

## **Highway 742 – Three Sisters Dam Fan**

This site is located approximately 16 km southbound from the junction between Highway 742 and Three Sisters Parkway in Canmore, AB and a few hundred metres southbound from the Three Sisters Dam adjacent to the highway. The site location is shown on Figures A1 and A2 in Appendix A. The site coordinates are listed in Table A1 in Appendix A.

The site inspection was performed on October 18, 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 physical setting and conditions around this site is presented in Section 4.2 of this report.

### **Site Observations**

- As shown in Photo 742-45, the highway crosses the lowermost portion of a fluvial/colluvial fan at this site. This fan has been deposited below a drainage basin in the southwest slope of the Three Sisters peaks and above the Spray River channel (now the Spray Lakes Reservoir) and has developed over time since the last glaciation.
- It appears that an approximately 50 m wide area along the highway right-of-way and across the lowermost portion of the fan was excavated and leveled during highway construction and that no new debris has been deposited in that area during subsequent years.
- Portions of the fan have been excavated in recent years for use as construction material. The excavated face in the face exposes up to boulder-sized rocks. The portions of the fan that have been excavated have become partially revegetated.
- There is no creek channel visible in the surface of the fan above the highway. It appears that any flow coming from the drainage basin above the highway percolates down into the granular fan material in the area upslope of the highway.

## **Assessment and Risk Level**

There appears to be very little to no risk to the highway from debris flows along the creek channel. It does not appear that significant amounts of debris have been deposited on the fan in proximity to the highway in recent years, nor is there an active creek channel incised into the surface of the fan around the highway.

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

- Probability Factor of 2 to reflect the apparently inactive debris deposition on the fan around the highway in recent years and allowing for a very low to low probability of the fan becoming active again around the highway elevation in the future.
- Consequence Factor of 1.

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

## **Recommendations**

No further assessment or monitoring work is recommended for this site.

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**Photo 742-45** – Facing upstream along the fan from the highway, with the lower slopes of the Three Sisters Peaks visible in the background.