Highway 742 – Mount Buller Area Hazards

In their reconnaissance of rockslide hazards in Kananaskis Country, Cruden and Eaton (1985) described the following hazards originating from the slopes of Mount Buller:

Rockfall

Low magnitude but high frequency rockfall from steep oblique-dip and reverse-dip slopes above the highway, with individual rocks usually less than 1 cubic metre in volume. The hazardous zone mapped by Cruden and Eaton extends below the rockfall deposits along the bases of the slopes and approaches the highway in two locations around Km 30.4. The attached airphoto figure shows the extent of the rockfall hazard zone mapped by Cruden and Eaton.

As shown on the attached airphoto figure and confirmed during the field review, the hazardous zone below this rockfall area does not extend all the way downslope to the highway. Therefore, the ongoing rockfall from these slopes does not present a risk to the highway.

Potential Rockslide

There is a potential rockslide hazard at the westernmost flank of Mount Buller, where a slide mass of up to approximately 200,000 cubic metres could avalanche onto the highway around Km 31.3. The attached figure, excerpted from Cruden and Eaton's 1985 report, illustrates the potential slide mechanism and position relative to the highway.

This potential rockslide is a very low probability but high consequence event and therefore does present a risk, however small on a year-over-year basis, to the highway. The risk to the highway from the potential rockslide is judged to be low based on the improbability of such an event. However, the risk cannot be entirely ruled out, despite the low probability of it occurring. In any case, due to the size of the potential rockslide source area and the volume of rock included in the potential slide mass it is not possible to mitigate the risk by stabilizing the potential slide mass or designing/protecting the road such that it would not be affected by such an event. Therefore, short of permanently closing and rerouting the highway there are no options to reduce the risk to the highway at this site. Similar to the potential rock avalanches in the Mount Sparrowhawk area, efforts towards further investigating and characterizing the risk may be of interest under the Alberta Geological Survey's geohazard program and the results of such research may show that a monitoring and possibly early-warning system for the initiation of large-scale slope failures may be possible. However the cost-effectiveness of such efforts is likely low given the low Risk Level to the highway.

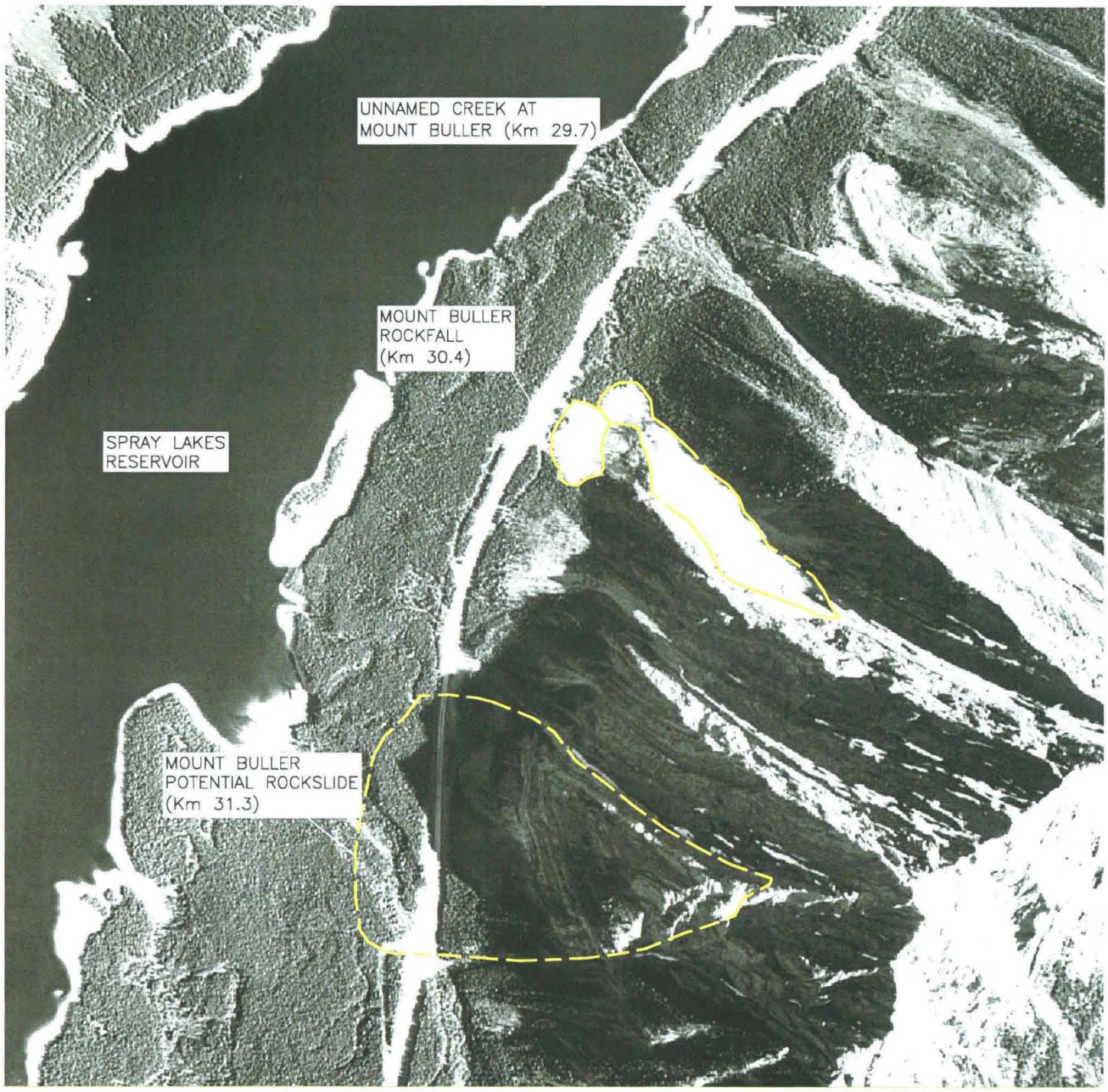
The recommended Risk Level to the highway from these potential rock slides, based on AT's general geohazard risk matrix, is as follows:

- Probability Factor of 1, representing an inactive state and a slide occurrence being very improbable.

- Consequence Factor of 10, representing a site where rapid mobilization of a large scale slide is possible.

Therefore, the recommended Risk Level related to the potential rockslide from the westernmost flank of Mount Buller is 10.

TO CANMORE, AB



TO HIGHWAY 40

SCALE
1:15 000
0 100 200 300 m

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CLIENT: Alberta Transportation

PROJECT: HWY 742 GEOHAZARDS REVIEW

TITLE: MOUNT BULLER AREA HAZARDS

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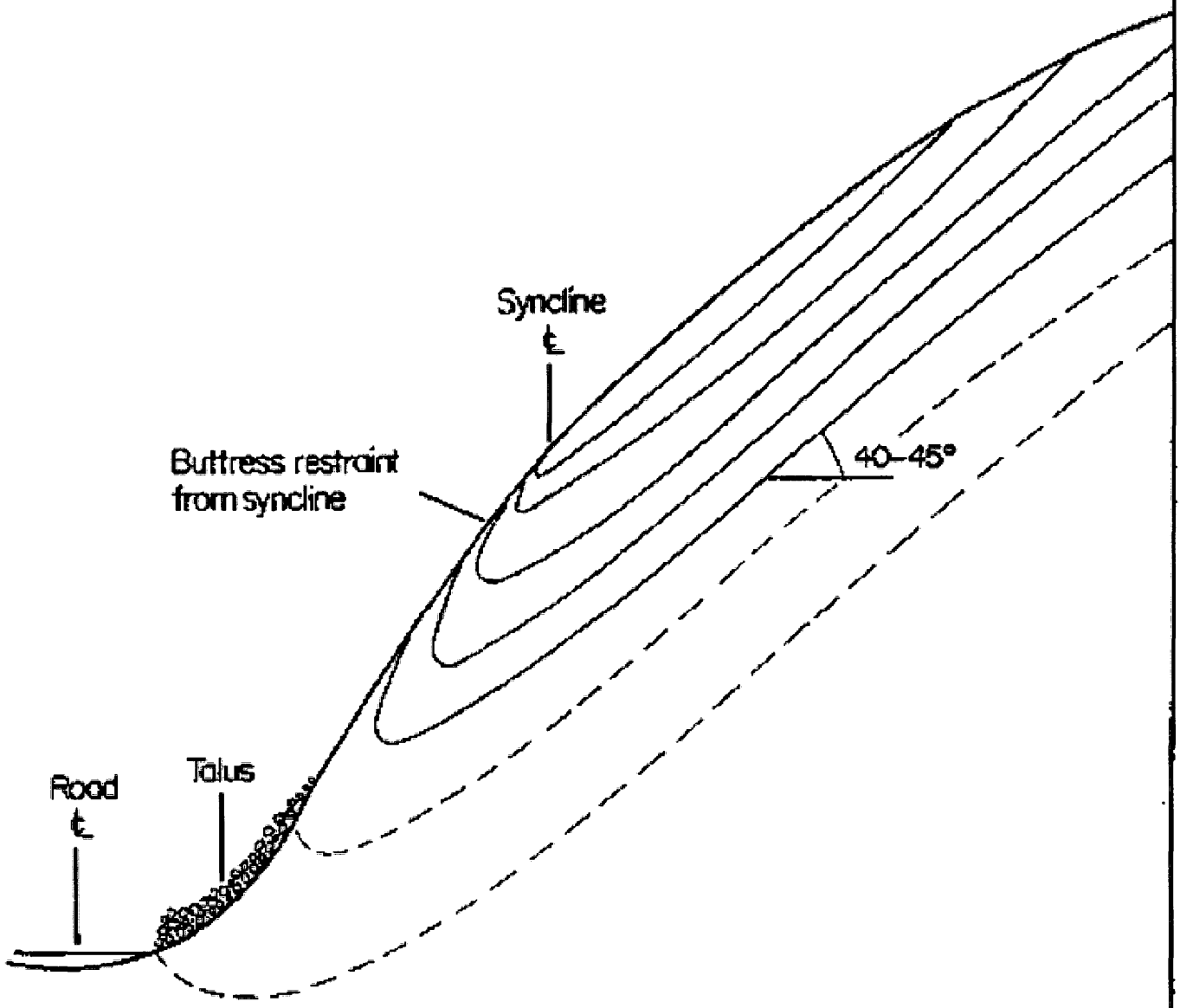
Not To Scale



NOTE:

1. FIGURE 3.8 FROM CRUDEN AND EATON (1985).

CROSS-SECTION THROUGH WESTERNMOST FLANK OF MOUNT BULLER, STEEPLY DIPPING BEDS COULD SLIDE WHEN BUTTRESS RESTRAINT IS REDUCED.

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TITLE: POTENTIAL MOUNT BULLER ROCKSLIDE

DATE:	JOB No.:	CAD FILE:	FIGURE No.:	REV.
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