



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Licence to conduct Salmonid Enhancement Activities

Licensed for: Aquaculture
LICENCE No. SEP-AQ«Project_Code» - 2011

Date Issued: 1 July 2011
Expiry Date: 30 June 2012

ISSUED to: «Position»
«CAArea»
«CAAddress»
Phone «CAPhone»

This licence is issued under the authority of the *Fisheries Act* and confers, subject to provisions of the *Fisheries Act* and Regulations made there under, the authority to carry out aquaculture activities including cultivation and harvest of fish and prescribed activities under the conditions included herein and/or attached hereto.

The above licence holder is authorized by this licence to carry on salmonid enhancement activities under the Pacific Aquaculture Regulations (SOR/DORS/2010-270) at the following location:

Project Reference Number	Location and Legal Description
«Project_Code»	Project Name: «Project_Name» Organization Name: «Organization_Name» Project Contact: «First_Name» «Last_Name» Contact Address: «Address_1» «City», «Province» «Postal_Code» Coordinates «Latitude», «Longitude» Legal Description: Not presently available

Species and Total Maximum Production at the Enhancement Facility: As listed in the annual Department of Fisheries and Oceans *Facility Production Plan for the licenced project*

Required Record Keeping and Reporting: Details are contained within the attached conditions of this licence.

Compliance Advisory: Contravening a condition of this licence is an offence under the *Fisheries Act*.

It is the responsibility of individual licence holder to be informed of, and comply with, the *Fisheries Act* and the regulations made there under as well comply with all laws, bylaws and orders of any competent government authorities which affect the enhancement facility described herein, in addition to these conditions.

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Part A. Definitions

“Containment structures” are structures used to contain finfish for the purposes of aquaculture.

“Community Advisor (CA)” means a DFO representative who is authorized to provide direction and technical support to community enhancement facilities.

“Department” means the Department of Fisheries and Oceans (DFO).

“Enhancement Facility” means an aquaculture facility under the direction of DFO, culturing Pacific salmon for the purpose of increasing their freshwater survival before their intentional release into fish habitat.

“Facility Production Plan” means production targets of the Enhancement facility that have been developed through the Salmonid Enhancement Program integrated production planning process and approved by the Regional Director of the Oceans, Habitat and Enhancement Branch.

“Fish Health Veterinarian” (FHV) means a veterinarian licensed in the Province of BC, on staff with the Department for the care of fish in aquaculture facilities.

“Major Mortality Event” means a significant number of fish mortalities caused by disease, life support failure, or through intentional destruction.

“Stock” means a group of fish from one production cycle that are defined by the system of origin, species and run timing.

General Conditions of Licence

1. Application and Licensed Species

- 1.1 This licence authorizes the cultivation of fish in the above mentioned enhancement facility including collection of adults, cultivation of fish in the facility, fish transfers into and from the facility, and the release from the facility of species of fish in the quantities and ages set out in the Facility Production Plan (Appendix I).

2. Transfer of Fish

- 2.1 Only fish of the species, stocks and production targets listed on the Facility Production Plan may be introduced to and transferred from the enhancement facility.
- 2.2 Fish may only be transferred from the enhancement facility, if:
 - (a) no disease outbreak is apparent in the stock, and losses in the stock have been low during the entire rearing period; and
 - (b) the stock is not currently being treated for a disease, nor has it had an antibiotic treatment during rearing;;
- 2.3 Where conditions 2.2 (a) or (b) cannot be met, advice from the FHV must be sought prior to transfer.
- 2.4 Records of transfers and releases into and from the enhancement facility (Appendix II) shall be kept and made available upon request by DFO staff.
- 2.5 A copy of this licence must accompany all shipments of fish between federally licenced enhancement facilities.

3. Fish Health

- 3.1 The fish cultivated in the enhancement facility must be given the care and attention consistent with their biological requirements.
- 3.2 If there is a fish health problem, it must be investigated by the licence holder or designate. The project may seek advice/assistance from the FHV directly if the licence holder or designate is not available.

- 3.3 All reasonable efforts shall be made at the enhancement facility to keep complete and accurate records of fish health and inventory in the enhancement facility, using Appendix III (attached) to capture the relevant information.
- 3.4 Major mortality events shall be reported within 24 hours to the FHV. Where the licence holder or designate is unavailable, the project shall contact the FHV directly.
- 3.5 Where fish must be destroyed, the licence holder shall seek the directions of the FHV.

4. Release of Fish

- 4.1 Fish shall only be released in accordance with the Facility Production Plan.
- 4.2 Fish shall only be released if:
 - (a) no disease outbreak is apparent in the stock and losses in the stock have been low during the entire rearing period; and
 - (b) the stock is not currently being treated for a disease, nor has it had an antibiotic treatment during rearing;
- 4.3 Where conditions 4.2 (a) or (b) cannot be met, advice from the FHV must be sought prior to release.
- 4.4 A copy of this licence shall accompany the fish to the site of release.
- 4.5 The licence holder shall keep records of all releases and report them as specified in s. 7 of this licence.

5. Adult Carcass Disposal

- 5.1 Where fish carcasses are placed in streams for stream nutrification, the placement must follow the Departmental guidelines (Appendix IV- Guidelines for In-stream Placement of Hatchery Salmon Carcasses). Placement may only proceed upon approval of the Department.
- 5.2 Fish that have been spawned or are in excess to spawning, not used in clause 5(1), shall be disposed of in a manner that does not impact the health of fish or fish habitat.

6. Net Pen Rearing

- 6.1 If net pens are used for marine or freshwater temporary rearing, the conditions set out in Appendix V- Licence Conditions for Net Pens operated by Enhancement Facilities shall be followed.

7. Records

- 7.1 An up-to-date copy of all records listed below relating to the enhancement facility shall be kept by the licence holder for a period of 6 years and shall be produced upon request to a Fishery Officer or other representative of the Department.
- 7.2 Records shall be kept in accessible and legible format, protected from damage. They may be kept either electronically or in a paper version.
- 7.3 Using Appendix II-Brood Summary Information as a guideline, the licence holder shall maintain records of:
- (a) the fish entering or introduced to the enhancement facility as well as all releases and transfers from the enhancement facility by
 - (b) species;
 - (c) age/developmental stage;
 - (d) quantity; and
 - (e) date of transfer to or from the source facility or water body.
- 7.4 Records of fish disease problems, reasons for losses, diagnosis where obtained from FHV must be kept using Appendix III, and must be made available to the FHV or representative of the Department upon request.

8. Reporting

- 8.1 The licence holder shall report all transfers to and from the facility, as well as all releases from the facility to the:

Salmonid Enhancement Program Planning and Assessment Unit
200-401 Burrard Street
Vancouver, BC, V6C 3S4
Fax: 604 666-0417

- 8.2 All information listed in the Transfer and Release Summary Information as set out in Appendix II shall be collected and reported. Records may be submitted in hard copy or electronically.
- 8.3 Reports shall be submitted by June 30 of each year for the information on spring releases and transfers up until June 30.
- 8.4 Reports shall be submitted by October 31 of each year for information on summer and fall releases up until October 31.

APPENDIX I - Salmonid Enhancement Facility Production Plan

2011 BROOD PRODUCTION TARGETS										08-Jun-11
Project	Species	Run	Stock	Release Site	Stage	Brood Stock	Production Eggs	Transfer Eggs	Release	Comments
Kingfisher/TOMF	Chinook	2	Shuswap R Low	Shuswap R Low	Smolt 0+	80	200,000	0	150,000	

(see also Excel document - FINAL BROOD SUMMARY FORM Template.xls)

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BROOD SUMMARY FORM INSTRUCTIONS		
CATEGORY HEADING	EXPLANATION	
Stock name	Broodstock origin: stream, river or lake where broodstock was obtained.	
Stock type	Wild (W), Hatchery (H), Mixed (M) or Captive Brood (C): use wild only if ALL pertinent hatchery releases were marked and all broodstock are unmarked; use hatchery only if ALL broodstock are marked; use captive brood if ALL broodstock were reared to adult; otherwise use mixed.	
Run	Time adults enter freshwater: 1=spring, 2=summer, 3=fall, 4=winter	
Broodstock Taken	# Used	# of males (adults or jacks) used for milt & # of females from which eggs were taken. Do not count a given male more than once if used for more than one female.
	# Pre-spawn Morts	# of males (adults and jacks) & females taken for broodstock, but died before spawning could occur.
Eggs	Egg Target	Targeted (ie. maximum) # of eggs to be taken for production + for transfers out, as per the annual Production Plan.
	# Taken	# of adjusted (remeasured) eggs.
	# Transfer In	# of eggs transferred to your facility from another facility (NOT between containers at your facility) - include transfer location (project from which eggs were transferred, NOT incubation locations at your facility) in comments section.
	# Transfer Out	Indicate transfer out by using a negative sign (-). # of eggs transferred from your facility to another facility (NOT between containers at your facility) - include transfer location (project to which eggs were transferred, NOT incubation locations at your facility) in comments section.
Juveniles	# Poned	# of fry poned/emerged
	# Transfer In	# of fry transferred to your facility from another facility (NOT between containers at your facility) - include transfer location (project from which eggs were transferred, NOT rearing locations at your facility) in comments section.
	# Transfer Out	Indicate transfer out by using a negative sign (-). # of fry transferred from your facility to another facility (NOT between containers at your facility) - include transfer location (project to which eggs were transferred, NOT rearing locations at your facility) in comments section.
	# On Hand	# of fry on hand (at time of reporting) for yearling release, ie. for release 2 years after brood year (eg. coho, interior chinook, steelhead or cutthroat)
Releases	Release Site	Name of river, creek, lake, etc. where juveniles were released. If adding a new release site, please include either a watershed code or the latitudinal & longitudinal coordinates of the site in the comments.
	Release Date(s)	From first day of release to last day; please keep release groups separate if they are released more than a month apart with no releases between.
	Release Stage	EP = egg plant, UF = unfed, CF = channel fry, FF = fed fry (fed fry have been fed for a minimum of 1 week but may have been starved for a few days prior to release), SFF = seapen-reared fed fry, SM = subyearling smolt (released 1 year after brood, eg. coastal chinook) YE = yearling smolt (salmon released 2 years after brood (eg. coho, interior chinook), and for steelhead and cutthroat released 1 year after brood), SM2+ = a steelhead or cutthroat smolt that is released 2 years after brood, SSM = seapen-reared smolt, SY = seapen-reared yearling smolt.
	Mark Type	Coded-wire tag (CWT) code (eg. 18-46-54) and whether Adipose-clipped (AdCWT) or unclipped (CWTonly), or Fin Clip Type (eg. adipose (AD), left ventral (LV), right maxillary (RM), etc.) or Otolith marked (eg. OTO 2:1.3,2.2,3.3). Enter "No Mark" if not tagged, clipped or otolith marked.
	# Marked	# of AdCWT, CWT, finclipped or Otolith-marked fish released (# released after all mortalities have been subtracted)
	# Unmarked	# of fish released without marks: please use a separate line to record unmarked releases unless they were released to the same site and at about the same time and size as tagged or finclipped fish (ie. associated release).
	Release Target	Targeted (ie. maximum) # of releases by stock, species, stage & release site, as per the annual Production Plan.
	Total # Released	Total # of fish released: must equal # of marked releases + # unmarked releases.
	Enum Meth	Enumeration Method (method of determining # of unmarked fish released): Book (B): calculated by subtracting # of mortalities from an earlier calculated # such as # of eyed eggs or # poned. Weight (W): volumetric or weight estimation of #'s immediately prior to release. Count (C): actual physical count of fish during release (or just prior to release during marking of other fish).
Tag Retention Check Information (only need to fill in if releases are tagged or clipped!)	# of fish sampled for tag retention quality check:	The total number of tagged fish run through a tag detector to check for missing tags (do not fill in if done by DFO contractor).
	# of fish missing tags (of those sampled above)	Number of tagged fish that were missing their tags when run through the tag detector (do not fill in if done by DFO contractor).
	# of days between end of tagging and tag retention quality check:	This is particularly important if you have done a long-term tag retention check (do not fill in if done by DFO contractor).
Comments	Include the locations of egg & fry transfers (which facility were the eggs or fry transferred to or from).	
	Include either a watershed code or the latitudinal & longitudinal coordinates of a new release site.	
	Include the total # of mortalities that occurred at each stage (incubation and rearing), and reasons for any unusually high mortalities (disease outbreaks, mechanical failure, vandalism etc).	
	Include numbers of fry salvaged (wild fry rescued from drying up pools) and dates over which they were salvaged.	
	Include reasons for tagging or finclipping or any abnormal condition of fish at release. Any other relevant comments.	

APPENDIX III- Fish Health Information

Facility name:

Licence number:

Date of report:

	Details (to be filled in)	Comments
Date of event		
Major mortality event	Yes/No Destruction/Accidental (circle as needed)	
Cause/Diagnosis		
Lot(s)/container(s) affected		
Fish species affected		
No. of fish of this species/age on site		
Estimated number of mortalities		
Name of drug used (prescription number if available)		
Date treatment started		
Date treatment completed		
Withdrawal time		
How applied (bath, feed, etc.)		
Amount (kg of treated feed used, weight/volume and concentration administered by bath)		
Response description		

Vaccine Usage

Vaccine administered (Trade name)		
Vaccine lot numbers		
Date		
Fish stock		

APPENDIX IV- Guidelines for In-Stream Placement of Hatchery Salmon Carcasses

Planning, Review, And Awareness

Carcass placement plans must be reviewed by DFO. Projects that meet the terms of the carcass placement guidelines will be issued a letter from the Department allowing the transport and deposition of carcasses. This letter must accompany all carcass movements.

Carcass placement plans should be discussed with all relevant groups and agencies. These groups will include DFO local area staff in stock assessment, habitat, resource management, and Conservation and Protection (Fishery Officers), as well as local First Nations, stewardship groups, affected landowners or any other affected groups. It is also important to contact the regional Ministry of Natural Resource Operations (MNRO) office to ensure that carcass placement is coordinated with MNRO inorganic nutrient enrichment projects. MNRO should also be contacted if placement is considered in non-anadromous waters.

Under the Water Act, downstream water users (primarily local municipalities), must be advised of activities that may potentially impact water quality of their withdrawals. Accordingly, Water Licensees on treatment streams should be advised prior to placement programs. Carcasses should be distributed in such a way so as to avoid or minimize impacts on domestic and other types of intakes or water supplies.

Background material and signage may be provided to advise members of the public of carcass placement activity and its benefits.

Carcass Management and Condition

The placement of salmon carcasses in streams may pose a risk of disease transmission if carcasses of infected fish are used, if carcasses are moved to areas within the watershed that are normally not accessible to salmon, or if carcasses are moved to streams outside the watershed.

Streams that receive carcasses are referred to as “treatment” streams and those that provide carcasses are referred to as “donor” streams. In general, no carcasses may be moved outside their natal stream because of concerns regarding disease transmission. However, in specific circumstances, movement of carcasses from the watershed to nearby streams may be considered if all of the following conditions are met:

- donor and treatment streams are geographically proximate and,
- treatment stream is within the zone of influence of the donor stock (i.e. adults may be straying from donor to treatment stream), and
- current disease history is available.

If sufficient information is not available, health testing of fish in the donor stream and treatment stream may need to be undertaken. Historical information can be obtained by searching the Pacific Biological Station (PBS) Fish Health Database; the Fish Pathology Program may be contacted at (250) 756-7057. Please note that wild fish surveys have not been conducted in many locations in

recent years so that information contained in the database does not include current disease status for many salmon stocks.

Only those fish killed with CO₂ or blunt trauma that show no visible evidence of serious disease should be used for carcass placement. Carcasses of recently dead salmon from managed spawning channels may also be considered for placement.

Because of drug clearance times, and the length of holding, fish previously treated with an antibiotic or anaesthetic must not be used for carcass placement. However, fish treated with external chemicals that do not require a withdrawal period (e.g. Parasite S or Chloramine T) are considered safe for placement. If in doubt, contact the Fish Pathology Program.

Carcasses may be frozen for later use. However, as freezing will not significantly reduce disease organism loads, it should not be considered a disease management tool.

Carcass Loading Density

All salmonid carcasses are considered equal from a nutrient content basis. That is, required placement load may be calculated as biomass and then converted to fish numbers of the available species. For example, chinook carcasses may be substituted for coho, and vice versa. Where system-specific weight data are not available, the following average weights for returning B.C. salmon are provided for weight conversion.

Suggested Average Weights for B.C. salmon *			
Pink	1.5 kg	Steelhead	4.0 kg
Sockeye	2.5 kg	Chum	4.5 kg
Coho	3.0 kg	Chinook	8.5 kg

Data sources: mean weights from B.C. catch statistics.

The maximum carcass placement within a stream segment (including the areas into which carcasses drift from the distribution point), over the course of a spawning season should be 1.9 kg/m². In treatment streams with continuous escapement records, the carcass numbers may be reduced by the recent 10 year average for natural escapement to the treatment reach. For determining total carcass deposition maximums for streams used by more than one salmon species, the area historically available to each salmon species should be used to calculate the loading rate. Spawning timing should be factored into distribution schedules.

Maximum loading densities may be adjusted to reflect the stream's carcass retention properties. Carcass retention in streams is affected by predator / scavenger activity, carcass transport during high flows, and abundance of in-stream structures to catch and retain carcasses. Accordingly, for streams with expected good carcass retention, maximum carcass densities may be reduced by the current spawner densities. For streams with expected poor carcass retention (high gradient, high flows, few pools and few in-stream structures), carcass loading densities need not be adjusted for current spawner densities.

Carcass Distribution

The temporal and spatial distribution of carcasses should reflect the historic spawn timing and abundance of salmon in the treatment reach.

Carcasses should be placed in stream areas that are normally (or recently historically) accessible to salmon, (i.e., not above barriers). Carcass placement into inaccessible stream segments may be permitted where juvenile salmon of the same stock and species have been previously outplanted (e.g., colonized upper areas above impassable barriers) but consultation with regional MNRO staff is necessary.

Placement in the riparian zone is not necessary and often results in increased numbers of blowflies. Natural predators will remove carcasses from the treatment stream and distribute them in riparian zones.

For streams with poor access (and low public use), a few accessible sites may be used for regular carcass placement. These sites should be inspected periodically to ensure adequate natural dispersion of carcasses. Where dispersal is poor, carcass loading should be reduced.

Carcasses should be distributed in stable stream areas, where possible. This will help avoid rapid downstream transport of carcasses. Optimal sites include shallow backwater pools, side-channels, small headwater tributaries, areas with abundant woody debris and beaver-dam complexes. However, note that placing excessive numbers of carcasses in side pools with sluggish or intermittent water exchange may cause de-oxygenation.

Carcass placement should be avoided or delayed during high flow events, especially where anchoring and/or riparian placement is not feasible.

Timing of carcass placement is also important as nutrients should be made available to young salmon upon their emergence from the gravel. Placement timing may be early, mid or late, and may be used to influence the ecological response to loading within watersheds. For example, the use of carcasses from later runs of native salmon (fall and winter) may benefit the next growing season, provided that some nutrients are stored through the winter. Also, the use of carcasses from several species, each with a different run timing (e.g., early sockeye, mid-chum, late coho), will provide a longer nutrient pulse in the treatment stream than if only one or two species were used, each with a brief spawning period.

If a treatment stream has a late natural spawning timing, carcasses from earlier runs to the treatment stream may be frozen and stored for later placement. The use of frozen carcasses is also convenient for long-distance transport.

Carcass distribution schedule should consider anticipated problems of poor stream accessibility due to snow, high water, and other constraints.

Carcass Anchoring/Mutilation

Carcasses may be tethered or anchored in place, especially in unstable, higher-flow areas in order to improve carcass retention.

Where carcass anchoring is desirable, natural anchors (e.g., large woody debris, log-jams, beaver-dams) or bio-degradable tethers such as natural-weave ropes, should be used where possible. External identification tags should be removed from carcasses prior to their placement.

Non-bio-degradable tethers should be collected and removed from the stream after carcass decomposition.

Where frozen carcasses are used, they should be tethered in place (frozen carcasses float and may be readily transported downstream). Where tethering is not possible, it is preferred to thaw out at least one fourth of the frozen carcasses before distributing them in order to enhance carcass retention at the point of access.

Where escapement enumeration programs will be conducted on treatment streams, carcasses should be cut in half or otherwise mutilated at placement, as directed by area stock assessment staff. This is crucial in order to avoid double-counting and ensure that enumeration programs are not affected.

Records of Carcass Placement

Records of numbers and species of carcasses placed in treatment streams should be maintained in annual data summaries, including areas and dates of placement.

Summaries should be provided to the DFO contact.

APPENDIX V - Licence Conditions for Net Pens operated by Enhancement Facilities

1. Containment Structures and Net Pen Support Systems

- 1.1 Equipment used at the net pens shall meet generally accepted standards prevalent in the aquaculture industry.
- 1.2 Navigation marker buoys shall be deployed as required by Transport Canada.
- 1.3 Signage to prevent damage by boats to the net pens shall be in place.
- 1.4 After fish are released, nets must be removed from the water, washed, repaired and stored.
- 1.5 Net washing must be done on land where the activity does not damage fish habitat or shed fish pathogens and deleterious substances into fish habitat.

2. Predator Control

- 2.1 Net pens shall be installed and maintained such that the upper edges are secured high enough out of the water to prevent mammalian predators such as seals or otters from coming in over the top edge.
- 2.2 Avian predator nets (bird netting) should be stretched over the net pens to prevent fish from being taken by birds.

3. Fish Health

- 3.1 Fish must be given the care and attention consistent with their biological requirements.
- 3.2 Mortalities must be collected on a regular basis and disposed off in a manner that does not impact the health of other fish.

Water quality in the area of the nets must be monitored before fish are transferred to the net pens.

