



**Forest  
Practices  
Board**

## **Impacts of Harvesting and Road Construction to Malakwa Creek**

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*Complaint Investigation #16081*

**FPB/IRC/207**

August 2017

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# Introduction

## The Complaint

On December 5, 2016, the Forest Practices Board received a complaint from a property owner about road construction and harvesting by Tolko Industries Ltd. (Tolko) near the town of Malakwa, BC (see Figure 1).

The complainant has concerns that Tolko's recent road construction and harvesting caused sediment to enter Malakwa Creek and damage his water system. The complainant said the damage resulted in a loss of water to his property and required him to replace 50 metres of waterline.

The complainant is also concerned that Tolko damaged riparian areas and water courses while conducting forestry operations. He would like compensation for remedial work on his water system.

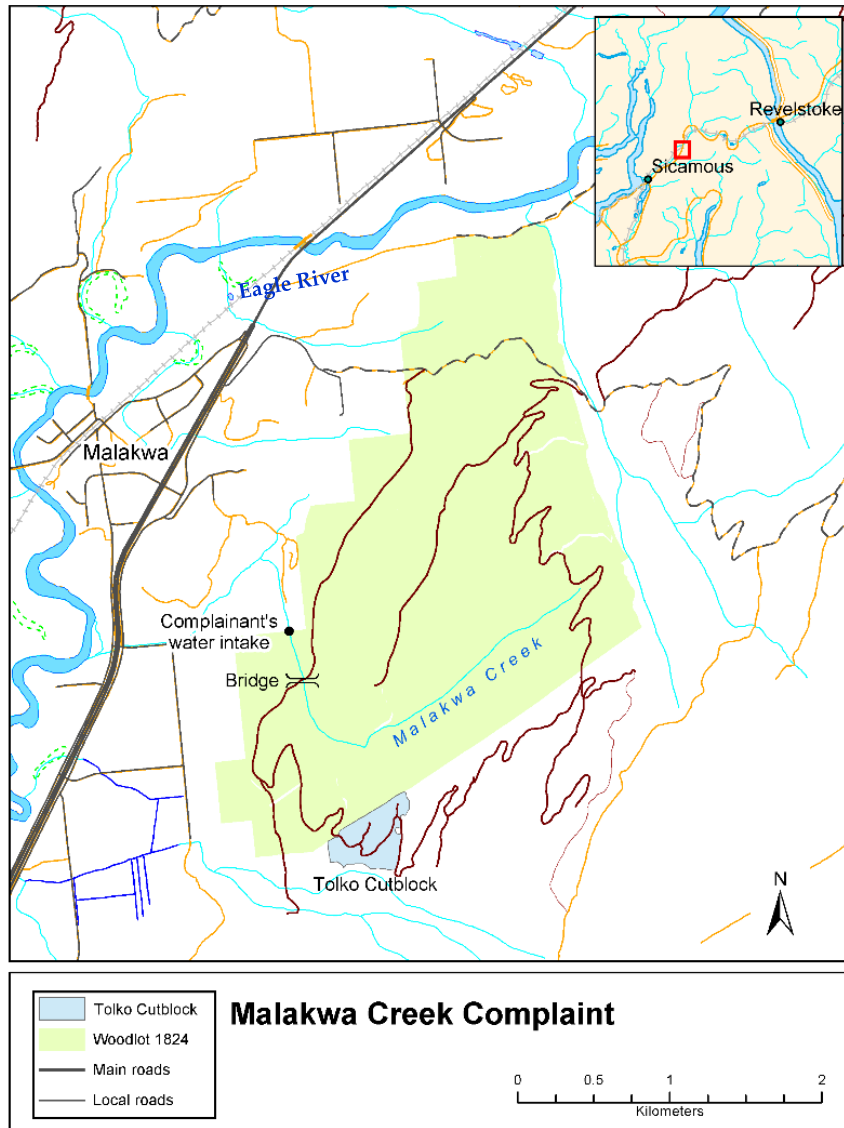


Figure 1. Location of the features relevant to the complaint.

## Background

Malakwa is a small community situated 50 kilometres east of Salmon Arm and 54 kilometres west of Revelstoke. Malakwa Creek is a small fish-bearing stream that drains into the Eagle River. The complainant has a domestic water licence on Malakwa Creek. He installed a water system in 1985 that draws water from a small earthen dam using a two-inch plastic pipe with a homemade filter (see Figure 2). Water flows continuously through the system to prevent freezing in the winter. This type of system is vulnerable to damage from sediment because it does not incorporate a settling tank or other source water protection measures.

The complainant said he did not experience problems with his water system prior to Tolko logging in the area. Malakwa Creek flows through a woodlot adjacent to the complainant's property before reaching the water intake on the complainant's property. The woodlot licensee harvested cutblocks in the Malakwa Creek watershed in early 2000 and another one in 2008.

In 2015, Tolko developed roads and a cutblock in the Malakwa Creek drainage south of the woodlot and about 1.5 kilometres upstream from the complainant's water intake. Tolko accessed the new development using an existing road that runs through the woodlot and crossed Malakwa Creek with an old wooden bridge, about 300 metres upstream of the intake.

Tolko obtained a road permit and replaced the original bridge with a new bridge in mid-August 2016.

Tolko began harvesting the cutblock in the summer of 2016 and finished harvesting near the end of August. It constructed temporary roads across two streams in the cutblock that flow into Malakwa Creek, about one kilometre above the intake. Tolko started hauling in late August, after the new bridge was constructed, and finished hauling on September 14, 2016. Tolko deactivated the temporary roads by September 21, 2016.

On October 21, 2016, five weeks after Tolko finished logging and hauling, the complainant says the water to his house stopped running for the first time since he installed his water system. The following day he checked his intake and found the intake pond was full of mud and silt, and that the intake screen was plugged. He cleaned the intake, but still could not get water to his house. He notified Tolko of the issue and then visited the bridge. He said it was covered with silt and sand, and that fine sand was in the back eddies and ponds above and below the bridge. Tolko met the complainant on site that day to review the bridge site and the water intake. The complainant said the sedimentation in the creek was above normal levels, but Tolko did not agree with that. Both parties also reviewed the cutblock, and Tolko said it could not find any significant sediment source into



Figure 2. Complainant's water intake—October 26, 2016.

Malakwa Creek. Tolko completed another field review to determine if its operations were contributing sediment to Malakwa Creek and said it could not find any.

Tolko and the complainant both said that the autumn of 2016 was one of the wettest they can remember. The Salmon Arm and Revelstoke weather station recorded heavy rain for two weeks before the complainant's water stopped running (see figure 3). Heavy rains can cause stream flows to increase, which can contribute sediment by eroding stream banks and stream channels.

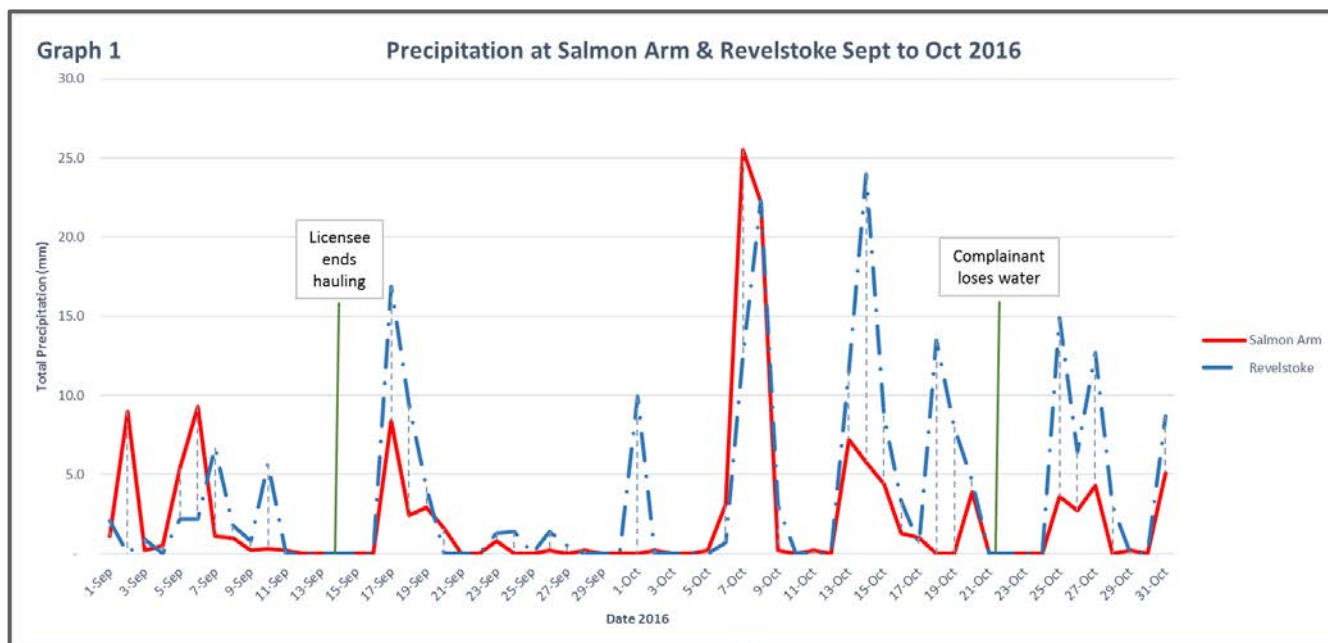


Figure 3. Precipitation record for the months of September 2016 and October 2016 at Salmon Arm and Revelstoke.<sup>1</sup>

The Compliance and Enforcement Branch of the Ministry of Forests, Lands and Natural Resource Operations (FLNRO) also investigated the bridge site, the water intake, and the road system to and within the cutblock. They did not find a contravention on the *Forest and Range Practices Act* on the part of Tolko.

The complainant initially contacted the Board on November 1, 2016, and filed the complaint on December 5, 2016.

## Investigation Results

In order to address the complaint the Board considered two questions:

1. Did Tolko adequately address the risks of its forestry operations to the water intake?
2. Did Tolko meet its legal obligations when working in the domestic watershed?

<sup>1</sup> The average precipitation in October for Salmon Arm recorded between 1981 and 2010 was 54.2 millimetres, which is considerably less when compared to 91.1 millimetres recorded for the same area in 2016.



## Did Tolko adequately address the risks of its forestry operations to the water intake?

### Operational Planning and Practices

In September 2015, Tolko walked Malakwa Creek and viewed the complainant's water system so it was aware of its location and condition. Tolko used forest professionals and professional engineers when planning its roads and cutblocks, and for the design and installation of a new bridge. Tolko invited the complainant to meet on site with the professional engineer designing the bridge, but the complainant was unable to attend.

The new bridge design has a longer span, is higher, and incorporates gentle elevated approaches to the bridge from each end (see Figures 4 and 5). The elevated approach helps keep road surface water away from the crossing. Tolko also installed sumps in the ditches to allow sediment in the ditch water to settle out and then direct the water into the standing timber, not directly into the stream.



**Figure 4.** Old bridge with deteriorating wooden deck and stringers. The wood stringers rested on concrete abutments.



**Figure 5.** New bridge November 2016. (A) is the height of the old bridge and (B) is the height of the new bridge above Malakwa Creek.

Tolko notified the complainant and the woodlot licensee before it started to install the bridge, and they met on site to discuss the bridge replacement. Tolko developed and implemented a strategy to mitigate the risk of disturbance to the streambed and to minimize inputs of sediment during the bridge installation. A professional engineer oversaw the construction of the bridge and a professional engineer also prepared and signed a construction assurance statement, indicating the new bridge substantially complied in all material aspects with the approved bridge design.

Tolko was also on site to monitor the bridge installation. It provided documentation to the Board including environmental management system pre-work, interim and final monitoring inspections, a stream crossing water quality effectiveness evaluation. In addition, a general arrangement drawing, an as built/record drawing and a crossing assurance statement<sup>2</sup> for the bridge were prepared, and

<sup>2</sup> Refer to the Guidelines for Professional Services in the Forest Sector – Crossings – APEGBC/ABC FP Professional Practice Guidelines V.2 June 2014 for definitions and detail. <https://www.apeg.bc.ca/getmedia/97dcbad3-5482-416a-9bc0-55b3c662e71a/APEGBC-Guidelines-for-Forest-Sector-Crossings.pdf.aspx>

signed and sealed by professional engineers. Other professional plans included a terrain stability assessment for the road outside of the woodlot and site plans for the blocks scheduled for harvesting.

Tolko installed splash guards<sup>3</sup> at this location on October 25<sup>th</sup>, and two other bridge locations at about the same time. Splash guards reduce the risk of sediment from the bridge deck being washed into Malakwa Creek. Tolko said it does this where the risk and hazard of erosion and sedimentation are high. Tolko also completed additional rehabilitation of the temporary access structures, and cleaned the sand and silt off the bridge deck and disposed of it away from the creek. Tolko said it completed additional water controls and trail deactivation in response to the very wet conditions observed on site, and to the concerns the complainant had.

While Tolko acted promptly once the complaint was received it could have taken preventative measures to mitigate potential impacts to water quality. These could have included capping the road with non-erodible material, installing the splash guards immediately after the bridge was constructed and installing signs at the bridge crossing indicating that extreme care must be taken due to the proximity of a domestic water intake to the bridge. Tolko could also have seasonally deactivated the approaches to the bridge with effective water bars when it pulled out in September.

## **Finding**

Tolko addressed the risk of proposed activities on resource values by using forest professionals and professional engineers when planning its roads and cutblocks, and the design and installation of the new bridge. Tolko also communicated with the complainant regarding its plans.

Bridge installation was adequately supervised and proper documentation was maintained. In addition, Tolko acted promptly when the complainant brought his concern forward and took reasonable actions once the issue was identified.

However, in the Boards opinion, Tolko could also have implemented additional measures that would have further mitigated the risk of its operations on water quality.

## **Did Tolko meet legal requirements?**

Sections 39, 60 and 79 of the *Forest Planning and Practices Regulation* are relevant to this investigation.

- Section 39 requires licensees to maintain natural surface drainage patterns when constructing a road, temporary access structure or permanent access structure.
- Section 60 requires licensees to ensure that the primary forest activity does not damage a licensed waterworks.
- Section 79 requires licensees to maintain a road by ensuring the structural integrity of the road prism and clearing width are protected, the drainage systems of the road are functional and can be used safely by industrial users.

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<sup>3</sup> Splash guards are boards attached to the edge of the bridge to prevent material on the bridge deck from being washed into the stream. Splash guards appear to be reasonably effective for containing coarse material; however, they should be installed at the time of the bridge construction.

## **Maintenance of Natural Drainage Patterns**

Both temporary access structures were identified in the site plan with a commitment to rehabilitate them following harvesting. Tolko seasonally deactivated the newly constructed road sections above the block, including the removal of the culverts from the temporary access structures by September 21, 2016. When the Board visited the site, the natural drainage patterns were maintained.

The complainant also said that Tolko diverted a dry gully away from Malakwa Creek. The Board reviewed the area in May 2017 during spring snow melt. There was no sign of surface water in the dry draws, whereas the two streams in the block were free-flowing.

## **Damage to a Licensed Waterworks**

If sediment affects the licensed waterworks' ability to function, then the waterworks may be considered damaged. Damage is defined as "harm or injury impairing the value or usefulness of something."<sup>4</sup>

In the Board's opinion, the complainant's water system may be considered damaged when plugged with sediment that is restricting the ability of the system to deliver water. The complainant has cleaned the intake pond in the past and it requires ongoing maintenance. However, the complainant asserts that the material he saw at the intake pond, immediately after his water stopped running, was finer than observed in the past. The Board investigators could find no evidence that the sediment at the intake in 2016 was different from previous years.

Both the complainant and Tolko confirm that there was silt and sand on the bridge deck. The material was likely the result of industrial traffic and heavy rains eroding the road surface and depositing the material on the bridge deck. Some of this may have washed into Malakwa Creek and been transported as suspended sediment to the intake. The complainant asserts this was the main source of sediment entering Malakwa Creek and the reason his water system plugged. The Board could not determine that the sediment plugging the water system was from the material on the bridge deck.

The complainant stated that suspended sediment in the creek indicated to him that at least some sediment was entering the stream above the bridge. The sediment above the bridge may have been from natural sources, including the heavy rains, which causes stream flows to increase, eroding the stream channel and stream banks. Streams flowing from the block may also have introduced sediment into Malakwa Creek above the bridge. When Board staff visited the site in May 2017, they did not see any significant sediment source that could be directly attributed to harvesting or road activities only. Board staff saw suspended sediment in Malakwa Creek and the stream flowing from the cutblock, but also saw similar levels of suspended sediment in Malakwa Creek above the confluence with the stream from the cutblock.

## **Road Maintenance**

Tolko is responsible for maintaining the road, because it is under permit to them, regardless of who uses the road. On October 27, 2016, Tolko said it observed the road leading to the bridge from the bush side was rutted from another road user. Ruts do not contravene the legislation, unless they result in damage to the environment.

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<sup>4</sup> Canadian Oxford Dictionary, Oxford University Press.



When Board staff visited the site, the elevated approaches to the bridge were graded off; the approaches were capped with sandy material, which is susceptible to erosion; the splash guards were installed on the bridge; and the bridge deck was clear of soil. Rutting or erosion of the roads leading to the bridge were not observed.

The structural integrity of the road prism and clearing width were maintained, the drainage systems of the road were functional, and the road was safe to use by industrial users. Board staff did not identify any environmental damage that could be directly attributed to the road.

## **Finding**

The Board found that Tolko complied with the legal obligations under the *Forest and Range Practices Act*. Tolko maintained roads and natural drainage patterns. The structural integrity of the road prism and clearing width were protected, the drainage systems of the roads were functional, and the road could be used safely. Tolko deactivated and rehabilitated the temporary access structures and maintained natural drainage in the cutblock. However, the elevated approaches to the bridge had been graded off, reducing their effectiveness to drain surface water away from the bridge. Splash guards were installed after Tolko was notified of the concern.

The Board could not confirm that the sediment at the intake in 2016 was different from previous years or that the suspended sediment in Malakwa Creek was the result of forestry activities, and not the higher than normal rainfall.

## **Conclusions**

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### **1. Did Tolko adequately address the risks of their forestry activities?**

The Board concludes that Tolko addressed the risks of its activities except for preventative measures to control the likelihood of sediment from the bridge reaching the creek. Tolko reacted quickly to implement preventative measures when it was notified of the concern by the complainant. Overall, planning, documentation, implementation and supervision were reasonable.

### **2. Did Tolko meet legal requirements?**

The Board concludes Tolko was compliant with sections 39, 60 and 79 of the *Forest Planning and Practices Regulation*.

A number of factors may have contributed to sediment entering Malakwa Creek during the autumn of 2016. It is possible that forestry activities contributed some sediment into Malakwa Creek. However, the Board could not confirm whether Tolko's forestry activities, other road users, heavy rains, natural events, the age and condition of the waterworks or a combination of these played in plugging the complainant's waterworks.

Regardless, when any licensee operates in a watershed that provides water for domestic purposes, it must take all reasonable precautions during and after operational activities to maintain the water quality. In this instance, the licensee could have installed splash guards when the bridge was constructed and implemented additional measures to reduce the risk of sediment impacting the complainant's water supply.



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