

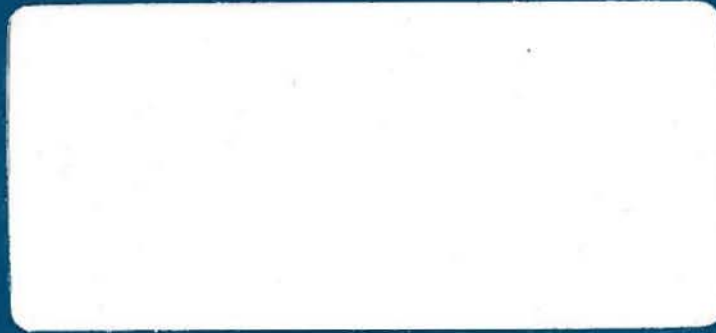


Public Works Travaux publics
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GEOTECHNICAL AND MATERIAL SERVICES PACIFIC REGION WHITEHORSE, YUKON TERRITORY





Public Works
Canada

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Canada

GEOTECHNICAL INVESTIGATION
PROPOSED BRIDGE
HYLAND RIVER
km 111.5 Nahanni Range Road
Yukon Territory
(Approach)

Geotechnical and Material Services
Whitehorse, Yukon



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-26**

HOLE LOCATION **1+000 ~ E**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.9.5**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	SAMPLE DATA			STD. PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT X - % < .074mm LIQUID LIMIT — PLASTIC LIMIT		
						UNIFIED CLASSIFICATION	% GRAVEL	% SAND				
0	ORGANIC SILTY CLAY											
1	SILTY SAND - trace clay & gravel - trace of organic		AP 3	577	SM	5.3	51.2	5.9		0	X	NP
2	SANDY GRAVEL - trace silt											
3			AP 4	578	GP-GM	71.3	22.1	-		0X		NP
4												
5	END HOLE											
6												
7												
8												
9												
10												



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND -27**

HOLE LOCATION **1+100 ~ E**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.9.5**

DRILL UNIT **340L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							STD. PENETRATION BLOWS / 300 mm	0 - % MOISTURE CONTENT x - % < .074 mm	LIQUID LIMIT — PLASTIC LIMIT
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND			
0	SILTY GRAVELLY SAND										
1	GRAVELLY SAND - trace silt										
1.5		A1p 5	579	SW SM	408	50.0	-		OX	NP	
2											
3		A1p 6	580	SW SM	458	47.4	-		OX	NP	
4											
4.5		A1p 7	581	SW	41	55	-		OX	NP	
5	END HOLE										
6											
7											
8											
9											
10											



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-29**

HOLE LOCATION **1+310 2nd C**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79. 9. 5**

DRILL UNIT **B406-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	SAMPLE DATA					STD. PENETRATION BLOWS / 300mm	0 - % MOISTURE CONTENT x - % < .074mm LIQUID LIMIT PLASTIC LIMIT	
						UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm				
0	ORGANIC CLAY												
1	SILTY SAND												
1.5			AP 10	584	SM	1.6	78.3	-					⊙ X TRACE
2													
3													
4	SILTY CLAY												
4.5			AP 11	585	SAMPLE NOT TESTED								⊙
5	END HOLE												
6													
7													
8													
9													
10													



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-30**

HOLE LOCATION **1+400 Q**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79-09-05**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							TEST RESULTS									
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005 mm	STD. PENETRATION BLOWS/300 mm	0 - % MOISTURE CONTENT					X - % < .074 mm		
										LIQUID LIMIT		PLASTIC LIMIT						
0	ORGANIC SILT - some sand & clay																	
1	SILTY SAND																	
2	GRAVELLY SAND - some silt																	
3	SILTY CLAY																	
4																		
5	END HOLE																	
6																		
7																		
8																		
9																		
10																		

A/P 12 586 ML 0.1 19.3 17.3

0 TRACE X

A/P 13 587 SW-SM 438 45.9 -

OX NP



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-31**

HOLE LOCATION **1+500 ~ 6**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **19.09.05**

DRILL UNIT **B404-6" AUGER**

TECHNICIAN **T.M.**

SAMPLE DATA

DEPTH (m)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm	STD PENETRATION BLOWS/300mm	MOISTURE CONTENT	
											0 - %	X - %
											LIQUID LIMIT	PLASTIC LIMIT
0 - 0.5	CLAY											
0.5 - 1.0	SAND - free water @ 0.45m		A/P 14	588	SP	33	92.2	-			X	0
1.0 - 4.0	SILTY CLAY.											NP
4.0 - 5.0	END HOLE											
5.0 - 10.0												



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-33**

HOLE LOCATION **1+695 ~ E**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.09.05**

DRILL UNIT **B40L-6'AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	SAMPLE DATA			STD PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT x - % < .074mm	LIQUID LIMIT PLASTIC LIMIT
						UNIFIED CLASSIFICATION	% GRAVEL	% SAND			
0	ORGANIC										
1	CLAYEY SILT - some sand										
1.5			AIP	16	590	ML	3.8	16.5	25.0		
2											
3											
3.5	CLAYEY SILT										
4			AIP	17	591	ML	-	1.3	2+4		
4.5											
5	END HOLE										
6											
7											
8											
9											
10											



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-34**

HOLE LOCATION **1+750 ~ ♀**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.09.05**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							MOISTURE CONTENT		LIQUID LIMIT		PLASTIC LIMIT		
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005 mm	STD. PENETRATION BLOWS/300 mm	0 - %	X - % < .074 mm	LIQUID LIMIT	PLASTIC LIMIT	
0	ORGANIC														
1	SAND - some gravel														
1.5		A/P	18	592	SP	16.0	79.9	-		⊗	NR				
2															
3															
3.5	CLAYEY SILT														
4															
4.5		A/P	19	593	ML	-	2.9	31.1		⊙		NR		X	
5															
6															
7															
8	END HOLE														
9															
10															



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-35**

HOLE LOCATION **1+775 ~ ♀**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.09.06**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	SAMPLE DATA					STD PENETRATION BLOWS / 300mm	0 - % MOISTURE CONTENT x - % < .074mm	LIQUID LIMIT — PLASTIC LIMIT
						UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm				
0 - 1	ORGANIC SAND CLAYEY SILT.												
3				AIP 20	594	ML	—	1.1	26.5		0	TRACE	
5	END HOLE												
10													



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-36**

HOLE LOCATION **1+820 ~ C**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.09.06**

DRILL UNIT **B406-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m)	DESCRIPTION OF MATERIAL	SAMPLE DATA							MOISTURE CONTENT			
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm	STD PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT	X - % < .074mm
										LIQUID LIMIT	PLASTIC LIMIT	
0	ORGANIC SAND											
1	CLAYEY SILT. - trace sand.											
2												
3												
4												
5	END HOLE	AP	21	595	ML	0.4	5.7	27.6		0	NP	X
6												
7												
8												
9												
10												



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-39**

HOLE LOCATION **0+700 ~ 4**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79-09-06**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m)	DESCRIPTION OF MATERIAL	SAMPLE DATA							MOISTURE CONTENT		
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm	STD PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT
0	ORGANIC SILTY SAND										
1	SANDY GRAVEL										
1.5		AIP	26	600	GP-GM	56.4	38.2	-		OK	NP
2	SANDY SILT - trace clay.										
4		AIP	27	601	ML	0.1	24.6	6.0		⊙	NP
5	END HOLE										
6											
7											
8											
9											
10											

LIQUID LIMIT — PLASTIC LIMIT



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-40**

HOLE LOCATION **0+605 ~ 9**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.9.6**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							TEST RESULTS												
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005mm	STD PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT		X - % < .074mm		LIQUID LIMIT		PLASTIC LIMIT				
0	ORGANIC									0	10	20	30	40	50	60	70	80	90	100	
0.5	SANDY GRAVEL																				
1.5																					
2.5																					
3.5	SAND																				
4.5	GRAVELLY SAND - some silt																				
5.5	END HOLE																				
6.5																					
7.5																					
8.5																					
9.5																					
10.5																					

A/P 28 602 GW 69.9 28.2 -

A/P 29 603 SM 24.7 61.0 -

NP

NP





SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-4Z**

HOLE LOCATION **0+400 ~ 4**

ELEV.

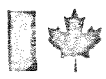
DEPTH TO G.W.L.

DATE DRILLED **79.09.06**

DRILL UNIT **340L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							STD. PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT X - % < .074mm	LIQUID LIMIT — PLASTIC LIMIT
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND			
1	SILTY CLAY - few small rocks 2.1 - 3.0 m.										
2		AIP	3Z	606	CL	2.5	159	40.9	20	X	
3											
4											
5	END HOLE										
6											
7											
8											
9											
10											



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-44**

HOLE LOCATION **0+200 4/5 10 M.**

ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.9.7**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	SAMPLE DATA					STD PENETRATION BLOWS / 300mm	0 - % MOISTURE CONTENT x - % < .074 mm LIQUID LIMIT PLASTIC LIMIT	
						UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005 mm				
0 - 1	SILTY CLAY - few small rocks.												
1 - 2	SILTY SAND - some cobbles below 3.7 m												
2 - 4													
4 - 5	REFUSAL 1ST ATTEMPT												
5 - 6													
6 - 10	REFUSAL												

AIP 35 609 SM 14.4 62.9 -

G X ND



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION HYLAND RIVER

HOLE No. ND. 45

HOLE LOCATION 0+150

E

ELEV.

DEPTH TO G.W.L.

DATE DRILLED 79.09.07

DRILL UNIT BAOL - 6" AUGER

TECHNICIAN T.M.

SAMPLE DATA

DEPTH (m)	DESCRIPTION OF MATERIAL	PERMAFROST CLASS. or G.W.L.	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005 mm	STD PENETRATION BLOWS/300mm	MOISTURE CONTENT	
											0 - %	X - %
											PLASTIC LIMIT	LIQUID LIMIT
1	SANDY SILT											
2	SHALE											
3												
3			A/p	36	610	51	35	-		0	X	N.P.
4												
4	REFUSAL											
4			A/p	37	611	9	61	10		0	X	N.P.
5												
6												
7												
8												
9												
10												

0 - % MOISTURE CONTENT
X - % < .074mm

PLASTIC LIMIT — LIQUID LIMIT



SUBSURFACE EXPLORATION AND TESTING REPORT

PROJECT/SECTION **HYLAND RIVER**

HOLE No. **ND-46**

HOLE LOCATION **0+050 E & 1/2 S.M. Rt.** ELEV.

DEPTH TO G.W.L.

DATE DRILLED **79.9.7**

DRILL UNIT **B40L-6" AUGER**

TECHNICIAN **T.M.**

DEPTH (m.)	DESCRIPTION OF MATERIAL	SAMPLE DATA							LIQUID & PLASTIC LIMIT												
		PERMAFROST CLASSIFICATION	SAMPLE TYPE	FIELD No.	LAB No.	UNIFIED CLASSIFICATION	% GRAVEL	% SAND	% < .005 mm	STO. PENETRATION BLOWS/300mm	0 - % MOISTURE CONTENT	X - % < .074 mm	LIQUID LIMIT	PLASTIC LIMIT							
0 - 1	SILTY CLAY									0	10	20	30	40	50	60	70	80	90	100	
1 - 2	SILTY SAND - some gravel																				
2 - 4																					
4 - 5																					
5 - 10	END HOLE																				

AIP 38 612 SM 16.2 61.7 -

⊙ X NP