

SITE NUMBER AND NAME: S061 Hwy 762 Embankment Erosion North of Junction 549		HIGHWAY & KM: 762:02, 0.346	PREVIOUS INSPECTION DATE: July 5, 2021	INSPECTION DATE: May 16, 2022
LEGAL DESCRIPTION: 09-03-21-04 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5626018 678916		RISK ASSESMENT: PF: 8 CF: 3 TOTAL: 24	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 720 (north) & 1420 (south) (Reference No. 65170 & 60180)			CONTRACTOR MAINTENANCE AREA (CMA): 27	

SUMMARY OF SITE INSTRUMENTATION: There is no instrumentation at the S061 site. LAST READING DATE: N/A	INSPECTED BY: Chris Morgan (KCB) Laura Assaad (KCB) Roger Skirrow (AT) Alex Frotten (AT) Maury Siddons (AT MCI)
PRIMARY SITE ISSUE: Cracking and settlement on the highway surface due to instability caused by creek erosion at the east embankment toe.	
APPROXIMATE DIMENSIONS: The highway embankment is approximately 6 m to 7 m high, with 4H:1V slopes. Longitudinal pavement cracking 23 m in length is in the west (southbound) lane.	
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		Longitudinal pavement cracking is along the centerline and in the west (southbound) lane. Minor pavement settlement is beginning to form in the west (southbound) lane.	X	
Slope Movement	X		Fence is 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 CSP culvert inlet on the west side of highway is in poor condition (heavily corroded) and has settled and it is possible that water is draining into embankment. Unable to inspect inside of CSP culvert.		X

COMMENTS
The site was previously inspected as part of the S008 Fisher Creek Pile Wall site and referred to as "South of S008". In 2021, the site was numbered and named "S061 Hwy 762 Embankment Erosion North of Junction 549".
The highway embankment is in a creek valley and downslope of a hill.
The highway embankment slopes are well vegetated.
High flow water comes out of the culvert on the west side of highway during periods of heavy rainfall. The water hits the bank directly downstream of the culvert and is eroding the west highway embankment toe. Standing water was observed at the culvert outlet during the 2022 inspection (Photo 1 and 2).

The fence on the west side of the embankment has deflected and is leaning towards the toe of the highway embankment (Photo 2).

The creek flow entering the culvert appears to be flowing faster than discharge from the outlet of the culvert (i.e., backing up). The culvert is corroded and may be partially blocked (Photo 3). Corrosion of the invert may be leading to leakage from the culvert into embankment fill beneath highway, increasing the groundwater level and destabilizing the embankment. KCB and AT could not inspect the inside of the 900 mm diameter CSP culvert during the 2022 inspection.

The longitudinal pavement cracking appears to have lengthened since the 2021 inspection (Photo 4) and the transverse pavement cracking has widened to approximately 30 mm to 40 mm (Photo 5). The pavement cracking (believed to be caused by settlement in the west (southbound) lane) has dropped by approximately 20 mm to 25 mm over its 23 m length and could suggest that the slide is moving to the west.

In 2022, a dip appears to be developing in both lanes and is located south of the 900 mm diameter CSP culvert (underlying the highway and oriented north-south) (WP 86).

Maintenance/Repair/Monitoring Recommendations:

- A camera inspection should be completed to assess the condition of the 900 mm diameter CSP culvert. If irreparable, the culvert could be sealed and a new culvert could be built with an alignment that allow water to flow away from the highway embankment at the culvert outlet.
- The embankment could be stabilized by reconstructing the embankment with geogrid reinforced granular fill.

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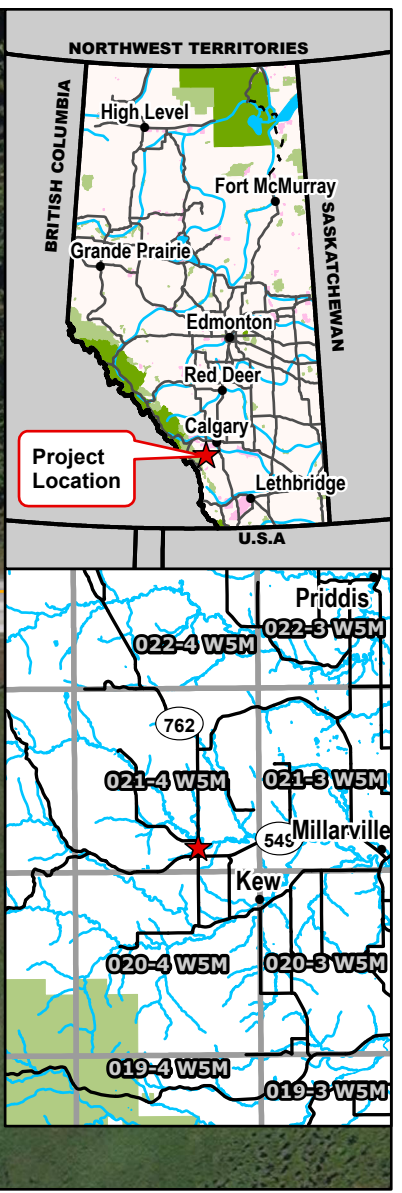
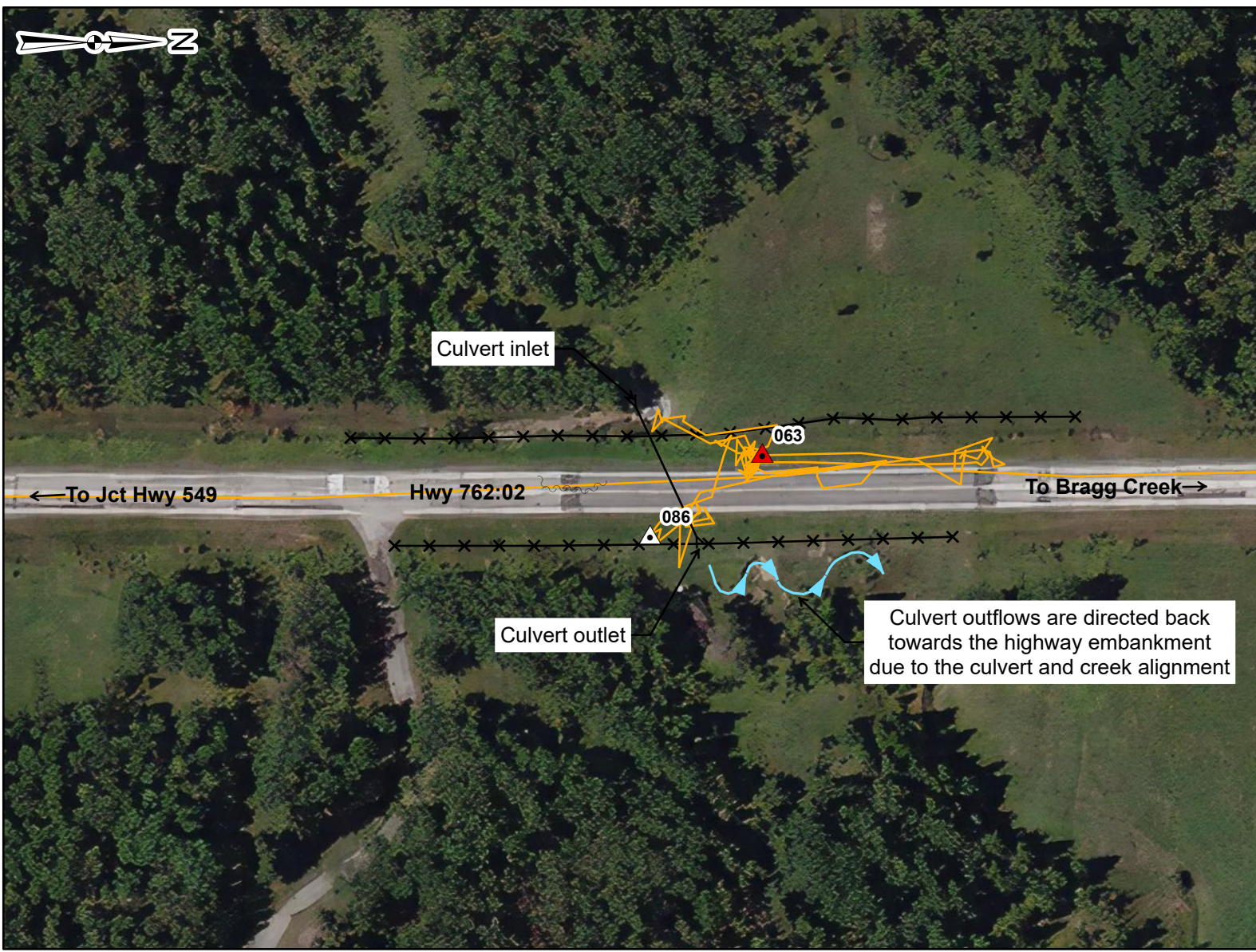
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<p>Chris Gräpel, M.Eng., P.Eng. Senior Civil Engineer, Associate</p>	
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File: Z:\A\CGY\Alberta\A05116A03\ABT Southern Region GRMP\400 Drawings\2022\Section\B\ArcGIS Pro Figures\S061.aprx Creator: aharrison Date: Time:



- Legend**
- GPS Waypoint (May 16, 2022)
 - GPS Waypoint (July 6, 2021)
 - GPS Track (May 16, 2022)
 - Flow Direction
 - Culvert
 - Crack
 - Fence

Culvert outflows are directed back towards the highway embankment due to the culvert and creek alignment



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 12N
 3. IMAGE SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS AND THE GIS USER COMMUNITY.
 4. MAP FRAME HAS BEEN ROTATED 90 DEGREES CLOCKWISE.

CLIENT

PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM		
TITLE Site Plan S061 - Hwy 792 Embankment Erosion N of Junction 549 Hwy 762:02, km 0.346		
SCALE 1:1,250	PROJECT No. A05116A03	FIG No. 1

Inspection Photographs

Photo 1 Erosion downstream of the CSP culvert outlet (indicated by red arrow). Culvert outflows are deflected back towards the highway embankment. Photo taken May 16, 2022, facing west.



Photo 2 Toe erosion and fence deflection on east highway embankment slope. CSP culvert outlet is indicated by red arrow. Photo taken May 16, 2022, facing north.



Photo 3 The base of the 900 mm diameter CSP culvert is corroding. Photo taken May 16, 2022, facing east.



Photo 4 Longitudinal pavement cracking in the west (southbound) lane. Photo taken May 16, 2022, facing north.



Photo 5 **Longitudinal pavement cracking in the west (southbound) lane. Photo taken May 16, 2022, facing north.**

