## SECTION A – FILE REVIEW

### Site Location

- This site is located along Highway 56, south of Crowfoot, Alberta, approximately 4.2 km south along Highway 56 from the Highway 1/56 intersection. At the site area, the highway is aligned north/south adjacent to a meander of the Bow River. The Crowfoot Ferry crossing is located at the south end of the site. The highway is a two-lane gravel surface at the site.
- NE-23-21-20-W4
- UTM coordinates: 383930E 5629092N (NAD 83, Zone 12)
- NTS mapsheet 82 I/15

### Chronological Background

Table A1 provides a chronological background of this site.

### Site Geology, Hydrogeologic and Geomorphologic Setting

The soils exposed in the landslide scarps consist of rounded to subrounded gravel to cobble sized rocks within a matrix of fine grained sand and fines. These soils are consistent with fluvial deposits on an old floodplain of the river. Exposed bedrock was visible along the waterline immediately upriver and downriver of the landslide toe. The bedrock exposure could not be inspected up close, but published geological mapping of the area shows that the bedrock should consist of clayey sandstone, bentonitic mudstone and carbonaceous shale of the Horseshoe Canyon Formation.

Hydrogeological information was not obtained for the site.

The site is located along an outward meander bend of the Bow River, which is actively eroding the bank.

### Description of Past Site Problems

Landslide activity along an approximately 200 m long segment of the river bank was reported by AT personnel in 2008. Bank erosion appears to be triggering retrogressive slumping of the approximately 10 m high slope between the river bank and the adjacent upland area. The landslide has not encroached into the right-of-way but has been actively retrogressing. The minimum offset between the scarp of the landsliding and the fence line along the west side of the road was 1.7 m at the time of the June 2008 site inspection.

### Description of Past Investigations

No records of past investigations have been found for this site.

## Description of Mitigative Measures Implemented

No records of mitigative measures have been found at this site.

### Table A1 – S3 – Bow River Upstream of Crowfoot Ferry – Chronological Background

| Date | Description |
|---|---|
| June 2008 | Initial inspection of the site as part of the Southern Region Geohazard program. The site inspection was performed after AT personnel reported active erosion and slope instability along the left (east) bank of the Bow River adjacent to the highway. It was assessed that bank erosion along the river meander is causing landslide movement and retrogression towards the highway. The headscarp of the slide was 1.7 m from the west fence line at the time of the inspection. Continued slide activity is expected to lead to 50 to 70 m of the highway being undermined in the future.<br><br>Options were presented to protect the highway but a road shift is probably the best option.<br><br>Risk Level = 36.<br><br>A hydrotechnical study was recommended to determine the pattern and rate of river erosion and to plan for a future potential road alignment shift. |
| June 2009 | Annual site inspection. No significant change.<br><br>Risk Level = 24.<br><br>No change to the recommendations. |
| June 2010 | Annual site inspection. No significant change.<br><br>Risk Level = 24.<br><br>No change to the recommendations. |
| June 2012 | Annual site inspection. No significant change.<br><br>Risk Level = 24.<br><br>No change to the recommendations. |