

## HOW ARE THE *GUIDELINES* APPLIED?

If fish habitat may be affected, and prior to commencing work, land developers are required to present DFO and MOELP with an environmental impact assessment document which outlines the development proposal and describes how the land development guidelines will be incorporated within the proposed project. This process will help developers identify potential impacts on the aquatic environment and avoid costly restoration and compensation requirements.

## RELATED INFORMATION AND INITIATIVES

The *Developer's and Planner's Guide to Stream Stewardship* examines approaches available to local government and developers to use the *Municipal Act*, economic incentives and other tools to implement stream stewardship during the planning and development process, and is available from DFO or MOELP.

*Fish Habitat Enhancement: a Manual for Freshwater, Estuarine and Marine Habitats* is available from the DFO's Salmonid Enhancement Program.

The Ministry of Environment, Lands and Parks has produced a *Stream Stewardship Manual* for use in schools.

The Department of Fisheries and Oceans is developing a *Streamkeeper's Manual* and program, which will encourage community involvement in stream stewardship.

## FOR A COPY OF THE *GUIDELINES* OR MORE INFORMATION CONTACT:

Habitat Management Division  
Department of Fisheries and Oceans  
555 West Hastings Street  
Vancouver, B.C.  
V6B 5G3

Tel: (604) 666-6566 Fax: (604) 666-7907

Habitat Protection Branch  
Ministry of Environment, Lands, and Parks  
780 Blanshard Street  
Victoria, B.C.  
V8V 1X4

Tel: (604) 356-7719 Fax: (604) 356-7183

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## An Overview of the

# LAND DEVELOPMENT GUIDELINES

## for the Protection of Aquatic Habitat



Province of  
British Columbia

Ministry of  
Environment,  
Lands and Parks

## WHAT ARE THE LAND DEVELOPMENT GUIDELINES FOR THE PROTECTION OF AQUATIC HABITAT?

The *Guidelines* are designed to protect fish and fish habitat. They identify requirements that limit the effects of land development activities on aquatic habitat. Application of the *Guidelines* from early in the design phase through to construction of a project helps speed project approvals, and reduces unexpected design changes, unplanned mitigation or compensation requirements, and enforcement action under the *Fisheries Act*. Their application results in reduced administrative burdens and a more predictable development process.

## WHO USES THE GUIDELINES?

Developers, engineers, surveyors, architects, contractors, environmental consultants, local government engineers, planners and inspectors, and others interested in the protection of aquatic habitats. Habitat protection and management staff from the Ministry of Environment, Lands and Parks (MOELP) and the Department of Fisheries and Oceans (DFO) will apply the *Guidelines* when reviewing development proposals. In some cases, the application of the *Guidelines* alone is not sufficient to adequately protect aquatic habitats and additional requirements may be identified.

## WHEN DO THE GUIDELINES APPLY?

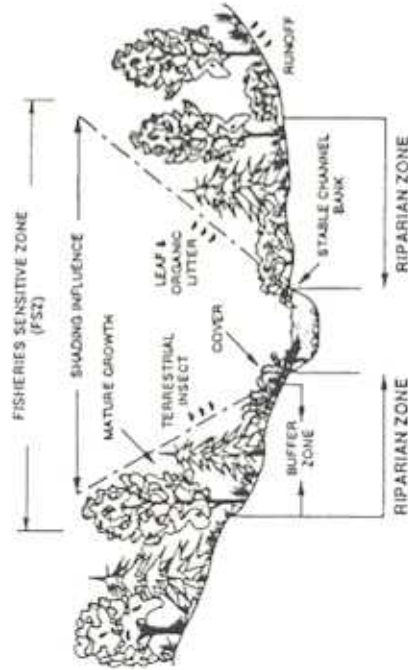
When projects involve work in and around fish habitat such as a stream, a lakeshore, wetlands, or a marine foreshore, or when drainage water or pollutants may potentially be discharged into fish habitat, the *Guidelines* apply.

## KEY ELEMENTS OF THE GUIDELINES

### Leave Strips

Leave strips are the riparian areas of land and vegetation adjacent to waterways which are to remain undisturbed both during and after development. These areas help to regulate water temperature, stabilize stream banks, prevent bank erosion and provide fish with food organisms and cover. As well, leave strips play a major role in the filtration, absorption and biological uptake of runoff water.

### Riparian Zone Benefits to Aquatic Habitat



### Sediment Control

Land development activities such as clearing land, grading slopes and road building all contribute to the erosion of soils into nearby watercourses. Sediment control is necessary to prevent suspended sediments from smothering eggs and alevins, clogging fish gills, reducing spawning success, reducing prey capture due to decreased visibility, decreasing juvenile fish survival and displacing fish into less optimal habitat. Sediment inputs can be minimized by reducing the potential for erosion before it occurs by stabilizing disturbed soils and intercepting sediment-laden runoff.

### Rates of Water Runoff

Urban development replaces natural groundcover which previously provided detention and retention of precipitation and runoff water. The replacement of natural groundcover with impervious surfaces and stormwater drainage systems causes urban runoff to be transported much more quickly into drains, ditches and streams. Runoff can accumulate rapidly into high peak flows, having detrimental effects on stream channels and bank stability. Rapid drainage also exaggerates summer low flows by reducing the water storage capacity of stream systems.

### Instream Work

Any work performed below the high water mark, within the Fisheries Sensitive Zone, is termed instream work. Care must be taken to ensure that methods and procedures protect natural stream conditions, allow for the unhindered passage of fish and prevent the generation of sediment within the stream system.

### Fish Passage

The maintenance of unhindered fish passage will ensure that the various phases in the life cycle of fish are allowed to proceed without undue stress or hazard. Barriers interfering with the natural migratory movements of fish include poorly designed culverts, debris dams, increased flow velocities over long stream reaches, lack of jump pools at drops in stream channels and insufficient water depth due to sedimentation or channelization.

### Pollutants

Pollutants entering the water system can include suspended solids, oxygen-demanding substances, toxic metals and trace elements, organic contaminants and nutrients. Sources of pollutants include leakage of motor vehicle fluids, road pavement materials, cement washing, stormwater runoff, vegetation, litter, spills, unauthorized dumping, and erosion of channels and banks. They all reduce water quality and have negative effects upon fish habitat and fish populations.