

Highway 940 – Dry Creek Colluvial Fan (Km 77.8)

This site is located approximately 78 km northbound from the junction between Highway 3 and Highway 940 at Coleman, AB, and approximately 4 km northbound from the junction between Highway 940 and Highway 532. The site is at the location where Highway 940 crosses over a colluvial fan along an unnamed tributary creek flowing into the Dry Creek valley from the south side of Plateau Mountain. The site location is shown on Figures B1 and B6 in Appendix B. The site coordinates are listed in Table B1 in Appendix B.

The site inspection was performed on September 27, 2008 by Mr. Andrew Bidwell, P.Eng. of AMEC.

Background

AMEC is not aware of any previously reported problems at this site.

A general description of the geological and climatic conditions in this area is presented in Section 5.2 of this report.

Site Observations

- The highway crosses the lowermost portion of a colluvial fan that has accumulated around the lower portion of a seasonal drainage channel on the south slope of Plateau Mountain. Photo 940-37 shows the relative locations of the lowermost portion of the fan and the road.
- The lower portion of the fan is at an angle of approximately 10° and is vegetated, with no active surface channel visible. As shown in Photo 940-37, it appears that the lowermost portion of the fan was graded flat for the road around the area where the original fan tapered out and blended into the Dry Creek valley floor.
- The source of the debris in the fan is the exposed bedrock in the south slope of Plateau Mountain (see Photo 940-38). The bedrock exposed in the drainage basin visible above treeline appears to be nearly horizontally bedded, possibly with a very slight over-dip slope configuration (see Figure D1 in Appendix D for an illustration).

Assessment

The colluvial fan has gradually accumulated since the retreat of the last glaciation due to erosion of the bedrock exposed in the south slope of Plateau Mountain. Based on the visual appearance of the fan, it does not appear that significant volumes of debris are

actively accumulating near the highway at this time. Based on the site appearance, the debris flow hazard at this site is judged to be very low.

Risk Level

The recommended Risk Level for this site, based on AT's debris flow geohazard risk matrix, is as follows:

- Probability Factor of 1 due to a debris flow at this site being very improbable. There is no current visual evidence of debris flow activity.
- Consequence Factor of 4 because in the event of a debris flow it is judged that a partial road closure would not be required while maintenance crews use heavy equipment to clear the debris.

Therefore, the current recommended Risk Level for this site is 2.

Recommendations

No further work is recommended for this site.

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Photo 940-37 (top) – Facing west/northbound across the lower portion of the fan which slopes at 10°. It appears that the lowermost portion of the fan was graded flat for the construction of the highway. There was no active surface creek channel visible on the fan at the time of the site inspection.



Photo 940-38 (bottom) – Facing upslope from the highway along the fan around the seasonal drainage channel. The exposed bedrock visible above the treeline is the south slope of Plateau Mountain.