

Section A File Review

1 PROJECT SETTING

1.1 Site Location

The Lethbridge RV site is located on Highway 3 (Hwy 3:09) between Coalhurst and Lethbridge, and consists of a surface runoff erosion feature on the east side of the highway embankment. The site was identified as a geohazard site for monitoring based on a landowner complaint by the Bridgeview RV Resort.

Each geohazard site managed by Alberta Transportation (AT) is assigned a distance in km along the relevant highway control section. The erosion site is summarized in Table 1.1.

Table 1.1 Identification of Hwy 3:09 Geohazard Site

Geohazard	Hwy #	Location (km)	Latitude	Longitude	Alberta Township System (ATS)	National Topographic System (NTS) Mapsheet
Erosion	Hwy 3:09	1.38	49.711348	-112.874872	NE SEC 2 TWP 9 RGE 22 M4	82H10

1.2 Site Description

This site is located to the west of Lethbridge, adjacent to the Oldman River. Hwy 3:09 is a paved four-lane highway, oriented southeast to northwest. Near the subject site, the highway is constructed on a well vegetated embankment up to 25 m high with an average slope of 2.5H:1V to 3H:1V. The embankment construction material is unknown, but the material exposed in erosion gullies was observed to be silty and sandy fill.

The geohazard at this site consists of erosion of the highway embankment due to discharge from road surface drainage. The erosion is due to leakage from the buried corroded CSP slope drain (installed in the 1960s) which conveys highway surface runoff to the downstream toe of the embankment. Due to corrosion of the culvert invert, flows are not contained in the culvert, leading to washout of soil around the slope drain and retrogression of the erosion gully up the slope as the CSP separates at undermined joints.

The AT right of way is reported (by AT) to extend from the highway surface to the toe of the embankment slope, which corresponds approximately to the cut line of the grass or edge of RV Park pavement and includes the drainage channel that extends northeast from the toe of the embankment to the Oldman River.

Based on the AT Maps data portal, the highway surface spot elevation is reported to be El. 839 m (near erosion feature at km 1.38).

1.3 Topography

Topographic data was reviewed using GeoDiscover Alberta map viewer (Alberta 2021). The embankment was assessed to be up to 25 m high with an average slope of 2.5H:1V to 3H:1V along the length of the embankment.

1.4 Site Geology, Hydrogeology, and Geomorphic Setting

The geological map for Lethbridge (GSC 1996) was reviewed to evaluate potential bedrock conditions at the site. The available information suggests that the surface geology is Bearpaw Formation (MKB) or Oldman Formation (Connelly Creek Formation equivalent [KO]). Surficial geology deposits are likely to be partially or fully overlain by fluvial deposits associated with the Oldman River.

2 HISTORICAL INFORMATION

2.1 Description of Past Site Problems

Aside from the erosion gully observed on September 9, 2020, there are no other historical problems recorded at the site.

Table 2.1 provides a brief chronological background of the site history, based on the available information.

Table 2.1 Chronological History of Site

Date	Description
1960s	Highway embankment and drainage system built by the City of Lethbridge. No documentation is available relating to the surface water drainage system.
2000	The highway asset was transferred to AT from the City of Lethbridge.
2004	Evidence of culvert wash-out visible in historic Google Earth imagery (no imagery available prior to 2004)
2015	Erosion event due to high precipitation or snow melt leading to channel erosion north of the concrete underdrain and contributing to sediment accumulation in historic Google Earth imagery.
September 9, 2020	Site walkover completed by KCB and AT as part of a call-out report.

2.2 Previous Site Investigations

Based on the available information, there have been no previous ground investigations at the site.

2.3 Repair Work and Mitigative Measures Implemented

Based on the available information at the time of reporting, there have been no repairs on the highway slope drains.

2.4 Monitoring Overview

There are no records of previous inspections available for our review.

REFERENCES

AT Maps, 2020: Government of Alberta, Alberta Transportation extranet interface portal. AT Maps web mapping solution (https://extranet.infra.gov.ab.ca/infra_portal.html#). Accessed September 2020.

Geological Survey of Canada (GSC). 1996. "Geology, Lethbridge, Alberta-Saskatchewan-Montana." Map NM-12-G, scale 1: 1 000 000. Downloaded from Natural Resources Canada Geoscience Publications GEOSCAN portal in September 2020.

Government of Alberta (Alberta). 2021. Government of Alberta, GeoDiscover Alberta. Map viewer. (<https://geodiscover.alberta.ca/geoportal/#homePanel>). Accessed January 2021.