GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

RIVER BANK STABILITY MAPS

CANADA SHEET 95 H

GSC MAP 3-1973

RIVER BANK STABILITY MAP

To accompany
THE STABILITY OF NATURAL SLOPES IN THE MACKENZIE VALLEY
by J.A. Code

Environmental Social Program Report 73-9

Prepared by the Department of Energy, Mines and Resources
for the Environmental-Social Program, Northern Pipelines

LEGEND

GEOLOGIC AGE	DESCRIPTION	MAP NOTATION	MODE OF EROSION	TYPICAL SLOPE CHARACTERISTICS
		Qs	Negligible, some mass transport of beach and lower slope material by water and river ice.	Stable slopes, vegetated, usually 15° or less. Burnt areas unstable at 5° or less.
Quaternary and Recent	Granular and fine grained (cohesive) uncemented clastic sediments. (Soil cover)	Qa	Mass movement confined to active layer. Failures also shallow in non-permafrost areas. Mainly earthflows, detachment slides, solifluction. Gully erosion and slope-wash.	Slope angle 15-35°. Displaced material usually highly deformed due to high moisture contents in active layer. Slopes usually less than 100 feet high.
		Ql	Large scale, retrogressive failures (translational slides, slumps, flows); usually accompanied by large scale gullying. Characteristic of glacio-lacustrine sediments overlain by glaciofluvial sands.	Steep slopes greater than 100 feet in height. Displaced blocks usually relatively undeformed during movement; sometimes consist of frozen soil and often exhibit back-ward tilt.
Tertiary	Weakly cemented mainly clastic sediments-sandstone, lime-stone, conglomerate, shale.	Te	Gullying, slope wash, infrequent slumping.	Moderate to steep upper slope; talus accumulation at toe consisting of granular and fragmented rock debris.
Cretaceous	Weak soft shale; weakly cemented sandstone and siltstone.	Ka	Gullying, slope wash, shallow active layer slides.	Bank height less than 100 feet. Weathered slopes generally less than 35°.
		Kl	Large scale retrogressive failures of high shale banks.	Steep shale banks unstable at heights of over 100 feet. Low shale content slopes are less susceptible to slumping.
		K	Undifferentiated	
Devonian	Mainly well cemented, resistant sedimentary rock. Limestone, sandstone, dolomite shale.	D	Rockfalls, infrequent slumping. Some high shale content banks more susceptibe to gullying and slumping.	Resistant rocks form steep upper valley walls, flatter talus accumulation at toe. Softer shales erode to low angle valley walls (< 35°).

NOTES

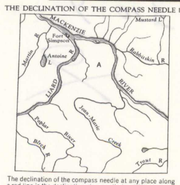
1. Vertical sequences of the above units observed in the field are shown with components divided by horizontal stroke. For example $\frac{Qa}{K}$ denotes Quaternary with shallow slides over Cretaceous sediments. Thicknesses of units not measured.
2. Notations showing combinations of above subdivisions such as Qas indicate predominance of Qa with subordinate Qs.
3. Transitions between units are often gradual rather than abrupt; in such instances boundaries are chosen arbitrarily.
4. Where the above notation is applied to meandering rivers, instability if indicated applies only to outside banks of meander loops.

Compiled by J.A. Code from information collected in 1971-1972

Cartography by Geological Survey of Canada

Printed by Surveys and Mapping Branch 1973

THE DECLINATION OF THE COMPASS NEEDLE 1955



The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighbouring red lines; thus at the place marked **A**, the declination is between 34°00′E. and 34°30′E. The declination of the compass needle is decreasing 7 minutes annually.

Universal Transverse Mercator Projection

REFERENCE

Roads:	more than 2 lanes	2 lanes	less than 2 lanes
hard surface, all weather	2 lanes or more	less than 2 lanes	dry weather
loose surface, all weather			
wagon; cart track		Trail or portage	
Railway: normal gauge	multiple track / station	single track / flagstop	abandoned
Boundaries:		Contours:	
international		elevation	1000
provincial		depression	2500
county or district		approximate	2000
Indian reserve, park, etc		Spot elevation (in feet)	1885
Surveyed line		Power transmission line	

FORT SIMPSON

NORTHWEST TERRITORIES

DISTRICT OF MACKENZIE

Scale 1:250,000

1 Inch to 4 Miles Approximately

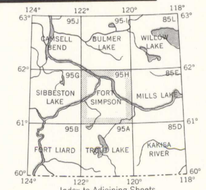
Miles 5 0 5 10 15 20 Miles

Kilometres 5 0 5 10 15 20 25 30 Kilometres

Contour interval 100 Feet
Elevations in Feet above Mean Sea Level
North American Datum 1927(1954).

REFERENCE

Town		School	Boundary marker
Village or settlement		Building or cabin	Astronomical position
Post office	P	R.C.M.P. post	Horizontal control point
Streams:			
intermittent or dry			Marsh or swamp
indefinite			Land subject to seasonal inundation
Irrigation canal or ditch			Sand, gravel or mud
Rapids; falls			Ferry
Intermittent lake			



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