2020 ANNUAL MANAGEMENT PLAN
CRYSTAL LAKE HATCHERY
Southern Southeast Regional Aquaculture Association

This Annual Management Plan (AMP) plan is prepared to fulfill the requirements of 5 AAC 40.840. This plan must organize and guide the hatchery's operations, for each calendar year, regarding production goals, broodstock development, and harvest management of hatchery returns. Egg take through release details are included in planning for succeeding calendar years. Inseason assessments and project alterations by Southern Southeast Regional Aquaculture Association (SSRAA) or Alaska Department of Fish and Game (ADF&G) may result in changes to this AMP in order to reach or maintain program objectives. SSRAA will notify the ADF&G private nonprofit (PNP) hatchery program coordinator in a timely manner of any departure from the AMP. The ADF&G PNP coordinator will advise as to whether an amendment, exception report, or other action is warranted. No variation or deviation will be implemented until an AMP amendment has been approved or waived by both the department and SSRAA. This policy applies to all hatchery operations covered under the AMP.

1.0 Executive Summary

1.1 *Introduction*

Crystal Lake Hatchery (CLH) is operated by Southern Southeast Regional Aquaculture Association (SSRAA) under contract with ADF&G, Division of Sport Fish. The CLH is located 17.5 miles south of Petersburg, just off Mitkof Highway near the City of Petersburg's hydroelectric power plant. Crystal Lake, at an altitude of 1,300 feet, supplies water to the power plant. The water then passes to the hatchery before flowing into lower Crystal Creek. The City of Petersburg is responsible for reliably supplying the hatchery with water flows as described in their FERC license to operate.

The CLH has four king salmon projects:

Crystal Creek king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Petersburg area, as well as providing Andrew Creek broodstock for the Crystal Creek, City Creek, and Anita Bay king salmon programs. The production goal for this program is the release of 600,000 Andrew Creek stock king salmon smolt at Crystal Creek.

Anita Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Wrangell area. The production goal of this program is the release of 450,000 Andrew Creek stock king salmon smolt at Anita Bay.

Neets Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Ketchikan area, as well as a cost recovery opportunity for SSRAA in the Neets Bay terminal harvest area (THA). The production goal of this program is the release of 300,000 Chickamin River stock king salmon smolt at Neets Bay.

City Creek king salmon: This program will provide adult king salmon to the local sport and commercial fisheries in the Petersburg area. The production goal of this program is to release 200,000 Andrew Creek stock king salmon smolt.

The CLH also has a coho salmon program. The hatchery releases up to 200,000 coho salmon smolt annually into Crystal Creek.

1.2 *New this year (production, harvest management, culture techniques, etc.)*

None.

1.3 *New permits or permit amendments*

None.

1.4 *Expected Returns*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery
Coho salmon	Crystal Creek	6,300	3,800	2,500	150	2,350
King salmon	Crystal Creek	3,000	1,400	1,600	1,000	600
King salmon	Anita Bay	11,000	11,000	0	0	0
King salmon	Neets Bay	11,400	5,500	5,900	0	2,750

1.5 *Production Summary*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Crystal Creek coho salmon	2018	5/2020	120,000	Smolt	CWT, 9%
Crystal Creek king salmon	2018	5/2020	600,000	Smolt	CWT, 10%
Anita Bay king salmon	2018	5/2020	500,000	Smolt	CWT, 10%
Neets Bay king salmon	2018	5/2020	300,000	Smolt	CWT, 10%
City Creek king salmon	2018	5/2020	120,000	Smolt	CWT, 20%

In 2020, CLH plans to take 200,000 coho salmon eggs and 2.5 million king salmon eggs. The CLH is a backup egg source of Andrew Creek stock king salmon eggs for both Northern Southeast Regional Aquaculture Association (NSRAA) and Douglas Island Pink and Chum, Inc. (DIPAC).

1.6 *Current Permitting*

CLH is operated by SSRAA under contract with ADF&G and not subject to a private non-profit hatchery permit. The *Statewide Stocking Plan for Recreational Fisheries* outlines the CLH program objectives and release numbers and locations. The current CLH operating plan capacity is 250,000 coho salmon eggs and four million king salmon eggs.

2.0 Fall Coho Salmon Production

2.1 *Program details*

The program was established to mitigate losses to Crystal Creek spawning habitat associated with operations of the Blind Slough Hydroelectric project, run by the City of Petersburg. In addition, this program provides adult coho salmon returns to local sport, personal use, and commercial fisheries in the Petersburg area. The releases also ensure a sustainable broodstock for future hatchery releases.

Eggs are collected from coho salmon adults returning to CLH each fall. Up to 200,000 yearling coho salmon smolt produced from the collected eggs are released each May into Crystal Creek.

At least 20,000 smolt are marked with a coded wire tag (CWT) and a clipped adipose fin. Tagged fish are recovered at the rack and through port sampling performed by ADF&G.

2.2 *Egg Takes*

Program Name	Ancestral Stock	Egg Take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Crystal Creek coho salmon	Crystal Creek	CLH	Primary	140,000	250,000
Totals				**140,000**	**250,000**

2.3 *Broodstock capture method*

Coho salmon returning to CLH are hatchery-produced fish from Crystal Creek stock. Adult returns to CLH enter adult holding ponds through a fish ladder.

2.4 *Spawning*

Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets are then transported to the hatchery building and placed in incubator trays.

2.5 *Egg-take Schedule*

Egg takes occur in mid-October through early-December.

2.6 *Carcasses*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

2.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Release Date	Number to Release	Life Stage	Type of Mark, % Marked
Crystal Lake coho salmon	2018	5/20	120,000	smolt	CWT 9%[a]

[a]This tag rate is results in 10,800 tagged brood year 2018 fish released in 2020.

2.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (Jan. 1)	Life Stage	Type of Mark, % to Mark	Number to Release, Date
Crystal Lake coho salmon	2019	130,000	Eyed eggs	CWT @ 20,000 fish	120,000 5/2021

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2.9 *Operational diagram*

2.10 *Fish transport permits*

FTP #	Egg take, transport, or release?	Transport From → To	Maximal #, Life Stage	Expires
08J-1013	Egg take & release	CLH to Crystal Creek	250,000 eggs 200,000 smolt	8/31/28

3.0 King salmon

3.1 *Program details*

CLH has four king salmon programs.

Crystal Creek king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Petersburg area. The Crystal Creek release of Andrew Creek stock king salmon provides sustainable returns for production at CLH and Anita Bay. The annual production goal of 600,000 king salmon smolt is released into Crystal Creek at a target weight of 20 grams. Smolt released in 2020 will be marked with CWTs at a rate of 10%. Tags are recovered at the rack and through ADF&G port sampling efforts.

Anita Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Wrangell area. Each spring, 450,000 Andrew Creek stock king salmon smolt are transported to saltwater net pens in Anita Bay for short-term rearing and release. When extremely cold water at CLH is anticipated to limit growth, king salmon fry are transferred to NBH in October for interim freshwater rearing. NBH does not experience the same extreme cold-water conditions that CLH sometimes experiences, therefore warmer rearing water at NBH allows for better growth than would be possible at CLH in years of extremely cold water. The following spring, smolt are transported from NBH to net pens in Anita Bay for rearing and release. The saltwater net pens are positioned so the freshwater influence of several creeks at the upper end of the bay ensures proper imprinting. Smolt released in 2020 will be marked with CWTs at a rate of 10%. Tags are

recovered through ADF&G port sampling efforts. Extremely poor egg survival of BY19 Andrew Creek eggs at CLH resulted in a shortfall at CLH and as a result a one-time FTP was granted to allow the use of Chickamin River Ancestral Stock eggs for the Anita Bay release. The resultant fish will be reared at CLH in 2020 for eventual transport and release at Anita Bay in 2021.

Neets Bay king salmon: This program provides adult king salmon returns to local sport and commercial fisheries in the Ketchikan area and provides a cost recovery opportunity for SSRAA in the Neets Bay THA. Eggs are collected from hatchery-produced Chickamin River stock king salmon returning to Whitman Lake Hatchery (WLH). Approximately 520,000 eyed eggs are shipped to CLH for incubation and freshwater rearing. In October, approximately 300,000 king salmon are transported to Neets Bay Hatchery (NBH) for over-winter freshwater rearing, short term saltwater rearing and release. Smolt released in 2020 will be marked with CWTs at a rate of 10%. Tags are recovered at the rack and through ADF&G port sampling efforts.

City Creek king salmon: This program will provide adult king salmon to the sport and commercial fisheries in the Petersburg area. The intent of the program is to provide diversification to the areas sport harvest opportunities and to evaluate survival rates from a saltwater netpen release. It is expected that smolt released from a saltwater netpen will survive at a much higher rate than the fish released directly from CLH which suffers from extended regimes of cold water. In April, up to 200,000 Andrew Creek stock smolt will be transported from CLH to the City Creek net pen site for rearing, imprinting and release in late May. Smolt will be marked with CWTs at a minimum rate of 20% or 30,000 smolt. Tags will be recovered through ADF&G port sampling efforts.

3.2 *Egg Takes*

Program Name	Ancestral Stock	Egg Take Site	Primary or Alternate Source?	Current Year Egg Goal	Permitted Maximum
Crystal Creek king salmon	Andrew Creek	CLH	Primary	1,000,000	3,000,000
Anita Bay king salmon	Andrew Creek	CLH	Primary	600,000	3,000,000
City Creek king salmon	Andrew Creek	CLH	Primary	150,000	3,000,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Macaulay Salmon Hatchery	Alternate	0	1,400,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Medvejie Creek Hatchery	Alternate	0	1,000,000
Crystal Creek, Anita Bay, and City Creek	Andrew Creek	Hidden Falls Hatchery	Alternate	0	1,000,000
Neets Bay king salmon	Chickamin River	WLH	Primary	550,000	1,000,000
Totals				**2,300,000**	**4,000,000**

3.3 *Broodstock capture method*

Broodstock for the Crystal Creek, City Creek, and Anita Bay king salmon programs are collected at CLH. King salmon returning to CLH are an enhanced run of Andrew Creek stock. Adult returns enter holding ponds through a fish ladder.

Broodstock for the Neets Bay king salmon project are collected at WLH. King salmon returning to WLH are an enhanced run of Chickamin River stock. Adults enter holding ponds through a fish ladder.

3.4 *Spawning*

Eggs for the Crystal Creek and Anita Bay king salmon programs are collected at CLH. Adult fish are dispatched with a blow to the head. Females are incision spawned into a bucket. Milt from two males is added to each bucket of eggs. An activator/extender solution is added to aid in fertilization. The buckets of eggs are immediately transported to the hatchery building and placed in incubator trays. Eggs are disinfected with iodophor. Family tracking is used to control bacterial kidney disease.

Eggs for the Neets Bay king salmon project are collected at WLH. The WLH uses a dry method of spawning where male and female gametes are mixed in a bucket. Eggs are rinsed and then water hardened for one hour in an iodophor bath. Family tracking is used to control bacterial kidney disease.

3.5 *Egg-take schedule*

King salmon egg takes at CLH and WLH occur from early-August to early-September.

3.6 *Carcass disposal*

The number of carcasses generated from egg takes can be limited by the number of fish allowed into the holding pond. Carcasses will be given away to commercial fishermen for bait or transported to a local processor for disposal.

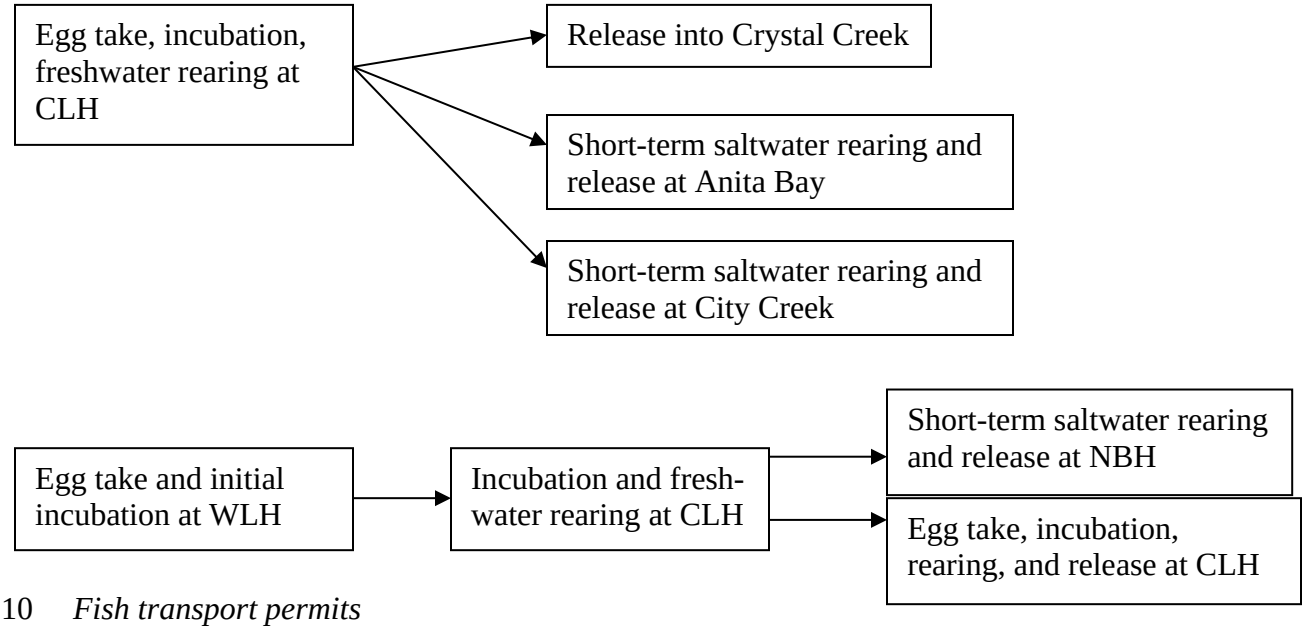
3.7 *Planned releases this calendar year of previous brood year's production*

Program Name	Brood Year	Planned Release Date	Number to Release	Life Stage	Type of Mark, Percent Marked
Crystal Creek king salmon	2018	5/2020	600,000	Smolt	CWT, 10%
Anita Bay king salmon	2018	5/2020	500,000	Smolt	CWT, 10%
Neets Bay king salmon	2018	5/2020	300,000	Smolt	CWT, 10%
City Creek king salmon	2018	5/2020	80,000	smolt	CWT, 20%

3.8 *Previous brood years that will remain in culture during the entire calendar year*

Program Name	Brood Year	Number Live (January 1)	Life Stage	Number to Release, Date
Crystal Creek king salmon	2019	650,000	Sac fry	600,000 5/2021
Anita Bay king salmon	2019	500,000	Sac fry	450,000 5/2021
Neets Bay king salmon	2019	310,000	Sac fry	300,000 5/2021
City Creek king salmon	2019	130,000	Sac fry	110,000 5/2021

3.9 *Operational diagram*



3.10 *Fish transport permits*

Andrew Creek stock

FTP Number	Egg take, transport, or release?	Transfer From To	Maximal Number, Life Stage	Expires
03J-1006	Egg take, release	CLH to Crystal Creek	3,000,000 eggs	6/30/2027
08J-1021	Egg take, transport	Macaulay to CLH	1,400,000 eggs	12/31/2023
01J-1007	Egg take, transport	Medvejie to CLH	1,000,000 eggs	12/31/2021
01J-1002	Transport, release	CLH to Anita Bay	500,000 smolt	5/31/2028
08J-1018	Transport, release	CLH to NBH to Anita Bay	500,000 smolt	12/31/2022
12J-1020	Egg take, transport	Hidden Falls to CLH	1,000,000 eggs	8/14/2022
13J-1003	Transport, release	CLH to City Creek	200,000 smolt	2/28/2028

14J-1026	Transport	CLH to WLH to CLH	1,500,000 eggs	8/30/2024

Chickamin River stock

FTP Number	Egg take, transport, or release?	Transfer From To	Maximal Number, Life Stage	Expires
14J-1015	Transport, release	WLH to CLH to Neets Bay	520,000 fry	4/30/2024
15J-1021	Egg take, transport, release	WLH to CLH to NBH	1,000,000 eggs	6/30/2025
18J-1004[1]	Transport, release	CLH to PSN	250,000 smolt	12/31/2020
20J-1012	Transport, release	CLH to Anita Bay	300,000 fry	6/1/2021

[1] Port Saint Nicholas fish transport permit.

4.0 Harvest Management

4.1 *Harvest Areas*

Terminal Harvest Areas

5 AAC 33.370. District 1: Neets Bay Hatchery Salmon Management Plan.

5 AAC 33.381. District 6: Wrangell Narrow-Blind Slough Terminal Harvest Area Management Plan.

5 AAC 33.383. District 7: Anita Bay Terminal Harvest Area Management Plan

Special Harvest Areas

5 AAC 40.043. Neets Bay Special Harvest Area - Behm Canal.

4.2 *Projected return this year*

Species, Run	Release Location	Total Return	Common Property Harvest	Return to Hatchery	Broodstock Needed	Available for Cost Recovery	Terminal/ Sport Harvest
Coho salmon	Crystal Creek	6,300	3,800	2,500	150	2,350	0
King salmon	Crystal Creek	3,000	1,400	1,600	1,000	600	0
King salmon	City Creek	1,000	0	0	0	0	1,000
King salmon	Anita Bay	11,000	11,000	0	0	0	0
King salmon	Neets Bay	11,400	5,500	5,900	0	2,750	0

4.3 *Common property fisheries management*

Commercial Fisheries

Coho salmon

Coho salmon returning to CLH are harvested by the commercial troll fishery during the spring and summer seasons after June 1st as well as the commercial drift gillnet fishery in Central Southeast Alaska waters. Terminal commercial gillnet fisheries have not occurred since 1996 and are not expected to occur unless the return is very large.

King salmon

5 AAC 33.381. DISTRICT 6: WRANGELL NARROW-BLIND SLOUGH TERMINAL HARVEST AREA MANAGEMENT PLAN.

5 AAC 33.383. District 7: ANITA BAY TERMINAL HARVEST AREA MANAGEMENT PLAN provides the framework for establishing common property seine, gillnet and troll fisheries within the THA. The fishing ratio between seine and gillnet fleets and fishing start dates are determined by the Alaska Board of Fisheries. SSRAA, in conjunction with ADF&G, produces a fishing schedule every spring. The Anita Bay THA initial opening will be delayed until June 1. Beginning 5:00 a.m. Monday June 1 commercial fishing will be open concurrently for troll, drift gillnet and purse seine gear. Commercial fishing with troll gear will close at 11:59 p.m. Sunday July 12. Commercial fishing with drift gillnet and purse seine gear will close 12:00 noon Friday June 12 and a rotational fishing schedule will begin at 12:00 noon Saturday June 13. For full 2020 information and schedule of fishing by gear group see Anita Bay Terminal Harvest Area Advisory Announcement issued April 17, 2020.

https://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareasoutheast.salmon

Personal Use Fishery

A personal use coho salmon fishery occurs annually within the Wrangell Narrows-Blind Slough THA. The fishery generally starts mid-August, is restricted to fishing on Fridays, and is open for four to five consecutive Fridays. The possession and annual limit is 25 coho salmon per household. Personal use fishermen must obtain a permit and must have a valid sport fishing license.

Sport fisheries

Coho salmon

The sport bag and possession limits for coho salmon will be the same as the Southeast Alaska regional limits, 6 coho salmon per day, and 12 in possession. Snagging of coho salmon is not permitted during the summer in Blind Slough.

King salmon

During 2020, the retention of king salmon is prohibited in the majority of marine waters within the Petersburg/Wrangell area from April 1 through June 14, 2020. On June 1, 2020 the sport bag and possession limits for king salmon in the Blind Slough/Wrangell Narrows THA will be established by emergency order (EO) effective through July 31, 2020 in accordance with the Blind Slough/Wrangell Narrows King Salmon Management Plan. After this period, king salmon regulations for the marine waters of Wrangell Narrows will reflect the most current Southeast Alaska regional king salmon regulations. The freshwaters of Blind Slough will remain open to king salmon harvest year round, as described in regulation, unless more restrictive action is necessary to achieve broodstock goals.

On June 1, 2020 opportunity to harvest king salmon will open in Anita Bay with bag, possession and annual limits identical to the most current Southeast Alaska regional king salmon regulations.

On June 15, 2020 the opportunity to harvest king salmon will open in the City Creek terminal area. King salmon regulations will be established by EO effective from June 15 through July 14. During this time, the bag and possession limit will be one king salmon of any size and nonresident annual limits will continue to apply. After this period, king salmon regulations will revert to the most current Southeast regional king salmon regulations. In the 2020 season the boundaries of the City Creek terminal area are described as the marine waters adjacent to City Creek between a marker on the Mitkof Island shore, at 56° 47.83' N. lat., 132° 51.57' W. long. to 56° 48.30' N. lat., 132° 51.50' W. long. to 56° 49.77' N. lat., 132° 55.78' W. long. (navigation buoy) and back to the Mitkof Island shore at Hungry Point (56° 49.36' N. lat., 132° 56.38' W. long.) and includes the freshwaters of City Creek.

On June 15 the sport bag and possession limit for king salmon in Neets Bay will be established by EO effective through August 14, 2020. During this time, the king salmon bag and possession limit will be one king salmon 28 inches or greater in length and the nonresident annual limit will continue to apply. After this period, king salmon regulations in Neets Bay will revert to the most current Southeast Alaska regional king salmon regulations.

4.4 *Cost-recovery harvest management*

SSRAA's long-term goal is to have 75% of all fish produced harvested in common property fisheries, with the remaining 25% harvested by SSRAA to cover operating expenses. We have exceeded this goal for the past several years, in large part because of better than average survival to adult of SSRAA chum releases and perhaps even more importantly the increased value of salmon in the marketplace. Though this remains our goal, we annually adjust our cost-recovery goal related to operational and capital expenses even if it exceeds this goal, or if it falls short.

5.0 APPROVAL

Recommendation for Approval: Crystal Lake Hatchery Annual Management Plan, 2020.

David Landis, General Manager, SSRAA 6/3/2020

Paul Salomone, Area Management Biologist, Div. of Commercial Fisheries 6/2/2020

Patrick Fowler, Area Management Biologist, Div. of Sport Fish 6/4/2020

Judy Lum, Regional Supervisor, Div. of Sport Fish 6/4/2020

Lowell Fair, Regional Supervisor, Div. of Commercial Fisheries 6/2/2020

Lorraine Vercessi, PNP Hatchery Program Coordinator, Div. of Commercial Fisheries 7/6/2020

Approval:

The 2020 Annual Management Plan for Crystal Lake Hatchery is hereby approved.

Tom Taube, Deputy Director, Division of Sport Fish 7/6/2020

Peter Bangs, Assistant Director, Division of Commercial Fisheries 7/7/2020