



**Forest
Practices
Board**

Fire Hazard Abatement and the Shovel Lake Wildfire

Complaint Investigation #18061

FPB/IRC/221

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Board Commentary

This complaint investigation highlighted an issue that has been anticipated for more than a decade; the significant amount of fuel across the mountain pine beetle-killed landscape presents a huge threat to public and responder safety. In addition, the impacts of climate change and a history of fire suppression mean that fires have the potential to be more frequent, larger, more severe, and harder to fight.

The Forest Practices Board has issued over half a dozen reports on the topic of wildfire management including *Fire Hazard and Abatement* (2008), *Managing Forest Fuels in the Wildland Urban Interface* (2010) and an update to that report in 2015, all of which are available on our website www.bcfpb.ca.

In March 2019, the province announced increased funding for wildfire management including funding for increased use of broadcast burning. The changes that are underway are welcome and should, over the long term, improve the ability to manage fires such as the Shovel Lake wildfire.

This investigation also revealed there are opportunities to improve hazard abatement following logging, such as:

- Timing of abatement; reducing the time allowed from logging to completion of abatement from the current 30 months could benefit wildfire suppression efforts.
- Allowable fuel levels; BC Wildfire Service staff believe that reduced fuel levels could ensure that some plantations are less likely to burn and may act as fire breaks across the landscape.

During the course of this investigation, BC Wildfire Service staff told the Board that they have formed a working group to review the Defined Hazard Assessment and Abatement Strategy.

In accordance with section 131 of the *Forest and Range Practices Act*, the Board is recommending:

1. Government review the appropriateness of the Defined Hazard Assessment and Abatement Strategy with particular attention to the deadline by which hazards must be abated, and the amount of fuel that may be left on cutblocks without requiring abatement.

In making this recommendation, the Board recognizes that a flexible approach to abatement is required; some areas will require higher attention to abatement than others. The review of abatement requirements should also consider the potential impact of smoke, as a health hazard, and risk to other values such as biodiversity, silviculture requirements and carbon sequestration.

In accordance with section 132 of the Act, the Board requests a response from government outlining its progress in implementing this recommendation by December 31, 2019.

Introduction

The Complaint

On October 16, 2018, the Board received a complaint from a member of the BC Wildfire Service team who managed the Shovel Lake wildfire, near Fraser Lake. The complainant alleged that piles of logging debris along the Hannay Road and Tatin Road contributed to fire spread. In addition, logging debris and old decked timber associated with two timber sale licences in the Peta Mountain area contributed to the severity and spread of the fire. The complainant provided photos of the timber sale licences (see Photos 1, 2 and 3).

The complainant asked that industry and the public be informed of the issue, and the problems that it creates in firefighting, to ensure it does not continue to happen. He also requested that any existing debris piles or decks be dealt with in a timely manner, and that forest professionals and licensees be responsible and accountable for their actions and decisions.



Photo 1. Timber Sale Licence A91995 showing decked logs and a trail. Logging of this block was not complete at the time of the wildfire. Photo provided by the complainant.

Background

The Shovel Lake wildfire began on July 27, 2018, approximately 28 kilometres northwest of Fraser Lake. By mid-August, the wildfire had grown substantially and several nearby communities were under evacuation alerts or orders, and the province declared a state of emergency. Extremely dry conditions challenged suppression efforts.

Ultimately, the Shovel Lake wildfire measured 92 000 hectares, or 920 square kilometres, in size (see Map 1).

The Shovel Lake wildfire burned during drought conditions in a forest severely impacted by a large scale mountain pine beetle infestation. A 1982 Environment Canada report¹ identified three main periods of increased fire hazard after attack. For the first five years, needles and fine branches are retained on standing dead trees and can increase a stand's susceptibility to crown fires. After about 10 years, the risk increases again as bark sloughs off. Finally, after 20 years, fuel loading is at its maximum and the quantity and arrangement of fuel may produce extremely high intensity fires.

Photo 4 (p. 4) shows a pine stand 13-20 years after beetle attack when the trees start to rot at the base and fall over. The report notes that "Fires, occurring during drought periods in heavy concentrations of downed woody fuels, produce extreme fire intensities, are damaging to sensitive sites, and are impossible to control."

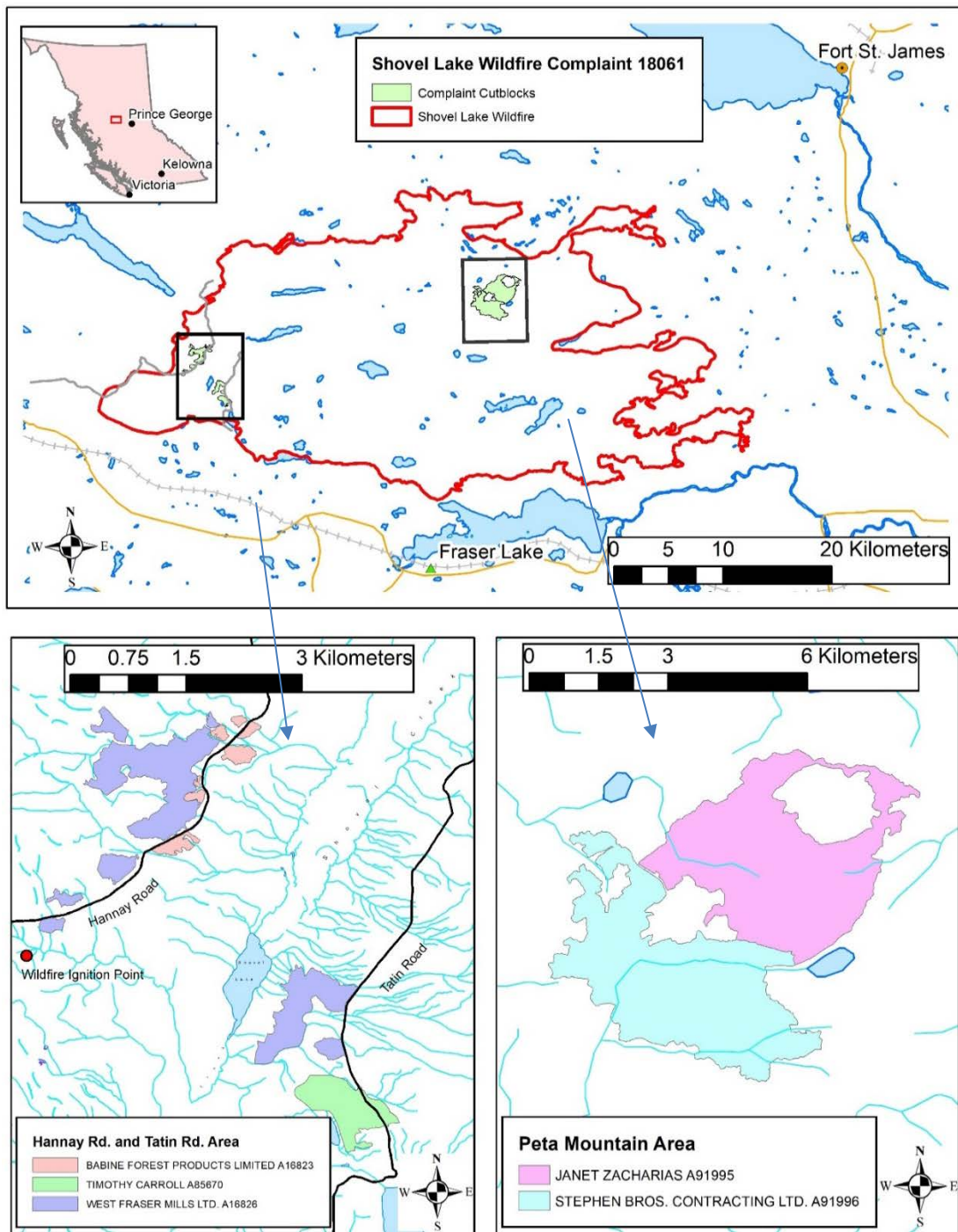


Photo 2. Timber Sale Licence A91995. This photo shows the approaching fire, bunched timber (bottom left) and timber awaiting processing on both sides of the road. Photo provided by the complainant.



Photo 3. Timber Sale Licence A91996. This photo shows a windrow of debris parallel to the road. This block was logged between October 2017 and April 2018. Photo provided by the complainant.

¹ Environment Canada. 1982. A review of mountain pine beetle problems in Canada. Canadian Forest Service, Pacific Forestry Centre, Victoria, BC. p.27.



Map 1. The Shovel Lake wildfire and cutblocks relevant to the complaint.

The forest industry has been harvesting in the area of the wildfire since the early 2000s, in an attempt to recover dead timber before it becomes unmerchantable. In his 2002 rationale for increasing the allowable annual cut in the Prince George timber supply area to address the mountain pine beetle infestation, the chief forester stated "There is also a danger that the dead and dying trees will become susceptible to fire, which in turn will not only endanger adjacent stands of marketable timber, but also recreation, range, and residential areas."



Photo 4. A pine stand 13 – 20 years after attack by the mountain pine beetle. Photo provided by West Fraser Mills Ltd.

Industrial activities, such as harvesting, can change the amount and arrangement of fuel on the landscape and can create, reduce or increase a fire hazard. The *Wildfire Act* requires a person who carries out an industrial activity on forest land to conduct fire hazard assessments. If an assessment identifies that the activity has created a fire hazard, the person must abate it. The *Wildfire Regulation* specifies when fire hazard must be assessed, what the assessment must include, and when a hazard must be abated. While a licensee must abate a hazard it has created, it is not required to abate a naturally occurring hazard such as beetle-killed timber.

Government has provided guidance to the forest industry on fire hazard assessment and abatement.² Licensees may follow the "Defined Hazard Assessment and Abatement Strategy" (DHAAS) set out in the guidelines, to ensure they comply with the law. Alternatively, certain licensees, classified as "qualified holders,"³ may choose to follow their own professionally prepared hazard assessment and abatement strategies.

Five forest licensees had activities in the areas of concern identified by the complainant. The details are summarized in Table 1.

The complainant was concerned that logging debris contributed to the spread and severity of the Shovel Lake wildfire. The investigation examined whether these licensees complied with the fire hazard assessment and abatement requirements of the *Wildfire Act*.

² "A Guide to Fuel Hazard Assessment and Abatement in British Columbia" is available at <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/for-industry-commercial-operators/hazard-assessment-abatement>

³ Qualified Holders means a person or company who is a party to a cost-sharing or service agreement; holds a forest licence, timber licence, tree farm licence, community forest agreement, First Nations woodland licence, woodlot licence, or timber sale licence; and has paid the annual rent.

Table 1. Cutblocks Relevant to the Complaint

LICENSEE	LICENCES	CUTBLOCKS	AREA
Babine Forest Products Limited	Forest Licence A16823 and road permit R10010 for the Hannay Road.	7 cutblocks logged in 2003.	Hannay Road
West Fraser Mills Ltd.	Forest Licence A16826 and road permit R16589 for the Tatin Road.	6 cutblocks logged in 2016-17.	Hannay Road and Tatin Road
Timothy Carroll	Forestry Licence to Cut A85670	1 cutblock logged in 2009.	Tatin Road
Janet Zacharias	Timber Sale Licence A91995	1 cutblock started in 2016 and not completed at the time of the wildfire.	Peta Mountain
Stephen Bros. Contracting Ltd.	Timber Sale Licence A91996	1 cutblock started in October 2017 and harvesting completed in April 2018.	Peta Mountain

Investigation Results

The hazard assessment and abatement requirements for the cutblocks harvested in 2003 under Forest Licence A16823 differ from the other cutblocks because the *Wildfire Act* was not in force at the time. These cutblocks were subject to the *Forest Fire Suppression and Prevention Regulation* and it required that a fire hazard assessment had to be carried out by June 30, 2004, and any hazard had to be abated within 12 months of the assessment.

For the remaining cutblocks, the *Wildfire Act* requirements for assessing and abating fire hazard apply, and they depend on who is conducting the industrial activity and the location of the activity. For example, hazards created within two kilometres of a local government or a fire protection district must be assessed and abated more promptly than hazards located away from these settled areas.

The more recent cutblocks are not within two kilometres of a local government or a fire protection district, and the licensees are considered "qualified holders." This means that licensees must assess the fire hazard at 6 month intervals after the start of activity, and must abate an identified hazard within 30 months of the start of activity, or at a time specified by a forest professional.

A detailed analysis of the hazard assessment and abatement requirements for each cutblock appears in Appendix 1. Table 2 identifies whether the licensees complied with assessment and abatement requirements in place at the time the cutblocks were harvested. For A85670, the licensee is deceased and no records are available.

Table 2. Compliance Summary

LICENSEE	CUTBLOCK STATUS	COMPLIANCE WITH ASSESSMENT REQUIREMENTS?	COMPLIANCE WITH ABATEMENT REQUIREMENTS?
Babine Forest Products Limited A16823	Harvesting completed in 2003.	Yes	Yes. Abatement completed.
West Fraser Mills Ltd. A16826	Harvesting completed in 2016-17.	Yes	Yes. Abatement completed on two blocks and not yet required on 4 blocks.
Timothy Carroll A85670	Harvesting completed in 2009.	Unknown as no records are available.	Unknown as no records are available.
Janet Zacharias A91995	Harvesting not complete when the block was burned in the wildfire.	No	Yes. Abatement not yet required.
Stephen Bros. Contracting Ltd. A91996	Harvesting completed in 2018.	Yes	Yes. Abatement not yet required.

The holder of Timber Sale Licence A91995 (Janet Zacharias) did not assess the fire hazard as required. Assessing fire hazard is important because it requires a licensee to consider a cutblock and the risk of a fire starting and spreading. It is also a critical step in demonstrating due diligence, which means taking all reasonable steps to comply with the law. Section 29 of the *Wildfire Act* states that a person may not be found to have contravened the Act if they can demonstrate due diligence.

Forestry Licence to Cut A85670 was directly awarded to Timothy Carroll in 2009 to chip dead pine that had been skidded to roadside. The licensee is deceased and neither the Board nor government could locate any records of hazard assessment or abatement. The wildfire burned this cutblock and it is not possible to confirm whether any hazard was abated. All of the other licensees complied with the hazard abatement requirements. Babine Forest Products Limited completed abatement in 2004. West Fraser Mills Ltd. completed abatement on two blocks in 2017 and the remaining are not yet due for abatement, but were burned during the wildfire. Janet Zacharias and Stephen Bros. Contracting are not yet required to abate a hazard and these blocks were also burned during the wildfire.

The complainant told the Board that he has worked throughout the province and has never seen the amount of debris that he saw at the Shovel Lake wildfire. There is no doubt that there were unabated debris piles in cutblocks as well as large amounts of fuel distributed across cutblocks that is the result of the mountain pine beetle infestation. The Tatin Road was also widened to create a fire guard, and felled and bunched wood would have lined the road. Despite the large amount of fuel on the landscape, the activities of the licensees complied with the hazard abatement requirements of the *Wildfire Act*.

In light of the intensity and size of recent wildfires, and the amount of fuel on the landscape, the Board considered whether the current hazard assessment and abatement requirements and guidance are appropriate for the area of the complaint. The Board considered the hazard abatement period, the state of the landscape, and how hazard is assessed.

Hazard Abatement Period

When the *Wildfire Act* came into force in 2004, the deadline for abating a hazard was extended. One of the reasons was to support the developing wood pellet industry. The extra time allowed before abatement provided an opportunity for the pellet industry to collect and use the material. Another reason was to allow time for the debris to dry so that it would burn more effectively.

The differences between a block harvested prior to 2004 versus 2018⁴ are shown in Table 3.

Table 3. Comparison of the Hazard Abatement Requirements for Cutblocks Harvested in 2003 vs. 2018

DATE HARVESTING STARTED	LATEST DATE TO ASSESS FIRE HAZARD	LATEST DATE TO ABATE A FIRE HAZARD	MAXIMUM TIME BETWEEN HARVEST START AND ABATEMENT
November 1, 2003	June 30, 2004	June 30, 2005	19 months
November 1, 2018	May 1, 2019	November 1, 2021	30 months or longer if specified by a professional.

In this example, the risk of a hazard contributing to the start or spread of a wildfire is borne for an additional 11 months or longer if specified by a professional.

The reasons for extending the abatement period may not be as relevant in mountain pine beetle-killed stands as it is in green stands. Dead and dry material will generally burn more readily than green material, although when harvesting and piling in extremely wet conditions, this is not always the case.

The Changing Landscape

Before the mountain pine beetle infestation, cutblocks were separated by stands of live, green timber. Prescribed burning was also a common practice to reduce the fire hazard on cutblocks and prepare the site for planting. Fire behaved differently in these live stands and previously burned cutblocks provided opportunities to effectively manage a wildfire.

As the mountain pine beetle infestation grew, harvesting accelerated to address it. At the same time, prescribed burning fell out of favor for a number of reasons including concerns about liability and smoke and its health effects. Today, the landscape in some areas is characterized by uninterrupted cutblocks in various stages of regeneration. The more recent cutblocks were not prescribed to be burned and slash is distributed across them. According to BC Wildfire Service staff, when a fire gets going in this situation and is accompanied by drought conditions, "only a change in the weather can put it out."

⁴ Harvested by a licensee (qualified holder) outside of the interface.

Hazard Assessment

Today, many licensees use the Defined Hazard Assessment and Abatement Strategy (DHAAS), developed by government, to fulfil the requirements of the *Wildfire Act*. The DHAAS permits significant amounts of fuel to be left on the ground. For example, in lodgepole pine on a flat (0-15%), south-facing slope, 99 tonnes per hectare of fine fuels (less than 7 centimetres in diameter or width) can be left on a cutblock in a low risk area without requiring abatement. According to BC Wildfire Service staff, when the DHAAS was developed, it did not take into account the accelerated harvest of beetle-killed stands and the scale of harvest across the landscape. There was also concern from industry about increasing hazard abatement costs, particularly in stands with heavy fuel loads pre-harvest, due to dead and downed timber.

Conclusions

The complainant was concerned that logging debris and old, decked timber contributed to the spread and intensity of the Shovel Lake wildfire. The Board investigation focused on whether licensees assessed and abated the fire hazard in accordance with requirements.

One of five licensees did not comply with the fire hazard assessment requirements of the *Wildfire Act*. With the exception of one licensee for which no records are available, all licensees complied with the requirements for fire hazard abatement. The hazard was either abated or it was not yet required to be abated because logging was very recent or still in progress.

Despite this, the complainant is justifiably concerned about the large amounts of fuel on the landscape. Fire hazard assessment and abatement requirements may need to be reviewed in light of the following factors:

- The mountain pine beetle infestation has created a significant, natural fuel hazard as dead trees break and fall over. This natural process coupled with the accelerated salvage harvest of dead pine across the landscape has created a series of debris-covered cutblocks in the area of the complaint.
- A hazard abatement period to 30 months or longer from the date of harvest commencement means that the risk will be borne for an additional 11 months or more compared to standards in place before 2004.
- The DHAAS permits significant amounts of fine fuels to be left on the landscape without abatement.

The issue is further exacerbated by the fact that prescribed burning is no longer commonly used to reduce the fuel hazard on cutblocks.

Appendix 1: Cutblock Details

Licence	Client	Cutblock	Location	Disturbance		Latest Date FHA required	Date of Assessment	Latest Abatement Date	Date of Abatement	Compliance with Assessment Requirements?	Compliance with Abatement Requirements?	Status
				Start	End							
A91995	JANET ZACHARIAS	1	Peta Mountain	12/15/2016	Still Active	6/15/2017	Not provided	6/15/2019	2018 (Shovel Lake wildfire)	N	Y	Active
A91996	STEPHEN BROS. CONTRACTING LTD.	1	Peta Mountain	11/1/2017	4/3/2018	5/1/2018	6/12/2018	7/1/2020	2018 (Shovel Lake wildfire)	Y	Y	Active
A16823	BABINE FOREST PRODUCTS LIMITED	23	Hannay Road	11/1/2003	12/1/2003	6/30/2004	4/23/2004	6/30/2005	Leave for a year and no abatement necessary	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_61	Hannay Road	10/1/2003	11/1/2003	6/30/2004	4/22/2004	6/30/2005	Leave for a year and no abatement necessary	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_63	Hannay Road	10/1/2003	11/1/2003	6/30/2004	4/22/2004	6/30/2005	Leave for a year and no abatement necessary	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_74	Hannay Road	11/1/2003	11/30/2003	6/30/2004	4/23/2004	6/30/2005	10/8/2004	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_75	Hannay Road	11/1/2003	11/30/2003	6/30/2004	4/23/2004	6/30/2005	10/8/2004	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_78	Hannay Road	11/1/2003	12/1/2003	6/30/2004	4/23/2004	6/30/2005	Leave for a year and no abatement necessary	Y	Y	Retired
A16823	BABINE FOREST PRODUCTS LIMITED	607_79	Hannay Road	11/1/2003	12/1/2003	6/30/2004	4/23/2004	6/30/2005	Leave for a year and no abatement necessary	Y	Y	Retired
A85670	TIMOTHY CARROLL (Deceased)	03	Tatin Road	3/6/2009	3/11/2009	9/6/2009	Unknown	9/6/2011	Unknown	Unknown	Unknown	Retired
A16826	WEST FRASER MILLS LTD.	756-1	Hannay Road	9/18/2017	9/29/2017	3/18/2018	11/2/2017	3/18/2020	2018 (Shovel Lake wildfire)	Y	Y	Active
A16826	WEST FRASER MILLS LTD.	754-1	Hannay Road	9/15/2017	9/20/2017	3/15/2018	9/18/2017	3/15/2020	2018 (Shovel Lake wildfire)	Y	Y	Active
A16826	WEST FRASER MILLS LTD.	755-2	Hannay Road	9/11/2017	11/10/2017	3/11/2018	11/22/2017	3/11/2020	2018 (Shovel Lake wildfire)	Y	Y	Active
A16826	WEST FRASER MILLS LTD.	755-1	Hannay Road	9/15/2017	9/25/2017	3/15/2018	9/21/2017	3/15/2020	2018 (Shovel Lake wildfire)	Y	Y	Active
A16826	WEST FRASER MILLS LTD.	711-14	Tatin Road	11/1/2016	12/19/2016	5/1/2017	12/16/2016	5/1/2019	10/18/2017	Y	Y	Active
A16826	WEST FRASER MILLS LTD.	711-13	Tatin Road	11/1/2016	12/19/2016	5/1/2017	12/16/2016	5/1/2019	10/18/2017	Y	Y	Active



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