

Highway 940 – Upper Wilkinson Creek Valley, ~Km 82.4 Creek Erosion

This site is located approximately 82 km northbound from the junction between Highway 3 and Highway 940 at Coleman, AB, and approximately 9 km northbound from the junction between Highway 940 and Highway 532.

The site location is shown on Figures B1 and B6 in Appendix B. The site coordinates are listed in Table B1 in Appendix B.

This segment of Highway 940 is closed between December 1 and April 30 each year.

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. As described below, it appears that a repair was made at this site in 2008.

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

Site Observations

- As shown on Photos 940-45 and 940-46, at this site the highway is just above the right bank of Wilkinson Creek.
- The rock fill slope between the road and the creek channel is approximately 6 m high at 38° inclination.
- Relatively fresh cobble to boulder-sized rock fill was visible along an approximately 10 m segment of the slope between the downslope edge of the road and the right creek bank at the time of the September 2008 site inspection. As shown in Photo 940-47, this location is a short distance downstream of the outside of a bend in the creek channel. It appeared that the rock fill had been placed earlier in 2008 to buttress the downslope edge of the highway after erosion along the right creek bank may have been starting to undermine the road.

Assessment

The rock fill appears to have been successful in buttressing the slope between the road and the right creek bank. However, the effectiveness of the repair should be checked again after spring runoff in 2009.

Risk Level

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

- Probability Factor of 7 relative to slope instability along the right creek bank undermining the downslope edge of the road, based on the apparently successful repair but also conservatively allowing for some uncertainty regarding the possibility of further erosion and instability along or adjacent to this segment of the creek bank due to peak flows during spring runoff in 2009
- Consequence Factor of 2 because if the downslope edge of the road starts to become undermined in the future, it may be necessary to post warning signs and temporarily reduce the road width for traffic prior to repair.

Therefore, the current recommended Risk Level for this site is 14.

Recommendations

This site should be included in the 2009 Southern Region inspection tour in order to check the condition of the 2008 repair after the spring 2009 runoff in the creek.

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Photo 940-45 (top) – Facing northbound along the highway and downstream along the creek. The rock fill area that appears to have been placed in 2008 to buttress the downslope edge of the road is marked.



Photo 940-46 (middle) – Closer view of the 2008 repair area, facing southbound along the highway and upstream along the creek. Note how the repair area is a short distance downstream of a bend in the creek channel.

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Photo 940-47 (bottom) – Facing upstream along the creek, towards the 2008 repair area.