

**ALBERTA TRANSPORTATION  
GEOHAZARD ASSESSMENT PROGRAM  
PEACE REGION – SWAN HILLS  
2022 INSPECTION**



Site Number	Location	Name	Hwy	km
SH022-7	Little Smoky River	Little Smoky River Valley, North Hill – Site #7	744:02	19.58-19.71*
Legal Description		UTM Co-ordinates		
SW21-76-22-W5M		11U E 477,732	N	6,161,398

	Date	PF	CF	Total
<b>Previous Inspection:</b>	2-Jun-2020	10	4	40
<b>Current Inspection:</b>	31-May-2022	10	4	40
<b>Road AADT:</b>	230		<b>Year:</b>	2022
<b>Inspected By:</b>	Rishi Adhikari, TRANS Ed Szmata, TRANS Max Shannon, TRANS		Ken Froese, Thurber Mark Gallego, Thurber	
<b>Report Attachments:</b>	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

<b>Primary Site Issue:</b>	Highway traverses deep-seated, retrogressive landslides with ongoing creep movements due partly to erosion at toe by the Little Smoky River and Peavine Creek resulting in cracking and sagging of the pavement surface at numerous locations. Approx. 4 km of the highway crosses this unstable north valley slope. Site #7 is 70 m above and 480 m away from the Peavine Creek.	
<b>Dimensions:</b>	120 m length of highway affected by cracking and distortion * - Division between SH22-7 and SH12-8 appears arbitrary.	
<b>Date of Remediation:</b>	Approximately 1 m thick GBC “sandwich” placed at this site.	
<b>Maintenance:</b>	Routine ACP crack sealing, milling, and patching (2014 and 2015), when required. <u>Spring 2017:</u> Both sideslopes regraded <u>Fall 2017:</u> Patch over the entire site Spring 2019: Milling over most of the site 2020: Line painting 2021: From 0 m (at km 19.6) up to 1.06 m (at km 19.7) of vertical grade readjustment (downward) and 50 mm overlay.	
<b>Observations:</b>	<b>Description</b>	<b>Worsened?</b>
<input checked="" type="checkbox"/> Pavement Distress	Site was recently overlaid. Some of the previous longitudinal and traverse cracks have reflected through.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Site is located on an active deep-seated landslide moving toward the Little Smoky River in one direction and Peavine Creek in another. This site crosses over and along a main scarp.	<input checked="" type="checkbox"/>
<input type="checkbox"/> Erosion		<input type="checkbox"/>
<input type="checkbox"/> Seepage		<input type="checkbox"/>
<input type="checkbox"/> Bridge/Culvert Distress		<input type="checkbox"/>

Other

**Instrumentation:** None.

**Assessment:**

The overall valley slope is moving as several separate slide blocks in response to the toe erosion and downcutting of two different rivers resulting in numerous scarps, sag ponds, and differential movement zones going in slightly different directions. The highway intersects the scarps of these blocks at several locations resulting in an uneven highway surface and cracking.

Site #7 intersects a major scarp which parallels the highway resulting in significant pavement distortions and requires frequent patching and milling to maintain a safe driving surface. The 2021 highway overlay removed most of the previously observed pavement distortions. As of the 2022 Geohazard inspection, it appears that this site is less active than Sites #5 and #6. The sideslopes were regraded to promote better drainage at the site.

**Recommendations:**

Short-Term:

- Road maintenance should continue as necessary to maintain a safe roadway surface and may consist of milling, patching, and crack sealing of the ACP.

Long-Term:

It is understood that, at this time, the only long-term remediation option under consideration is realignment of the entire north hill section of Highway 744. However, given the high cost of this option and as it is a low volume highway, it is unlikely that realignment will be undertaken in the near future. Consideration is also being given to a shorter realignment which would include this Site #7.

Ongoing Investigation:

- It is recommended that the annual Geohazard inspection should continue as scheduled. As a potential highly active Site along Highway 744 (as it is affected by both the Little Smoky River and Peavine Creek), consideration should be given to installing one or two slope inclinometers to measure movement rates at this site.

**Closure:**

It is a condition of this letter report that Thurber's performance of its professional services will be subject to the attached Statement of Limitations and Conditions.

Don Proudfoot, P.Eng.  
Principal | Senior Geotechnical Engineer

Mark Gallego, P.Eng.  
Geotechnical Engineer



## STATEMENT OF LIMITATIONS AND CONDITIONS

### 1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

### 2. COMPLETE REPORT

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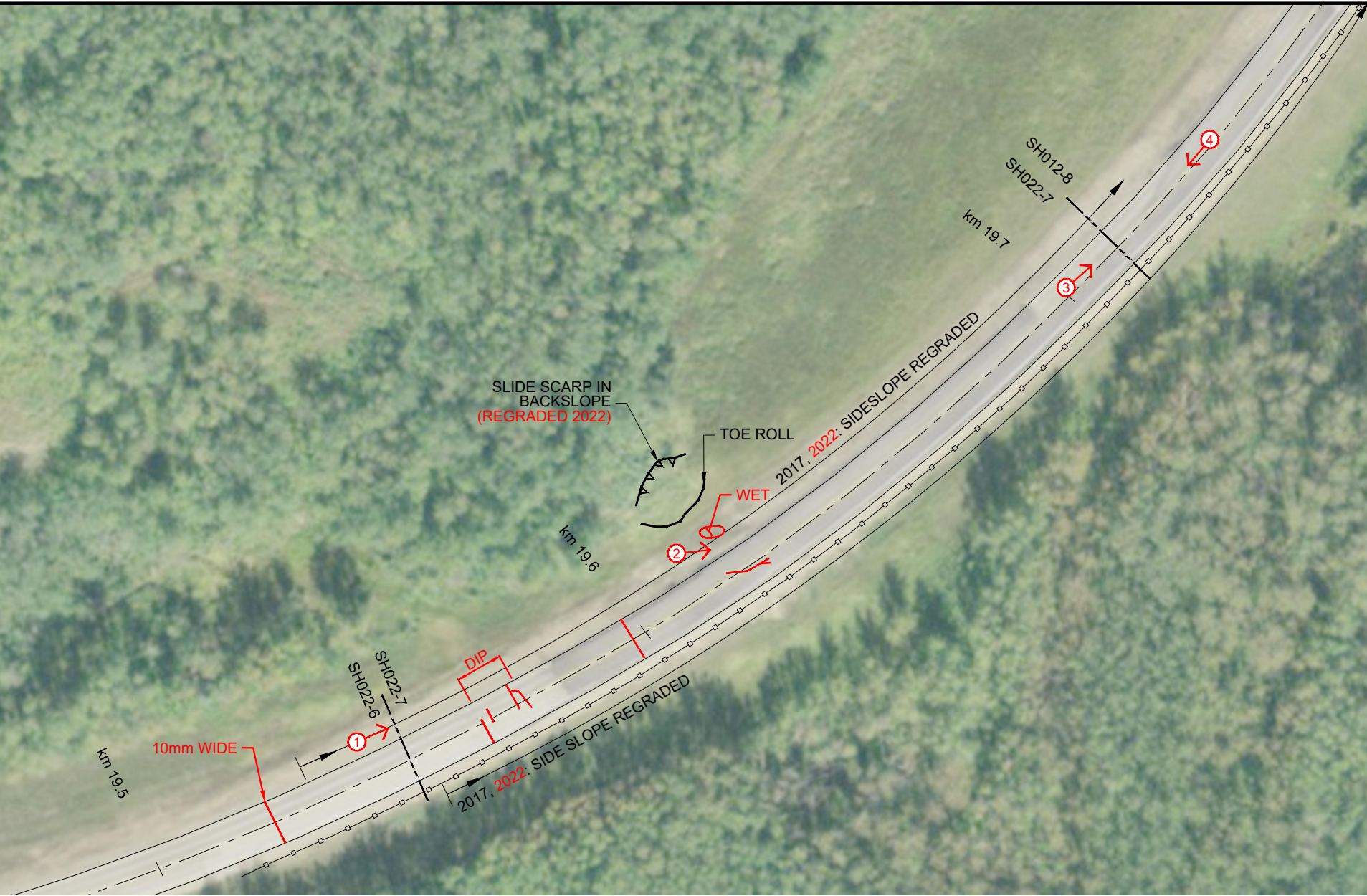
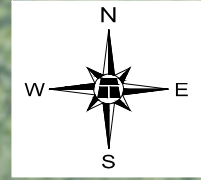
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- b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
- c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.
- d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

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**DETAILED SITE PLAN**

SCALE 1:1000

**OVERALL SITE PLAN**

SCALE 1:30 000

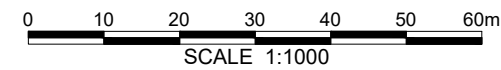


**LEGEND**

- DRAINAGE CHANNEL
- GUARDRAIL
- ASPHALT PATCH
- DIRECTION AND NUMBER OF PHOTO

**NOTES**

1. FEATURE LOCATIONS ARE APPROXIMATE.
2. MAY 2022 OBSERVATIONS SHOWN IN RED.
3. CRACK AND PATCH PATTERNS RESET AS HWY 744 WAS OVERLAID IN SUMMER 2021.
4. GUARDRAIL AND CULVERT LOCATIONS TAKEN FROM MCINTOSH PERRY AS-BUILT DRONE SURVEY (JULY 2021).



SATELLITE IMAGE FROM VALTUS IMAGERY (DATED 2014)



**PEACE REGION (SWAN HILLS)**

**SH022-7: HWY 744:02 LITTLE SMOKY RIVER VALLEY  
2022 SITE INSPECTION PLAN**

DWG No. 32121-SH022-7

DRAWN BY	ML
DESIGNED BY	MG
APPROVED BY	DWP
SCALE	AS SHOWN
DATE	OCTOBER 2022
FILE No.	32121





Photo 1 – Looking east from west end of site.



Photo 2 – Looking up-chainage at cracks starting to resurface where main scarp crosses highway.



Photo 3 – Looking up-chainage where overlay has covered previously-observed cracks.



Photo 4– Looking west near east end of Site #7.