

J E FARRELL & ASSOCIATES INC.
5025 Delmonte Avenue, Victoria
British Columbia, Canada V8Y 1W9

August 31, 1999

Regional district of East Kootenay
19 - 24th Avenue South
Cranbrook, B.C.
VIC 3H8

Attention: Mr. R D Whetham, Director of Planning

Dear Mr. Whetham:

Re: Fairmont Hot Springs Resort Area,
Flood Protection Works Inspection

Further to our previous communications on the above matter, the reports were sent directly to me by the consultant and are enclosed for your information. The invoice will be following under separate cover. I remind you that the Regional District agreed to pay for the inspection reports from the tax accounts.

I have reviewed the reports and it is clear that the only major concern is at the Fairmont Creek Flood Protection works where the upper portions of the retaining wall are tilting towards the creek. The report recommends that the upper portion of the wall should be restored to a vertical position and an adequate drainage system and tiebacks are put in place.

If you would like to discuss any aspect of these reports do not hesitate to contact me.

Yours truly,



J. E. Farrell, P. Eng.
for Fairmont Hot Springs Resort Ltd.

c.c. Carol Seable, President



Cochrane Engineering Ltd.
#450, 340 - 12th Avenue S.W.
Calgary, Alberta T2R 1L5
Tel: (403) 262-3638
Fax: (403) 262-1298

August 18, 1999

Our File: 35329

Regional District Of East Kootenay
% J E Farrell & Associates Inc.
5025 Delmonte Avenue
Victoria, BC
V8Y 1W7

**Attention: Ms. Lee-Ann Crane
Administrator**

Dear Ms. Crane:

RE: Flood Protection Works Inspection – Fairmont Creek

Cochrane Engineering Ltd. was engaged to undertake an inspection of the debris flow control works on Fairmont Creek at the Fairmont Hot Springs Resort Ltd. The debris control works were originally designed and constructed to convey any debris flows past the adjacent development to an area downstream.

On June 10, 1999 we carried out an inspection of the Fairmont Creek Debris Flow works located upstream of the golf course. A visual inspection of the works was undertaken to verify their integrity and ability to provide ongoing protection. As a result, a series of photographs and notes were made during the inspection and these are summarized here.

Since the construction of the retaining walls two notable features have developed. The first is the deposition of a calcareous encrustation on the bed of Fairmont Creek. This is occurring as the flow from the hot springs is cooled as it passes down the creek. This solid encrustation tends to stabilize the bed of the creek throughout this reach.

The second, and more problematic, occurrence has been the tilting of the retaining wall. We speculate that a combination of factors may have lead to the current situation. The watering of the lawns along the top of the wall could have provided the hydraulic pressures, which are acting to push the wall off of a vertical alignment. This may be combined with a poor drainage system or possibly a limited tieback system. A photo of the wall is shown below.



It can be seen that there is no visible evidence of movement along the bottom rails. The tilting seems to be limited to rails located above the storm sewer outlet.

At this time we recommend that the upper portions of the wall be restored to a vertical position. Further, an adequate drainage system should be placed behind the wall along with appropriate tiebacks.

If you have any questions or comments, do not hesitate to contact this office.

Yours truly,
COCHRANE ENGINEERING LTD.

J. M. K. (Jim) Dumont, P. Eng., P. Ag.
Group Manager, Civil Engineering

JD/

COCHRANE
ENGINEERING

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5025 Delmonte Avenue

Victoria, BC

V8Y 1W7

**Attention: Ms. Lee-Ann Crane
Administrator**

Dear Ms. Crane:

RE: Flood Protection Works Inspection – Coldspring Creek Downstream of Highway 93

Cochrane Engineering Ltd. was engaged to undertake an inspection of the debris flow control works on Coldspring Creek downstream of Highway 93 to the debris collection pond adjacent to the Columbia River at Fairmont Hot Springs Resort Ltd. This reach of Coldspring Creek has been modified to allow the free passage of debris flows into a debris trap adjacent to the Columbia River. The debris trap will prevent outflows of debris into the Columbia River. A layer of stone rip rap has been placed in the channel to prevent erosion and degradation of the channel.

On June 10, 1999 we carried out an inspection of the Coldspring Creek downstream of Highway 93 to the debris collection pond adjacent to the Columbia River. A visual inspection of the works was undertaken to verify their integrity and ability to provide ongoing protection. As a result series of photographs and notes were made during the inspection and these are summarized here.

The channel appears to be stable functioning as it was designed. Along portions of the channel, there has been a placement of soil on the rip rap of the south bank. This soil and resulting grasses will not decrease the functionality of the channel. The condition of the channel can be seen in **Photo 1** and **Photo 2**.

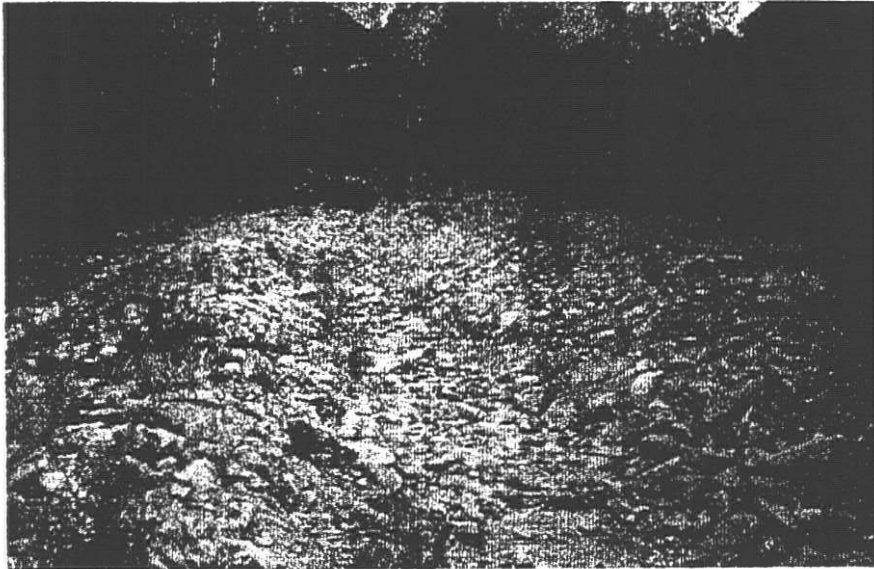


Photo 1, Coldspring Creek downstream of Highway 93



Photo 2, Coldspring Creek at Riverside Golf Course

The debris trap adjacent to the Columbia River is almost free of sediment and debris accumulation. **Photo 3** shows the general condition of this facility.

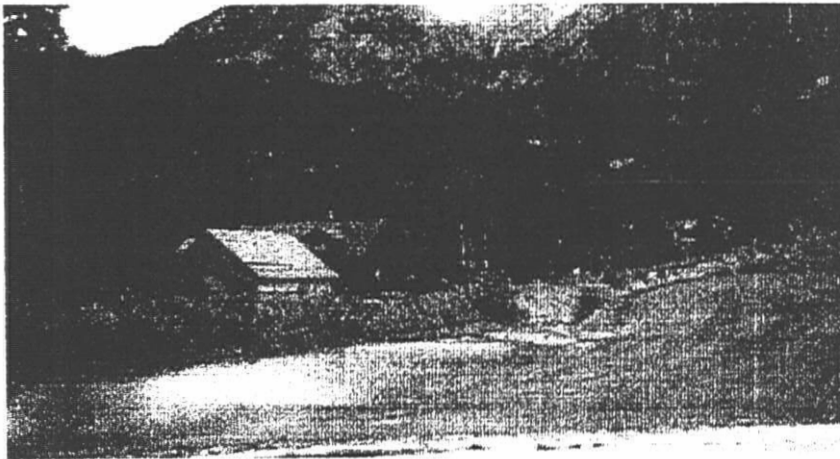


Photo 3, Coldspring Creek Debris Trap

At this time we recommend only continued monitoring of this system which includes Coldspring Creek downstream of Highway 93 and the debris trap adjacent to the Columbia River.

If you have any questions or comments, do not hesitate to contact this office.

Yours truly,

COCHRANE ENGINEERING LTD.

J. M. K. (Jim) Dumont, P. Eng., P. Ag.
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