

S3 Cochrane

The Cochrane site was visited on 29 May 2002. Photographs from this site visit are included in Appendix S3, along with a site plan, air photograph, and a detailed discussion of the visit. This discussion has also been submitted in separate unbound sheets for inclusion in Appendix B of the Cochrane binder. The following is a brief summary of the assessment.

The assessment indicated that no recent movements have occurred in the landslide downslope of the road. The previous repairs to the ditch liner along the downslope edge of the road appear to be functioning adequately. Some cracking of the road surface along the north shoulder was noted. This cracking may be longitudinal cracking of the pavement structure but could also be related to the continued creep movements measured at 2.7 m depth in the adjacent SI #4. The status of the cracking should be monitored during future site visits.

The Risk Level at the site was kept at 14, as per the previous assessment. AMEC recommends that the annual assessments and semi-annual monitoring at this site be continued. Please refer to Appendix S3 for further discussion.

1.0 Site Visit

The Annual Inspection site visit was conducted on 29 May 2002. At the time of the visit, the weather was clear and windy.

2.0 Significant Observations

The following observations, considered to be relevant to the stability of the slope were made:

- The repairs to the ditch liner along the downslope edge of the road that were made in the summer of 2000 continue to perform adequately (Photo 1).
- Cracking along the north shoulder of the road, adjacent to SI #4 was noted (Photos 2 and 3).
- No indications of recent movement on the slide mass/slope face below the road.

3.0 Changes from Previous Visits

There appears to be relatively little change at this site since the previous assessment in May 2001. The Spring 2002 slope inclinometer readings showed no significant movement aside from continued creep movements at approximately 2.7 m depth in SI #4.

4.0 Discussion

The instability at this site appears to be confined to an approximately 50 m² area on the steep slope below the highway. Movements of up to 20 mm per year have been recorded in the past and may be a combination of natural movements on the steep slope as well as movement of side cast fill material from the construction of the highway. Recent movement has been restricted to creep displacements (13 mm since May 2000) at approximately 2.7 m depth in SI #4. Uncontrolled surface drainage from the highway ditch entering the slide area may have also increased the magnitude and rate of movements in the past. Repairs in the summer of 2000 to the ditch liner above the slide area have improved local drainage control and may be reducing the movement.

The cracking of the pavement on the north shoulder of the road adjacent to SI #4 could possibly be related to the shallow creep in SI #4, although they also had the appearance of longitudinal cracking of the pavement structure. These cracks should be checked during future site visits in order to assess if they are related to the slope movement.

It is likely that damage to the highway in the near future can be minimized by continuing to carefully control the surface water runoff conditions. The repairs to the ditch liner appear to be helping to keep the movement under control so far.

5.0 Assessment

The large valley slope extending below the slide area contains numerous shallow landslides, likely associated with a slow, long term natural retrogression of the valley slope. Although the site appears to be currently inactive, small changes to surface or groundwater conditions may reactivate movements. It is not considered feasible to mitigate the entire valley slope. However, there was no evidence of any active landslide extending below the road surface at this site, although slope indicators in the ditch adjacent to the road have shown movements in recent years. On this basis the Probability Factor with respect to this slide is taken as 7 since there is a high probability of movements being reactivated adjacent to the highway.

It is likely that in the short term continued movements of the current slide will not impact the highway provided that surface water continues to be controlled in order to minimize water flow into the slide area. Given the shallow nature of the slide mechanism, potential impacts in the highway, should they occur, are expected to be relatively small and gradual. The cracking in the road surface noted above SI #4 may represent such impacts. Significant losses to the highway would not be expected to occur rapidly. On this basis a Consequence Factor of 2 is assigned to this slide.

Based on the above, the Risk Level at this site is calculated as 14, which is unchanged from the value calculated after the 2001 inspection.

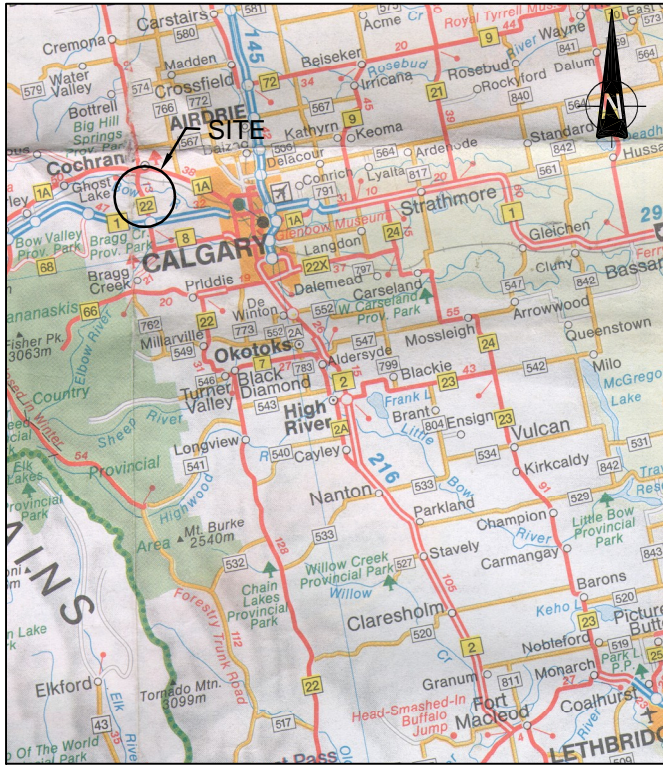
6.0 Recommendations

The monitoring programs currently in place should be continued.

Annual Assessments at this site should be continued.

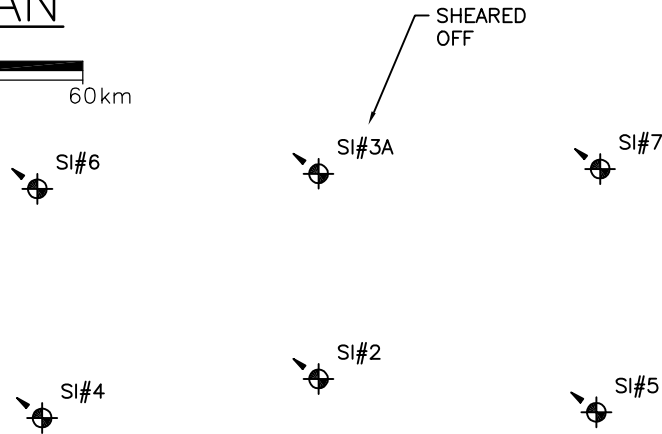
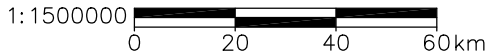
The surface conditions of the road at this location should be carefully monitored by maintenance personnel. This would be in conjunction with slope indicator monitoring to provide as early detection of potential problems below the road as possible. Particular attention should be paid to the cracking noted adjacent to SI #4.

The ditches preventing surface water from draining into the slide area should be monitored on a regular basis by maintenance personnel and repaired as necessary in the future.

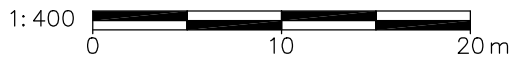


KEY PLAN

1:1500000



⊕ HIGHWAY 22:00



LEGEND

SI#5 SLOPE INCLINOMETER WITH A-GROOVE ORIENTATION RELATIVE TO MAGNETIC NORTH.

AMEC Earth & Environmental Limited

PROJECT: **SOUTHERN REGION LANDSLIDE MONITORING**

TITLE: **INSTRUMENTATION SITE PLAN
HWY 22:00
COCHRANE SLIDE AREA**

CLIENT: **ALBERTA TRANSPORTATION**

DATE: JUNE 2002	JOB No.: CG25132	CAD FILE: 25132R03.DWG	FIGURE No.: FIGURE I-S3	REV. A
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LEGEND

 Slide Area



Enlarged View from Airphoto
AP AS4958 LN-7 296
 May 31/98

Approx Scale: 1:3100

Alberta Transportation/S. Region Landslide Monitoring Program		Figure S3-1	
Site S3 - Cochrane		Date:	Revision
		Jun 2002	A
		Job No.	CG25132.B
		File No:	CR08AM05.ai

