

SITE NUMBER AND NAME: S060 Lost Knife Creek	HIGHWAY & KM: 40:14, 34.480	PREVIOUS INSPECTION DATE: May 27, 2024	INSPECTION DATE: May 26, 2025
LEGAL DESCRIPTION: 15-29-19-05 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5612799 665797	RISK ASSESSMENT: PF: 1 CF: 7 TOTAL: 7	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 175 (north) & 265 (south) (Reference No. 00401450)		CONTRACTOR MAINTENANCE AREA (CMA): 520	

SUMMARY OF SITE INSTRUMENTATION: There is no instrumentation at the S060 site. LAST READING DATE: N/A	INSPECTED BY: Chris Gräpel (KCB) Jorge Rodriguez (KCB) Karen Masterson (KCB) Alex Frotten (TEC) Rishi Adhikari (TEC)
--	--

PRIMARY SITE ISSUE: There was an erosion gully and slope failure on the east side of the highway. The culvert under the highway at the centre of the slide mass was disconnected at a joint and was hanging. It is unknown whether slope movement led to culvert separation or whether culvert separation led to the erosion feature. After the 2024 repair, conditions have been addressed.
APPROXIMATE DIMENSIONS: The head scarp was approximately 8 m wide. The overall height of the slope is approximately 15 m above an unnamed creek that is believed to be Lost Knife Creek.
DATE OF ANY REMEDIAL ACTION: 2022 – Concrete jersey barriers installed upslope of the geohazard. November and December 2024 – the site was repaired by TEC's Highway Maintenance Contractor (HMC) Volker Stevin Highways Ltd. (Volker). The repair consisted of removing slide material, extending the CSP culvert, reconstructing the slope with geogrid-reinforced granular fill, and installing Class 2 riprap at the culvert outlet. A riprap channel was also constructed to convey surface water flow from the highway to the culvert outlet channel.

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	N/A – none observed during the 2025 inspection.	X	
Slope Movement		X	The erosion and slide were repaired between November and December 2024.	X	
Erosion		X	The slope face is unvegetated and susceptible to erosion.	X	
Seepage	X		N/A – none observed during the 2025 inspection.	X	
Culvert Distress		X	An 800-mm-diameter CSP culvert was extended during the 2024 construction.	X	

COMMENTS

General:

- KCB prepared a proposal for the design and repair of the site. The proposal was submitted on February 14, 2023, and approved by TEC in May 2023. Design work was completed for the site, and a Request for Quotation (RFQ) to support contractor procurement was issued to TEC on August 22, 2024. An Environmental Risk Assessment (ERA) was also prepared for the site to support TEC's HMC during construction, and it was issued to TEC on November 22, 2024.
- Construction was completed between November 27 and December 9, 2024, by Volker and monitored by KCB. In general, the repair scope included removal and installing the guardrail, topsoil stripping, salvaging, and resspreading, excavating the slide mass, extending the CSP culvert, rebuilding the highway embankment slope with geogrid-reinforced granular fill, installing a drainpipe along the base of the repaired slope, armouring the culvert outlet channel with riprap, constructing a riprap lined channel from the edge of highway to the outlet channel, and hydro seeding. KCB is preparing a construction summary report, and the final report will be issued to TEC following the completion of the warranty inspection.

S060:

- The gravelled highway and guardrail above the repaired slope appear to be in good condition (Photos 1 and 2).
- At the time of the 2025 site inspection, the rebuilt slope was smooth with no evidence of post-construction settlement (Photo 3). Also, the slope was bare with little to no vegetation growth as it was pending to be reseeded (hydroseed was completed on July 25, 2025). Thin ground cracks were observed in the slope, likely due to desiccation.
- Straw wattles were installed around the riprap armouring (channel from the edge of the pavement and the riprap apron at the culvert outlet) (Photo 4).
- The 800-mm-diameter CSP culvert extension appears to be in good condition with no post-construction settlement or deformation observed during the 2025 inspection (Photo 4).
- The riprap appears to be hard, durable particles which appear to be performing well (Photos 4 and 5).
- The riprap-lined culvert outlet channel is steep and does not have a well-defined channel, especially near the road. The upper section of the channel above the culvert has a 1.2 m wide section with 2H:1V side slopes that appears relatively flat with class 1M riprap, resulting in very little to no freeboard. Below the outlet of the culvert, the invert (2 m wide base, 1 m deep, with 2H:1V side slopes) of the channel appears far down the slope.
- Two check dams of rounded cobbles and boulders (up to approximately 500 mm in diameter) are located in the ditch near the culvert inlet and have been observed during previous inspection (Photo 6). The check dam on the north side entrance of the inlet appears to have been partially moved and no longer protects the full width of the ditch.

Maintenance/Repair/Monitoring Recommendations:

- The site should be regularly inspected by the Maintenance Contract Inspector (MCI).
- The site should be inspected as part of the 2026 Southern Region GRMP Section B inspections to assess the performance of the repair, and then inspected once per contract afterwards.
- The warranty inspection should be performed in late 2025. The vegetation cover (reseeding was performed by the HMC in July 2025) should be assessed, as well as the low invert geometry of the 1.2 m wide section of the channel.

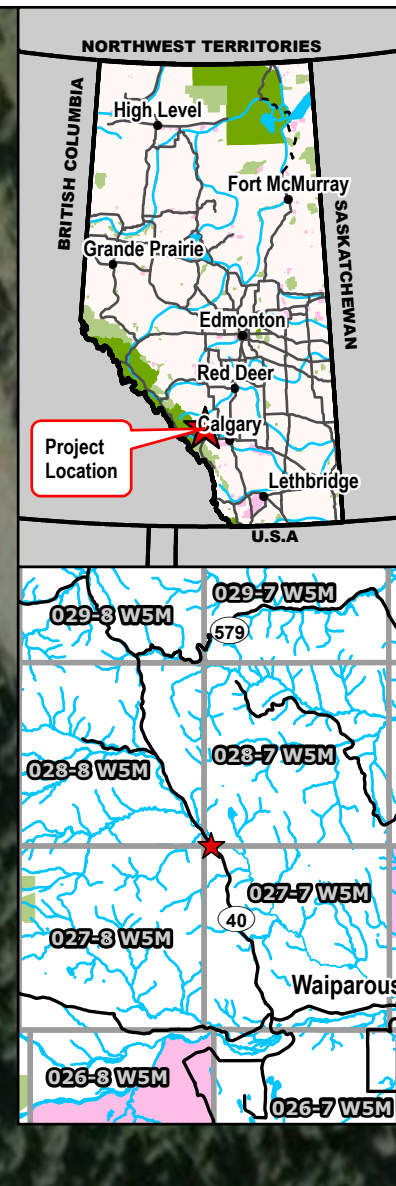
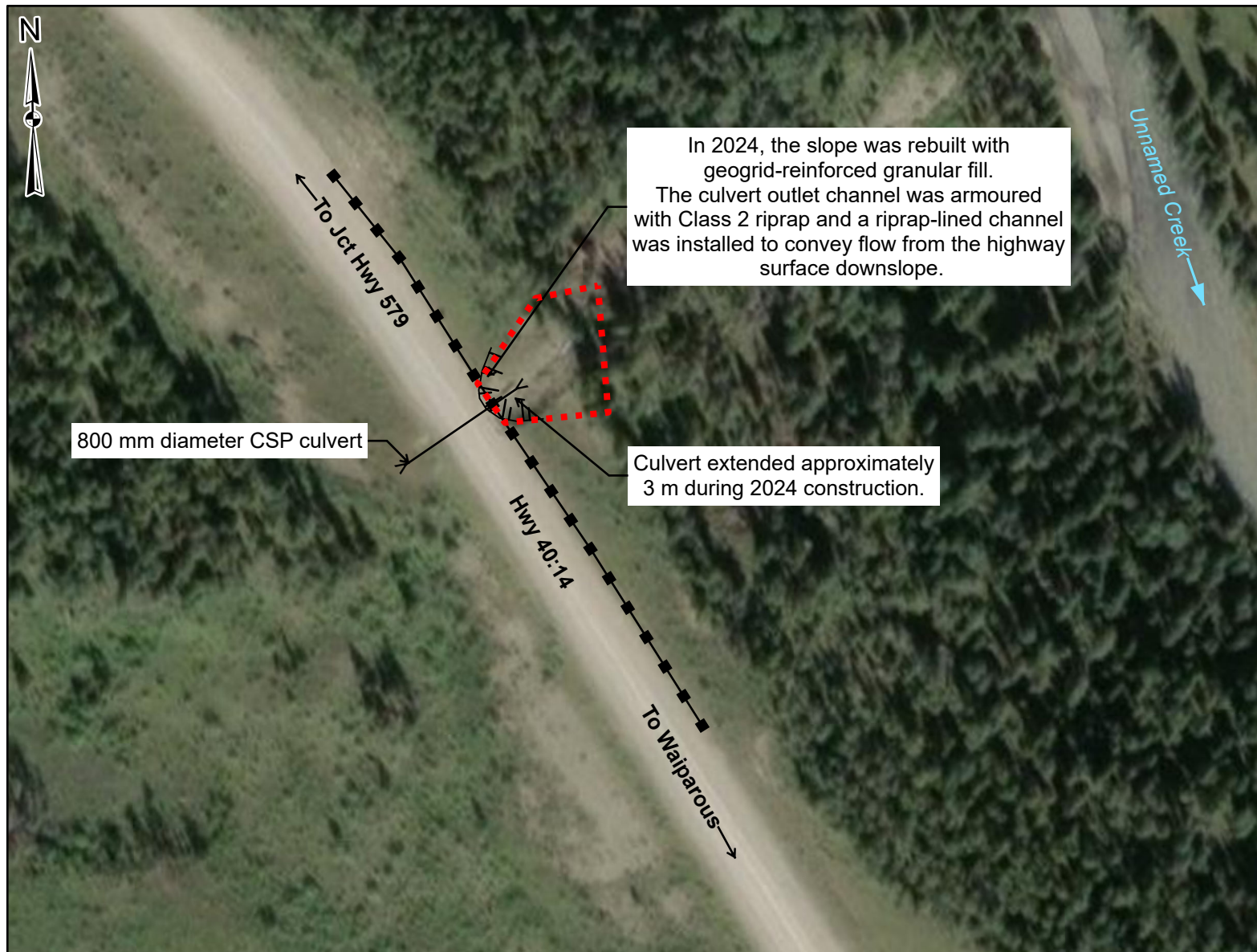
This report is an instrument of service of Klohn Crippen Berger (KCB). The report has been prepared for the exclusive use of Alberta Transportation and Economic Corridors (Client) for the specific application to the Southern Region Geohazard Risk Management Program (Contract No. CON0022161) and it may not be relied upon by any other party without KCB's written consent.

KCB has prepared this report in a manner consistent with the level of care, skill and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.






Use of or reliance upon this instrument of service by the Client is subject to the following conditions:

1. The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
2. 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.
3. The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
4. KCB should be consulted regarding the interpretation or application of the findings and recommendations in the report.
5. This report is electronically signed and sealed and its electronic form is considered the original. A printed version of the original can be relied upon as a true copy when supplied by the author or when printed from its original electronic file.

Jorge Rodriguez, Ph.D., M.Sc., P.Eng.
Geotechnical Engineer



Legend

-  Flow Direction
-  Scarp (pre-repair)
-  Culvert
-  Guardrail
-  Approximate Repair Footprint

NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 11N
 3. IMAGE SOURCE: ESRI, MAXAR, EARTHSTAR
 GEOGRAPHICS AND THE GIS USER COMMUNITY.

CLIENT

Alberta

 Klohn Crippen Berger

PROJECT

SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE

Site Plan
 S060 - Lost Knife Creek
 Hwy 40:14, km 34.480

SCALE
 1:1,250

PROJECT No.
 A05116A03

FIG No.
 1

Inspection Photographs

Photo 1 Aerial photo of the site showing the rebuilt slope, riprap armoured channels, and culvert outlet and inlet (indicated by red arrows). Photo taken May 26, 2025, facing southeast.



Photo 2 Aerial photo of the site showing the rebuilt slope, riprap armoured channels, and culvert outlet and inlet (indicated by red arrows). Two check dams of rounded cobbles and boulders are observed at the entrance of the culvert inlet (circle). Photo taken May 26, 2025, facing north.



Photo 3 The rebuilt highway embankment slope was poorly vegetated during the 2025 inspection. Photo taken May 26, 2025, facing southeast.



Photo 4 Straw wattles were installed around the riprap armoured channels as part of the 2024 construction. Photo taken May 26, 2025, facing south.



Photo 5 Channel constructed to convey surface water runoff from the highway surface to the culvert outlet channel. Photo taken May 26, 2025, facing north.



Photo 6 North check dam of cobbles and boulders at the culvert inlet. Photo taken May 26, 2025, facing northwest.

