

GEOHAZARD RISK MANAGEMENT PROGRAM

North Central Region – Edson / Stony Plain Area

20120 Inspection Report

Site Number	Site Name	Hwy	km
NC74	South of Entwistle Slide	22:30	44.2
Legal Land Description	SE 17 and SW 16-52-07-W5M		
UTM Coordinates (NAD 83)	Zone 11N	N5928504	E633710
Operational Site Instrumentation	Slope Inclinometers	3	
	Pneumatic Piezometers	0	
	Vibrating Wire Piezometers	1	
	Standpipe Piezometers	0	
Date of Last Instrumentation Readings	May 20, 2020		

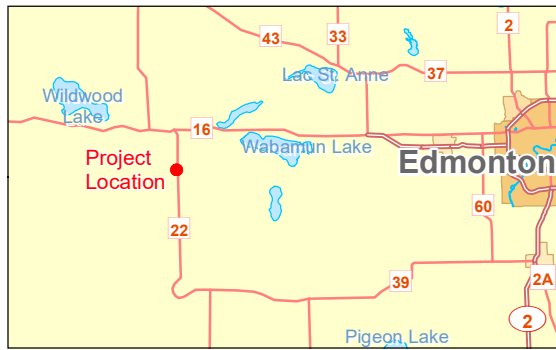
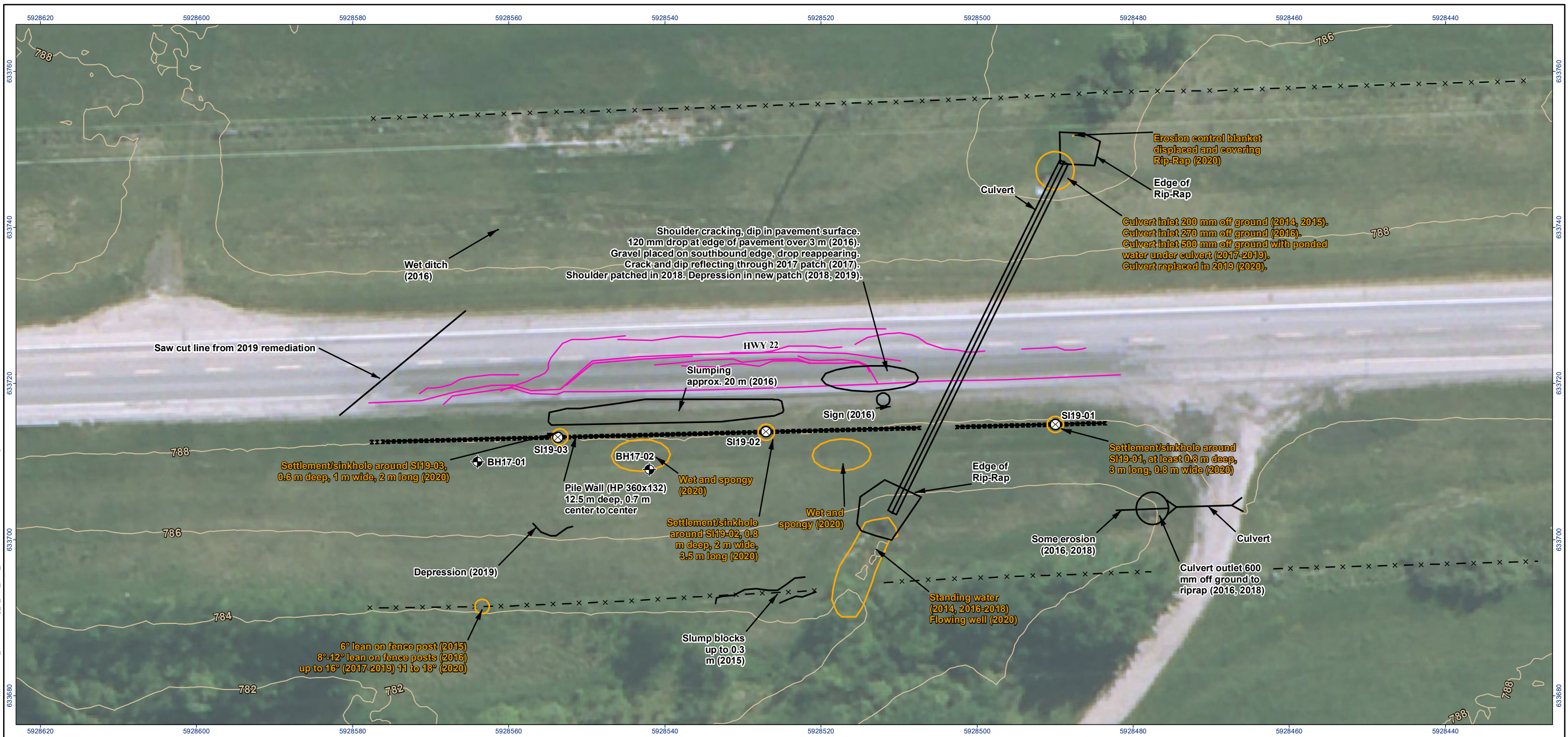
Risk Assessment	Date	PF	CF	Risk Ranking
Current Inspection	May 25, 2020	3	5	15
Previous Inspection	July 11, 2019 (Call-Out)	16	6	96
Report Attachments	<input checked="" type="checkbox"/> Photographs (10 photos)		<input checked="" type="checkbox"/> Site Plans (1 page)	

	Stantec	Alberta Transportation
Inspected By	Leslie Cho	Kristen Tappenden and Kathleen Davis
Date of Remediation	October/November 2019 – Driven steel pile wall construction and culvert replacement.	

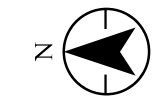
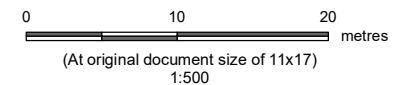
Recent Maintenance	Patched 3 times in 2011. Overlaid after 2012 inspection. Southbound lane (SBL) overlaid in 2013 and 2014. Patched in 2015. Patched end of June 2017. Gravel placed on SBL to repair drop at edge of pavement. West shoulder patched in 2018. SBL overlaid on June 21, 2019. SBL hand patched on June 29, 2019.	
Primary Site Issue	Slope instability from weak foundation soils and high groundwater table.	
Observations	Description and Location	Change from Previous Inspection
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Culvert Distress		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Bridge Distress		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Slope Movement	Additional lean at fenceposts	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> Erosion		<input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Seepage	Wet and spongy ground near BH17-02 and between SI19-02 and culvert.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Other	Depression around each of the SI.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Discussion	<p>Remediation of NC74 was completed during October to November of 2019. As part of remediation, the failed pavement was removed and reconstructed. No signs of distress were observed along the remediated pavement as shown in Photos 1 and 2.</p> <p>Ground depression of various dimensions around each of the SI were observed as shown in Photos 3 to 5. The dimensions of each are recorded in the Site Inspection Figure.</p> <p>The replaced culvert appeared to be performing well with no signs of distress. Erosion matting was displaced at the outlet. Culvert photos are provided in Photos 6 to 8.</p> <p>No signs of distress along the embankment slope were observed. The overall embankment slope is shown on Photos 9 and 10.</p>
Assessment	<p>The depressions around each of the SI is likely due to a combination of poor fill compaction during winter construction and the Contractor's "carefulness" with compaction equipment around the SI. The slope inclinometers showed deflection of the top of pile of about 1 mm to 3 mm, with the typical shape of pile wall deformation. Currently, the pile wall appears to be performing well.</p>

Recommendations	<p>Given that the site is still under warranty, the Contractor can backfill the depressions around the SI. The erosion matting at the culvert inlet can also be cut shorter to the edge of creek instead of draping it across the creek.</p> <p>Site inspections should continue to be completed annually. The instruments should be read semi-annually. The frequency of both inspections and instrumentation readings may be reduced following another year of monitoring, depending on the performance of the highway.</p>
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- Borehole Location
- Slope Inclinometer
- Previous Observation
- 2020 Observation
- Pavement Cracks prior to 2019 remediation
- Fence
- Ground Elevation Contours (m AMSL, LiDAR Nov. 2007)



Project Location
Hwy 22
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
NC74 South of Entwistle Slide

123312435

Figure No.

1

Title

Site Plan

Notes
1. Coordinate System: NAD 1983 UTM Zone 11N
2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Background: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Reference: 2002 Annual Inspection Photographs at NC74 – South of Entwistle Slide
File Number: 123312435



Photo 1: Reconstructed pavement at north end of remediation limits. Looking south.



Photo 2: Reconstructed pavement at north end of remediation limits. Looking south.

Reference: 2002 Annual Inspection Photographs at NC74 – South of Entwistle Slide
File Number: 123312435



Photo 3: Depression at SI19-01. Looking east.



Photo 4: Depression at SI19-02. Looking south.

Reference: 2002 Annual Inspection Photographs at NC74 – South of Entwistle Slide
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Photo 5: Depression at S119-03. Looking north.



Photo 6: Culvert outlet. Looking northwest.

Reference: 2002 Annual Inspection Photographs at NC74 – South of Entwistle Slide
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Photo 7: Erosion matting displaced at culvert inlet. Looking southeast.



Photo 8: Culvert condition from outlet. Looking southeast.

Reference: 2002 Annual Inspection Photographs at NC74 – South of Entwistle Slide
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Photo 9: Overall repaired west embankment slope. Looking north.



Photo 10: Overall east embankment slope. Looking north.