
4.0 Watershed Integrity

4.1 Introduction:

General management direction from the Bulkley LRMP indicates that water “health” is thought to be maintained if fish habitat, and the production of clean potable water in community watersheds, is maintained.

The topic of “maintaining fish habitat” is complex: it has several integrated elements including inventorying, monitoring changes, and taking action to remedy perceived imbalances in:

- fish population sizes (i.e. populations by individual species, by water system utilized by that population).
- riparian habitats (i.e. instream and upslope areas associated with waterbodies), which support fish populations
- water quality, i.e.
 - temperature
 - turbidity; total suspended sediment
 - water chemistry (e.g. pH; dissolved oxygen content; phosphorus levels)
 - ability to support aquatic invertebrate life
- water quantity

The topic of “maintaining the production of clean potable water in Community Watersheds” breaks out into:

- maintaining a level of water cleanliness suitable for human consumption; i.e.
 - low coliform levels
 - low levels of total suspended solids
 - “good” water chemistry (e.g. neutral pH levels, low phosphorus content)
- “maintaining production”; i.e. ensuring continued stream flow to water users in the Community Watershed.

There is a close parallel with water quality and quantity elements of “maintaining fish habitat”, albeit viewed from a human consumer perspective, so the topics will be discussed simultaneously in the indicator writeups.

Several government agencies manage the various elements of water quality, in a co-operative (although not fully co-ordinated) manner. A matrix of responsibilities is shared between the Ministry of Health, the Ministry of Sustainable Resource Management (SRM), the Ministry of Water, Land and Air Protection (WLAP), the Federal Department of Fisheries and Oceans (DFO), and the Ministry of Forests (MOF).

- the Ministry of Health assumes ultimate responsibility for providing safe drinking water for British Columbians, under the Drinking Water Protection Act.
- SRM is responsible for making appropriate land use decisions that carefully consider water protection.

- WLAP is responsible for protection of water quality (including water potability), stewardship of biodiversity including fish habitat, and environmental monitoring and enforcement.
- DFO is responsible for stewardship of fisheries and fish streams.
- MOF is responsible (under the Ministry of Forest Act) for stewardship of Crown forest and range resources. This includes co-ordination and integration with other agencies for managing fish and water resource values. Practically, a division of responsibility is maintained between instream (DFO, Ministry of Health, and WLAP) and upslope (MOF) processes.

This section focuses on the MOF's sphere of responsibility, which revolves around maintaining watershed integrity. As summarized from Wilford (2001), "watershed integrity" is maintained if development does not result in a significant increase over natural characteristics/levels of:

- Peak stream flow
- Landslide activity
- Surface erosion
- Stream channel bank erosion; channel bed characteristics
- Stream channel location

Watershed Integrity Indicators

- 1) Terrain Stability Mapping/ Sediment Transport Capability Mapping (object: to identify potential problem areas for sediment delivery into waterbodies, prior to new development)
- 2) Overview watershed assessment procedures and reassessments (object: to monitor/assess watershed integrity on an ongoing basis).
- 3) Watershed restoration (object: to rehabilitate areas where watershed integrity is at risk as a result of past and current development)
- 4) Co-ordinated water quality monitoring (object: to monitor water quality in sensitive watersheds over time, as an aid in assessing whether or not integrity problems are developing)