Potential Effects of Logging on Drinking Water Quality at Scum Lake

Complaint Investigation 990235

FPB/IRC/43

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Table of Contents

The Investigation

Background

Scum Lake is a small lake located approximately 110 kilometres southwest of Williams Lake. Both year-round and seasonal residents have properties around Scum Lake. Cattle are grazed in the forest and meadows near the lake. The lake is fed and drained by Haines Creek.

The complainant operates a fishing camp at Scum Lake. He holds a water licence from the Ministry of Environment, Lands and Parks (MELP) to supply his camp with water that he takes from Haines Creek and Scum Lake. Since the late 1980s he has expressed his concerns to the Ministry of Forests Chilcotin Forest District about contaminated water. He is concerned that his drinking water is being contaminated with fecal coliform runoff in nearby cutblocks. Coliform bacteria are present in the intestinal tracts of humans and other warm-blooded animals and are excreted in fecal waste. The presence of coliform in water is used as an indicator when assessing the bacteriological safety of water.[1]

In response to concerns from the complainant, the forest district placed a one-kilometre deferral area around Scum Lake in 1989 for a 10-year period. This meant that harvesting would not be permitted until at least 1999.

Between 1993 and 1996 the complainant contacted the Ministry of Forests with further concerns about harvesting and water contamination. The ministry's regional hydrologist inspected the existing and proposed harvesting in the area during this period. Fecal coliform was found in water sources near the complainant's intake. The hydrologist concluded that it was unlikely that the existing harvesting had caused the contamination. He attributed contamination in Haines Creek primarily to natural sources but acknowledged that cattle could be a contributing factor. In 2000, the regional health officer inspected the complainant's camp after he applied for a permit to operate a water system. Fecal coliform was found in the complainant's water supply.

The harvest deferral expired in 1999. In its 1999-2004 forest development plan, West Fraser Mills Ltd. (the licensee) proposed cutting permits 924 and 925 (CP 924 and CP 925) near the lake to harvest pine stands that had been killed by a mountain pine beetle attack in 1985. The complainant was not residing in the province during the public review period for the plan and did not provide any comments on the plan. The plan was approved in November 1999.

In April 2000, the licensee proposed a major amendment to the 1999 forest development plan that would amalgamate CP 924 and CP 925 into one permit, CP 925. The amended CP 925 includes about 10 cutblocks, ranging in size from 3 to 210 hectares, with a total net area of 620 hectares. Five of the cutblocks are located within the area draining into Scum Lake and Haines Creek above or near the complainant's water intake.

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[1] *Bacteriological Quality*. Health Canada. June 1988. Supporting documentation for *Guidelines for Canadian Drinking Water Quality*.

The complainant filed a complaint with the Forest Practices Board in March 2000. He asserted that the proposed harvesting would affect water quality because increased surface water running off the new cutblocks would transport fecal coliform into his drinking water supply. The Board decided that the investigation would focus on the following questions:

1. Is forest harvesting contributing to fecal coliform levels in Scum Lake?

2. Was approval of the 1999 forest development plan in compliance with section 41(1)(b) of the *Forest Practices Code of British Columbia Act* (the Act)?

3. Was the complainant given an adequate opportunity for review and comment on the forest development plan?

The silviculture prescriptions have been approved and a cutting permit has been issued for CP 925, but no harvesting has been done at the time of this report.

Investigation Findings

1.0 Is forest harvesting contributing to fecal coliform levels in Scum Lake?

The complainant asserted that past forest harvesting had contributed to fecal coliform contamination in Scum Lake and Haines Creek and that the harvesting of CP 925 will add to that contamination. The investigation did not try to prove the assertions that increased surface water runoff had occurred in the past or that cattle were responsible for any fecal coliform that may be in the complainant's water supply. The investigation considered whether the proposed harvesting presented an unacceptable risk to the complainant's water supply.

The overall level of harvesting in the watershed, usually measured as the equivalent clearcut area (ECA), was not a key issue in this complaint. The ECA is an indicator for potential changes in peak flow in streams due to a cumulative impact of runoff from all cutblocks. This complaint issue is about surface runoff from individual cutblocks, which is not affected by levels of development elsewhere in the watershed.

Several of the proposed cutblocks are located on the south side of Scum Lake. There are also existing cutblocks outside of the one-kilometre zone where harvesting was previously deferred. The complainant had identified concerns with some of the existing cutblocks in the past.

Cattle and other animals are in contact with the water

During a field visit with all participants in June 2000, the complainant identified two areas that he thought were sources of fecal coliform contamination. Both are adjacent to a privately owned lot known locally as Newton Meadow. One site is a pond located on Crown land at the west end of Newton Meadow, between cutblocks 6 and 6a. Beaver had dammed the pond outlet, which the licensee's map for CP 925 shows as draining into Scum Lake. Cattle feces were observed around the pond and in the pond water. At the second site, an existing cutblock adjacent to the meadow, the complainant asserted that, in 1994, water ran off of the cutblock

and through a smaller meadow known as Howie's Meadow, and into Scum Lake. He had not observed that happening since then.

The complainant was also concerned that harvesting the cutblocks would increase cattle access to Scum Lake. He reported that, in the past, cattle had ranged beyond the authorized grazing areas and come close to the lake and Haines Creek. The Board did not investigate this; however, the silviculture prescriptions for CP 925 identify that the proposed cutblocks are within a range tenure.

There is coliform in the water

Water sampling tests distinguish between coliform and fecal coliform bacteria. The coliform bacteria originating from fecal material create the more serious health risk. Water samples taken in 1994 by the Ministry of Forests regional hydrologist indicated that coliform bacteria and fecal coliform bacteria were present in water flowing out of Howie's Meadow and in a log culvert near the complainant's water intake on Haines Creek. Fecal coliform bacteria were not present in the samples from Scum Lake and Haines Creek at that time. The hydrologist concluded, in a 1996 report, that moose feces observed in Howie's Meadow were likely the main source of fecal coliform contamination observed.

Water samples taken in 2000 by the Cariboo Health Office at the complainant's camp found fecal coliform bacteria in an unfiltered water tank. Fecal coliform was also found to a lesser degree in the water that was filtered for general camp use. Virtually no fecal coliform was found in water that had gone through a reverse osmosis process for the complainant's personal use. The Cariboo Health Office advised that the levels of contamination found were within the range of what could be expected from natural sources of contamination.

The general goal for water quality is to have no fecal coliform in a water supply. It is a policy of the Ministry of Health that surface water supplies should not be considered safe to drink and should be treated.

Finding #1

Water samples taken by the Cariboo Health Office indicate that fecal coliform is present in the complainant's water supply. The levels observed are within the range of what could be expected from natural sources of contamination.

Clearcutting can increase runoff and sedimentation

One of the concerns with surface water runoff is the sediment that it can carry. In addition to fecal coliform, there are other pathogens that may be present on the ground and could be transported to watercourses. Water treatment can remove hazardous sediment from the water supply; however, if the sediment level is great enough it can reduce the effectiveness of water treatment processes.

In a June 2000 letter to the Board from the Pubic Health Protection Branch, the concerns for turbidity (sedimentation) are described:

> Sources of turbidity can also be sources of pathogens, including bacteria, virsuses and parasites, such that turbidity measures can serve as a surrogate measure of the risk of pathogens in water. The relationship between turbidity and pathogens is, at best, site specific, but any process that increases overland flow and erosion is capable of transporting pathogens, as well as sediment, to the water column from adjacent land. Turbidity can interfere with the effectiveness of disinfection, further increasing the risk of exposure to viable, infectious pathogens.

Because a forest canopy intercepts snow and allows part of it to evaporate, timber harvesting tends to increase the total snowpack and the amount of spring runoff. The regional hydrologist commented that, in a preliminary field study of forested and recently clearcut sites, coliform bacteria was more abundant in snowmelt coming from the clearcuts than from the forested sites.

There are factors that likely reduce the potential increase in surface water and risk of sediment with the harvesting of CP 925

For the cutblocks in CP 925 at Scum Lake, there are factors that may decrease the effect that clearcutting may have on surface water volumes. The stands viewed by the analyst were relatively open. Also, the stands have an average dead component of 53 percent stems per hectare. The dead trees likely have a lower ability to intercept snow, and therefore the change in the accumulation of snow over the area following harvesting should be reduced.

Another factor to consider is the transportation of any fecal coliform that may exist naturally, or through cattle grazing, into the water system. The district manager identified that there are measures that can be implemented to minimize this concern, including placing buffers on watercourses. The cutting permit map shows that the proposed cutblocks do not extend up to identified water courses and would be at least 200 metres back from Scum Lake. Cutblock 6 does extend to the edge of the road running from the complainant's property to Newton Meadow, and therefore has the potential to carry runoff to Scum Lake. The licensee stated that the narrowness of the cutblock and a soil/debris berm along the road should mitigate the risk of runoff from cutblock 6. The Board accepts this opinion if the berm is built with the intent that it should be able to intercept water running off of the cutblock onto the road.

Efforts can also be made within cutblocks to control sedimentation. Section 12 of the *Timber Harvesting Practices Regulation* requires that excavated or bladed trails must be constructed in a way that minimizes soil erosion and sediment entering streams. No excavated or bladed trails are proposed for the cutblocks, and therefore the risks of soil disturbance and sedimentation are reduced.

There is a potential for an increase in surface water with new clearcut blocks; however, the risk of a significant change in runoff with CP 925 is likely reduced by the local stand conditions. Also, the risk of the runoff carrying sediment is reduced by the planned setbacks from watercourses and the lack of excavated or bladed trails.

Finding #2

An increase in surface runoff is possible with new cutblocks. However, local stand conditions and the proposed harvest plans for CP 925 should reduce the risk of runoff carrying sediment into Scum Lake and Haines Creek.

Summary

There is fecal coliform in the complainant's water. However, the source is not known and the levels of contamination are within the range of what could be expected naturally. Water sampling has not been conducted over any length of time to determine whether the levels of contamination found are a regular occurrence or related to weather events; however, coliform has been detected in sampling for two different years. Cattle are present in the area and the complainant asserted during the investigation that the cattle have been getting past range fences. This was not an issue investigated in this complaint, however cattle were found to be a potential source of fecal coliform. Evidence of beaver was seen at the Newton Meadow pond in addition to cattle feces in and adjacent to the water. The regional hydrologist concluded that observed moose feces was likely the main source of contamination of water coming out of Howie's Meadow.

On Crown land, cattle grazing is authorized through grazing licences or permits under the *Range Act*. The district manager has the authority to control cattle grazing on Crown land. The district manager may also suspend a licence or permit if the holder does not meet the associated obligations or fails to comply with the *Range Act* or *Forest Practices Code of British Columbia Act* and if the failure may cause imminent damage to the environment.

The proposed cutblocks do not in themselves appear to create a significant risk to the complainant's water supply. Natural sources of contamination, and possibly cattle, have already affected the water quality. Natural contamination of any surface water system is to be expected. The Ministry of Health has recommended that all surface water be treated.

In the Board's opinion there are appropriate regulatory mechanisms available to the district manager to control cattle grazing and reduce the risk of transmission of fecal coliform from cattle into the water supply. However, the natural sources of contamination are still present. The Board cannot determine the acceptable level of risk for the complainant's water. That expertise lies with the Ministry of Health.

Finding #3

The proposed harvesting should not create a significant increase in the current risk of contamination to the complainant's water supply. The complainant's water quality has already been affected by natural sources of contamination, and possibly by cattle.

2.0 Was approval of the 1999 forest development plan in compliance with section 41(1)(b) of the *Forest Practices Code of British Columbia Act*?

Section 41(1)(b) of the Act requires the district manager to be satisfied that a plan will adequately manage and conserve forest resources before an operational plan is approved. Water is a forest resource under the Code. In determining whether the 1999-2004 forest development plan adequately managed and conserved forest resources, the district manager considered a number of information sources. He considered public comments made during the review and comment process and comments provided by his staff and other agencies. A meeting to discuss the plan was held with the licensee and MELP. Issues identified during the review and comment process were discussed. The district manager asked if there were any other issues to address. Water quality at Scum Lake was not raised in the meeting and the public had not commented on it during the review and comment period.

The district manager, who was new to the district in 1998, was aware of the water quality concerns expressed by the complainant several years previously and of the reports by the regional hydrologist. The hydrologist had concluded in 1996 that it was unlikely that the present level of harvesting had had an impact on water quality, and that the water needed to be treated anyway because of contamination from natural sources. The district manager was aware of the hydrologist's review and findings. He believed that the issue had been resolved.

Based on the evidence available, the Board finds that it was reasonable for the district manager to have the opinion that the forest development plan would adequately manage and conserve the water resource.

Finding #4

The approval of the forest development plan complied with section 41(1)(b) of the Act. It was reasonable for the district manager to have the opinion that the 1999-2004 forest development plan would adequately manage and conserve water resources in the Scum Lake area.

3.0 Was the complainant given an adequate opportunity for review and comment on the forest development plan?

The Board considered this question because the district manager acknowledged that, in his approval, he considered that there were no public comments received opposing the proposed cutting permits.

Section 27(4) of the *Operational Planning Regulation* requires that a forest development plan be advertised and made available for public review and comment for a 60-day period.

The licensee advertised its 1999-2004 forest development plan for Forest License A55902 for review and comment for the 60-day period. Following this, two open houses were held in key communities in the Chilcotin Forest District.

Finding #5

The opportunity for review and comment on the 1999-2004 forest development plan complied with the Code requirements.

The complainant was aware that the one-kilometre deferral zone around Scum Lake was expiring in 1999, and that the licensee was interested in proposing harvesting there. In 1997, he met with Ministry of Forests staff on three occasions to discuss concerns. He also contacted the licensee, requesting information on the current forest development plan. The complainant did not contact the licensee or the forest district again after this because he was discouraged by his previous attempts to have his concerns addressed.

There was no direct notification to the complainant about the review and comment period in 1999. The complainant did not provide any comments. The complainant knew that there was a review and comment process, but he did not reside in the region during the winter and did not see local advertisements for the review period for the 1999 forest development plan. He believed that he would hear about any developments that might affect him through his neighbours at Scum Lake. After the 60-day review period, an additional opportunity to review the plan was provided with two open houses held in Alexis Creek and Tatla Lake in May 1999.

Section 27(8) of the *Operational Planning Regulation* states:

> An opportunity for review provided to an interested or affected person ... will be adequate only if, in the opinion of the district manager ... the opportunity is commensurate with the nature and extent of the person's interest in the area under the plan and any right that person may have to use the area under the plan.

Further, under section 7 of the *Operational Planning Regulation*, the district manager may require a person who is submitting an operational plan for approval to refer the plan to any person that may be materially affected by the proposed operational plan.

The district manager believed that the complainant was not materially affected by the proposed harvesting and had an adequate opportunity to review the 1999-2004 forest development plan. This was based on the following considerations:

- the complainant did not have a tenure to use the area covered by the proposal;
- the complainant had not provided written comments when the cutblocks were proposed in the 1997 plan and had not communicated any concerns since then; and
- the complainant's concerns had been previously considered and partly addressed through the reviews by the regional hydrologist and the construction of a berm to divert some water flow from Newton Meadow.

The district manager also felt that further consultation would not generate new concerns or operational information from the complainant.

The Board recognizes that Ministry of Forests staff had met with the complainant on several occasions between 1989 and 1997 to discuss concerns, and the district had implemented the deferral around Scum Lake during that period in response to the complainant's concerns. Despite this, it would have been preferable for the district to directly notify the complainant about the 1999 forest development plan because of the proximity of the proposed harvesting to the complainant's property, the isolated location of the property, and the fact that the complainant had previously expressed concerns about harvesting near Scum Lake. In the Board's view, consideration of the need for a direct referral of a plan to an interested person should not be influenced by an expectation of the type of response that may or may not be received.

Finding #6

In light of the complainant's expressed interest in harvesting near Scum Lake, it would have been reasonable for the complainant to receive a direct referral of the forest development plan.

The licensee has increased its consultation with the residents of Scum Lake since the 1999-2004 forest development plan was approved. A referral package for the amendment to the forest development plan was sent to each resident at Scum Lake. Based on continuing discussions with residents, changes were made to the amendment and changes to the cutting permit are also being considered.

Commentary

The complainant's opportunity to review the 1999 forest development plan exceeded the minimum requirements of the Code. In addition to the 60-day review period, open houses were held to view the plan after the required review period had ended. However, a recent Board special report on forest development planning[2] identified that a lack of direct notification, and a need to travel a long distance to review a plan, were barriers to participating in the public review and comment process.

Conclusions

The proposed harvesting should not create a significant increase in the current risk of contamination to the complainant's water supply. The complainant's water quality has already been affected by natural sources of contamination and possibly by cattle.

The approval of the forest development plan complied with section 41(1)(b) of the Act. It was reasonable for the district manager to have the opinion that the 1999-2004 forest development plan would adequately manage and conserve water resources in the Scum Lake area.

[2] *A Review of the Forest Development Planning Process in British Columbia.* Forest Practices Board. 2000. FPB/SR/04.

The review opportunity complied with the requirements of the Code. However, based on the expressed interest of the complainant, it would have been preferable for the complainant to have received a direct referral of the plan.

Recommendations

In accordance with section 185 of the *Forest Practices Code of British Columbia Act*, the Board makes the recommendation set out below.

1. The district should ensure there are adequate measures in place to prevent unreasonable risks to residential drinking water due to cattle having direct access to water sources that may flow into Scum Lake or Haines Creek.

In accordance with section 186 of the Act, the Board requests that the Ministry of Forests advise the Board by September 30, 2001, on how it will address recommendation 1 above.