

SITE INSPECTION FORM

SITE NUMBER AND NAME: GP003-I and II Cutbank River Slides (South) (Roseham Creek)		HIGHWAY & KM: 40:38, 52.134	PREVIOUS INSPECTION DATE: May 26, 2020	INSPECTION DATE: June 15, 2022
LEGAL DESCRIPTION: NE 16-65-05-W6M SE-16-65-05-W6M	NAD 83 COORDINATES: UTM Northing Easting 11 6054593 391085		RISK ASSESSMENT: PF: 9 CF: 3 TOTAL: 27	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 2170 (north) & 2310 (south) (Reference No. 7000761, 2021)			CONTRACT MAINTENANCE AREA (CMA): 504	

SUMMARY OF SITE INSTRUMENTATION: Operable: One slope inclinometer (SI) and two pneumatic piezometers (PNs) installed between 1997 and 1998. Two reference/survey stakes with flagging placed 1.0 m upslope of slide scarps at WP217 and 221 to monitor retrogression. Inoperable: Five SIs and one PN installed between 1997 and 1998. LAST READING DATE: June 21, 2022	INSPECTED BY: Chris Gräpel (KCB) Courtney Mulhall (KCB) Ed Szmata (AT) Kristen Tappenden (AT) Max Shannon (AT)
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PRIMARY SITE ISSUE: A series of slides/slope failures between Hwy 40:38 and Roseham Creek. Highway fill placed in a side-hill arrangement along west bank of creek. Slide movements exacerbated by creek erosion at toe of slope, high groundwater table and seepage, and glacio-lacustrine deposits with low strength. Roseham Creek is a tributary of Cutbank River. The site is located just south of the Cutbank River Bridge.

APPROXIMATE DIMENSIONS: Entire site is approximately 1.0 km long. At northern site limit, slide scarps are close (as close as 11 m from pavement edge) and roughly parallel to the highway over an approximate 500 m length. At southern site limit, slide scarps are approximately 50 m away from pavement edge. West creek bank along east side of highway up to approximately 15 m deep below pavement surface. Backslope along highway west side of highway up to approximately 25 m high above pavement surface.

DATE OF ANY REMEDIAL ACTION: Winter 1996 – berm constructed. September 1997 – road re-aligned west into backslope in combination with use of lightweight “hog fuel-wood waste” as fill. Summer 2000 – reconstruction of slope to remove hog fuel-wood waste (due to perceived environmental reasons) and install drainage layer at base and edge drains at sides. 2003 – approximately 10 rock weir barriers and live stakes installed along creek channel, which were subsequently washed out, and a subdrain installed along upslope/west highway ditch and possibly a catchwater ditch (location unknown). 2016 – overlay placed in former location of tension crack. 2019/2020 – backslope cut back and flattened to widen highway for third (passing/climbing lane).

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Tension and alligator cracking (due to high groundwater) previously observed by others, but no cracking visible at time of 2022 inspection in recent overlay completed in 2016.		X
Slope Movement	X		Series of slides/slope failures between highway and Roseham Creek that continue to retrogress towards and expand laterally along highway. New slides observed along east creek bank.	X	
Erosion	X		Ongoing erosion and channel degradation along Roseham Creek. Some rill erosion along backslope, upper portion of highway embankment (unvegetated gravelly material), and upslope/west highway ditch.	X	

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Seepage	X		High groundwater table and seepage previously resulted in wet subgrade leading to alligator cracking in pavement surface.		X
Culvert Distress	X		Culvert outlet on downslope/east side of highway at WP218 blocked with soil, inlet not visible in upslope/west ditch. Some seepage around outlet.	X	

COMMENTS

Former wet area with dead cat tails at WP215.

Recent slope failure observed at WP216.

Some scarps as close as 11 m (WP217) to 15 m (WP219) from east pavement edge. Scarp at WP220 has retrogressed approximately 3 m towards highway since previous inspection.

An accelerated rate of movement (approximately up to 20 mm/year) has been recorded in SI-2 since 2015.

Creek channel partially blocked by fallen trees.

Maintenance/Repair/Monitoring Recommendations:

- Continue to maintain and clean existing subdrain system.
- Monitor seepage around culvert outlet on downslope/east side of highway at WP218. Monitor for signs of sinkhole activity in west ditch where inlet of culvert could be buried.

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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.

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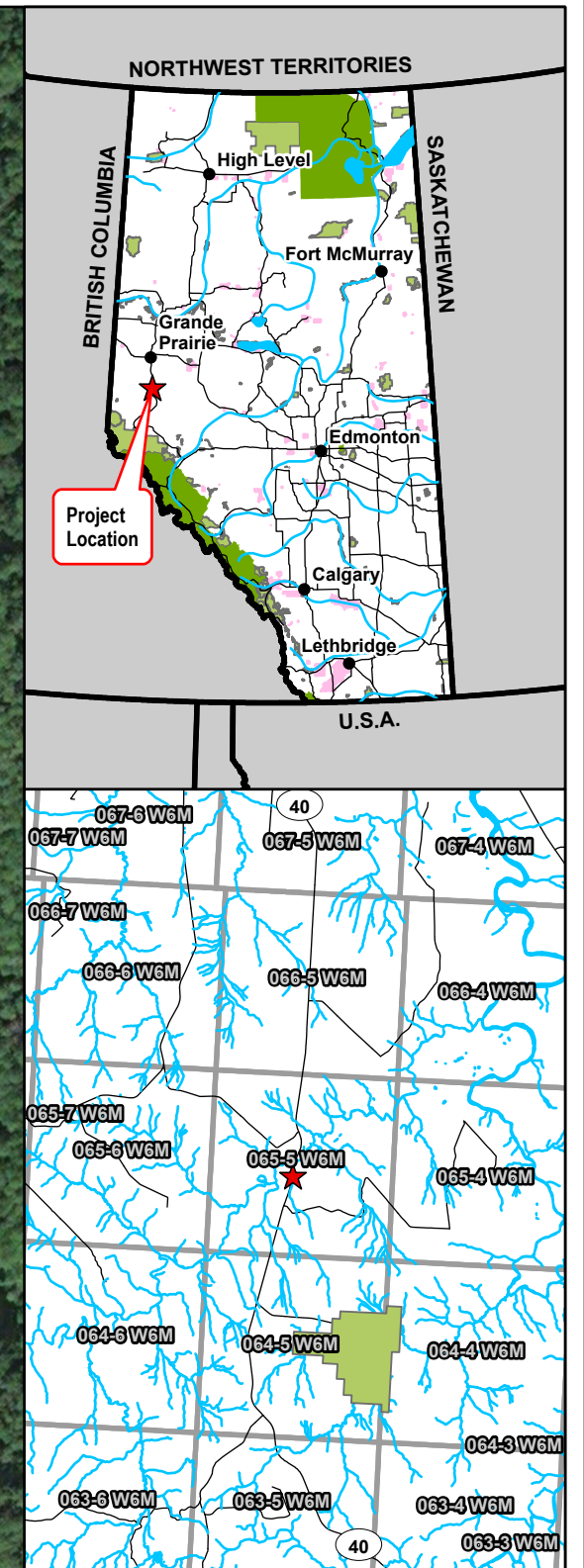
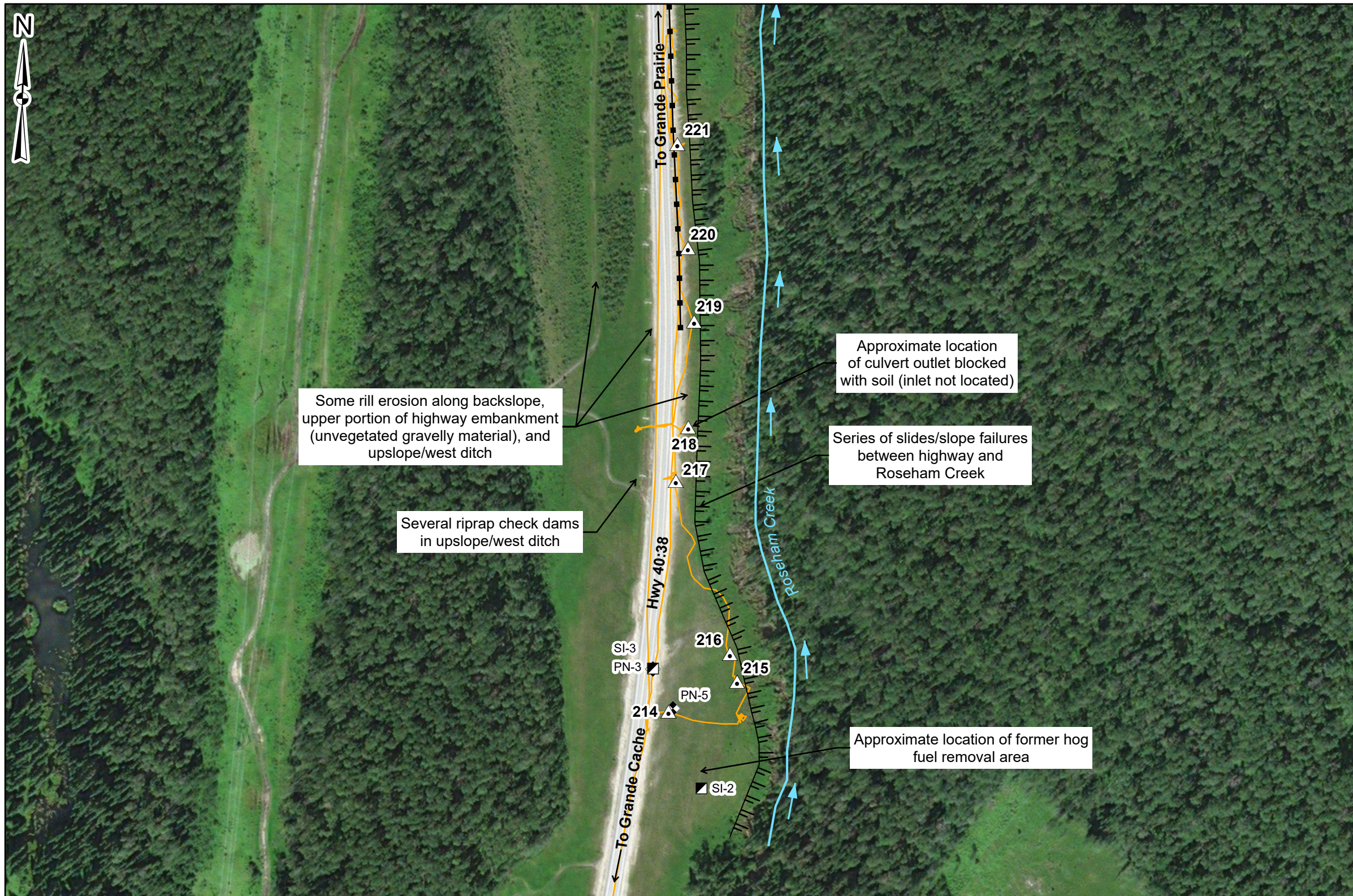
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PEACE REGION
(GRANDE PRAIRIE DISTRICT – SOUTH) GRMP
SITE INSPECTION FORM



<p>Chris Gräpel, M.Eng., P.Eng. Senior Civil Engineer, Associate</p>	
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Legend

- ◆ Approximate Pneumatic Piezometer Location
- Approximate Slope Inclinometer Location
- △ GPS Waypoint (June 15, 2022)
- GPS Track (June 15, 2022)
- Guardrail
- Flow Direction
- Watercourse
- ⊥ Scarp



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 11N
 3. IMAGE SOURCE: 2022 MICROSOFT CORPORATION, 2022 MAXAR CNES, DISTRIBUTION AIRBUS DS

CLIENT

Alberta

Klohn Crippen Berger

PROJECT	PEACE REGION (GRANDE PRAIRIE DISTRICT-SOUTH) GEOHAZARD RISK MANAGEMENT PROGRAM	
TITLE	Site Plan GP003-I and -II - Cutbank River Slides (South) Hwy 40:38, km 52.134	
SCALE	PROJECT No.	FIG No.
1:3,000	A05116A01	1

Inspection Photographs

Photo 1 Overview of GP003 site on Hwy 40:38. Photo taken June 15, 2022, with unmanned aerial vehicle (UAV) facing north.



Photo 2 Series of slides between Hwy 40:38 and Roseham Creek. Culvert outlet (circled in white) on downslope/east side of highway at WP218 blocked with soil, inlet not visible in upslope/west highway ditch. Photo taken June 15, 2022, with UAV facing southwest.



Photo 3 Former hog fuel removal area (circled in white) downslope/east of Hwy 40:38 and WP214. Series of slides along Roseham Creek. Photo taken June 15, 2022, with UAV facing down/west.



Photo 4 Series of slides between Hwy 40:38 and Roseham Creek. Photo taken June 15, 2022, with UAV facing southwest.



Photo 5 **Series of slides between Hwy 40:38 and Roseham Creek. Photo taken June 15, 2022, with UAV facing west.**



Photo 6 Riprap check dams and rill erosion in/along upslope/west ditch of Hwy 40:38. Photo taken June 15, 2022, facing south.



Photo 7 Pavement surface of Hwy 40:38. Photo taken June 15, 2022, facing northwest.



Photo 8 Slides scarps between Hwy 40:38 and Roseham Creek. Culvert outlet on east side of highway at WP218 blocked with soil, inlet not visible in west highway ditch. Photo taken June 15, 2022, facing north.



Photo 9 Culvert outlet on east side of Hwy 40:38 at WP218 blocked with soil, inlet not visible in west highway ditch. Some seepage around outlet. Photo taken June 15, 2022, facing north.



Photo 10 Rill erosion along downslope/east side of Hwy 40:38 embankment. Note reference/survey stake with flagging (circled in white) placed 1.0 m upslope of slide scarp to monitor retrogression at WP221. Photo taken June 15, 2022, facing south.

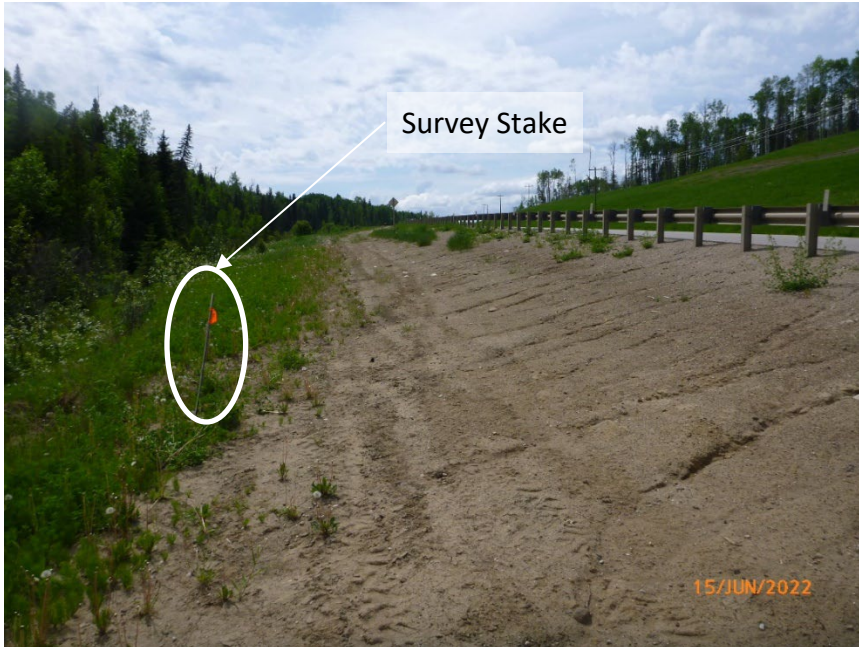


Photo 11 Slides scarps between Hwy 40:38 and Roseham Creek). Note reference/survey stake with flagging (circled in white) placed 1.0 m upslope of slide scarp to monitor retrogression at WP221. Photo taken June 15, 2022, facing north.

