Information Note #2:

Other Environmental Concerns with Fish and Fish Habitat During Development

This Information Note is a guide only. It is not a substitute for the federal Fisheries Act, the provincial Riparian Areas Regulation, or local government bylaws..

The Riparian Areas Regulation deals with riparian fish habitat, and only in association with new residential, commercial and industrial development on land under local government jurisdiction (this includes private land and the private use of provincial Crown land). Other uses are subject to other planning and management approaches.

Although beyond the scope of section 12 of the *Fish Protection Act*, attention also needs to be given to:

- hydrological impacts on fish habitat resulting from land use and development and the associated creation of impervious surfaces;
- water quality impacts on fish from point and non-point source pollution; and
- the role and importance of riparian ecosystems to terrestrial species.

It is anticipated that local governments will choose – as many already have – to address these matters through comprehensive, watershed-based, integrated stormwater and stream corridor planning and management.

Large woody debris (LWD)

Large woody debris can be problematic in urban areas and local governments regularly remove it because it poses a flood hazard to instream structures, primarily culverts.

The abundance of LWD in urban streams is considerably lower than that for forested streams. Areas with more urbanization tend to have more LWD removed from the channel and lower recruitment due to the removal of danger trees. Emphasis needs to be placed on finding opportunities to satisfactorily address both the fish habitat needs and municipal hazard concerns to enable the recovery of urban streams. Past practices of LWD removal should be re-evaluated in light of the importance of LWD to stream environments. It is recommended that local governments work collaboratively with DFO and the Provincial Government on developing best management practices for managing LWD in urban streams.

The Regulation has designed the SPEA to supply large woody debris (downed trees and large pieces of trees) to streams. Large woody debris (LWD) is an essential component of healthy fish habitat in streams – it

contributes to the complexity and stability of stream channels as well as providing cover for fish and aiding in the cycling of stream nutrients.

Watershed planning

Local governments are encouraged to undertake watershed planning because it leads to more informed environmental decisions. Watershed plans consider environmental, cultural and socio-economic values and identify clear and realistic goals, objectives and timelines. They enable the use of best available information, can resolve land and water use conflicts and build partnerships which lead to improved cooperation. Watershed plans reconcile short-term actions and future plans for the watershed.

A component of any watershed plan should be riparian protection. The Regulation can be used to provide the riparian fish habitat component of a watershed plan. Recommendations from watershed plans, because they are more comprehensive, may develop setbacks that incorporate a number of interests and values, and may exceed those established solely by following the direction in the regulation.

Stormwater management

During the past 15 years, a significant body of research has been completed regarding the impacts of urbanization on streams, lakes and wetlands. The findings clearly demonstrate that the most important impacts of urbanization on streams in order of importance are:

- Changes in hydrology;
- Changes in riparian corridor;
- Changes in fish habitat within the stream, and
- Water quality.

Stormwater is the component of runoff that is generated by human activities. Stormwater is created when land development alters the natural hydrological cycle or "water balance". To mitigate the cumulative impacts of stormwater resulting from changes to the natural water balance, the Province of BC has developed a guidebook to assist local governments, engineers and planners in clearly understanding the broader issues and strategies currently available to correct stormwater-related problems.

The document *Stormwater Planning: A Guidebook for British Columbia* (2001) is available at the Provincial Government website: http://www2.gov.bc.ca/gov/DownloadAsset?assetId=FA2C4B4B9B9F47F5981272B98894655D

Metro Vancouver is incorporating Integrated Stormwater Management Planning as part of their Liquid Waste Management Planning process:

http://www.metrovancouver.org/about/publications/Publications/IntegratedLiquidWasteResourceManagementPlan.pdf

Based on the current knowledge of the science of stormwater management, certain guidelines can be identified for all land development projects, especially those sites adjacent to watercourses. These include:

- Maintain effective impervious surfaces close to zero;
- Infiltrate or re-use runoff from the development area;
- Retain significant natural (forest) cover across the development site, and
- Maintain an undisturbed SPEA to ensure proper filtration and maintenance of water quality.

Performance targets for stormwater provide the foundation for implementing solutions to eliminate the source of stormwater related problems. These performance targets can then be translated into design criteria that can be applied at the development site, to design stormwater systems that mitigate the impacts of the development. Site design criteria can provide local government staff and developers with practical guidance in adopting Best Management Practices. Further reference material is available from the following websites:

- http://www.metrovancouver.org/services/wastewater/sources/stormwatermanagement/Pages/default.aspx
- http://bc.waterbalance.ca/

Stormwater treatments ponds and wetlands cannot not be located within SPEAs.

Instream works

Often, in undertaking instream works such as pipeline crossings, road crossings, foot bridges, bank repairs and stormwater outfalls, a proponent is required to enter a SPEA or make some modification to a SPEA. These works and their impact on riparian vegetation are to be considered together in the context of instream works.

For some instream works, proponents need only submit a notification under the *Water Act* and apply best management practices. See: *http://www.env.gov.bc.ca/wsd/water_rights/licence_application/section9/*

For other instream works with a greater potential for harming aquatic resources, proponents must apply for an approval from the provincial government.

Activities that comply with these laws, regulations and best management practices are not considered to trigger the Riparian Areas Regulation. See *Develop with Care* 2014 to find the most up-to-date advice on these activities:
http://www.env.gov.bc.ca/wld/documents/bmp/devwithcare/index.html

It is important that all recommendations under best management practices be considered to ensure that the potential impacts to riparian vegetation are minimized.

Wetlands

Wetlands are very sensitive to hydrological changes and water quality degradation. Although the Regulation provides a SPEA for wetlands, if significant soil movement is part of the development plan, a hydrological expert should also be retained. The hydrological expert will evaluate if soil movement will impact the water regime of the wetland and the riparian vegetation. Stormwater should be treated before being discharged into a natural wetland and, again, an evaluation should be undertaken to ensure that input of additional water over more frequent periods will not harm the functioning of the wetland.

Hazards

Some development properties will require assessment and confirmation that the land may be used safely for the purpose intended without undue risk of hazards. Hazards may include flooding, groundwater flows, mud flows, erosion, subsidence, land slip, earthquake or avalanche. With respect to streams, steep slopes found in ravines are often of special concern and require assessment by a professional. Development on areas with thick peaty soils may also cause heaving of soils that may impact the integrity of the SPEA and the watercourse.