



Investigation: Stream Erosion and Sediment  
on Block T141 Managed Forest #7  
Beaufort Range Port Alberni

Owner: TimberWest Forest Corporation

Investigation: IN05019-3 Beaufort Block T141

Date: February 9, 2007

Investigation Report by: Stuart J Macpherson RPF, CEA  
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## 1.0 INTRODUCTION

During the week of November 14 2006, a severe winter storm crossed central and southern Vancouver Island. On November 15 Mr. Wayne Crowley (the Complainant) called the Council office to complain that there had been a severe flooding on his property again. He said he believed it was caused by some kind of landslide event on TimberWest's property, Block T141 (the Block), on the hillside above his property. He requested that Council inspect the damage to his property and he felt that TimberWest should be held accountable for the event and the property damage he had suffered.

The Complainant said that the flooding and washout was a repeat of a similar event at the same location that had occurred on January 5, 2006. I advised the Complainant that I would schedule an inspection of his property on November 17, 2006.

## 2.0 BACKGROUND

I had previously concluded an investigation of road construction practices on the Block on February 28 2006. That investigation resulted in Council making a determination against TimberWest (the Owner) for contravening section 14 (2) (c) and 15 (b) of the Private Managed Forest Land Council regulation. TimberWest was fined \$30,000 and issued a remediation order to repair and deactivate the road system on Block T141. Please refer to the report *Road Construction Practices on Block T141 Managed Forest #7, Beaufort Range Port Alberni*, and dated February 28, 2006 for an account of my investigation.

### **Chronology of Significant Events**

On July 26, 2006 I made a site inspection of Block T141 to review the progress that TimberWest had made in complying with the remediation order. At that time I was satisfied with the work in progress I saw; culverts had been replaced and/ or repaired, sections of running surface had been reshaped and ditchlines had been grass-seeded. I informed TimberWest that a final inspection would be made in the fall when they advised Council office that the remediation work was complete, and that we would require an independent as-built report.

On November 7, 2006 I received a copy of the Golder Associates report *Road Deactivation Review Beaufort Range Block T141 Port Alberni BC*, dated November 3, 2006 concerning their field review of the road deactivation work. This meant that the Block was ready for a final inspection by our office.

On November 14, 2006, a severe storm hit the area, including this Block. On November 15, 2006, I received Mr. Crowley's complaint.

On November 16, 2006 I contacted Gordon Butt P Geo of Madrone Environmental Services Ltd and retained him to undertake an independent objective assessment of the storm event on the Block and the Complainant's property. I also made arrangements with the Owner to inspect the condition of Block in their presence. I asked Mr Butt to collect the facts concerning the event and to provide an opinion on its cause. My intention was to

draw on the information in his report to decide whether there were grounds to allege that the Owner had contravened sections 13,14 and 15 of the Private Managed Forest Land Council regulation. I shall be referencing Mr. Butt's assessment in this report

On November 17, 2006 I made an inspection of the Owner's property i.e. the Block and the Complainant's property. I was accompanied by Ron Davis P.Eng, a member of the Council. The purpose of the inspection was to review the deactivation work completed and the debris torrent that occurred in the streams within the Block that lead to the complaint. Mr. Butt undertook his own inspection at the same time, but independently. (I did not accompany him.) The weather was cloudy and overcast. This did not prevent me from inspecting the Block but restricted my attempts to inspect the area above the upper boundary of the Block. However from what I could see, there seemed to have been scouring and mobilization of debris in the channel of stream 6 above the Block.

Mr. Davis and I then met with Mr. Butt later in the day and we made a joint inspection of Complainant's property and the two damaged culverts on the Log Train Trail that traverses his property. Mr Crowley and three of his associates accompanied us.

During the course of this investigation I held conversations with several people to help understand the situation and the sequence events that occurred both on TimberWest property and Mr. Crowley's property before and after the flooding. The following people provided helpful assistance and information relevant to this investigation:

Gordon Butt	Consulting geoscientist	Madrone Environmental Services
Drew Hadfield	Manager, Engineering Services	Alberni-Clayoquot Regional District
Dave Clough	Consulting fisheries biologist	Alberni Enhancement Society
Domenico Iannidinardo	Resource specialist	TimberWest Forest Corporation
Mike Miles	Consulting geomorphologist	M.Miles and Associates
Wayne Crowley	Complainant and property owner	
Brian Epps	Source Water Protection Specialist	Ministry of Environment
Brad Rushton	Habitat Manager	Fisheries and Oceans Canada

### 3.0 SCOPE

The investigation is concerned with determining whether the Owner may have contravened the *Private Managed Forest Land Act* or regulations through its activities on Block T141. Council does not have the jurisdiction to investigate compliance with the *Water Act* on the Owner's property or the Complainant's property. Nor does the Council have jurisdiction concerning liability for damage on the Complainant's property.

Although TimberWest reported to me that there had been a debris torrent on the Block, the investigation was triggered by the Complainant's allegations that the Owner's logging and road building activities behind his property had caused the flooding and damage to his property. He alleged that the large clearcut and poor road construction practices had increased the water run-off during the storm of November 15, 2006, causing the Owner's

roads to washout, the two Log Train Trail culverts to washout and the resulting debris and sediment-laden water to flow onto his property depositing debris and a layer of silt on the landing in front of his sawmill.

A key question then to be answered by this investigation is whether the Owner's logging and road construction activity was a cause of the debris event.

#### 4.0 LOCATION & OWNERSHIP

The Block is located on the east side of the Beaufort Range on the toe of the slope. It is just beyond the end of Cameron Road, which runs north of Port Alberni. The property joins Crown land (Lots 257, 275) along the southern boundary. The Crown land is part of Woodlot #11, administered by the Ministry of Forests and Range, South Island Forest District. The Log Train Trail (a remnant of a former railway grade and now a recreation trail) runs along the southern boundary. The Complainant's property is south west of the Crown land, and immediately south of and adjacent to some sections of the Log Train Trail.

It was established in my previous report (February 28, 2007) that TimberWest is the owner of private managed forest land on the hillside behind the Complainant's property, and that TimberWest constructed, maintained, and deactivated road during the period that the *Private Managed Forest Land Act* was in force (i.e. after August 1, 2004).

#### 5.0 FINDINGS

My inspection was both from the air by helicopter and on the ground. It was evident that there had been severe erosion and bank scouring in the channels of streams 4 and 6 and that the culverts crossing these streams had been washed out. Other than at the crossings on streams 4, 6 and 9, there was no evidence of substantial movement of road surface or subgrade materials down slope of the roads. The road sections between these streams had remained reasonably stable despite having been tested by a major rain event. In my view this is evidence that the deactivation work along these road sections were effective in draining the run-off from the storm as it was intended to do.

I saw that bank erosion was evident in stream 6 for a substantial section above the upper boundary of the Block. This suggested to me that the event might have initiated way some distance above the upper boundary of the Block.

Downstream the culverts on stream 4 and 6 crossing the Log Train Trail were partially washed out. The flooding of stream 4 and 6 had deposited debris and a layer of silt on the Complainant's property.

At the time of the inspection the Owner had two backhoes on the Block clearing out washouts at the stream crossings.

Gordon Butt's assessment report is an integral part of this investigation. His report is comprehensive and thorough and provides a detailed description of the storm-related event from the origin on the hillside above the Block, and its effects on the streams 4, 6 and 9, which flow through the Block and below the Block across the Log Train Trail and through the Complainant's property.

It is recommended that Council review Mr Butt's report in detail to gain an understanding of his account of the event and his conclusion as to the cause. I will provide a summary of Mr. Butt's opinion and the key points relevant to the sections of the Council Regulation in question.

In his report Mr. Butt states that an extreme storm caused flash flooding and washouts of the culverts on streams 4 & 6. The flooding originated in the catchments of streams 4 & 6 above the Block. The result of the severe magnitude of the storm was flooding and extensive scouring of the stream channels. The flooding also mobilized bedload, carrying it down the channel, and causing blockage at the culvert inlets channels and erosion of the material around culverts. With some exceptions the flooding and erosion was confined to within the channel of the stream banks.

Mr. Butt states that the stream crossings failed due to "an unusually large volume of bedload that buried and incapacitated the culvert pipes, irrespective of their size." He says that harvesting on the Block had a negligible effect on the magnitude of the storm flow, as the area harvested is less than 12% of the catchment area. Stream channels were scoured on the hillslope above the Block and the flooding caused a small landslide along stream 6 at a point well above the Block boundary.

In section 5.3 Water Management in Block T 141 of his report Mr. Butt draws several conclusions that are relevant to the effectiveness of the deactivation work by the Owner on the Block and the drainage pattern of the road system. The key points are:

Culvert size:

- Culvert sizes were adequate to pass "water-only" flows but were not able to handle the volume of bedload movement.
- There was no evidence that streams would be subject to such a volume of bedload.

Culvert gradient:

- Culverts were installed with gradients consistent with accepted industry standards.
- Steeper installed gradients may have improved the possibility that the culverts could have self-cleaned.

Sediment Transport:

- Most of the sediment transported in streams 4 and 6 was generated from channel erosion.
- There is no evidence of landslides in the Block area.
- Channel scouring was extensive in the stream reaches above the upper boundary of the Block.
- Evidence of the unusually high flow suggests the cause of the sediment generated was rain and snowmelt rather than a point source or concentrated road drainage.
- Scouring deepened the stream channels but did not substantially widen them.
- Scour lessened downstream and below the Tod Mainline and was limited in the lower section of the Block.
- Road crossings appear to have had an overall neutral effect on sediment production.

- Road construction and harvesting in the Block did not significantly affect the amount of sediment delivered downstream of the lower block boundary.

Flooding:

- There was no evidence that the roads on the Block or above the Block had caused stream diversion.
- Flooding on the Complainant's property may have resulted from previous excavation of gravel from the alluvial fan on his property.

## 6.0 CONCLUSION

With respect to section 13(1) of the Council regulation, I do not find evidence that the deactivation work caused soil erosion or led to landslides on the Block. The cutslopes and fillslopes of the road prism remained stable and did not slump as a result of the heavy November storm. The channel scouring and minor erosion of the banks of the streams have been confined to within the natural banks and have not resulted in loss of productive area.

With respect to section 14(2) of the Council regulation, the streams have remained in their natural channels with some minor exceptions. The erosion and sediment transport associated with the stream crossings have not resulted in the transport of debris into a water supply area or a fish stream. The sediment that entered the streams was from natural scouring as a result of the severe storm rather than from road excavation by the Owner.

With respect to section 15(a) of the Council regulation, the extreme flooding and the scouring of the stream channels and banks have caused them to become unstable. In any case the scouring is a natural process and the Owner could not have prevented the amount of sediment that resulted.

Based on the forgoing and the information provided to me by Gordon Butt in his report, I have concluded that TimberWest has not contravened sections 13, 14 and 15 of the Private Managed Forest Land Council regulation.

I recommend that the investigation be closed.



Stuart J Macpherson

Executive Director