

**Fish Habitat Design, Operation and Reclamation Requirements for
High Habitat Suitability Watercourses (Chinook Salmon Production)**

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High suitability habitats are defined as watercourses that provide spawning habitat for salmon or critical migratory corridors required to access salmon spawning habitat. Typically, the distribution of this habitat type is the most limited in watersheds. High suitability habitats require effective management of mining activities to provide protection from potentially harmful effects resulting from development activities and achieve conservation and protection of habitats. As such, **placer mining works or undertakings will be highly restricted in this habitat type.**

In **all cases**, any placer mining activities (other than those listed in the following operational requirements) that are likely to result in the harmful alteration, disruption or destruction of High suitability habitats require a site-specific review, and if the activity is deemed to be acceptable, a site-specific authorization issued by Fisheries and Oceans Canada. A full compensation and fish habitat restoration plan must be submitted to Fisheries and Oceans Canada with any proposal to conduct works in or around High suitability habitats.

Summary of general restrictions on works or undertakings in High suitability habitats

Activity Type / Operation	Restriction in High suitability habitats without site-specific authorization.
Effluent Discharge	Discharge of sediment concentrations above background levels not authorized
Riparian Zone	Work within 30 metres from the high water mark not authorized.
Fords	Construction of new fords not authorized.
Diversion Channels	Construction of diversion channels not authorized.
In-stream Works	In-stream works not authorized.

Please refer to the following information regarding works or undertakings in or around High suitability habitats.

Do you propose to undertake placer mining activities in or near a watercourse? Activities may include discharging effluent, constructing stream crossings, clearing riparian vegetation, constructing channel diversions, or withdrawing water.

NO – No further review pursuant to the *Fisheries Act* is required.

YES – Proceed to Step A, Identification of Project Location

A) Identification of Project Location

The first step in compiling a project proposal that involves activities proposed to occur in or around fish habitat areas is the completion of the ***Project Location Worksheet*** (Appendix A).

A1. *On the Project Location Worksheet enter the stream name, the watershed name (as per Yukon Placer Fish Habitat Suitability Maps), identify the watershed sensitivity and habitat suitability classification for the reaches you proposed to work in, determine if any reaches are designated as “prior development”, provide a short description of the location, describe the proposed duration of activities and include a copy of a map of the specific location of the site.*

Once the sections noted above are completed on the *Project Location Worksheet*, proceed to the next question.

Do you propose to discharge effluent from your mine site?

NO – Proceed to Step C, Riparian Zones.

YES - Proceed to Step B, Settling Pond Discharge. *Note – discharge of sediment concentrations above background levels is not authorized in High suitability habitats.*

B) Settling Pond Discharge (effluent concentration)

Point source sediment discharges from gold recovery processes are typically managed through the use of settling facilities. The action level approach is a key element of the risk-based approach to sediment management for Yukon placer mining. For more information on the action level approach or settling pond design, operation, recirculation systems, and settling pond reclamation refer to the *Guidebook of Mitigation Measures for Yukon Placer Mining*.

Water quality objectives and sediment discharge standards for High suitability habitats are identified in the *Authorization for Placer Mining Works or Undertakings Affecting Fish Habitat* for the specific watershed you propose to work in (general requirements summarized below). Please verify your specific discharge standard in the respective watershed you plan to work in (specifically if any exemptions exist) prior to proceeding with your application.

Discharge Standard (High Habitat Suitability)	Requirement
Design Target	0 mg/L*
Action Level	0 mg/L*
Compliance Level	0 mg/L*

****Note – Typically only total recirculation systems will be able to achieve this standard.***

B1. Record the Design Target, Action Level and Compliance Level on the *Project Location Worksheet* (Appendix A).

Once the effluent discharge standards are recorded on the *Project Location Worksheet* proceed to the next question.

Do you propose to build a Seasonal, Temporary or Permanent diversion channel?

NO – Proceed to Step C, Riparian Zones.

YES – Proceed to Step D, Diversion Channels.

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C) Riparian Zones

The Riparian Zone is defined as the portion of the stream bank (either vegetated or not) immediately adjacent to the stream channel. Riparian Zones are measured from the high water mark on each bank of the watercourse and follow the shape of the channel.

The designated **Riparian Zone** in High suitability habitats is **30 metres**.

The Riparian Zone designation applies to all High suitability habitats. In the absence of a site-specific authorization from Fisheries and Oceans Canada, the only activity permitted within the Riparian Zone is the clearing of surface vegetation to create a corridor to provide access to the stream (typically for water acquisition purposes). The maximum width of the corridor is to be no more than **3 metres**. Riparian Zones must be staked out by the operator prior to development.

Do you propose to conduct surface or subsurface works in the Riparian Zone?

NO – Proceed to Step D, Diversion Channels.

YES – Not permitted without a site-specific authorization from Fisheries and Oceans Canada. Proceed to next question.

Do you propose to construct a new stream crossing (ford)?

NO – Proceed to next question.

YES – Not permitted without a site-specific authorization from Fisheries and Oceans Canada. Proceed to next question.

Do you propose to clear surface vegetation only?

YES – Not permitted without a site-specific authorization from Fisheries and Oceans Canada. Proceed to next question.

NO – Proceed to next question.

D) Diversion Channels

It is unlikely that the construction of a diversion channel will be permitted in High suitability habitats. However, operators wishing to propose construction of a diversion channel in High suitability habitats must first prepare a detailed design of the diversion channel, with the structural design certified by a professional engineer, and a detailed fish habitat compensation plan and submit this detailed design to Fisheries and Oceans Canada for review. Each proposal will be reviewed on a case-by-case basis and it is likely that detailed dialogue will need to occur between the operator and Fisheries and Oceans Canada during the proposal review stage.

Ultimately, the proposal will need to clearly demonstrate how High suitability habitat will be compensated for (via the creation of replacement habitat) in a manner that poses little to no risk to the fisheries resource (typically adult salmon / spawning activities). Operators are encouraged to contact Fisheries and Oceans Canada for more information prior to proceeding with the development of a proposal that involves channel diversion in High suitability habitat.

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Do you propose to use an Existing Ford?

NO – Proceed to next question.

YES – Proceed to Step E, Watercourse Crossings, then E1, Use of Existing Ford.

Do you propose to construct a New Ford?

NO – Proceed to Step F, Water Acquisition.

YES – Not permitted without a site-specific authorization from Fisheries and Oceans Canada. Proceed to next question.

E. Watercourse Crossings (Fords)

Fording is defined as the crossing of creeks, streams and / or rivers at locations where a bridge, causeway or elevated embankment does not exist or is not utilized by a vehicle or equipment. Fording typically involves driving directly through a watercourse, across the banks and bed. In some instances, Fording locations (*Fords*) have been “improved” or constructed through watercourses by way of adding materials such as rocks or gravel, the modification of approaches, or the modification of the bed of a watercourse.

E1. Use of Existing Ford

Use of existing Fords is often the least preferred option for crossing watercourses however it is recognized that there are instances where it is the only viable option. Refer to the *Guidebook of Mitigation Measures for Yukon Placer Mining* for additional information on Fords. The following measures should be adhered to when utilizing existing Fords.

NOTE – Use of existing Fords in High suitability habitats is ONLY permitted between June 10 and July 1 of any given year. Please identify if you intend to use existing Fords on the Project Location Worksheet (Appendix A).

- Ensure water depth is sufficiently shallow to allow passage of vehicle / equipment.
- Plan your activities in advance to minimize the number of crossings required.
- Avoid crossing during extreme rain or flood events.
- Access approaches at 90° to the bank, when entering or exiting the ford.
- Maintain speed at a very slow and steady pace throughout the crossing.
- Avoid rapid acceleration while on approaches or while in the water.

Do you propose to withdraw water from a High habitat suitability watercourse?

NO – Proceed to Step G, In-stream Works.

YES – Proceed to Step F, Water Acquisition.

F. Water Acquisition

Acquisition of water is required for processing materials during placer mining. Effective water management is a key consideration at all placer mine sites. The following requirements must be achieved to meet compliance with the respective watershed *Authorization for Placer Mining Works or Undertakings Affecting Fish Habitat*.

F1. Water Intake Screens

In order to meet the requirement of the *Fisheries Act*, all water intakes must be screened in accordance with requirements identified in the Fisheries and Oceans Canada Intake End-of-Pipe Fish Screen Guidelines. A general summary of the guideline requirements are provided in the following table. For more information regarding fish screens, please refer to the *Guidebook of Mitigation Measures for Yukon Placer Mining* or for more specialized applications please refer to the Fisheries and Oceans Canada Intake End-of-Pipe Fish Screen Guidelines (available online or through Fisheries and Oceans Canada).

General Guidelines for Intake Screens

Design Component (Fish Screens)	Requirement
Screen Openings (Imperial)	No less than 8 openings per lineal inch, with openings no greater than 1/8 inch along any given side of the screen. If a punch plate or similar material is used, openings no greater than 1/8 inches in length or width are permitted.
Screen Openings (Metric)	No less than 3.5 openings per lineal cm, with openings no greater than 3.2 mm along any given side of the screen. If a punch plate or similar material is used, openings no greater than 3.2 mm in length or width are permitted.
Screen Area (Imperial)	1 ft ² of open screen area per 45 imperial / 55 US gallons per minute of water withdrawn is required.
Screen Area (Metric)	929 cm ² of open screen area per 205 litres per minute of water withdrawn is required.

Note: the objective behind the installation of intake screens is to prevent the destruction of fish through the acquisition of water. If screens of the correct mesh size are deployed between a watercourse and the intake to a water reservoir or gravity feed ditch, it is not necessary to screen the pump intake that removes water from within these structures provided these structures do not already contain fish. In the case of total recirculation systems, the operator shall ensure that any areas where fish could enter the system have barriers to prevent the entry of fish (unless the pump intake is appropriately screened).

G. In-stream Works

In-stream works are defined as works that occur within the high water mark of a watercourse, but do not include diversion channels or fords. Some in-stream works can lead to effects on fish and fish habitat such as erosion/scouring, sediment inputs, loss of habitat area, changes in channel morphology, blockages to passage, and reduced productivity.

No physical works are permitted within a watercourse under the auspices of a watershed-based authorization in habitats of High suitability. Should in-stream works be contemplated in these areas, operators must apply to Fisheries and Oceans Canada for a site-specific review of proposed in-stream works prior to proceeding.