

SITE NUMBER AND NAME: S061 Hwy 762 Embankment Erosion North of Junction 549		HIGHWAY & KM: 762:02, 0.346	PREVIOUS INSPECTION DATE: July 8, 2020	INSPECTION DATE: July 5, 2021
LEGAL DESCRIPTION: 09-03-021-04 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5626018 678916		RISK ASSESSMENT: PF: 8 CF: 5 TOTAL: 40	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 720 (north) (Ref No. 65170), 1420 (south) (Ref. No. 60180)			CONTRACTOR MAINTENANCE AREA (CMA): 27	

SUMMARY OF SITE INSTRUMENTATION: None LAST READING DATE: N/A	INSPECTED BY: Chris Morgan (KCB) Chris Grapel (KCB) Roger Skirrow (AT) Alex Frotten (AT)
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PRIMARY SITE ISSUE: Cracking and settlement on the highway surface due to instability caused by embankment erosion from a creek at the east toe.

APPROXIMATE DIMENSIONS: Embankment is approximately 6 to 7 m high, with 4H:1V slopes. New pavement cracking observed during the 2019 inspection, extending over a 2 m length on the west side of the highway.

DATE OF ANY REMEDIAL ACTION: Overlays and patching have been conducted in previous years. The highway was milled and paved in fall 2017. Fill was added to both the east and west embankments of the highway and graded.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Cracking is visible near the centreline.		X
Slope Movement	X		Fence tilted in the downslope direction		X
Erosion	X		Erosion due to the creek below highway.		X
Seepage	X		Seepage previously noted on slope at the north extent of the failure area.		X
Culvert Distress	X		900 mm diameter culvert inlet on the west side of highway is corroded and it is possible that water is draining into embankment. Unable to see through culvert.		X

COMMENTS

The highway embankment is in a creek valley and downslope of a hill. Slopes were vegetated with grass at the time of the inspection.

When compared to 2020 observations, longitudinal pavement cracking has extended, and transverse cracking has widened. Crack width is approximately 10 mm. A dip in both lanes is starting to form.

High flow water comes out of culvert on east side of highway during periods of heavy rainfall. The water hits the bank directly downstream of culvert and changes direction, about 65° to the north, and is eroding toe of embankment supporting the highway.

Cannot see through culvert from either end. The creek flow entering the culvert appears to be flowing faster than discharge from the outlet of the culvert. The culvert is corroded and may be partially blocked. Corrosion of the

invert may be leading to leakage from the culvert into embankment fill beneath highway. A downward deflection of the highway near the culvert was noted. AT reported that the culvert periodically plugs. A camera inspection of the culvert should be completed to assess the condition of the culvert.

Mitigation measures could include sealing the existing culvert and constructing a new culvert in an alignment that cuts off the corner and discharges away from the toe of the embankment.

If required, the embankment can be reconstructed with geosynthetic reinforced fill.

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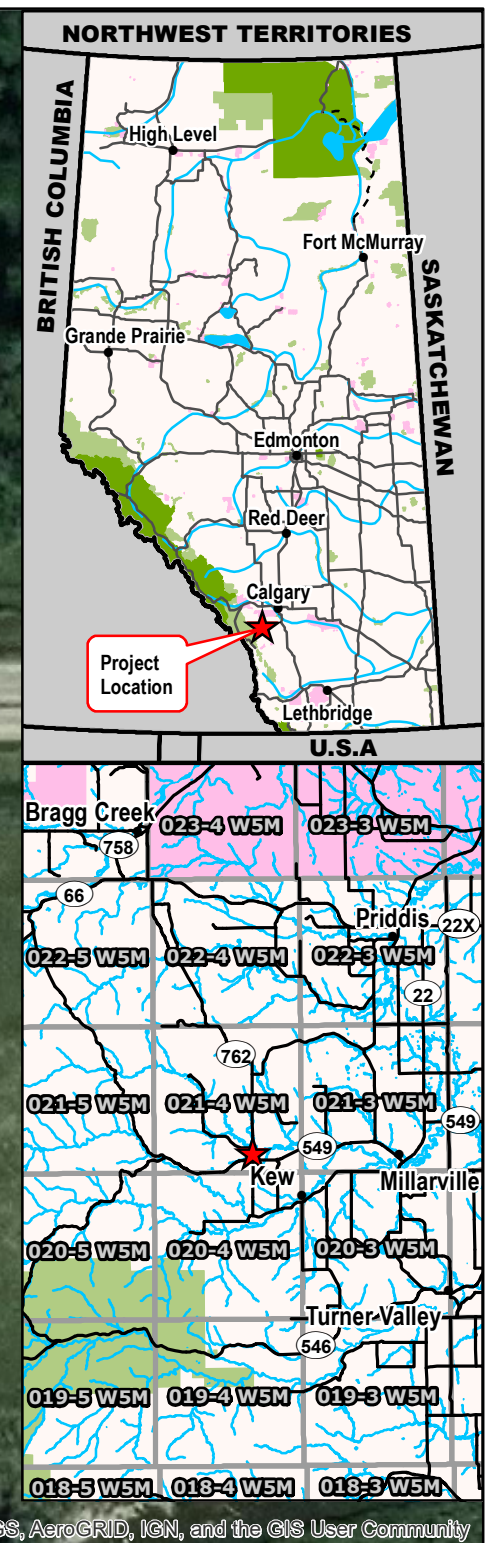
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- (i) The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
- (ii) The observations, findings, and conclusions in this report are based on observed factual data and conditions that existed at the time of the work, and should not be relied upon to precisely represent conditions at any other time.
- (iii) KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.



2021-11-24

Chris Morgan, M.Sc., P.Eng.
Senior Geotechnical Engineer



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Legend**
- ▲ GPS Waypoint (July 6, 2021)
 - > Culvert
 - Flow Direction



NOTES: 1. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM Zone 11N 3. IMAGE SOURCE: World Imagery from ESRI ArcGIS Online. Source dated January 15, 2015	CLIENT 	PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
		TITLE Site Plan S061 - H762 Embankment Erosion N of Junction 549 Hwy 762:02, km 0.346
	SCALE 1:938	PROJECT No. A05116A03
		FIG No. 1

Time: 15:49:57 PM
 Date: October 14, 2021
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Photo 1 Erosion at downstream end of culvert (east side). Culvert outflows are deflected back towards the highway embankment. Photo was taken facing east on July 5, 2021.



Photo 2 Toe erosion and fence deflection on embankment slope. Photo taken facing north on July 5, 2021.



Photo 3 Longitudinal pavement cracking. Photo was taken facing north on July 5, 2021.



Photo 4 Longitudinal pavement cracking. Photo was taken facing south on July 5, 2021.

