60	NB/CR	60	85J-1027	40	62.3[l]	60	85J-1027	33	32.5
1993	NB	60	NB/CR	60	85J-1027	40	72.8[m]	60	85J-1027	40	40.2
1994	NB	60	NB/CR	60	85J-1027	52	77.7[n]	60	85J-1027	46.8	45.5
1995	NB	60	NB/CR	60	85J-1027	80	77.9[o]	60	85J-1027	43	43.4
1996	NB	60	NB/CR	60	85J-1027	80	83.7[p]	60	85J-1027	45	45.2
1997	NB	60	NB/CR	60	85J-1027	80	51.4	60	85J-1027	45	45.3
1998	NB	60	NB/CR	60	85J-1027	80	52.1	60	85J-1027	45	45.1
1999	NB	60	NB/CR	60	85J-1027	80	84.9[q]	60	85J-1027	45	45.4
2000	NB	60	NB/CR	60	85J-1027	80	86.8[r]	60	85J-1027	45	46.0
2001	NB	72	NB/CR	60	85J-1027	80	49.6[s]	60	85J-1027	39	36.5
2002	NB	102.7	NB/CR	60	85J-1027	80	51.8[t]	60	85J-1027	39	39.0
2003	NB	102.7	NB/CR	60	85J-1027	80	74.5[u]	60	85J-1027	49	47.8
2004	NB	102.7	NB/CR	60	85J-1027	100	108.4[v]	60	85J-1027	49	48.6
2005	NB	102.7	NB/CR	60	85J-1027	100	116.4[w]	60	85J-1027	49	46.3
2006	NB	102.7	NB/CR	60	85J-1027	100	123.5[x]	60	85J-1027	49	54.4
2007	NB	102.7	NB/CR	60	85J-1027	100	92.5[y]	60	85J-1027	36	34.5
2008	NB	102.7	NB/CR	60	85J-1027	100	110.8[z]	60	85J-1027	49	48.5
2009	NB	102.7	NB/CR	60	85J-1027	110	135.0[aa]	60	85J-1027	49	53.0
2010	NB	102.7	NB/CR	60	85J-1027	110	111.3 [bb]	60	85J-1027	49	51.8
2011	NB	102.7	NB/CR	60	85J-1027	135	135.0 [cc]	60	85J-1027	60	59.3
2012	NB	102.7	NB/CR	60	85J-1027	135	137.0 [dd]	60	85J-1027	61	65.0
2013	NB	102.7	NB/CR	70.5	85J-1027	135	134.9 [ee]	70.5	85J-1027	61	65.4
2014	NB	102.7	NB/CR	70.5	85J-1027	135	140.7 [ff]	70.5	85J-1027	61	62.6

[a] Eggs collected WL/CR returns to Nakat Inlet.
[b] Additional 3.2 million to Whitman Lake Hatchery.
[c] Egg take is for all release sites, including NB.
[d] Additional 23.5 million eggs to WL.
[e] From brood year 1987 to brood year 1990, no release figure was listed in the AMPs.
[f] Includes the 8.3 million fry transported from WL back to NB Hatchery.
[g] Additional 22.4 million eggs transferred to WL and 3.5 million transferred to Alaska Aquaculture Association.
[h] Includes the 6.2 million fry shipped back from WL.
[i] Includes 4.2 million eggs shipped to WL.
[j] Includes 13.4 million eggs shipped to WL.
[k] Includes 24.1 million eggs shipped to WL.

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[l] Includes 23.8 million eggs shipped to WL.
[m] Includes 25.6 million eggs shipped to WL.
[n] Includes 24.4 million eggs shipped to WL and includes eggs collected for Kendrick Bay release site.
[o] Includes 25.38 million eggs shipped to WL.
[p] Includes 26.6 million eggs shipped to WL.
[q] Includes 30.1 million eggs shipped to WL.
[r] Includes 32.0 million eggs shipped to WL.
[s] Includes 29.0 million eggs shipped to WL and includes eggs collected for Anita Bay release.
[t] Includes eggs collected for Anita Bay release.
[u] Includes eggs collected for Anita Bay and Kendrick Bay releases.
[v] Includes 33.8 million eggs transferred to WL and includes eggs collected for Anita Bay release.
[w] Includes 38.3 million eggs transferred to WL, 2 million eggs transferred to Tamgas Creek Hatchery, and includes eggs for Anita Bay release.
[x] Includes 39.8 million eggs transferred to WL. Egg number from 2006 Neets Bay Annual Report.
[y] Includes 37 million eggs transferred to WL and includes eggs collected for Anita Bay release.
[z] Includes 36.7 million eggs transferred to WL and includes eggs collected for Anita Bay release.
[aa] Includes 36 million eggs transferred to WL and eggs collected for Anita Bay release.
[bb] Includes 35.5 million eggs transferred to WL and eggs collected for Anita Bay release.
[cc] Includes 40.8 million eggs transferred to WL and 22.7 million eggs transferred to Burnett Inlet Hatchery.
[dd] Includes 41.4 million eggs transferred to WL and 22.4 million eggs transferred to Burnett Inlet Hatchery.
[ee] Includes 40.7 million eggs transferred to WL and 23.1 million eggs transferred to Burnett Inlet Hatchery.
[ff] Includes 42.0 million eggs transferred to WL and 23.5 million eggs transferred to Burnett Inlet Hatchery.

Appendix G.–Permitted and reported egg take and release, in millions and rounded, of summer chum salmon from the Earl West Cove release site.

The project was permitted under the Whitman Lake Hatchery and Neets Bay Hatchery. Eggs were collected at Neets Bay, incubated at Whitman Lake Hatchery or Neets Bay Hatchery, and resulting fry released at Earl West Cove.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, NB=Neets Bay Hatchery, CR=Carroll River, BI=Burnett Inlet Hatchery, HR=Harding River.

Brood Year	Hatchery Permit Egg Take	Egg Source	FTP Egg Take	FTP Authorizing Egg Take	AMP Egg Take	Annual Report Egg Take[a]	FTP Juvenile Release	FTP Authorizing Release	AMP Juvenile Release[b]	Annual Report Juvenile Release
1985	33.8	NB/CR	8	85J-1065		9	8	85J-1065	2	1
1986	33.8					0				0
1987	33.8	NB/CR	8	85J-1065	16[c]	24	8	85J-1065	4	3
1988	33.8	NB/CR	8	85J-1065	20[c]	22	8	85J-1065	7	4
1989	33.8					0				0
1990	47.8	BI/HR	8	90J-1051	24[c]	7.5	8	90J-1051	7	6
1991	47.8	NB/CR	8	85J-1065	24[c]	24	8	85J-1065	6	6
1992	47.8	NB/CR	8	85J-1065	26[c]	24	8	85J-1065	7	7
1993	47.8	NB/CR	8	85J-1065	26[c]	26	8	85J-1065	8	7
1994	47.8	NB/CR	8	85J-1065	8	24	8	85J-1065	8	7
1995	47.8	NB/CR	8	85J-1065	9	25	8	85J-1065	8	8
1996	47.8	NB/CR	8	85J-1065	9	29	8	85J-1065	8	8
1997	47.8	NB/CR	8	85J-1065	9	29	8	85J-1065	8	8
1998	47.8	NB/CR	8	85J-1065	9	30	8	85J-1065	8	8
1999	47.8	NB/CR	8	85J-1065	8	29	8	85J-1065	8	8

[a] Egg take number is for all release sites, including Anita Bay.

[b] Total release from Anita Bay.

[c] Eyed eggs from NB. Egg take number is for all release sites, including Earl West Cove.

Appendix H.–Permitted and reported egg takes and releases, in millions and rounded, of summer chum salmon in from the Anita Bay release site.

From 2001–2010, the project was permitted under both the Whitman Lake Hatchery and Neets Bay Hatchery permits. Eggs were collected at Neets Bay, incubated at Whitman Lake Hatchery and/or Neets Bay Hatchery, and resulting fry released at Anita Bay. In 2011, the project was transferred to the Burnett Inlet Hatchery permit. Eggs were collected at Neets Bay, incubated at Burnett Inlet Hatchery, and resulting fry released at Anita Bay.

Key: IL=Incubation Location, FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report; WL=Whitman Lake Hatchery, NB=Neets Bay Hatchery, CR=Carroll River, BI=Burnett Inlet Hatchery.

Brood Year	IL	Hatchery Permit Egg Take[a]	Egg Source	FTP Egg Take	FTP No. Egg Take	AMP Egg Take[a]	AR Egg Take[a]	FTP Release	FTP No. Release	AMP Release[b]	AR Release
2000	WL	35.8	NB/CR	8	01J-1003	80	32	8	01J-1003	8	8
2001	WL	43.8	NB/CR	8	01J-1003	80	29	8	01J-1003	14	7
	NB	72	NB/CR	6	01J-1009			6	01J-1009		7
2002	WL	44.3	NB/CR	8	01J-1003	80	32	8	01J-1003	14	8
	NB	72	NB/CR	6	01J-1009			6	01J-1009		5
2003	NB	84	NB/CR	22	01J-1009	80	75	22	01J-1009	14	14
2004	NB	84	NB/CR	22	01J-1009	100	74	22	01J-1009	14	14
2005	WL	44.3	NB/CR	8	01J-1003		37	8	01J-1003		4
	NB	84	NB/CR	22	01J-1009	100	76	22	01J-1009	22	18
2006	WL	44.3	NB/CR	8	01J-1003		40	8	01J-1003		5
	NB	84	NB/CR	22	01J-1003	100	84	8	01J-1003	22	20
2007	WL	44.3	NB/CR	8	01J-1003		37	8	01J-1003		5
	NB	84	NB/CR	22	01J-1009	100	51	22	01J-1009	22	15
2008	WL	44.3	NB/CR	8	01J-1003			8	01J-1003		4
	NB	84	NB/CR	22	01J-1009	100	111	22	01J-1009	22	19
2009	WL	44.3	NB/CR	8	01J-1003			8	01J-1003		5
	NB	84	NB/CR	22	01J-1009	110	135	22	01J-1009	22	19
2010	WL	44.3	NB/CR	8	01J-1003			8	01J-1003		4
	NB	102.7	NB/CR	22	01J-1009	111	111	22	01J-1009	22	19
2011	BI	25	NB/CR	25	10J-1028	135	23	25	10J-1028	22	22
2012	BI	25	NB/CR	25	10J-1028	135	22	25	10J-1028	22	22
2013	BI	25	NB/CR	25	10J-1028	135	23	25	10J-1028	22	23
2014	BI	25	NB/CR	25	10J-1028	135	24	25	10J-1028	22	23

[a] Egg take number is for all release sites, including Anita Bay.
[b] Total release from Anita Bay.

Appendix I.–Permitted and reported egg takes and releases, in millions and rounded, of summer chum salmon from the Kendrick Bay release site.

Releases from the site were permitted through both Whitman Lake Hatchery and Neets Bay Hatchery over the years.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, NB=Neets Bay Hatchery, CR=Carroll River, KB=Kendrick Bay.

Brood Year	Hatchery Permit Egg Take	Egg Source	FTP Egg Take[a]	FTP No.	AMP Egg Take	Annual Report Egg Take[b]	FTP Release	FTP No.	AMP Release	Annual Report Release
1990	14	NB/CR	14	90J-1052	14	0.7[c]	13	90J-1052	6	6
1991	14	NB/CR	14	90J-1052	24[d]	24	13	90J-1052	8	8
1992	14	NB/CR	14	90J-1052	26[d]	24	13	90J-1052	8	8
1993	14	NB/CR	14	90J-1052	26[d]	26	13	90J-1052	9	9
1994	14	NB/CR	14	90J-1052	12	24	13	90J-1052	9	8
1995	14	NB/CR	14	90J-1052	13	25	13	90J-1052	8	8
1996	14	NB/CR	14	90J-1052	13	29	13	90J-1052	9	9
1997	14	NB/CR	14	90J-1052	13	29	13	90J-1052	9	9
1998	14	NB/CR	14	90J-1052	13	30	13	90J-1052	9	9
1999	14	NB/CR	14	90J-1052	80[d]	29	13	90J-1052	9	10
2000	14	NB/CR	14	90J-1052	80[d]	32	13	90J-1052	14	10
2001	14	NB/CR	14	90J-1052	14	29	13	90J-1052	14	10
2002	14	NB/CR	14	90J-1052	14	32	13	90J-1052	14	11
2003	20	NB/CR	20	03J-1008	14	26	20	03J-1008	20	20
2004	20	NB/CR	20	03J-1008	20	34	20	03J-1008	20	20
2005	20	NB/CR	20	03J-1008	20	37	20	03J-1008	20	21
2006	20	NB/CR	20	03J-1008	20	40	20	03J-1008	20	22
2007	20	NB/CR	20	03J-1008	20	37	20	03J-1008	20	18
2008	20	NB/CR	20	03J-1008	20	38	20	03J-1008	20	19
2009	44.3	NB/CR	20	08J-1020	22	39	20	08J-1022	20	21
2010	44.3	NB/CR	20	08J-1020	22	36	20	08J-1022	20	20
2011	44.3	NB/CR	20	08J-1020	22	41	30	08J-1022	30	29
2012	44.3[e]	NB/CR	30	12J-1013	22	41	30	12J-1013	30	29[f]
2013	44.3	NB/CR	30	12J-1013	22	42	30	12J-1013	30	30
2014	44.3	NB/CR	30	12J-1013	22	42	30	12J-1013	30	29

[a] FTP was in number of eggs 1990–2002. From 2003 to 2014, FTP was in number of fry.

[b] Eyed eggs from NB. Egg take number is for all release sites, including KB.

[c] And additional 13.9 million eyed eggs transferred from NB.

[d] Egg take number is for all release sites, including KB.

[e] The additional eggs for the increased release at KB were to come from Burnett Inlet. Whitman Lake Hatchery remained at 44.3 million eggs.

[f] Release was to McLean.

Appendix J.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes and releases, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Whitman Lake Hatchery release site (Herring Cove), 1979–2014. Donor broodstock was collected from Indian Creek, a tributary to the Chickamin River, from 1978–1980, after which hatchery returns were used for broodstock.

The program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, NS=Not Specified in permit, WL=Whitman Lake Hatchery, NB=Neets Bay Hatchery, EW=Earl West Cove, NI=Nakat Inlet, AB=Anita Bay, BL=Bakewell Lake, NL=Neck Lake.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1978	2.3	[a]	78J-0118		0.776[b]			0.220	0.271
1979	2.3	1.0	80-10	1.5	0.928[b]	0.225	80-57	0.240	0.224
1980	2.3	1.2	80-91	1.2	0.630[b]	0.225	81-11	0.225	0.219
1981	2.3	0.300	81-19[c]	0.300	0.400	0.300	81-19	0.300	0.208
1982	2.3	0.300	81-19	0.350	0.360	0.300	81-19	0.200	0.309
1983	3.4	1.0	81-19	0.350	1.1	0.300	81-19	1.0	1.0
1984	3.4	1.0	81-19	1.0	1.0[d]	0.300	81-19	0.234	0.234
1985	3.4	1.0	81-19	1.0	1.0[d]	0.300	81-19	0.140	0.119
1986	3.4	1.0	81-19	1.0	1.993[d]	0.300	81-19	0.175	0.172
1987	3.4	1.0	81-19	1.0	2.729[d]	0.300	81-19	0.302	0.301
1988	3.4	1.0	81-19	3.4[e]	4.061[f]	0.300	81-19	0.300	0.301
1989	3.4	1.0	81-19	4.0[g]	3.014[d]	0.300	81-19	0.300	0.304
1990	3.4	1.0	90J-1010[h]	4.0	3.600[d]	1.0	90J-1010	0.300	0.304
1991	3.4	1.0	90J-1010	4.0	5.300[d]	1.0	90J-1010	0.032	0.300
1992	3.4	1.0	90J-1010	4.0	4.352[d]	1.0	90J-1010	0.300	0.301
1993	3.4	1.0	90J-1010	5.0	2.493[d]	1.0	90J-1010	0.297	0.302
1994	3.4	1.0	90J-1010	5.0	2.726[d]	1.0	90J-1010	0.300	0.283
1995	3.4	1.0	90J-1010	4.5	3.962[d]	1.0	90J-1010	0.300	0.317
1996	3.4	1.0	90J-1010	4.5	3.597[d]	1.0	90J-1010	0.300	0.300
1997	3.4	1.0	90J-1010	4.5	4.414[d]	1.0	90J-1010	0.300	0.305
1998	3.4	1.0	90J-1010	4.5	1.435[d]	4.5	90J-1010	0.300	0.344
1999	3.4	1.0	90J-1010	4.5	2.251[i]	4.5	90J-1010	0.284	0.301
2000	7.0	4.5	90J-1010	4.5	4.488[i]	4.5	90J-1010	0.300	0.314
2001	7.0	4.5	90J-1010	4.5	4.285[i]	4.5	90J-1010	0.300	0.321
2002	7.0	4.5	90J-1010	4.5	4.311[i]	4.5	90J-1010	0.300	0.158
2003	7.0	4.5	05J-1007	4.5	5.046[i]	NS	05J-1007	0.300	0.304
2004	7.0	4.5	05J-1007	4.5	3.738[i]	NS	05J-1007	0.300	0.307
2005	7.0	4.5	05J-1007	4.5	2.740[i]	NS	05J-1007	0.300	0.320
2006	7.0	4.5	05J-1007	4.5	2.410[j]	NS	05J-1007	0.300	0.305
2007	7.0	4.5	05J-1007[h]	4.5	5.500[j]	NS	05J-1007	0.300	0.299
2008	7.0	4.5	05J-1007	4.5	7.230[j]	NS	05J-1007	0.300	0.312
2009	7.0	4.5	05J-1007	4.5	6.500[j]	NS	05J-1007	0.300	0.301
2010	7.0	4.5	05J-1007	6.0	6.949[j]	NS	05J-1007	0.300	0.309
2011	7.0	4.5	05J-1007	6.0	6.292[k]	NS	05J-1007	0.300	0.315
2012	7.0	4.5	05J-1007	6.5	5.284[i]	NS	05J-1007	0.300	0.324
2013	7.0	4.5	05J-1007	6.5	6.303[l]	NS	05J-1007	0.300	0.319
2014	7.0	4.5	05J-1007	6.5	4.500[l]				

[a] No egg number was listed on FTP 78J-0118.

[b] Egg take for releases at WL and NB.

[c] FTP 81-19 had a transport date of Oct to Dec 1981. When FTP 90J-1010 was issued, the FTP indicated it was replacing FTP 81-19. It is unclear if FTP 81-19 was renewed or if it was assumed that the FTP was valid and that somewhere along the line someone saw it needed to be updated and did so in 1990.

[d] Egg take for releases at WL, NB, EW, and NI.

[e] It is unclear where the increase from 1.0 million to 3.4 million eggs came from. The hatchery capacity at the time was 3.4 million eggs, but the only FTP found in effect at the time (81-19) was for 1 million eggs. Egg take for releases at WL, NB, EW, and NI.

[h] This FTP was for a 4.5 million egg take for release at WL, EW, NI and NB.

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[f] Includes 1,500,000 eyed eggs transferred to Neets Bay Hatchery.

[g] It is unclear where the increase from 3.4 million to 4.0 million eggs came from. The hatchery capacity at the time was 3.4 million eggs, but the only FTP found in effect at the time (18-19) was for 1 million eggs.

[i] Egg take for releases at WL, NB, AB, and NI.

[j] Egg take for releases at WL, NB, AB, NI and BL.

[k] Egg take for releases at WL, NB, AB, NI and NL.

[l] Egg take for releases at WL and other sites.

Appendix K.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes and releases, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Neets Bay release site, 1979–2012. Numbers in millions.

This program is permitted under the Whitman Lake Hatchery permit and Neets Bay Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, IC=Indian Creek, WL=Whitman Lake Hatchery, NB=Neets Bay.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No.	Egg Source	Incubation Location	AMP Egg Limit	AR Egg Take or Juvenile Transfer	Release Site	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1978	2.3	[a]	78J-0118	IC	WL		0.776[b]	NB			0.325	0.278
1979	2.3	1.0	80-10	IC	WL	1.5	0.928[b]	NB	0.775	80-55	0.530	0.563
1980	2.3	1.2	80-91	IC	WL	1.2	0.630[b]	NB	0.564	81-12	0.335	0.340
1981	2.3	2.0	81-18	NB	WL	2.0	1.903	NB	1.950	81-18	0.950	0.980
1982	2.3	1.950	81-18	NB	WL	1.95	2.406	NB	1.950	81-18	Not listed	0.958
1983	4.5		[c]	NB	NB		2.758	NB	4.5	84J-1033	Not listed	2.153
1984	3.4		[d]	WL	WL	1.0	0.462[e]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	5.0	3.352	NB	4.5	84J-1033		
								NB			2.75	2.356
1985	3.4			WL	WL	1.0	0.487[f]	NB	5.0	81-18		
				WL	WL	1.0	0.172[g]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	3.0	3.050	NB	4.5	84J-1033		
								NB			2.8	2.485
1986	3.4			WL	WL	1.0	0.144[h]	NB	5.0	81-18		
				WL	WL		0.353[f]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	3.0	2.080	NB	4.5	84J-1033		
								NB			1.683	1.779
1987	3.4			WL	WL	1.0	0.756[g]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	3.0	1.138	NB	4.5	84J-1033		
								NB			2.242	2.142
1988	3.4			WL	WL	3.4[i]	1.5[j]					
							0.550[f]	NB	5.0	81-18		
							0.565[f]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	3.0	1.138	NB	4.5	84J-1033		
								NB			3.0	2.204
1989	3.4			WL	WL	4.0[k]	1.086[g]	NB	5.0	81-18		
	4.5	4.5	84J-1033	NB	NB	3.0	3.615[l]	NB	4.5	84J-1033		

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BY	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	Egg Source	IL	AMP Egg Limit	AR Egg Take or Juvenile Transfer	Release Site	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1990	3.4			WL	WL	4.0	1.187[f]	NB	[m]			
				WL	WL		0.697[g]	NB				
	4.5	4.5	84J-1033	NB	NB	3.0	0.414	NB	4.5	84J-1033		2.303
1991	3.4			WL	WL/NB	4.0	2.411[j]	NB				
				WL	WL		0.488[f]					
				WL	WL		0.517[g]					
								NB			3.0	2.677
1992	3.4			WL	NB/WL	4.0	2.143[j]	NB				
				WL	WL		0.394[f]	NB				
				WL	WL		1.0[g]	NB				
								NB			2.5	2.315
1993	3.4			WL	WL	5.0	0.298[f]	NB				
				WL	WL		0.893[g]	NB				
	4.5	4.5	84J-1033	NB	NB	3.5	2.150	NB	4.5	84J-1033	2.925	2.672
1994	3.4			WL	WL/NB	5.0	2.078[j]	NB				
				WL	WL		1.132[g]	NB				
								NB			3.1	3.002
1995	3.4			WL	WL/NB	4.5	1.591[j]	NB				
				WL	WL		1.355[g]	NB				
	4.5		[n]	NB	NB	3.0	0.641	NB				
								NB			3.300	3.382
1996	3.4			WL	WL/NB	4.5	1.540[j]	NB				
				WL	WL		0.865[g]	NB				
	4.5	4.5	[n]	NB	NB	3.0	0.542	NB				
								NB			2.700	2.414
1997	3.4			WL	WL/NB	4.5	2.144[j]	NB				
				WL	WL		0.913[g]	NB				
								NB			3.000	2.751
1998	3.4					4.5	0.137[f]	NB				
							0.973[g]	NB				
	4.5	4.5	98J-1007	NB	NB	3.0	2.220	NB	4.5	98J-1007		
								NB			3.000	3.099

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BY	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	Egg Source	IL	AMP Egg Limit	AR Egg Take or Juvenile Transfer	Release Site	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1999	3.4					4.5	0.368[j]	NB				1.180[j]
							0.100[f]	NB				
							0.713[g]	NB				
	4.5	4.5	98J-1007	NB	NB	3.0	1.772	NB	4.5	98J-1007		
								NB			2.830	2.738
2000	7.0					4.5	2.011[g]	NB				
	4.5	4.5	[n]	NB	NB	3.0	0.347	NB	4.5	98J-1007		
								NB			2.900	2.046
2001	7.0			WL	WL/NB	4.5	2.198[j]	NB				
				WL	WL		0.829[f]	NB				
				WL	WL		0.120[g]	NB				
								NB			2.900	3.026
2002	7.0			WL	WL/NB	4.5	4.311[o]	NB			2.900	2.537
2003	7.0			WL	WL/NB	4.5	5.046[o]	NB			2.900	2.999
2004	7.0			WL	WL/NB	4.5	1.600[j]	NB				
	4.5	4.5	98J-1007	NB	NB	3.0	1.319	NB	4.5	98J-1007		
								NB			2.900	3.075
2005	7.0			WL	WL/NB	4.5	0.928[j]	NB				
	4.5	4.5	98J-1007	NB	NB	3.0	1.723	NB	4.5	98J-1007		
								NB			2.900	2.814
2006	7.0			WL	WL/NB	4.5	0.260[j]	NB				
				WL	WL		0.589[g]	NB				
	4.5	4.5	98J-1007	NB	NB	3.0	1.723	NB	4.5	98J-1007		
								NB			2.900	2.779
2007	7.0			WL	WL/NB	4.5	2.600[p]	NB				
				WL	WL		0.609[g]	NB				
								NB			2.900	2.775
2008	7.0	4.5	[q]	WL	WL/NB	4.5	2.900[j]	NB			2.900	3.011
2009	7.0			WL	WL/NB	4.5	2.610[p]	NB			2.900	3.285

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BY	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	Egg Source	IL	AMP Egg Limit	AR Egg Take or Juvenile Transfer	Release Site	FTP Release Limit	FTP No	AMP Release Limit	AR Release
2010	7.0			WL	WL/NB	6.0	2.557[p]	NB			3.000	2.823
2011	7.0			WL	WL/NB	6.0	2.564[j]	NB				
				WL	WL		0.626[g]	NB				
		1.2	11J-1024	WL	WL		0.822[r]	NB	1.2	11J-1024		
								NB			4.05	3.702
2012	7.0			WL	WL/NB	6.5	1.063[j]	NB				
							0.219[g]	NB				
		1.2	11J-1024	WL	WL	2.0	1.768[r]	NB	1.2	11J-1024		
	4.5	4.5	98J-1007	NB	NB	3.0	1.405	NB				
								NB			4.2	4.46
2013	7.0	2.6	13J-1005	WL	WL/NB	6.5	6.905	NB	2.9	13J-1005		
	4.5	4.5	98J-1007	NB	NB	3.0	1.522	NB	4.5	98J-1007		
								NB				4.154

[a] No egg number was listed on FTP 78J-0118.
[b] Egg take for releases at WL and NB.
[c] FTP was not issued until 1984.
[d] No FTP permitted eggs to be taken at WL, incubated at WL, and transferred to NB until 2013. FTP 81-18 permitted eggs to be taken at NB, incubated at WL, and transferred back to NB.
[e] Annual report indicates that a total of 895,700 smolt were released from this egg take, including 234,250 at Whitman Lake Hatchery, 100,307 from Earl West Cove and 99,063 from Nakat Inlet. The author subtracted these 3 releases from the total smolt number to get the Neets Bay release, as it was not found recorded in the annual report.
[f] Presmolts transferred from WL to NB.
[g] Smolts transferred from WL to NB.
[h] Fry transferred from WL to NB.
[i] It is unclear where the increase from 1.0 million to 3.4 million eggs came from. The hatchery capacity at the time was 3.4 million eggs, but the only FTP found in effect at the time (18-19) was for 1 million eggs.
[j] Eyed eggs transferred from WL to NB.
[k] It is unclear where the increase from 3.4 million to 4.0 million eggs came from. The hatchery capacity at the time was 3.4 million eggs, but the only FTP found in effect at the time (18-19) was for 1 million eggs.
[l] 1.311 million eyed eggs of the NB egg take was transferred to WL.
[m] It appears that this transfer was not approved under an FTP. Neets Bay releases were approved under FTP 84J-1033 to collect and release up to 4.5 million Neets Bay/Indian Creek stock eggs from Neets Bay, but not with eggs received from Whitman Lake Hatchery (Whitman Lake Hatchery/Indian Creek stock eggs). In 1990, FTP 90J-1007 allowed for a collection of 4.5 million eggs at Neets Bay for incubation at Whitman Lake and release of resulting fry at Neets Bay. FTP 90J-1007 was amended in 2000 to increase egg take to 5 million eggs through 2005. No FTP was issued that stated the number of eggs collected or release number for eggs collected at Whitman Lake Hatchery and released at Neets Bay. Since the donor stock at Neets Bay and Whitman Lake were the same (Indian Creek), this appears as an oversight. No FTP was found authorizing Neets Bay coho salmon releases from 2005 until FTP 13J-1005 was issued in 2013.
[n] 84J-1033 had expired.
[o] Eggs for incubation at both WL and NB for release at NB and other sites.
[p] Green eggs from WL transferred to NB as eyed eggs.
[q] No FTP was found permitting transfer of eggs or fry from WL to NB. FTP 05J-1007 renewed FTP 90J-1010, and again permitted the egg take at WL but not the transfer to NB.
[r] Smolt transferred from Neck Lake.

Appendix L.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes and releases, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for Earl West Cove releases.

This program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit[a]	AR Egg Take [b]	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1981					0.400[c]				0.095
1984	3.4	0.5	82J-1083	0.05	1.0	0.5	82J-1083	0.100	0.100
1985	3.4	0.5	82J-1083	1.0	1.0	0.5	82J-1083	0.225	0.228
1986	3.4	0.5	82J-1083	1.0	1.993	0.5	82J-1083	0.197	0.178
1987	3.4	0.5	82J-1083	1.0	2.729	0.5	82J-1083	0.298	0.286
1988	3.4	0.5	82J-1083	3.4	4.061	0.5	82J-1083	0.225	0.223
1989	3.4	0.5	82J-1083	4.0	3.014	0.5	82J-1083	0.225	0.214
1990	3.4	0.5	90J-1006	4.0	3.600	0.5	90J-1006	0.225	0.227
1991	3.4	0.5	90J-1006	4.0	5.300	0.5	90J-1006	0.208	0.204[d]
1992	3.4	0.5	90J-1006	4.0	4.352	0.5	90J-1006	0.225	0.190
1993	3.4	0.5	90J-1006	5.0	2.493	0.5	90J-1006	0.198	0.202
1994	3.4	0.5	90J-1006	5.0	2.726	0.5	90J-1006	0.206	0.206
1995	3.4	0.5	90J-1006	0.260	3.962	0.5	90J-1006	0.225	0.228
1996	3.4	0.5	90J-1006	0.260	3.597	0.5	90J-1006	0.200	0.194
1997	3.4	0.5	90J-1006	0.260	4.414	0.5	90J-1006	0.200	0.225
1998	3.4	0.5	90J-1006	0.260	1.435	0.5	90J-1006	0.225	0.245

[a] The planned egg take in the AMP from 1984-1994 was for all of Whitman Lake Hatchery Projects, including for Earl West Cove releases.

[b] The egg take from 1985-1998 was reported in the annual reports for all of Whitman Lake Hatchery Projects, including for Earl West Cove releases.

[c] Smolt resulting from this egg take were released from Whitman Lake Hatchery and Earl West Cove.

[d] Includes 488,400 presmolts transferred in 1992 for rearing and release and 516,900 smolts released in 1993.

Appendix M.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes and releases, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for Anita Bay releases.

This program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit[a]	AR Egg Take[b]	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1999	3.4	0.225	01J-1001	NL	2.842	0.225	01J-1001	0.225	0.200
2000	7.0	0.225	01J-1001	NL	4.488	0.225	01J-1001	0.225	0.200
2001	7.0	0.225	01J-1001	4.5	4.285	0.225	01J-1001	0.225	0.222
2002	7.0	0.225	01J-1001	4.5	4.311		01J-1001	0.225	0.184
2003	7.0	0.225	01J-1001	4.5	5.046	0.225	01J-1001	0.225	0.228
2004	7.0	0.225	01J-1001	4.5	3.738	0.225	01J-1001	0.225	0.220
2005	7.0	0.225	01J-1001	4.5	2.740	0.225	01J-1001	0.225	0.220
2006	7.0	0.225	01J-1001	4.5	2.410	0.225	01J-1001	0.225	0.218
2007	7.0	0.225	01J-1001	4.5	5.500	0.225	01J-1001	0.225	0.229
2008	7.0	0.225	01J-1001	4.5	7.230	0.225	01J-1001	0.225	0.225
2009	7.0	0.225	01J-1001	4.5	6.500	0.225	01J-1001	0.225	0.216
2010	7.0	0.225	01J-1001	6.0	6.949	0.225	01J-1001	0.225	0.218
2011	7.0	0.225	01J-1001	6.0	6.292	0.600	01J-1001	0.225	0.223
2012	7.0	0.225	01J-1001	6.5	5.284	0.600	01J-1001	0.300	0.312
			[c]			0.660	14J-1011	0.300	0.282
2013	7.0	0.225	01J-1001	6.5	6.905	0.600	01J-1001	0.300	0.303

[a] The egg take planned in the AMP was for all fall run coho salmon projects, including the Nakat Inlet project.

[b] The egg take reported in the annual report was for all fall run coho salmon projects, including the Nakat Inlet project.

[c] This production includes eggs taken at Whitman Lake Hatchery, incubated at Burnett Inlet Hatchery, fry transferred and reared at Neck Lake, and smolt transferred to Anita Bay and released. The FTP noted is only for the transfer from Neck Lake to Anita Bay. No FTP was found for the transfer from Burnett Inlet Hatchery to Neck Lake.

Appendix N.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for Nakat Inlet releases.

This program is permitted under the Whitman Lake Hatchery hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit[a]	AR Egg Take[b]	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1984	3.4	0.1[c]	86J-1005	0.05	1.0	0.100	86J-1005	0.100	0.099
1985	3.4	0.1	86J-1005	1.0	1.0	0.100	86J-1005	0.100	0.108
1986	3.4	0.1	86J-1005	1.0	1.993	0.100	86J-1005	0.093	0.093
1987	3.4	0.1	86J-1005	1.0	2.279			0.096[d]	
1988	3.4	0.1	86J-1005	3.4	4.061	0.100	86J-1005	0.100	0.100
1989	3.4	0.1	86J-1005	4.0	3.014	0.100	86J-1005	0.100	0.100
1990	3.4	0.1	86J-1005	4.0	3.600	0.100	86J-1005	0.100	0.115
1991	3.4	0.1	86J-1005	4.0	5.300	0.100	86J-1005	0.096	0.092
1992	3.4	0.1	86J-1005	4.0	4.352	0.100	86J-1005	0.100	0.095
1993	3.4	0.2	94J-1044	5.0	2.493	0.200	90J-1044[e]	0.196	0.199
1994	3.4	0.2	94J-1044	5.0	2.726	0.200	90J-1044	0.206	0.204
1995	3.4	0.2	94J-1044	0.230	3.962	0.200	90J-1044	0.210	0.207
1996	3.4	0.2	94J-1044	0.230	3.597	0.200	90J-1044	0.200	0.199
1997	3.4	0.2	94J-1044	0.230	4.414	0.200	90J-1044	0.200	0.201
1998	3.4	0.3	94J-1044	0.230	1.435	0.200	90J-1044	0.200	0.233
1999	3.4	0.3	94J-1044	0.200	2.842	0.300	90J-1044	0.300	0.302
2000	7.0	0.3	94J-1044	0.200	4.488	0.300	90J-1044	0.300	0.302
2001	7.0	0.3	94J-1044	4.5	4.285	0.300	90J-1044	0.300	0.306
2002	7.0	0.3	94J-1044	4.5	4.311	0.300	90J-1044	0.300	0.232
2003	7.0	0.3	05J-1026	4.5	5.046	0.300	90J-1044	0.300	0.302
2004	7.0	0.3	05J-1026	4.5	3.738	0.300	90J-1044	0.300	0.291
2005	7.0	0.3	05J-1026	4.5	2.740	0.300	05J-1026	0.300	0.300
2006	7.0	0.3	05J-1026	4.5	2.410	0.300	05J-1026	0.300	0.298
2007	7.0	0.3	05J-1026	4.5	5.500	0.300	05J-1026	0.300	0.295
2008	7.0	0.3	05J-1026	4.5	7.230	0.300	05J-1026	0.300	0.296
2009	7.0	0.3	05J-1026	4.5	6.500	0.300	05J-1026	0.300	0.299
2010	7.0	0.3	05J-1026	6.0	6.949	0.300	05J-1026	0.300	0.299
2011	7.0	0.3	05J-1026	6.0	6.292	0.300	05J-1026	0.300	0.301
2012	7.0	0.3	05J-1026	6.5	5.284	0.300	05J-1026	0.600	0.601
2013	7.0	0.3	05J-1026	6.5	6.905	0.300	05J-1026	0.600	0.578

[a] The planned egg take in the AMP from 1984-1994 and 2001-2012 was for all of Whitman Lake Hatchery Projects, including for Nakat Inlet releases.

[b] The egg take reported in the annual report was for all coho salmon projects, including the Nakat Inlet project.

[c] This is a fry release limit, so the egg take number to reach this limit is slightly higher to account for mortality.

[d] There was no report of the Nakat Inlet release on the annual report.

[e] This FTP shows it was only valid for 1995, but the permit appears from a later amendment to have been intended to expire in 2005.

Appendix O.–Comparison of permitted and reported fall-run coho salmon (Indian Creek stock) egg takes, in millions and rounded, in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Bakewell Lake release site.

This program is permitted under the Whitman Lake Hatchery permit, 2006–2010.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report.

Brood Year	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	Release Site	FTP Release Limit	FTP No	AMP Release Limit	AR Release
2006	7.0	1.0	06J-1032	4.5	2.410[a]	BL	1.0	06J-1032	0.450	0.429
2007	7.0	1.0	06J-1032	4.5	5.500[b]	BL	1.0	06J-1032	0.450	0.510
2008	7.0	1.0	06J-1032	4.5	7.230[c]	BL	1.0	06J-1032	0.450	0.510
2009	7.0	1.0	06J-1032	4.5	6.500[d]	BL	1.0	06J-1032	0.450	0.500
2010	7.0	1.0	06J-1032	6.0	6.949[e]	BL	1.0	06J-1032	0.500	1.010

[a] Includes 282,000 eyed eggs transferred to Neets Bay Hatchery and 12,000 eggs discarded.

[b] Includes 2,575,000 eyed eggs transferred to Neets Bay Hatchery and 500,000 eggs discarded.

[c] Includes eyed egg transfers of 2,900,000 to Neets Bay Hatchery, 200,000 to Burnett Inlet Hatchery and discards of 1,600,000 eggs and 285,000 emergent fry.

[d] Includes eyed egg transfers fo 2,560,000 to Neets Bay Hatchery, 200,000 to Burnett Inlet Hatchery and discards of 1,540,000 eggs and 75,000 emergent fry

[e] Includes transfer of 2,505,000 eyed eggs to Neets Bay Hatchery and discard of 521,000 eggs.

Appendix P.–Comparison of permitted and reported Chinook salmon egg takes in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for Whitman Lake Hatchery release site.

This program is permitted under the Whitman Lake Hatchery permit.

Key: Year=Brood Year, IL=Incubation location, FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, UR=Unik River (Cripple Creek), WL=Whitman Lake Hatchery, CI=Carroll Inlet, CR=Chikamin River.

Brood Year	Egg Source/Stock	IL	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1980	UR	WL	[a]	130,000	80-59	[a]	194,000	200,000	81-16	140,000	0.146
1983	CR	WL	400,000	100,000	83J-1017	100,000	31,475	100,000	83J-1017	26,775	27,200
1984	CR	WL	500,000	100,000	83J-1017	100,000	225,275	100,000	83J-1017	170,000	132,890
1985	CR	WL	1,500,000	400,000	84J-1044	400,000	226,800	1,500,000	87J-1020[b]	NR	98,000[c]
1986	CR	WL		400,000	84J-1044		276,255	400,000	84J-1044	148,000[d]	151,000
1987	LP/CR	WL	1,500,000	1,000,000	87J-1021	2,100,000[e]	909,200[f]				
	CR	WL		400,000	84J-1044		195,750				
	WL/UR&CR[g]	WL		1,000,000	85J-1061		134,400				
						Total:	1,239,350	400,000	84J-1044	55,000	55,000
1988	WL/CR	WL	1,500,000	1,500,000	87J-1020	1,700,000	1,610,000	400,000	84J-1044[h]	75,000	75,400
1989	WL/CR	WL	1,500,000	1,500,000	87J-1020	1,700,000	1,999,000[i]		[j]	75,000	73,700
1990	WL/CR	WL	3,000,000	1,500,000	87J-1020	3,700,000	3,263,000		[j]	100,000	106,200
1991	WL/CR	WL	3,000,000	1,500,000	87J-1020	3,700,000	4,324,600[k]		[l]	100,000	109,000
1992	WL/CR	WL	3,000,000	1,500,000	87J-1020	3,700,000	1,700,000		[l]	100,000	123,164
1993	WL/CR	WL	3,000,000	1,500,000	87J-1020	3,700,000	699,800				
	LP/CR	WL			NF[m]		206,207				
						Total:	906,007		[m]	122,400	233,623[n]
1994	WL/CR	WL	3,000,000	250,000[o]	95J-1021	3,100,000	519,400				
	MH/CR	WL		1,300,000	94J-1020		312,474				
	LP/CR	WL			NF[p]		200,600				
						Total:	1,032,474		[p]	225,000	239,000
1995	WL/CR	WL	3,000,000	250,000[o]	95J-1021	1,365,000	743,469				
	WL/CI/CR[q]	WL		1,000,000	95J-1028		780,798				
						Total:	1,524,267	250,000	95J-1021	700,000	697,169

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Brood Year	Egg Source/Stock	IL	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1996	WL/CR	WL	3,000,000	250,000[o]	95J-1021	1,600,000	2,162,161[r]	250,000	95J-1021	710,000	713,331
1997	WL/CR	WL	3,000,000	250,000[o]	95J-1021	1,600,000	2,120,000	250,000	95J-1021	750,000	741,929
1998	WL/CR	WL	3,000,000	750,000[o]	95J-1021	1,600,000	1,892,000	750,000	95J-1021	750,000	779,750
1999	WL/CR	WL	3,000,000	750,000[o]	95J-1021	1,600,000	1,815,000	750,000	95J-1021	750,000	782,410
2000	WL/CR	WL	3,000,000	750,000[o]	95J-1021	1,600,000	1,360,348	750,000	95J-1021	750,000	689,634
2001	WL/CR	WL	3,000,000	750,000[o]	95J-1021	2,000,000	1,325,411	750,000	95J-1021	750,000	702,350
2002	WL/CR	WL	3,000,000	750,000[o]	95J-1021	2,000,000	1,381,711	750,000	95J-1021	750,000	715,400
2003	WL/CR	WL	3,000,000	750,000[o]	95J-1021	2,000,000	2,341,412	750,000	05J-1009	750,000	633,000
2004	WL/CR	WL	3,000,000	750,000[o]	95J-1021	2,000,000	2,197,808	750,000	05J-1009	750,000	720,000
2005	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,299,000	750,000	05J-1009	750,000	715,000
2006	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,180,289	750,000	05J-1009	750,000	727,500
2007	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,185,000	750,000	05J-1009	750,000	740,000
2008	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,430,000	750,000	05J-1009	750,000	768,000
2009	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,684,000	750,000	05J-1009	750,000	738,000
2010	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,570,000	750,000	05J-1009	750,000	720,000
2011	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,405,500	750,000	05J-1009	750,000	768,000
2012	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,000,000	2,783,000	750,000	05J-1009	500,000	535,000
2013	WL/CR	WL	3,000,000	750,000[o]	05J-1009	2,200,000	2,612,628	750,000	05J-1009	657,000	
2014						2,800,000	2,790,000				
2015						2,800,000	1,950,000				

[a] These eggs were collected under a scientific/education permit, and not as part of the hatchery permit.
[b] This FTP indicated that the CR stock eggs were to be from returns to WL, but this release was from eggs collected directly from CR broodstock.
[c] Released in 1987.
[d] The release number in the AMP of 148,000 is apparently for releases from both the hatchery and CI release sites.
[e] Includes 400,000 eggs from CR wild stock and 1,700,000 eggs from WL and LP.
[f] Eggs received from LP.
[g] Apparently, the adults used were hatchery returns of UR stock brood year 1980, and CR stock brood years 1983–1985 and 1987.
[h] This FTP was for release of smolt from eggs collected from CR wild broodstock. The smolt released here were from eggs of WL returns of CR stock fish.
[i] Of these eggs, 414,000 eyed eggs were transferred to NSRAA.
[j] 84J-1044 expired in 1990.
[k] Eggs taken in excess of SSRAA needs. Originally sent NSRAA over 1 million eggs but these were later returned when they were not wanted.
[l] 84J-1044 expired in 1990.
[m] 87J-1021 authorized transport of CR stock eggs to Whitman Lake for release at CI for 1987 only.
[n] These releases were from the combined progeny of the 1993 eggs from WL and LP.
[o] FTP 95J-1021 authorized a release of 750,000 smolts from WL, but did not specify an eggtake number for that release.
[p] 87J-1021 authorized transport of LP/CR stock eggs to WL for release at CI for 1987 only.
[q] This denotes collection of eggs from WL/CR stock returns that had been released at CI.
[r] Eggs collected from WL and CI returns.

Appendix Q.–Comparison of permitted and reported Chinook salmon egg takes in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for Long Lake (adjacent to Neets Bay Hatchery).

This program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, WL=Whitman Lake Hatchery, CL=Crystal Lake Hatchery, CR=Chickamin River stock.

Brood Year	Egg Source/Stock	Incubation Location	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1997	WL/CR	WL/CL[a]		1,000,000	95J-1027	1,600,000	2,120,000	25,000	98J-1023		29,827
1998	WL/CR	WL	1,500,000	1,500,000	91J-1039	1,600,000	1,892,000	25,000	98J-1023	250,000	273,613
1999	WL/CR	WL	3,000,000	250,000	98J-1023	1,600,000	1,815,000	250,000	00J-1005	250,000	248,698
2000	WL/CR	WL	3,000,000	250,000	98J-1023	1,600,000	2,238,500	250,000	00J-1005	250,000	301,666[b]
2001	WL/CR	WL	3,000,000	250,000	98J-1023	2,000,000	1,381,711	250,000	00J-1005	250,000	257,389
2002	WL/CR	WL	3,000,000	250,000	98J-1023	2,000,000	1,381,711	250,000	00J-1005	250,000	257,500
2003	WL/CR	WL	3,000,000	250,000	98J-1023	2,000,000	2,341,412	250,000	00J-1005	250,000	257,609

[a] Eggs eyed at WL then transferred to CL.

[b] Includes 2 releases of 251,238 smolt on 10/17/2001 and 50,428 smolt on 8/11/2001.

Appendix R.–Comparison of permitted and reported Chinook salmon egg takes in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Carroll Inlet release site.

This program is permitted under the Whitman Lake Hatchery permit.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, CR=Chickamin River, WL=Whitman Lake Hatchery, UR=Unuk River (Cripple Creek), CI=Carroll Inlet; CL=Crystal Lake Hatchery.

Brood Year	Egg Source/Stock	Incubation Location	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1984	CR		1,100,000	100,000	83J-1017	100,000	225,275[a]	100,000	87-1020	1,500,000	51,290
1985	WL/UR	WL	1,100,000[b]	1,000,000	85J-1061	NR	7,297,000[c]	1,000,000	85J-1061	1,000,000	239,650[d]
										820,000	816,600[e]
	CR	WL	1,100,000	400,000	84J-1044	400,000	226,800	100,000	86J-1012	NR	54,000[d]
1986	WL/UR	WL	1,100,000	1,000,000	85J-1061	400,000	1,687,972	1,000,000	85J-1061	1,000,000	435,000[f]
								1,000,000	85J-1061	1,400,000	851,000[g]
	CR	WL		400,000	84J-1044		276,255	1,500,000	87J-1020[h]		41,000
1987	LP/CR	WL	1,100,000	1,000,000	87J-1021	2,100,000[i]	909,200[j]				
	CR	WL		400,000	84J-1044		195,750				
	WL/UR&CR[k]	WL		1,000,000	85J-1061		134,400				
						Total:	1,421,000[l]				
			800,000[m]					1,500,000	87J-1020	700,000	703,000
1988	WL/CR	WL	1,100,000	1,500,000	87J-1020	1,700,000	1,610,000	1,500,000	87J-1020	1,100,000	1,004,800
1989	WL/CR	WL	1,100,000	1,500,000	87J-1020	1,700,000	1,999,000[n]	1,500,000	87J-1020	1,100,000	1,102,100
1990	WL/CR	WL	1,100,000	1,500,000	87J-1020	3,700,000	3,263,000	1,500,000	87J-1020	1,200,000	1,217,800
1991	WL/CR	WL	1,100,000	1,500,000	87J-1020	3,700,000	4,324,600[o]	1,500,000	87J-1020	1,200,000	1,062,700
1992	WL/CR	WL	1,100,000	1,500,000	87J-1020	3,700,000	1,700,000	1,500,000	87J-1020	1,200,000	1,147,826
1993	WL/CR	WL	1,100,000	1,500,000	87J-1020	3,700,000	699,800				
	LP/CR	WL			NF[p]		206,207				
						Total	906,007	1,500,000	87J-1020	601,000	513,323[p]

[a] Eggs taken for release at WL and at CI.

[b] The hatchery permit allowed for a combined total of 1,100,000 Chinook salmon eggs at WL for release at CI starting in 1985.

[c] A total of 7,297,000 eggs were taken. Of this number, 4,012,000 eyed eggs were transferred to Neets Bay and 1,648,000 eyed eggs were transferred to Tamgas Hatchery (FTP 86J-1035). The remainder was apparently incubated at WL for release at CI.

[d] Released in 1986.

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[e] Released in 1987. Includes release of 699,400 smolts on 5/26/87 and 5/31/87 and 117,200 smolts on 6/10/87.
[f] Released in 1987.
[g] Released in 1988.
[h] This FTP indicated that the CR stock eggs were to be from returns to WL, but this release was from eggs collected directly from CR broodstock.
[i] Includes 400,000 eggs from CR wild stock and 1,700,000 eggs from WL and LP.
[j] Eggs received from LP.
[k] Apparently, the adults used were hatchery returns of UR stock brood year 1980, and CR stock brood years 1983–1985 and 1987.
[l] The schedule A in 1987 indicates 909,200 green eggs were taken at Little Port Walter, 195,750 eggs from wild CR stock, and 134,400 from Whitman Lake, UR, and CR stock returns. Schedule B in 1988 shows the green egg total of 1,421,000 from all sources. Thus, the total is not the sum of the 3 egg takes but that was the best the author could do to piece together the breakdown of eggs by source.
[m] Permit alteration in effect for 1987 only allowed up to 800,000 smolts to be released at CI.
[n] Of these eggs, 414,000 eyed eggs were transferred to NSRAA.
[o] Eggs taken in excess of SSRAA needs. Originally sent NSRAA over 1 million eggs but these were later returned when they were not wanted.
[p] 87J-1021 authorized transport of CR stock eggs to Whitman Lake for release at CI for 1987 only.

Appendix S.–Comparison of permitted and reported Chinook salmon egg takes in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Earl West Cove release site.

This program is permitted under the Whitman Lake Hatchery permit. Egg takes and incubation were at Crystal Lake Hatchery during the 1984–1992 period. No FTPs for egg takes or annual reports were found for Crystal Lake Hatchery for this period, as it was operating as an ADF&G facility at the time.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, CL=Crystal Lake Hatchery, AC=Andrew Creek, WL=Whitman Lake Hatchery, CI=Carroll Inlet, CR=Chickamin River, NF=Not found.

Brood Year	Egg Source/Stock	Incubation Location	Hatchery Permit Egg Limit	FTP Egg Limit	FTP No	AMP Egg Limit	AR Egg Take	FTP Release Limit	FTP No	AMP Release Limit	AR Release
1984	CL/AC	CL	300,000					100,000	86J-1012	100,000	97,533
1985	CL/AC	CL	300,000					500,000	86J-1012	300,000	251,977
1986	CL/AC	CL	500,000					500,000	86J-1012	500,000	482,700
1988	CL/AC	CL	500,000					500,000	86J-1012	500,000	486,532
1989	CL/AC	CL	500,000					500,000	86J-1012	450,000	399,600
1991	CL/AC	CL	500,000					500,000	86J-1012	450,000	436,300
1992	CL/AC	CL	500,000					500,000	86J-1012		316,100
1996	WL/CI/CR	WL/CL[a]	500,000				511,000[b]		NF[c]		386,426
1997			500,000				520,000[d]		NF		364,405
1998	WL/CR	WL/CL[a]	500,000				543,000[e]		NF		441,038

[a] Eggs eyed at WL then transferred to CL.

[b] These eyed eggs shipped to CL are part of the total 2,162,161 eggs collected. 151,000 eyed eggs culled.

[c] No FTP found for the Earl West Cove Chinook salmon release. May have been under the ADF&G statewide stocking plan since it was a cooperative project.

[d] These eyed eggs shipped to CL are part of the total 2,120,000 eggs collected. 107,000 eyed eggs of total culled.

[e] These eyed eggs shipped to CL are part of the total 1,892,000 eggs collected.

Appendix T.–Comparison of permitted and reported Chinook salmon releases in hatchery permit, basic management plan, annual management plan, fishery transport permits and annual reports for the Anita Bay release site.

This program is permitted which was permitted under the Whitman Lake Hatchery permit. Egg takes, incubation and rearing were at Crystal Lake Hatchery unless otherwise noted.

Key: FTP=Fish Transport Permit, AMP=Annual Management Plan, AR=Annual Report, CL=Crystal Lake Hatchery, AC=Andrew Creek.

Brood Year	Egg Source/Stock	Hatchery Permit Egg/Release Limit	FTP No	FTP Egg Limit[a]	FTP No	FTP Release Limit	AMP Release Limit	AR Release
1999	CL/AC	500,000	94J-1010	3,000,000	01J-1002	500,000	400,000	365,361
2001	CL/AC	500,000	94J-1010	3,000,000	01J-1002	500,000	450,000	406,806
2002	CL/AC	500,000	94J-1010	3,000,000	01J-1002	500,000	450,000	470,975
2003	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	330,140
2004	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	438,244
2005	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	373,353
2006	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	343,000
2007	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	547,075
2008	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	553,107[b]
					08J-1018	450,000		
2009	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	456,200
2010	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	441,000
2011	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	477,500[b]
					08J-1018	450,000		
2012	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	500,000	498,755[b]
					08J-1018	450,000		
2013	CL/AC	500,000	03J-1006	3,000,000	01J-1002	500,000	450,000	340,800[b]
					08J-1018	450,000		

[a] Limit was for eggs collected at CL for all releases from CL.

[b] Some smolt were transferred directly to Anita Bay under FTP 01J-1002 and some smolt were reared first in Neet Bay and then transferred to Anita Bay for release under FTP 08J-1018.

Appendix U.–Whitman Lake Hatchery releases recovered at other hatcheries, releases sites, or during escapement surveys of wild stocks.

Key: DMH=Deer Mountain Hatchery, WLH=Whitman Lake Hatchery.

Release Site	Species	Stock[a]	Recovery Site	Recovery Type	Year	Number of Fish with Tags Recovered
Bakewell Lake	Coho	WLH/Indian Cr.	Hugh Smith Lake	Escapement	2009	1
		WLH/Indian Cr.	DMH	Hatchery	2010	1
		WLH/Indian Cr.	WLH	Hatchery	2009	1
Carroll Inlet	Chinook	WLH/Chickamin R.	Carroll River	Escapement	1988	7
		WLH/Chickamin R.			1995	5
		WLH/LPW/Chickamin R.	DMH	Hatchery	1985	1
		WLH/LPW/Chickamin R.			1986	1
		WLH/Unuk R.			1987	1
		WLH/Chickamin R. and WLH/Unuk R.			1989	2
		WLH/Unuk R.			1990	2
		WLH/Chickamin R.			1991	1
		WLH/Chickamin R.			1992	5
		WLH/Chickamin R.			1994	1
		WLH/Chickamin R	WLH	Hatchery	1987	2
		WLH/Unuk R.			1988	4
		WLH/Chickamin R. and WLH/Unuk R.			1989	2
		WLH/Chickamin R. and WLH/Unuk R.			1990	7
		WLH/Chickamin R. and WLH/Unuk R.			1991	3
		WLH/Chickamin R. and WLH/Unuk R.			1992	11
		WLH/Chickamin R.			1993	2
		WLH/Chickamin R.			1994	6
		WLH/Chickamin R.			1995	5
		WLH/Chickamin R.			1996	3
		WLH/Chickamin R.			1997	2
		WLH/Chickamin R.			1998	6
		WLH/Chickamin R.			1999	1
Earl West Cove	Coho	WLH/Indian Cr.	Stikine River	Escapement	2001	2
		WLH/Indian Cr.	Crystal Lake Hatchery	Hatchery	1998	1
		WLH/Indian Cr.	WLH	Hatchery	1987	1
		WLH/Indian Cr.			1988	1
		WLH/Indian Cr.			1991	3
		WLH/Indian Cr.	Neets Bay	Hatchery	1996	1
		WLH/Indian Cr.			1998	1

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Release Site	Species	Stocka	Recovery Site	Recovery Type	Year	Number of Fish with Tags Recovered
WLH	Chinook	WLH/Chickamin R.	Hugh Smith Lake	Escapement	1988	1
		WLH/Chickamin R.			2002	1
		WLH/Chickamin R.	Ketchikan	Escapement	1985	5
		WLH/Chickamin R.			2001	1
		WLH/Chickamin R.	Unuk River	Escapement	2016	1
		WLH/Unuk R.	DMH	Hatchery	1983	12
		WLH/Unuk R.			1984	4
		WLH/Chickamin R. and WLH/Unuk R.			1985	20
		WLH/Chickamin R. and WLH/Unuk R.			1986	3
		WLH/Chickamin R.			1987	6
		WLH/Chickamin R.			1989	22
		WLH/Chickamin R.			1990	14
		WLH/Chickamin R.			1991	16
		WLH/Chickamin R.			1992	1
		WLH/Chickamin R.			1993	3
		WLH/Chickamin R.			1995	2
		WLH/Chickamin R.			1996	1
		WLH/Chickamin R.			1999	1
		WLH/Chickamin R.			2003	2
		WLH/Chickamin R.			2004	1
		WLH/Chickamin R.			2009	2
		WLH/Chickamin R.			2010	1
		WLH/Chickamin R.	Hidden Falls Hatchery	Hatchery	1991	1
		WLH/Chickamin R.	Medvejie Cr. Hatchery	Hatchery	2013	1
		WLH/Chickamin R.	Port Armstrong Hatchery	Hatchery	2010	1
WLH	Coho	WLH/Indian Cr.	Burnett Inlet Hatchery	Hatchery	1982	7
		WLH/Indian Cr.	Hugh Smith Lake	Escapement	1984	1
Nakat Inlet	Coho	WLH/Indian Cr.	WLH	Hatchery	1987	2
		WLH/Indian Cr.			1988	2
		WLH/Indian Cr.			1991	5
		WLH/Indian Cr.			1995	1
		WLH/Indian Cr.			1999	1
		WLH/Indian Cr.			2002	4
		WLH/Indian Cr.			2003	1
		WLH/Indian Cr.			2004	1
		WLH/Indian Cr.			2005	4

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Release Site	Species	Stocka	Recovery Site	Recovery Type	Year	Number of Fish with Tags Recovered
Nakat Inlet (cont)	Coho (cont)	WLH/Indian Cr.			2006	1
		WLH/Indian Cr.			2007	3
		WLH/Indian Cr.			2008	3
		WLH/Indian Cr.			2009	1
		WLH/Indian Cr.			2010	2
		WLH/Indian Cr.			2011	9
		WLH/Indian Cr.			2013	1
		WLH/Indian Cr.			2015	2
	Chum	WLH/Disappearance Cr.	Hugh Smith Lake	Escapement	1994	3
		WLH/Carroll River	Beaver Falls Hatchery	Hatchery	1983	1
		WLH/Carroll River	WLH	Hatchery	1982	50
Neck Lake	Coho	WLH/DMH/Reflection Lake	Burnett Inlet Hatchery	Hatchery	2000	7
Neets Bay	Chinook	WLH/Chickamin R.	Chickamin R.	Escapement	1988	1
		LPW/Unuk R.	McDonald L.	Escapement	1984	7
		LPW/Unuk R.			1985	4
		LPW/Unuk R.			1986	8
		LPW/Unuk R. and DMH/Unuk R.	Naha R.	Escapement	1987	3
		LPW/Unuk R.	Unuk R.	Escapement	1986	1
		LPW/Unuk R.			1987	1
		WLH/Chickamin R.			2014	1
		WLH/Chickamin R.	WLH	Hatchery	1986	1
		WLH/Chickamin R.			2013	2
		LPW/Unuk R.			1984	4
		LPW/Unuk R.			1986	3
		LPW/Unuk R. and DMH/Unuk R.			1987	2
		WLH/Chickamin R.			2012	2
		WLH/Chickamin R.			2015	1
		LPW/Unuk R.	DMH	Hatchery	1984	2
		LPW/Unuk R.			1985	18
		LPW/Unuk R.			1986	18
		LPW/Unuk R.			1987	4
		LPW/Unuk R.			1988	1
		WLH/Chickamin R.			1989	3

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Release Site	Species	Stock[a]	Recovery Site	Recovery Type	Year	Number of Fish with Tags Recovered
Neets Bay (cont)	Coho	WLH/Indian Cr.	WLH	Hatchery	1982	75
		WLH/Indian Cr.			1983	3
		WLH/Indian Cr.		Hatchery	2014	1
		WLH/Indian Cr.		Hatchery	2015	3
		WLH/Indian Cr.		Hatchery	2014	1
		WLH/Indian Cr.	DMH	Hatchery	1983	1
	Chum	WLH/Disappearance Cr.	Hugh Smith Lake	Escapement	1984	1
		WLH/Disappearance Cr.	Ward Lake and Ward Cr.	Escapement	1987	1
		WLH/Disappearance Cr.	Beaver Falls Hatchery	Hatchery	1984	1
		WLH/Disappearance Cr.			1985	1
		WLH/Disappearance Cr.	WLH	Hatchery	1984	1
Anita Bay	Coho	WLH/Indian Cr.	WLH	Hatchery	2006	1
		WLH/Indian Cr.			2010	1
		WLH/Indian Cr.			2015	1
Kendrick Bay	Chum	WLH/Carroll R.	Neets Bay	Hatchery	1994	1

Source: ADF&G Mark, Tag and Age lab database.

[a] Stock is the hatchery source and the ancestral stock. For example, WLH/Indian Creek indicates the Indian Creek ancestral stock produced at WLH.