GEOHAZARD RISK MANAGEMENT PROGRAM
North Central Region – Edson / Stony Plain Area

2020 Inspection Report

Site Number	Site Name		Hwy	km
NC40	North of North Saskatchewan River		759:02	12.6
Legal Land Description	NE 14-50-6-W5M and NW 13-50-6-W5M			
NAD 83 Coordinates	3TM 114	5909492 N	-50475 E	
Operational Site Instrumentation	**Slope Inclinometers**		0	
	Pneumatic Piezometers		0	
	Vibrating Wire Piezometers		0	
	Standpipe Piezometers		0	
Date of Last Instrumentation Readings	May 11, 2010			

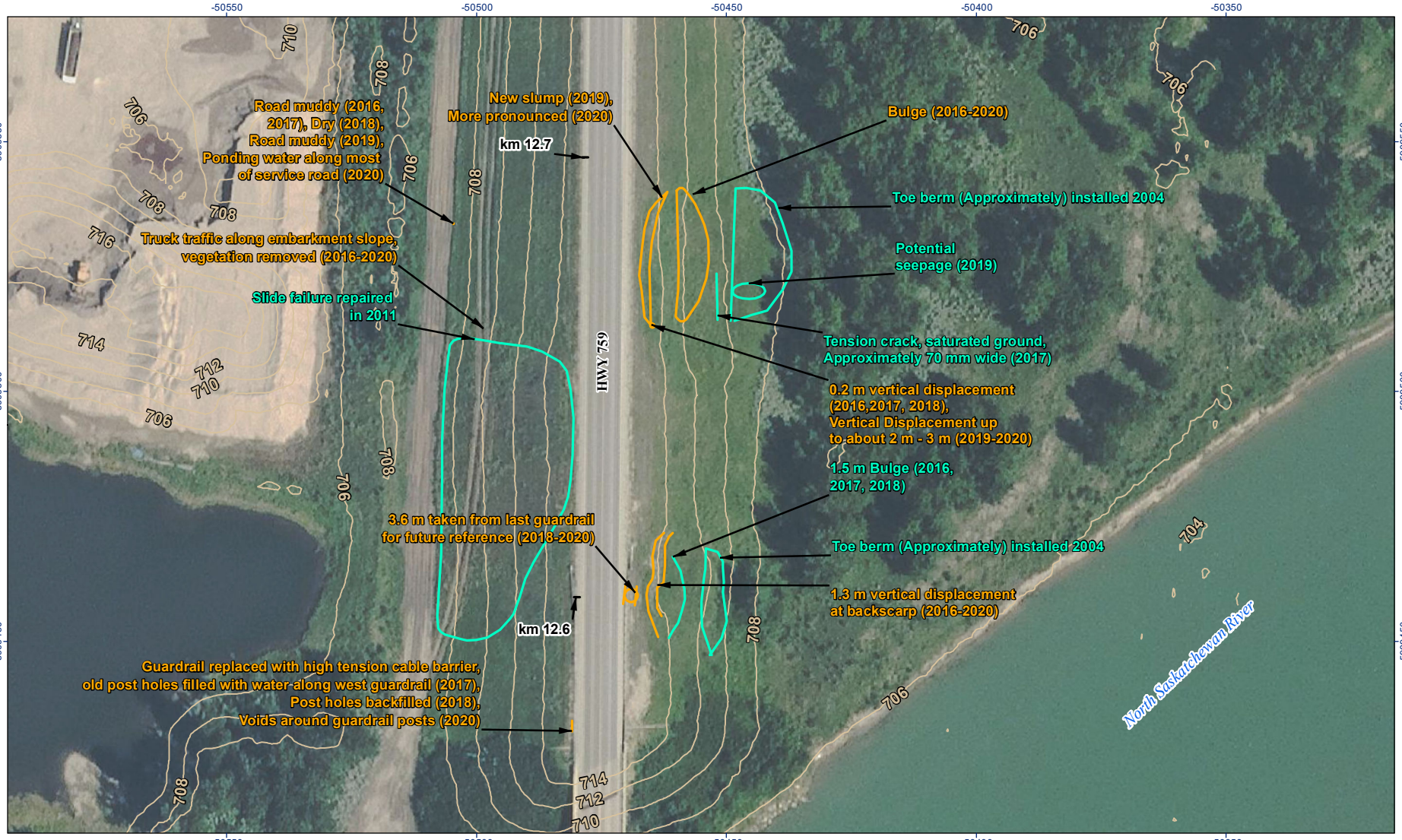
Risk Assessment	Date	PF	CF	Risk Ranking
Current Inspection	May 22, 2020	9	3	27
Previous Inspection	May 14, 2019	9	3	27
Report Attachments	☒ Photographs (6 photos)	☒ Site Plan (1 page)		

	Stantec	Alberta Transportation
Inspected By	Leslie Cho	Kristen Tappenden and Brennan Evans
Date of Remediation	2004 – Repaired shallow slides on east side slope 2011 – rotational failure on west embankment slope repaired	

Recent Maintenance	Summer 2016 – milled and paved; guard rail replaced with high tension cables		
Primary Site Issue	Rotational embankment failure of east side slope at two locations.		
Observations	**Description and Location**	**Change from Previous Inspection**	
☐ Pavement Distress		☐ Yes	☐ No
☐ Culvert Distress		☐ Yes	☐ No
☐ Bridge Distress		☐ Yes	☐ No
☒ Slope Movement	Slope failures with toe bulges at km 12.6 and 12.7. Increased scarp height at north slide.	☐ Yes	☒ No
☐ Erosion		☐ Yes	☐ No
☐ Seepage		☐ Yes	☐ No
☒ Other	Vegetation removed from west embankment.	☐ Yes	☒ No

Discussion	Highway 759 was last milled and paved in the summer of 2016. Pavement cracking was not observed as shown in Photos 1 and 2. No visual signs of slope instability were observed along the west slope. Vehicle tracks were observed several meters upslope from the service road. Repeated vehicle access had removed vegetation from the wheel path. The south slump on the east slope appeared unchanged from 2016 as shown in Photos 3 and 4. The scarp at this slump was measured to be approximately 1.3 m high and estimated to be approximately 18 m long. A 1 m high toe bulge associated with this slump was observed downslope as shown in Photo 4. The distance between the last guardrail beam to the edge of the scarp was measured to be 3.6 m, unchanged since the 2018 inspection. The scarp of the north slump appeared to be larger and more pronounced than in previous years. The north slump is shown on Photos 5 and 6. A potential seepage location was observed on the east side of the previously constructed toe berm in 2019 but could not be observed during the current inspection due to rain.

Assessment	The previously observed pavement distresses are believed to likely be unrelated to slope movements. Instead, the distress may be caused by heavy vehicle traffic. The repairs completed on the west slope appear to be functioning well since no visual signs of slope distress were observed. However, vehicle traffic appears to be moving upslope and along the embankment to avoid ponded water along the service road. This is leading to removed vegetation along the wheel paths. On the east side of embankment, the south slump appeared to be unchanged since 2014 suggesting relatively little movement within the slope. However, movement may be triggered due to water infiltration into the slope through the exposed scarps. The north slump appeared more defined with a larger vertical scarp than observed in previous inspections. Coupled with the potential presence of seepage at the toe of the slope, recent slope movements may be driven by increased pore pressure within the slope.
Recommendations	The service road along the west slope should be regraded to provide better drainage away from the slope. Vegetation should be replaced along the wheel paths of the west slope. It is recommended that the slope failure be monitored for regression into the highway. This can be completed by regularly monitoring the distance between selected guardrails and the backscarp. Long term recommendations include removal of the failed masses on the east slope and replacement with engineered granular fill. The gravel pit on the west side of the highway may be a potential source of gravel. Site inspections should continue to be completed annually.



2020 Observation

Previous Observation

Ground Elevation Contours (m AMSL, LiDAR May 2013)

N

0 10 20 metres

(At original document size of 8.5x11)

1:1,150

Notes

1. Coordinate System: NAD 1983 3TM 114

2. Data Sources: Geogratis, ©Department of Natural Resources Canada,

3. Background: City of Edmonton 2017Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stantec

Project Location
Parkland County, Alberta

Prepared by MK on 2020-06-11
Quality Review by LC on 2020-06-19
Independent Review by XL on 2020-06-19

Client/Project
Alberta Transportation
Geohazard Monitoring Program
NC40 Approach Fill Failure

123312435

Figure No.
1

Title
Site Plan

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Reference: 2020 Annual Inspection Photographs at NC40 –North of North Saskatchewan River
File Number: 123312435

Photo 1: Pavement last milled and paved in 2016. Looking south.

Photo 2: Pavement last milled and paved in 2016. Looking north.

Photo 3: South slump on the east slope. Looking north.

Photo 4: Toe bulge at south slump. Looking south.

Photo 5: North slump on east slope looking northwest.

Photo 6: North slump on east slope looking west.