



Ministry of  
Transportation  
and Infrastructure

# Fish-Stream Crossing Guidebook Information Sheet

The mandate of the Environmental Management Section is to ensure that the Ministry of Transportation and Infrastructure (MOTI) develops and maintains the provincial transportation infrastructure in an environmentally responsible and effective manner.

This group develops and maintains environmental policies, standards, specifications, best practices, and provides technical expertise. The Section is responsible for providing advice regarding environmental assessments on highway projects, for improving overall environmental performance, and delivering environmental enhancements with a direct benefit to transportation and infrastructure.

Information sheets are for use by ministry staff, contractors, and other stakeholders.

## PART 1: BACKGROUND

### 1.1 Fish-stream Crossing Guidebook

The **Fish-Stream Crossing Guidebook** (the **Guidebook**) was initially developed in the mid-90s as part of the Forest Practices Code, largely because poor culvert installations on Provincial forestry lands were causing fish passage and habitat concerns found through audits and other assessments. The **Guidebook**, which had earlier iterations in 1997/98 and 2002, is based on numerous case studies in British Columbia and other jurisdictions such as Oregon and Washington states with similar issues.

The Interagency Fish Passage Technical Working Group (FPTWG) released the revised edition of the **Guidebook** in September 2012. The FPTWG provides technical expertise to remediate and improve fish passage at problem culverts.

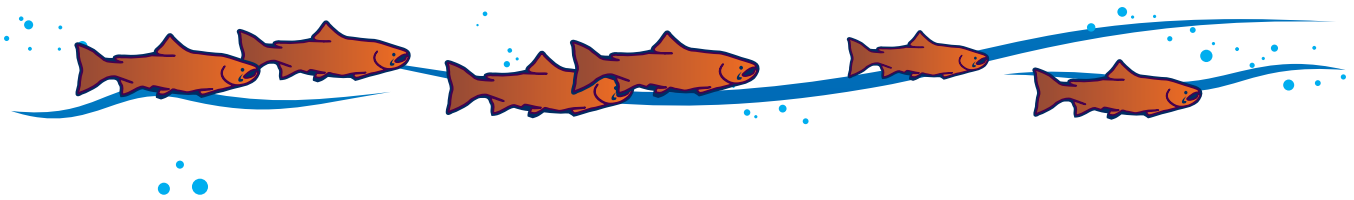


MOTI Environmental Management staff joined the FPTWG in October 2012, and other agencies are also being solicited and have expressed interest in joining this working group.

The **Guidebook** is a reference tool to help in the proper design, implementation, and long-term performance of fish-stream crossings to obtain environmental permits, adhere to best practices, and comply with provincial and federal legislation.

Changes to the revised September 2012 **Guidebook** compared to the 2002 version are highlighted in Section 1.2, and involve regulatory administrative changes, Species at Risk Act references and updated fish passage assessment procedures. The design, installation, and maintenance sections are largely unchanged from the 2002 version.





## 1.2 BC Ministry of Transportation Fish-Stream Crossings

Many replacement and upgraded crossings on fish-bearing streams are delivered by MOTI. This may include highway maintenance contractors that work under district and operational staff management, regional projects, major projects, environmental management, and others.

Current engineering standards and upgraded fish passage requirements necessitate that older, non-embedded, closed bottom culverts are generally not replaced like-for-like. Therefore, fish

passage installations may not be part of standard operations and maintenance through MOTI district operations and highway maintenance contractors, unless additional support is provided to districts. Alternatively, these projects are delivered by other means that have additional resources.

Sites that are typically environmentally sensitive, given they support valued fish species including Pacific salmon and trout, often have environmental community volunteer groups as their stewards, First Nations, cultural, and heritage significance, and environmental regulatory scrutiny.

Culvert replacements are becoming more common as many older, especially galvanized culverts, are past their lifespan and require replacement. These new culvert installations on fish-bearing streams usually require upgrades for fish passage or other criteria.



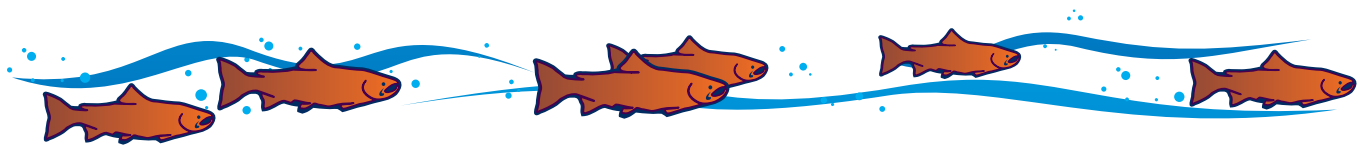
## 1.3 Guidebook Application to MOTI Fish-Stream Crossings

Historically, MOTI has somewhat inconsistently referenced and applied the **Guidebook** to its stream crossings and it intends to increase the awareness and use of applicable information in the **Guidebook** to MOTI fish-stream crossings.

The **Guidebook** is a tool, and not all of its content may apply to MOTI (e.g. use of log bridges). MOTI requirements may supersede the **Guidebook**, such as engineering life cycle, hydraulic freeboard, safety, and seismic requirements.

Conformance with the **Guidebook** by MOTI in itself does not provide an environmental permit. However, at the minimum it helps to meet environmental regulatory referral processes and ultimately may provide a streamlined means to achieve regulatory compliance.





Use of applicable designs and installations may achieve better performance and results by:

- Helping to restore valued fish populations that may be depressed because of sub-standard crossings and other impacts;
- Providing enhanced passage for small wildlife like amphibians;
- Following known and established guidelines rather than trying to develop new or unknown designs;
- Saving resources by reducing permitting delays;
- Reducing remediation requirements;
- Improving infrastructure stability by reducing erosion from downstream head cutting, upstream turbulence, and ponding attributed to poor culverts;
- Reducing maintenance (e.g. debris build-up, cleanouts, erosion remediation); and
- Being overall more robust and longer lasting (e.g. many newer crossings last much longer than closed bottomed galvanized culverts that may wear relatively quickly because of bed load abrasion and water quality corrosion).

While new closed bottomed culverts require upgrades to meet modern requirements and subsequent incremental costs compared to replacing like-for-like of existing older infrastructure, there are various options that include embedded stream simulated culverts, open bottom arches, and bridges.

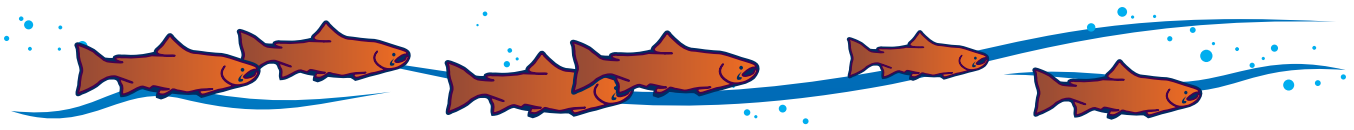
MOTI's environmental programs may provide some support to upgrade culverts related to fish passage or other environmental attributes. These programs are accessed either by regional or headquarters MOTI environmental staff.

MOTI Environmental Management Section recommends that our practitioners reference and use applicable sections of the **Guidebook** for new and replacement fish-stream crossings on MOTI roads. This helps compliance with fish passage requirements and improves performance to meet modern fish-stream guidelines that are based on proven technology.

Below is further information based on documents from the FPTWG sent to other stakeholders, with MOTI specific additions:

The revised 2012 edition of the **Fish-stream Crossing Guidebook** is now available. The **Guidebook** addresses the requirements for fish passage in the *Forest and Range Practices Act* and regulations, and in the federal *Fisheries Act*.





## MORE INFORMATION

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The revised 2012 edition of the Fish-stream Crossing Guidebook can be accessed at the Fish Passage Technical Working Group's (FPTWG) website at: [www.for.gov.bc.ca/hfp/fish/FishPassage.html](http://www.for.gov.bc.ca/hfp/fish/FishPassage.html)

The **Guidebook** is a revision to the former *Forest Practices Code of British Columbia Fish-Stream Crossing Guidebook*, March 2002. The main changes made are highlighted in Section 1.2 of the revised **Guidebook**.

The FPTWG includes scientific/technical experts from the B.C. Ministry of Environment; B.C. Ministry of Forests, Lands and Natural Resource Operations; Fisheries and Oceans Canada, and B.C. Ministry of Transportation and Infrastructure. You can learn more about the Working Group and their work in the above noted website.

The FPTWG acknowledges that recent amendments to the federal *Fisheries Act* and pending amendments to various regulations under that act will likely require further revisions to the **Guidebook** in the future. At that time, the FPTWG also plan to update and broaden the scope of the document to provide more guidance on fish-stream crossing under other legal regimes.

The FPTWG also recognizes that other improvements can likely be made to the **Guidebook** based on operational use and experience. The FPTWG welcomes your feedback and ideas on the **Guidebook** and on how it can be improved; please send those comments to:

**Mr. Ian Miller, RPF**

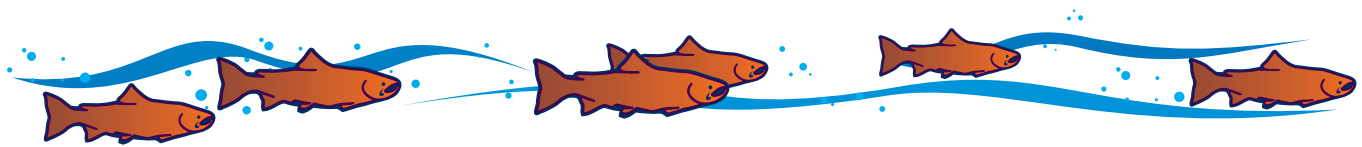
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For comments on MOTI, please email Mr. Sean Wong, Senior Biologist, BC Ministry of Transportation and Infrastructure, at [Sean.Wong@gov.bc.ca](mailto:Sean.Wong@gov.bc.ca).

For additional information, please visit the BC Interagency Fish Passage Technical Working Group website at: [www.for.gov.bc.ca/hfp/fish/FishPassage.html](http://www.for.gov.bc.ca/hfp/fish/FishPassage.html).



## FISH-STREAM CROSSING GUIDEBOOK CONTACTS

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