Guidance to C&E Program staff and delegated decision makers on interpreting the words "material adverse effect" and "material adverse impact"

This bulletin is provided for the information of C&E Program Staff and delegated decision makers. While every effort has been made to ensure its accuracy, this bulletin is only intended to provide an overview. It should not be interpreted as ministry policy or legal advice, and it should ***not*** *be used in place of the Forest & Range Practices Act or its associated regulations.*

Purpose

The purpose of this bulletin is to provide guidance on interpreting the words "material adverse effect" and "material adverse impact" which are used in several regulations under the *Forest and Range Practices Act* (the *FRPA*).

Introduction

The words "material adverse effect" and "material adverse impact" are not defined in the *FRPA* or the Regulations. They are used in different contexts and relate to a variety of subject matter in the Forest Planning and Practices Regulation, the Woodlot Planning and Practices Regulation, the Range Planning and Practices Regulation, and the Government Actions Regulation.

This bulletin looks at how these words can be interpreted using two examples from the Forest Planning and Practices Regulation (FPPR), one dealing with fish passage and the other with riparian reserve zones.

The meaning of the words "adverse effect" and "adverse impact"

The word "adverse" is defined in these dictionaries to mean:

Canadian Oxford Dictionary: 2. hurtful, injurious[1]
The Dictionary of Canadian Law: unfavourable[2]
Black's Law Dictionary: 4. hostile[3]

Canadian Oxford Dictionary defines the word "effect" to mean: "1. the result or consequence of an action", and the word "impact" to mean: "2. an effect or influence, esp. when strong".[4]

Using these definitions, an "adverse effect" or "adverse impact" may be understood as something that has an injurious result or an unfavourable influence.

Several Canadian jurisdictions have defined the words "adverse effect" in environmental legislation. These definitions commonly use words such as injury, damage, harm or impairment but are not directly applicable to the *FRPA* regime.

The meaning of the word "material"

The word "material" is defined in these dictionaries to mean:

Canadian Oxford Dictionary: 4b. serious, important, of consequence[5]
The Dictionary of Canadian Law: 1. important, essential[6]
Black's Law Dictionary: 3. significant, essential[7]

Using these definitions, a "material adverse effect" or "material adverse impact" may be understood as an injurious result or unfavourable influence that may have some real, appreciable consequence.

Statutory Interpretation

The words of a statute are to be read in their entire context and in their grammatical and ordinary sense harmoniously with the scheme of the Act, the object of the Act and the intention of the legislature. This is understood to mean that interpretation begins with an examination of the grammatical and ordinary meaning of the words. A meaning usually emerges from the reader's first impression of the words in their immediate context. If the words are precise, the ordinary meaning can be given substantial weight.

The grammatical and ordinary meaning of the words "material adverse effect" and "material adverse impact" are reasonably precise. There is no suggestion from the overall context of the words in the legislative scheme that the meaning should be broadened or narrowed, or an ambiguity exists that would support more than one reasonable meaning.

Proof

It is important to note that not every adverse effect or adverse impact will be material. The effect or impact must be both adverse and material. Whether an adverse effect or adverse impact is material will depend on what an informed person could reasonably consider to be material in the circumstances.

Unlike determinations made by the courts with respect to criminal matters, which have to be proved "beyond a reasonable doubt", the standard of proof for administrative contraventions is the "balance of probabilities". That is, it should be more likely than not that the contravention occurred. An adequate evidentiary basis, therefore, is one that has enough weight to tip the balance toward a finding of contravention.

Whether an incident can be proven to have had a material adverse effect or a material adverse impact will depend on the particular circumstances. Investigators may use an assessment protocol, such as a fish passage scoring model, to make a preliminary decision as to whether an incident is material enough to warrant further investigation. If investigators conclude that a contravention has occurred, an expert will need to be asked to provide an opinion on materiality.

Assessment protocols can also be used by experts as a starting point for an analysis of the factors that may support a finding of a material adverse effect or material adverse impact. However, protocols cannot be used as a substitute for expert analysis or used to prove that a contravention has occurred.

The proof of whether a contravention has occurred will always require one or more experts to examine the evidence and provide an opinion as to whether an adverse effect or adverse impact can be described as material.

The following 2 examples are for illustration only. The analyses presented in the examples relate only to the incidents described. The incidents that an investigator may encounter in the field are likely to be different and will require independent analyses and a consideration of which sections of the FRPA, or other statutes, have been contravened. An incident that does not constitute a contravention of the FRPA may (or may not) constitute a contravention of the federal *Fisheries Act*. A potential contravention must always be assessed on the basis of site-specific circumstances.

Example #1

Section 56(1)

> An authorized person who carries out a primary forest activity must ensure that the primary forest activity does not have a **material adverse effect on fish passage** in a fish stream.

Elements of the contravention

All the elements of the contravention must be proven. The allegation must be against an authorized person, the person must have carried out a primary forest activity, there must be a fish stream as defined in the FPPR, and the activity must have had a material adverse effect on fish passage in a fish stream.

Incident

An agreement holder is developing new road to an approved cutblock. The road crosses a fish stream that is 2.4 meters wide and has a slope of 3%. There is a lake approximately 2 km upstream and a large river less than a kilometre downstream. The agreement holder has installed an embedded closed metal pipe (culvert). The road is inspected and it is noted that a continuous stream bed simulation exists but its depth is only 15% of the culvert diameter. Additional measurements determine that the culvert is 1.8 m in diameter, 16 meters long and has a slope of 2.2 % (measured using an engineering level). No outlet drop exists and the average of 6 stream width measurements taken upstream is 2.3 meters.

Analysis

To decide whether the incident has likely resulted in a material adverse effect on fish passage, consider the following 2 questions: Has the incident had an **adverse effect** on fish passage? If so, has the adverse effect on fish passage been **material**?

A structure placed within a stream does not need to be a barrier to result in an adverse effect on fish passage. The act of placing a bare metal pipe which is not fully backwatered or a crossing structure that constricts the stream channel width will increase stream velocities which in turn results in additional energy expended by fish to move through that stream segment. Structures that increase stream velocity, turbulence or that reduce water depth or introduce a hydraulic jump all create adverse effects.

When does the change to a stream crossing structure move from having an adverse effect to having a material adverse effect? There are a number of factors that need to be examined before you can determine there is a material adverse effect on fish passage. Not all fish species or life stages have the same ability to pass through a stream crossing structure. This is partly due to differences in swimming ability. A structure which may be a total barrier to juvenile or small resident cutthroat trout may present only limited impediment to an adult anadromous cutthroat trout not long from the ocean environment.

Similarly not all adults have the same swimming ability. Fish may be delayed below a stream crossing waiting for velocities within a pipe to decline. During that period of delay they may be subjected to greater levels of predation or in the case of adult salmon returning to spawn their body condition may deteriorate further resulting in poorer swimming ability and reduced spawning success. Structures with a small outlet drop may be a barrier to adult chum but present limited increase in energy expenditure to an adult steelhead trout. In other words, a structure that presents a small impediment to a particular species and life stage may be a total barrier to a different species and life stage.

For the purposes of compliance and enforcement and restoration, a fish passage scoring model using easily measured channel/structure surrogates has been developed to help staff make a preliminary assessment of the possibility of a material adverse effect. The scoring model surrogates, as a general rule of thumb, suggest that structures with scores over 20 are more likely to have a material adverse effect on fish passage than structures with scores under 20. It bears emphasizing, however, that any structure, regardless of the score assigned using the model, could be proven to have a material adverse effect on fish passage. Therefore, every structure needs to be examined in the context of the species present within the system and the reason for movement. (The scoring model is at: https://sharepoint.forests.gov.bc.ca/ce_training/Fish%20Passage%20course%20material/Forms/AllItems.aspx)

The structure scores 5 points for inadequate depth of embedment (streambed material is continuous but occupies less than 20% of the diameter), 0 points for outlet drop (no outlet drop), 5 points for slope (culvert slope is between 1-3%), 3 points for stream width ratio between 1 and 1.3 (2.3m/1.8m = 1.3), and 3 points for a length between 15 and 30 meters. The cumulative score is 16 points. Structures that constrict the stream channel result in increased stream velocity which will be adverse to fish movement.

In addition to the fish passage score, consideration needs to be given to the fish species known to occupy the stream and its life stage. Are the fish species strong or weak

swimmers? What do they require to move within the stream system? In this example, because the culvert still contains a continuous streambed simulation, fish should be able to move through the culvert in much the same way they move within the natural stream. Low-velocity refuges will exist behind rocks and boulders associated with the streambed simulation.

It can be concluded that there is an adverse effect because the channel has been constricted by the culvert and the stream banks are gone. However, the adverse effect is likely not material regardless of the fish species if the streambed simulation continues to work.

WHAT MIGHT HAVE RESULTED IN A MATERIAL ADVERSE EFFECT?

Staff re-examine the same structure four years later and find that only scattered rocks exist within the barrel of the culvert and a 15 cm outlet drop has developed. The fish passage assessment data is collected again. The culvert diameter is 1.8 meters, the culvert length is 16 meters, and the culvert is not continuously embedded and only contains scattered rock. An outlet drop exists that is measured at 15 cm and the culvert slope is measured again using an engineering level and is calculated at 2.3%. Six stream widths are taken upstream at intervals approximately equal to one stream width. The average stream width is determined to be 2.4 meters.

Using the fish passage scoring model, the culvert scores 10 points because it is not embedded, 5 points for an outlet drop between 15 and 30 cm, 5 points for a slope between 1 and 3, and 6 points because the stream width ratio is greater than 1.3, and 3 points because the length is between 15 and 30 meters. The cumulative score is 29 points. A score of 29 is a good indication that this structure may now be having a material adverse effect on fish passage.

Additional field sampling is needed to help determine the fish species present and examine the issues associated with movement. Field sampling finds both cutthroat trout and young Coho salmon. Fish are present both above and below the road crossing; however, population densities are lower above the road. The presence of young Coho above the culvert is an indication that some adults continue to make it through the structure. A look at the habitat above and below the crossing reveals that the majority of off channel over-wintering habitat exists above the culvert.

The loss of embedment and development of a 15 cm outlet drop over a four year period along with the importance of over-wintering habitat to the survival of Coho salmon is likely to make this a material adverse effect. In the short term, the presence of juveniles upstream and downstream may make this situation look like the adverse effect is not material but over the longer term the inability of juvenile Coho to move freely through the system will limit the winter survival and contribute to a longer term reduction in the number of returning adults. This eventually may lead to fewer fish spawning above the culvert and an under utilization of the habitat.

Example #2

Section 51(2)

> An agreement holder who fells, tops, prunes or modifies a tree under subsection (1) may remove the tree only if the removal will not have a **material adverse effect on the riparian reserve zone.**

Elements of the contravention

All the elements of the contravention must be proven. The allegation must be against an agreement holder, the holder must have felled, topped, pruned or modified a tree under section 51(1), the holder must have removed the tree from the riparian reserve zone (RRZ), and the removal has had or will have a material adverse effect on the RRZ.

Incident

Under the harvesting exemptions in section 51(1), an agreement holder harvested 26 trees (36 m^3), including three trees rooted in the stream bank, from an area of S-3 RRZ equivalent to 0.14 ha. Most of the trees harvested were taken from the periphery of the RRZ distant from the stream. When the trees were removed, a minor amount of impact in the form of bank disturbance and exposure of bare soil was observed where the three stream bank trees were harvested. A few tree limbs with saw cut ends were also left in the stream channel. The limbs were scattered along the nearly 30 m of stream length where trees were felled. The limbs were found along 10-15 % of the channel length and did not cover the stream in any location. They did not appear to be capable of interrupting the free movement of water, sediments, or fish. The stream gradient is > 10%.

Analysis

To decide whether the incident has likely resulted in a material adverse effect on the riparian reserve zone, consider the following 3 questions: What is the purpose of the RRZ generally and in the particular case? Has the incident had an **adverse effect** on the RRZ? If so, has the adverse effect on the RRZ been **material**?

The RRZ has a number of purposes. These include minimizing or preventing impacts of forest and range uses on stream channel dynamics, aquatic ecosystems, and water quality of all streams, lakes, and wetlands; maintaining natural channel and bank stability; and retaining important wildlife habitat attributes including wildlife trees, large trees, hiding and resting cover, nesting sites, structural diversity, coarse woody debris, and food sources characteristic of natural riparian ecosystems.

In the example, the three trees that were harvested from the stream bank were located along the left bank of the stream (as viewed looking downstream). There was localized minor damage to the left bank in the area immediately around the tree stumps associated with the falling activities that introduced a small amount of mineral sediments into the channel from the affected portion of the bank. This damage has the potential to be a future source of materials subject to erosion during storm flows. Decomposition of the

root system of the felled trees may potentially result in weaker banks in the immediate area of the three tree stumps.

There was also localized introduction of tree limbs into the channel that has the potential to direct flows against the channel banks and increase the rate of erosion of finer materials that this small channel is capable of transporting downstream. The localized physical impacts to the channel bank and the addition of the tree limbs had an impact on the physical integrity and functions that are expected for a fish-bearing stream within a RRZ. In addition, the quality of the fish habitat was low – the part of the channel affected contained marginal habitat at the uppermost limit of fish occurrence in the stream. Little habitat space in the form of pools and fish cover attributes was present.

The length of stream affected was small (i.e., localized to where trees were felled and to where tree limbs were introduced) and amounted to less than 2 % of the total length of the fish-bearing reach.[*] The amount of immediate physical damage to the channel bed and banks was low, and the potential long term effect on fish habitat downstream is limited and likely low. Additionally, the number of trees harvested within the RRZ was small compared to the total number present; therefore, short-term effects on streamside shade or organic litter input for aquatic ecosystem productivity are difficult to measure, particularly relative to natural variations in these functions along the entire stream channel. Consequently, few measurable alterations in either habitat characteristics or biological productivity are expected over the long term as a result of (1) the removal of trees, (2) the localized bank damage, and (3) the introduction of logging-related debris in a small proportion of the reach either separately or in combination. Finally, redistribution of the limited amount of logging debris in the channel is unlikely to result in debris jams that would prevent the normal, unimpeded movement of fish, organic debris, and sediments in the stream.

It is unlikely that the alterations resulting from harvesting in the RRZ will result in substantial changes to the structure of the stream or its biological productivity and further impact the quality of its fish habitats both on site or further downstream. The incident had a short-term but limited adverse effect on the RRZ that is unlikely to be material given the low quality fish habitat and the minimal damage to the stream and channel bed. However, it is important to note that similar activities could result in measurable alterations and/or cumulative impacts in this example or to other stream/riparian systems depending upon specific circumstances, and given other developments and activities that could affect the stream.

[*] The 2 % of the reach (or stream) length affected in this example is not to be interpreted as a general threshold for determining whether or not an alteration or impact is material.

WHAT MIGHT HAVE RESULTED IN A MATERIAL ADVERSE EFFECT?

Suppose that, following removal of the trees, a heavy accumulation of harvest-related debris (tree limbs with saw-cut ends) was left in and across the stream channel covering 80% of the channel for a distance of nearly 30 m of stream length.

This alters the coverage of habitat space and impedes fish movement due to the tree boughs extending into water under the covered portion of the stream. The debris which spans the channel prevents feeding or reduces the ability of the resident cutthroat trout to feed on aerial insects at the water surface. Decomposition and settling of the logging debris into the channel has the potential to accumulate into debris jams that would prevent the normal, unimpeded movement of fish, organic debris, and sediments in the stream.

This could result in substantial changes to the structure of the stream and further impact the quality of its fish habitats both on site (channel blockages and sediment accumulations) and downstream to the lake (excess scour of streambed due to interruption of sediment supply upstream). Although the quality of the fish habitat is low, the length of stream affected is small, and the amount of immediate physical damage to the channel bed and banks is low, the channel and fish habitat downstream from the harvest site would likely be scoured down to the "unerodible" materials or materials too large to transport as a consequence of the partial channel blockage.

Excess scour would result from the on-going, normal, water-borne transport of sediments down the channel but no replacement sediment source would be available from upstream due to the blockage. The siltation plume would likely extend far enough downstream to smother a substantial amount of higher quality fish habitat, and would do so for a long period of time which is likely to have a material adverse effect on the RRZ.

Contacts:

Guy Brownlee, Compliance and Enforcement Branch, Ministry of Forests and Range
Peter Tschaplinski, Research Branch, Ministry of Forests and Range
Richard Thompson, Ecosystems Branch, Ministry of Environment

---

[1] *The Canadian Oxford Dictionary*, Katherine Barber. (Toronto: Oxford University Press, 1998), p.18
[2] *The Dictionary of Canadian Law, 3rd. Ed.*, Daphne A. Dukelow (Toronto: Thompson Canada, 2004), p.31
[3] *Black's Law Dictionary 8th Ed.*, Brian A. Garner (St. Paul: Thompson West, 2004), p.58
[4] *Supra*, note 1, p.446 and p.708
[5] *Supra*, note 1, p.891
[6] *Supra*, note 2, p.767
[7] *Supra*, note 3, p. 998