YUKON ENGINEERING SERVICES LTD.
YUKON ZINC CORP.

GEOTECHNICAL EVALUATION
WOLVERINE LAKE MINE ACCESS ROAD
km 189.5 ROBERT CAMPBELL HIGHWAY
YUKON

EBA File: 1200197

August 2006

EBA Engineering Consultants Ltd.
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Calcite Business Centre • Unit 6, 151 Industrial Road • Whitehorse, Yukon Y1A 2V3 • CANADA

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1.0 INTRODUCTION

EBA Engineering Consultants Ltd. (EBA) was retained to conduct a geotechnical evaluation of the proposed access road to the Yukon Zinc mining property at Wolverine Lake, Yukon. The work was requested by Yukon Engineering Services Ltd. (YES) of Whitehorse on behalf of Yukon Zinc Corp (YZC). The objective of the evaluation is to provide geotechnical recommendations for the construction of the access road.

The scope of work for this project was presented in a proposal and budget prepared by EBA and submitted to Robert Harvey, P.Eng. of YES in June 2006.

2.0 SCOPE OF WORK

The main tasks of the study included a review of background reports, geology, and previous terrain mapping; a hand-excavated testpit program between km 0 to km 5 to field-check terrain and soil conditions, and an excavator supported testpitting program from km 5 to km 24. The scope of work for this project consisted of the following:

- Review area geology, previous terrain mapping and air photo interpretation to examine and reassess previous mapping, slope stability and potential borrow sources
- Conduct a field program to evaluate terrain and shallow soil conditions from km 0 to km 5 using hand testpits. There is presently no access to this section of the proposed route.
- Conduct a field program to evaluate soil conditions and collect samples for laboratory testing from km 5 to km 24 using an excavator provided by YZC to dig testpits.
- Conduct geotechnical laboratory testing on soil samples collected. Tests include moisture determination on all samples and grain size analysis on select samples.
- Prepare base maps to locate all testpit locations
- Prepare interim reports and a final report to present a description of the work completed, including the results of all evaluation work, testpit logs, laboratory analysis results and geotechnical recommendations for road construction.

3.0 PROJECT BACKGROUND

The study area includes 24 km of a proposed access road that starts at km 189.5 on the Robert Campbell Highway (Yukon Highway 4) and is initially aligned south and southwest, following the valley of Light Creek past the divide at km 8 and across Bunker Creek at km 10. The alignment follows Chip Creek to km 19, where it turns northwest to eventually cross the Hawkowl Creek tributary of Money Creek, maintaining a northwest bearing to Wolverine Lake. The access road route is covered on NTS map sheets 105H/5 and 105G/8.

Part of the access road, from about km 24.5 to the Wolverine Lake Mine Site and camp at approximately km 27.5 and km 28.5 respectively, is developed as an access road to the airstrip and was not evaluated as part of this study.

4.0 METHODOLOGY

Geology and previous terrain mapping were reviewed and air photo interpretation was carried out to aid in the design of the field program. Available air photographs were of small scale, which precluded detailed terrain mapping and limited the interpretation of expected soil conditions.

Terrain field checking and hand testpitting was carried out on June 26 and June 27, 2006 using a motorhome provided by YES as a field camp based at km 190 on the Robert Campbell Highway. An excavator-supported testpitting program, based at the Wolverine Mine Site camp, was carried out from July 10 to July 13, 2006. Seventy-six testpits were excavated at about 300 m intervals and soil samples were taken within the testpits at depth intervals of 1 m and/or at changes in stratigraphy.

Moisture and grain size analysis was carried out at EBA's Whitehorse geotechnical laboratory on samples recovered during the excavator-supported test-pitting program. The results of testpit logs and lab analysis are compiled on ESEbase logs and used to provide recommendations for construction.

5.0 RESULTS AND DISCUSSION

Subsurface conditions

Seventy-six excavator testpits (km 5 to km 24) and 19 hand testpits (km 0 to km 5) were located along the road alignment to define its subsurface soil profile. Much of the alignment is underlain by shallow bedrock. A hard metavolcanic unit underlies km 0 to km 2 with a few outcrops forming low relief ridges. A veneer of peat-rich organics and/or gravelly sand colluvium typically overlies the bedrock in this section. Shallow bedrock, a soft fissile phyllite, was intersected throughout the latter half of the proposed alignment from km 14 to km 24. Surficial materials in this section were mostly colluvium with sections of till and pockets of fluvial gravels. Soil textures were variable and are described in the detailed logs of each testpit log (appended).

Near km 0 of the Wolverine Lake Access Road, at the Robert Campbell Highway, terraces of glaciofluvial gravel and sand are common and may provide convenient sources of granular fill. At km 0, however, bedrock is exposed on the shallow cutslope of the highway (Station 26JD24, Figure 1). Shallow bedrock conditions appear to continue to about km 2 of the proposed access road. Except where narrow, east-west trending outcrops occur, a thin veneer of gravelly sand colluvium or a thin, frozen organic veneer at sidehill meadow bog areas typically overlies bedrock in this area.

From about km 2.0 through km 3.2, including the crossings of Pitch Creek (km 2.90) and Light Creek (km 3.03), the terrain appears to be underlain by glaciofluvial sand and gravel. Alluvium (sand, some silt, some gravel) was observed at a low relief terrace on the west side of Light Creek (Station 26JD18, Figure 1).

Soil textures and conditions on the proposed road alignment are summarized on Table 1.

In some sections the reliability of the geotechnical testing is insufficient to provide reliable evaluation of sub-surface conditions. Testpit depths were less than 0.5 m at km 0 to km 0.5 and excavator testpits are recommended to provide deeper access from km 2 to km 5. Many excavator testpits were less than 0.5 m deep because the excavator provided was insufficient to penetrate frozen or dense soils.

Permafrost

The project area is within the zone of discontinuous permafrost. The active zone of seasonally thawed soil is estimated to be 0.5 to 2.0 m in undisturbed soils. Excess ice was present in a minority of samples and moisture contents are typically low (< 10%), although some localized high-ice content areas were observed and should be expected, usually near the base of the active layer (and typically on north-facing slopes with thick organic soil cover).

At eight of the 19 hand testpits and 25 of the 76 excavator testpits, frozen soil conditions were encountered. Depth to frozen ground ranged from about 0.3 m to 2.0 m. Frozen soil conditions were associated with thick organic cover, most of which are characterized as open, shallow gradient sideslope bog areas with black spruce/moss/larch vegetation. Testpitting with heavy equipment to depths greater than 0.5 m is required to characterize the ice content of these frozen soils—the excavator supplied for this program was not capable of these excavation requirements.

Permafrost conditions from about km 7 to km 14 may require thick fill (minimum 1500 mm) in localized sections to minimize the potential for permafrost degradation. Recommendations for construction in permafrost sections are provided in Section 7 and summarized in Table 7.1.

6.0 BORROW SOURCES

Nine potential borrow sources were selected for evaluation, including 3 primary sites and 6 secondary sites. Primary 1 at about km 0.5 and Secondary 1 at km 1 presently have no access for equipment and were not tested. However, granular glaciofluvial terraces of sand and gravel were identified at the Robert Campbell Highway near the access road. Further assessment and regulatory permitting would be required prior to acquiring borrow material from these sources.

Secondary 2 and Secondary 3 sites at km 3 also have no access for equipment. However, hand testpits indicated good quality gravelly sand granular material at glaciofluvial terraces at the confluence of Light Creek and Pitch Creek. Air photo interpretation of the terrain indicates that the features hosting this material appear to cover about 15 ha and may be at least 4 m thick. However, only a fraction of the deposit may be exploitable, as the deposit is incised by both Pitch Creek and Light Creek and riparian protection zones will be required.

Testpits on the road alignment at a potential borrow source at km 5 (Secondary 4) indicate soils with favourable textures. Testpits up to 3.5 m deep intersected sandy gravels and gravelly sand with trace to some silt. Testpit TP03 intersected 0.6 m of poorly graded fine sand between 1.2 of sandy gravel and > 1.7 m of gravelly sand (some silt).

Favourable coarse textured soil was intersected from km 14.4 to km 18.4; however, shallow bedrock in this section may limit quantities. The maximum proven soil depth was 2.5 m.

Testpits to evaluate the potential for favourable granular borrow are recommended at Primary 2 (km 11) and Primary 3 (km 24).

Borrow source target locations are shown on YES Figure 3 following EBA Figures 1-7.

7.0 RECOMMENDATIONS

Road Design and Construction

General recommendations for construction of the road include placement of uniform 300 mm granular fill in areas of shallow bedrock and unfrozen soils. Embankments of fill slopes should be constructed with slopes of 2:1. In primarily granular areas, the imported fill may be eliminated, but adequate ditches for road drainage must be provided.

In areas of frozen soil (permafrost), a uniform minimum fill of 1500 mm, including a cap of 300 mm granular fill, is recommended. Ground should be prepared by hand-clearing the vegetation at the site. Non-woven heavy highway-grade geotextile will be overlain on undisturbed ground over cut vegetation on an area equivalent to the footprint of the access road. Overlap of geotextile segments will be 1 m. Assuming a road surface width of 4.5 m, the average width of the access road footprint is approximately 10.5 m.

Twelve sections with unique ground conditions and accompanying recommendations for construction are described in Table 7.1 (following page). The ground conditions characterized are extrapolated from test pit results at typical spacing of about 300 m. During road construction, actual ground conditions may differ from that described. The recommendations in Table 7 are intended as a guide for those sections with the conditions in the accompanying description. If conditions encountered during construction are different from that described, EBA should be consulted to provide suitable recommendations.

After stripping, the subgrade must be compacted to at least 98% Standard Proctor maximum dry density (ASTM D698). All imported fill must be compacted in maximum lift thickness of 300 mm, with each lift compacted to at least 98% Standard Proctor maximum dry density (ASTM D698).

Site Grading, Surface Conditions, Groundwater and Drainage

Permafrost and shallow bedrock presents a barrier to vertical percolation of groundwater. In most sections, much of the run-off is transported downslope as shallow groundwater "sheet" drainage (e.g., km 0 to km 2, km 7 to km 22.5 and km 23.5 to km 24). In these areas, collecting drainage in ditches and concentrating drainage flow to culverts can be problematic where culvert outflows scour sensitive slopes (e.g., fine-textured soil, permafrost). In these sections, care should be taken to place culverts at all existing watercourses, with emphasis on small ephemeral or intermittent watercourses that may not be immediately visible to the untrained eye. Where culverts are required between natural watercourses, they should be placed at the ground surface and outflows should be armoured with rip rap to disperse energy during high flow periods. Construction of sub-grade with a permeable course of large boulders is preferred on wet slopes where natural watercourses have not developed.

Table 7.1 SITE DESCRIPTION and CONSTRUCTION PRESCRIPTION

KP	TESTPITS	DESCRIPTION	RECOMMENDATIONS for CONSTRUCTION
0 - 2.0	JD1 to JD6	Peat organic veneer and/or colluvium overlying competent bedrock (rock not confirmed at JD6)	strip organic layer and stockpile for future rehabilitation; minimum 300 mm granular fill; good granular borrow material available at glaciofluvial terraces observed at Robert Campbell Highway.
2.0 - 2.5	JD7 and JD23	Peat organic veneer overlying fluvial gravel and sand – permafrost	hand cut trees and leave ground vegetation undisturbed; cover with heavy highway grade geotextile with minimum 1500 mm fill, including 300 mm granular cap; borrow material available at glaciofluvial terraces observed at Robert Campbell Highway.
2.5 - 4	JD22 to JD14	Fluvial gravel and sand; unfrozen at shallow depths;	strip organic layer and stockpile for future rehabilitation; good granular borrow material in this area, but access limited by streams;
4.0 - 4.7	JD13 and JD11	Gravelly sand colluvium overlying till; unfrozen;	strip organic layer and stockpile for future rehabilitation; cap with minimum 300 mm granular fill; build embankments at a slope of 2:1; good borrow material at km 5;
4.7 - 4.9	JD8	Gravelly silty sand colluvium [overlying till?]; permafrost	hand cut trees and leave ground vegetation undisturbed; cover with unwoven heavy highway grade geotextile with minimum 1500 mm granular fill; use 1 m overlap with adjacent geotextile lengths.
4.9 - 7.1	JD9; TP01 to TP09	Mainly sand and gravel, trace to some silt; some sections of sandy silt with some gravel; unfrozen [frozen soil at 0.4m, TP04 assumed to be within seasonally active zone]; km 6.2 and 6.4: depth to bedrock 1.5 m and 1.8 m, but deeper in other sections (> 3.5 m at km 5.2 and 6.9).	strip organic layer and stockpile for future rehabilitation; minimum 300 mm granular fill over bedrock and silty till with embankments at a slope of 2:1; good borrow material at km 5;
7.1 – 9.9	TP10 to TP 20	Variable texture: fine to coarse grained; permafrost.	hand cut trees and leave ground vegetation undisturbed; cover with unwoven heavy highway grade geotextile with minimum 1500 mm granular fill, build embankments at a slope of 2:1;
9.9 – 13.9	TP21 TO TP35	Permafrost is encountered at depth (1.6 to 2.8 m) [frozen soil at 0.3 m in TP31 is assumed to be due to seasonal frozen conditions]; some sections have moderate gradient (27-49%) sideslopes;	fill construction is preferred in this section; however, cut and fill may be acceptable depending upon specific foundation conditions encountered during construction (field decision);
13.9 - 19.7	TP36 to TP57	Variable texture: mostly sandy silty gravel to gravelly sandy silt; some sections of gravelly silty sand; bedrock was intersected at depths of 1.5 m to 2.5 m; unfrozen.	strip organic layer, stockpile for future rehabilitation; minimum 300 mm granular fill with embankments at slope of 2:1
19.7 - 22.5	TP58 to TP70	Variable texture: sandy silty gravel to gravelly silty sand; some sections of gravelly sandy silt; shallow, soft, fissile bedrock; unfrozen.	strip organic layer, stockpile for future rehabilitation; minimum 300 mm granular fill with embankments at slope of 2:1;
22.5 - 23.5	TP71 to TP73	Variable texture; silty sand, sandy gravel, sandy silt; unfrozen; bedrock not intersected; pit depth ranged from 2.5 m to 4.0 m;	strip organic layer, stockpile for future rehabilitation; minimum 300 mm granular fill with embankments at slope of 2:1;
23.5 - 23.9	TP74 to TP76	Variable texture: sandy silty gravel to gravelly silty sand; some sections of gravelly sandy silt; shallow, soft, fissile bedrock [phyllite]; unfrozen.	strip organic layer, stockpile for future rehabilitation; minimum 300 mm granular fill with embankments at slope of 2:1;

8.0 CLOSURE

Conclusions and recommendations presented herein are based on observations of land-surface and shallow soil conditions, current understanding of slope processes and the review of previous geology and terrain mapping. This report has been prepared for use by Yukon Engineering Services and Yukon Zinc Corp., which includes distribution as required for purposes for which this investigation was commissioned. This evaluation has been carried out in accordance with generally accepted engineering and geoscience practice, and engineering/geoscience judgement has been applied in developing the recommendations in this report. The report incorporates and is subject to the General Conditions attached as Appendix A.

Respectfully submitted,
EBA Engineering Consultants Ltd.

PROFESSIONAL ENGINEER
YUKON TERRITORY
J. RICHARD TRIMBLE

Aug 17/06

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Date Aug 17/06
PERMIT NUMBER PP003
Association of Professional Engineers of Yukon

FIGURES

1200197-TP64

1200197-TP63

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1200197-TP46

1200197-TP45

21+000

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19+000

18+000

17+000

0 50 100 150 250 500

SCALE 1:7500

LEGEND:

- HAND DUG TESTPITS (JUNE 2006)
- TESTPITS (JULY 2006)

NOTES:

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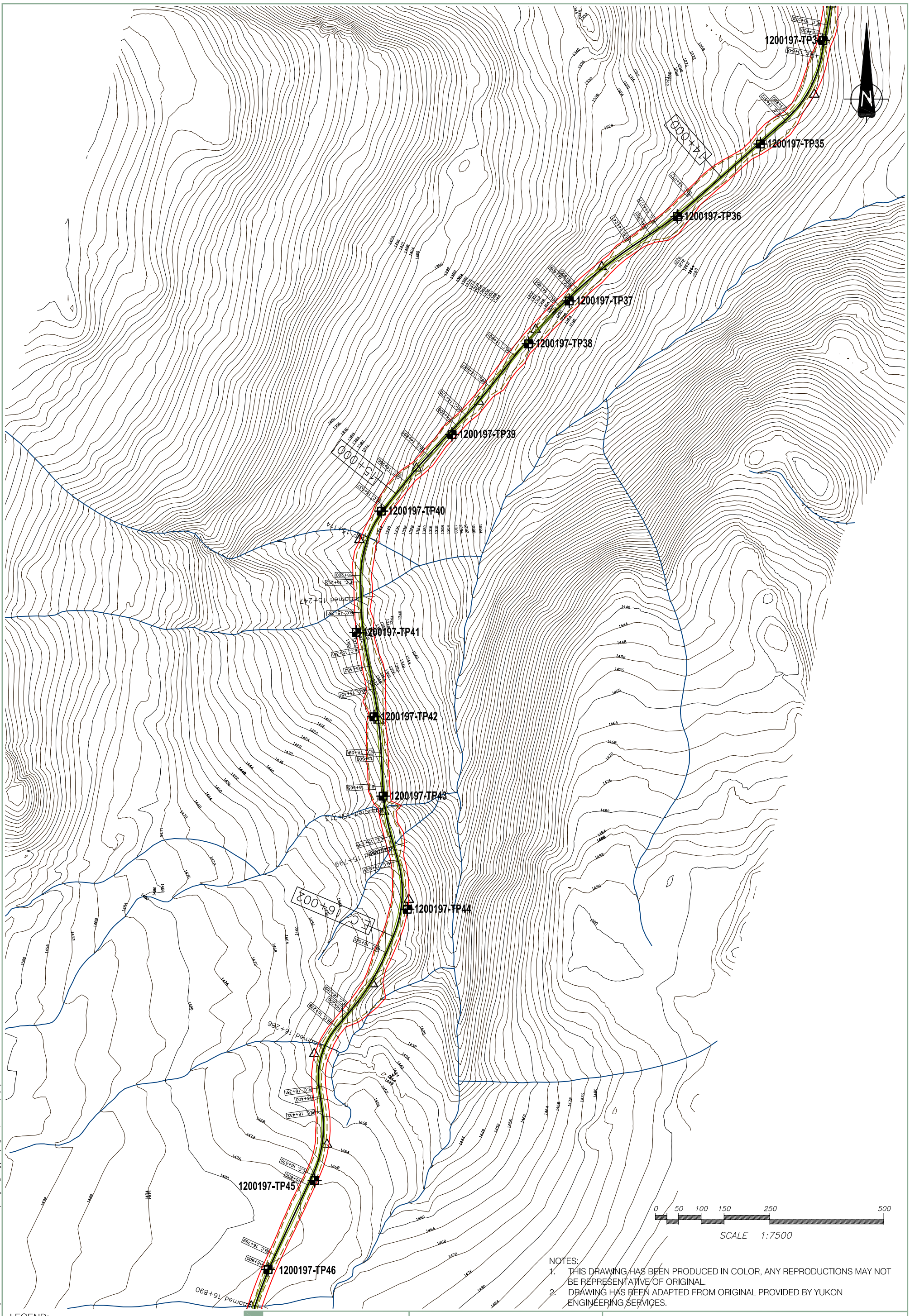
C:\Whitehorse\Data\0201\drawings\Campbell Hwy\1200197 Wolverine Lake\1200197 EBA Testpits Figure 1_7.dwg [FIG 6] August 16, 2006 - 1:30pm jbuyck

EBA Engineering Consultants Ltd.	CLIENT Yukon Zinc CORPORATION / Yukon Engineering Services			PROJECT	GEOTECHNICAL ASSESSMENT WOLVERINE LAKE ACCESS ROAD
				TITLE	SITE PLAN SHOWING TESTHOLE LOCATIONS
DWN. JSB	CHKD. JRT				
EBA JOB NO. 1200000.xxx	FILE: 1200197 EBA TP.dwg	REVISION NO.: 1	DATE: Aug. 2006		Figure 6



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DWN. JSB / CHKD. JTD/JRT		TITLE: SITE PLAN SHOWING TESTHOLE LOCATIONS	
EBA JOB NO. 1200197	FILE: 1200197 EBA TP.dwg	REVISION NO.: 1	DATE: Aug. 2006

Figure 5

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1200197-TP18
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1200197-TP31
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1200197-TP33

LEGEND:

HAND DUG TESTPITS (JUNE 2006)

TESTPITS (JULY 2006)

0 50 100 150 250 500

SCALE 1:7500

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DWN. JSB	CHKD. JRT				
EBA JOB NO. 1200197		FILE: 1200197 EBA TP.dwg	REVISION NO.: 1	DATE: Aug. 2006	Figure 4

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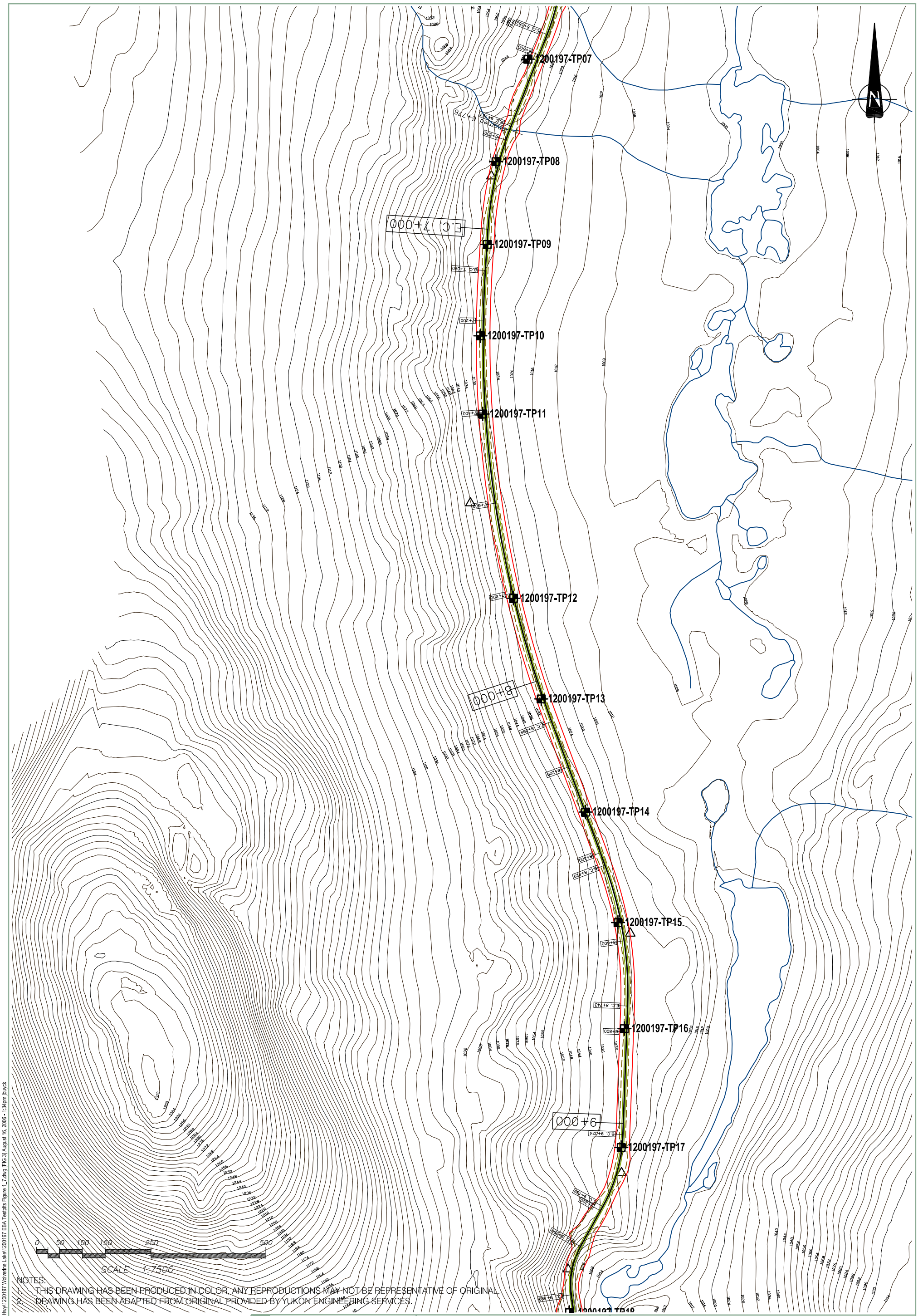

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CLIENT: Yukon Zinc CORPORATION; Yukon Engineering Services

PROJECT: GEOTECHNICAL ASSESSMENT
WOLVERINE LAKE ACCESS ROAD

TITLE: SITE PLAN SHOWING
TESTHOLE LOCATIONS

DWN. JSB	CHKD. JTD/JRT		
EBA JOB NO. 1200197	FILE: 1200197 EBA TP.dwg	REVISION NO.: 1	DATE: Aug. 2006

Figure 3

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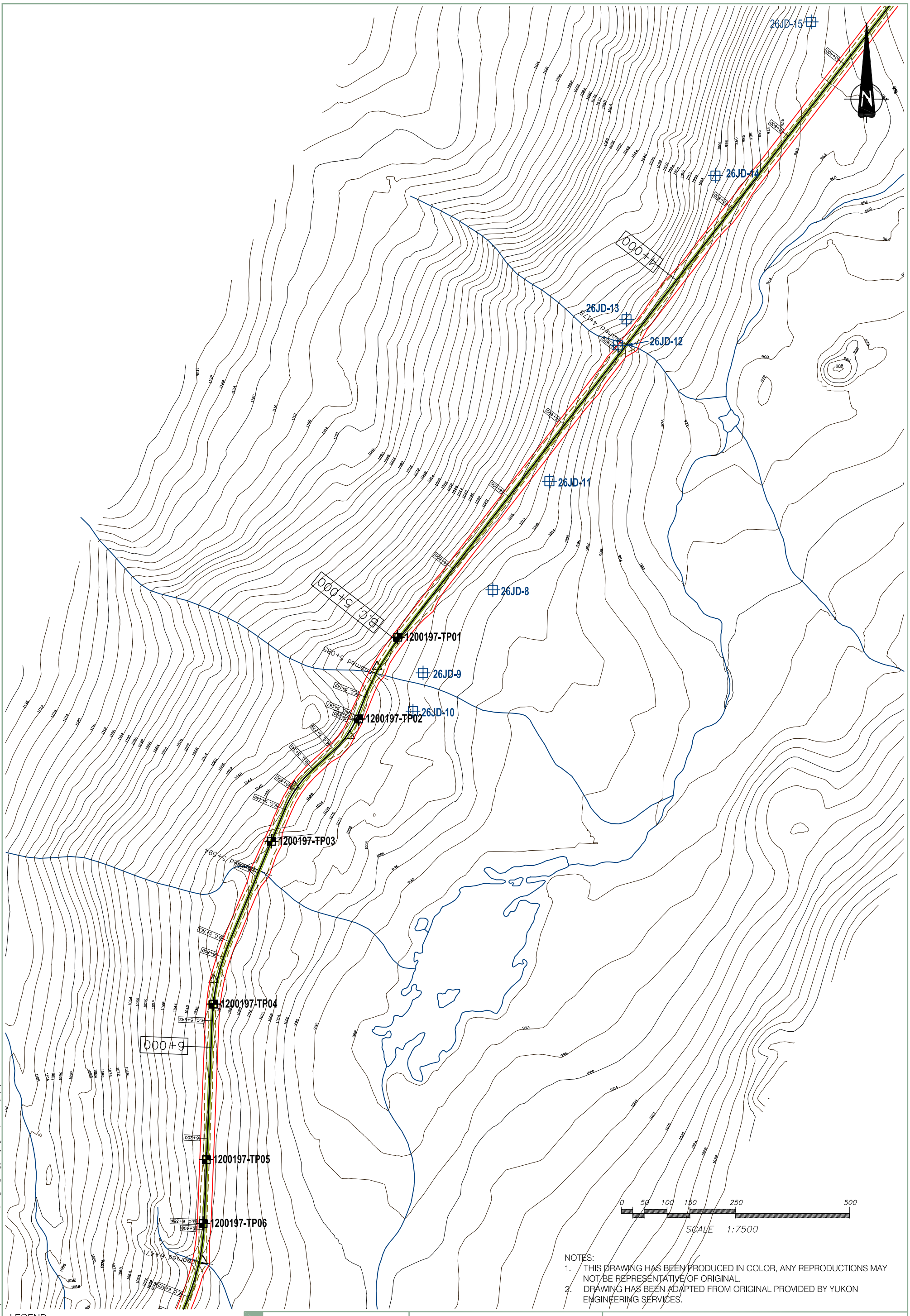

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DWN. JSB / CHKD. JTD/JRT		TITLE: SITE PLAN SHOWING TESTHOLE LOCATIONS	
EBA JOB NO. 1200197	FILE: 1200197 Fig 2.dwg	REVISION NO.: 1	DATE: Aug. 2006

Figure 2

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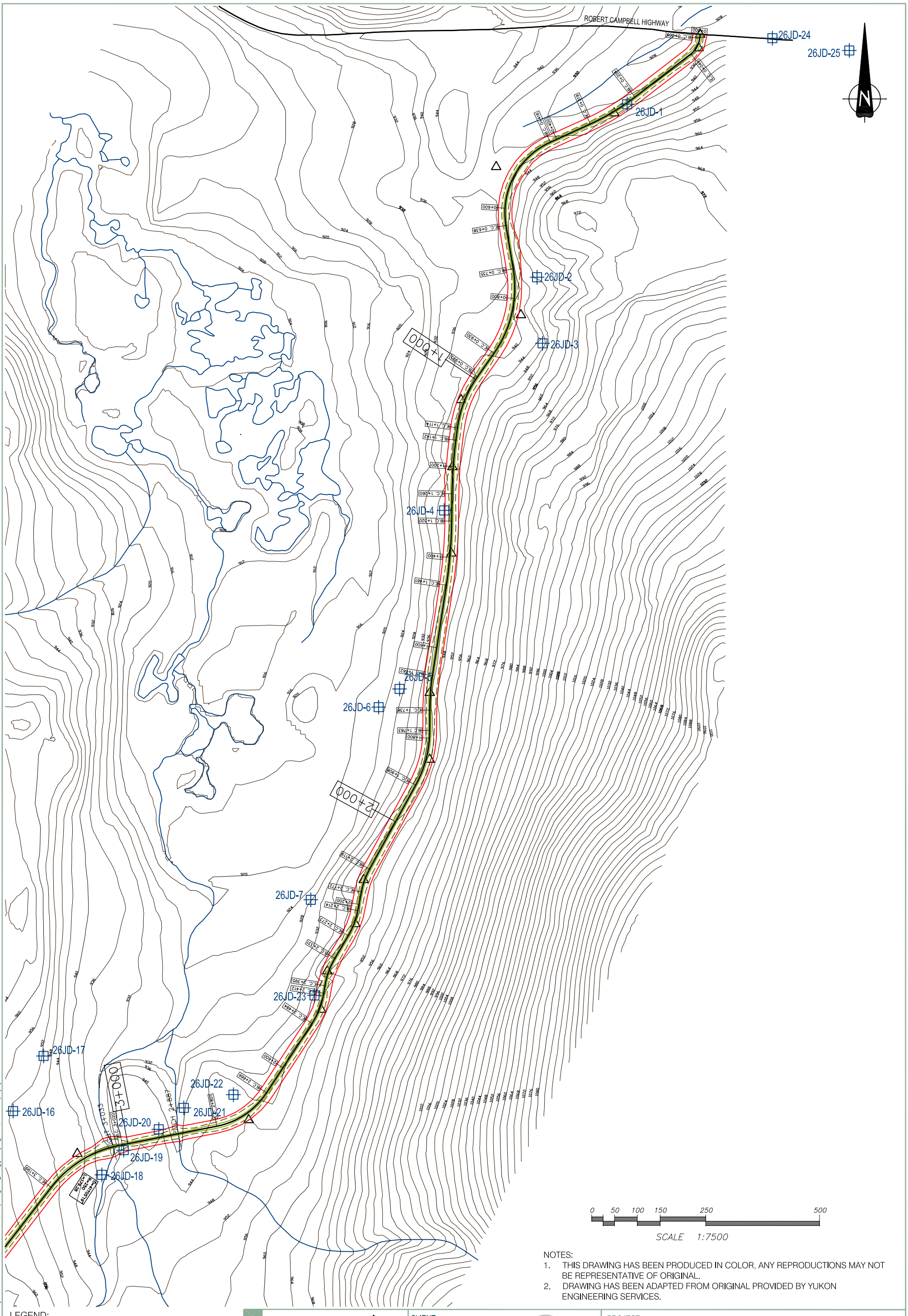

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EBA JOB NO. 1200197	FILE: 1200197 Fig 1.dwg	REVISION NO.: 1	DATE: Aug. 2006

Figure 1

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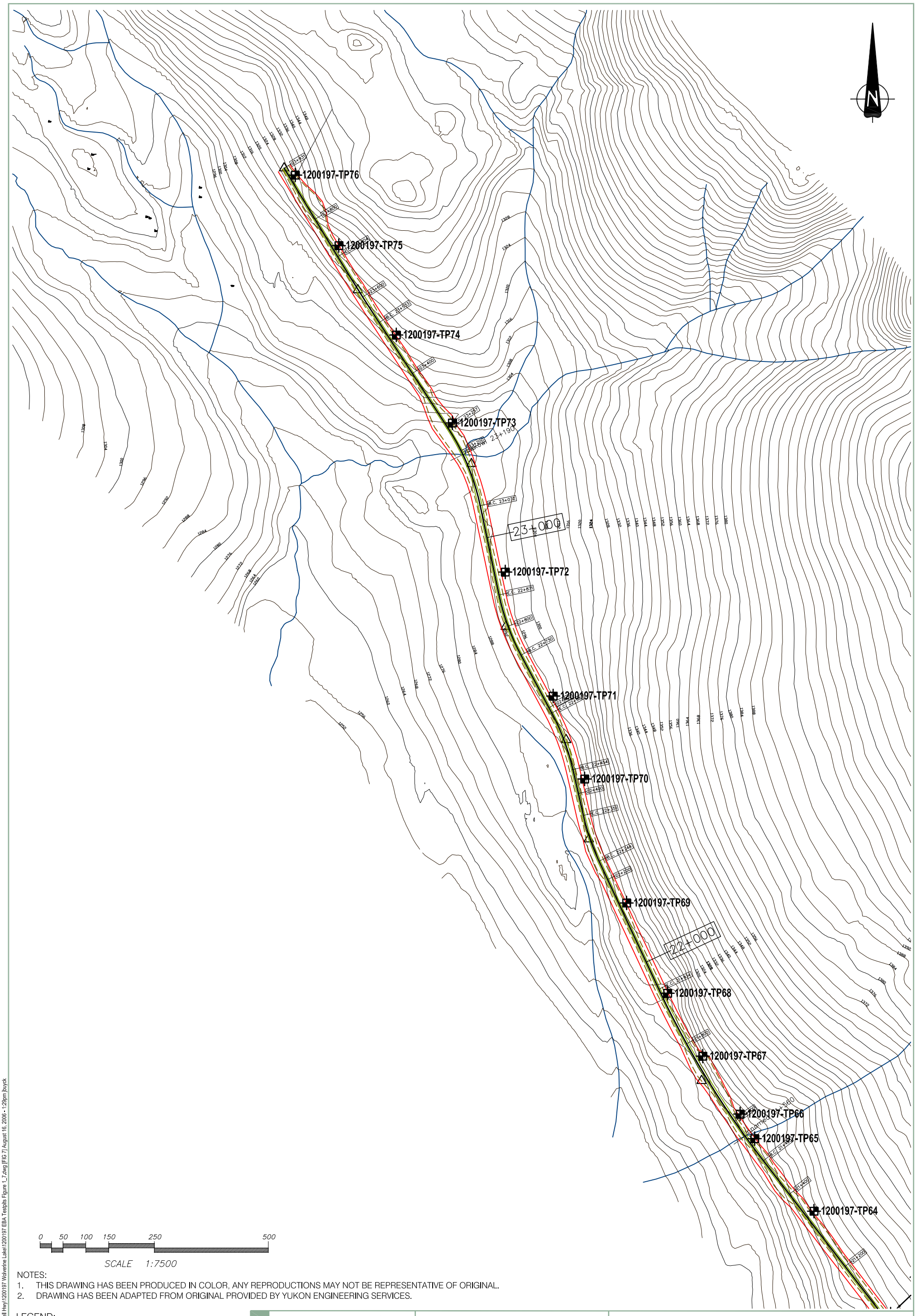

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EBA JOB NO. 1200197	FILE: 1200197 EBA TP.dwg / REVISION NO.: 1	DATE: Aug. 2006	Figure 7

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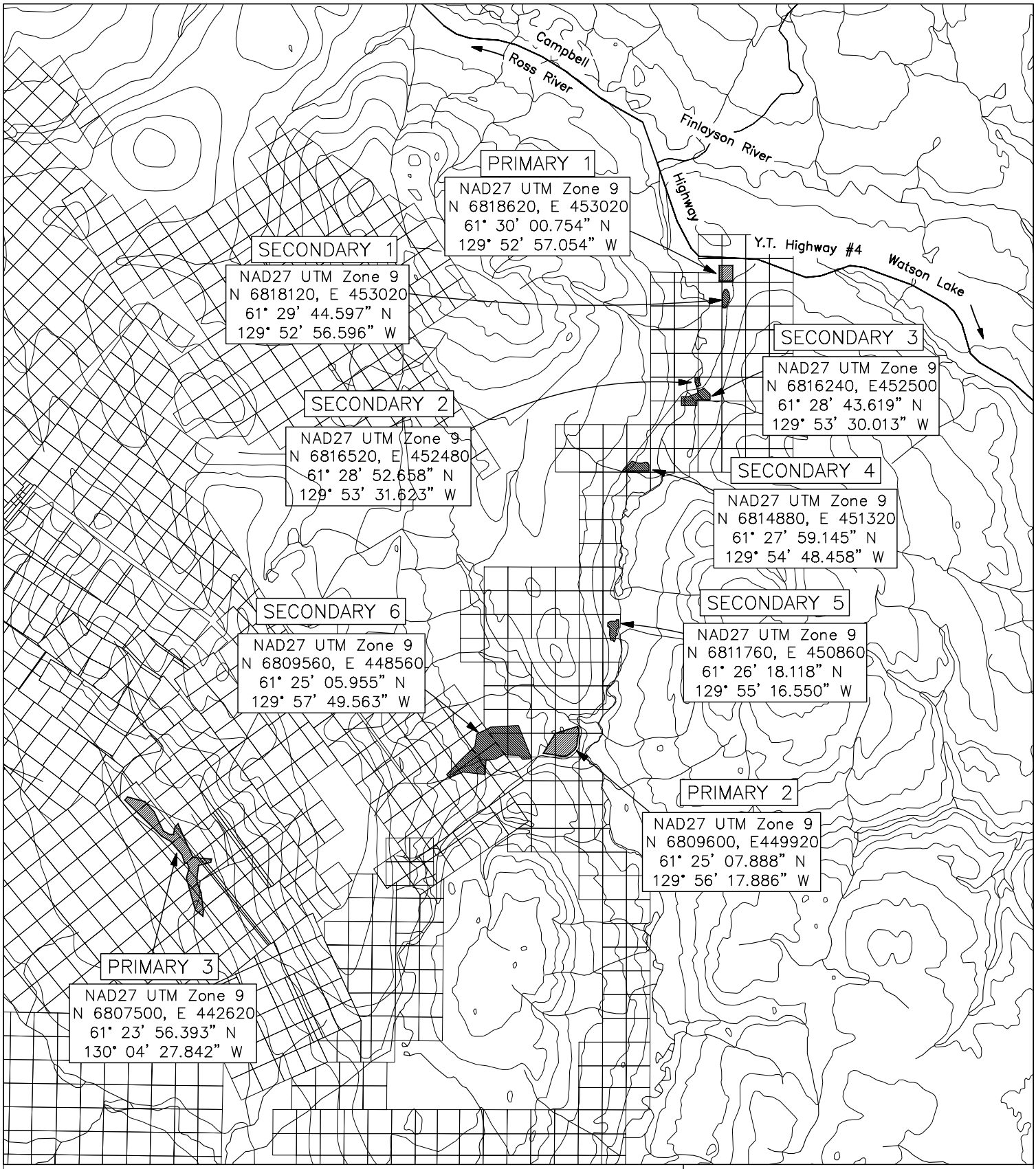


Yukon Zinc Corporation
Wolverine Access Road

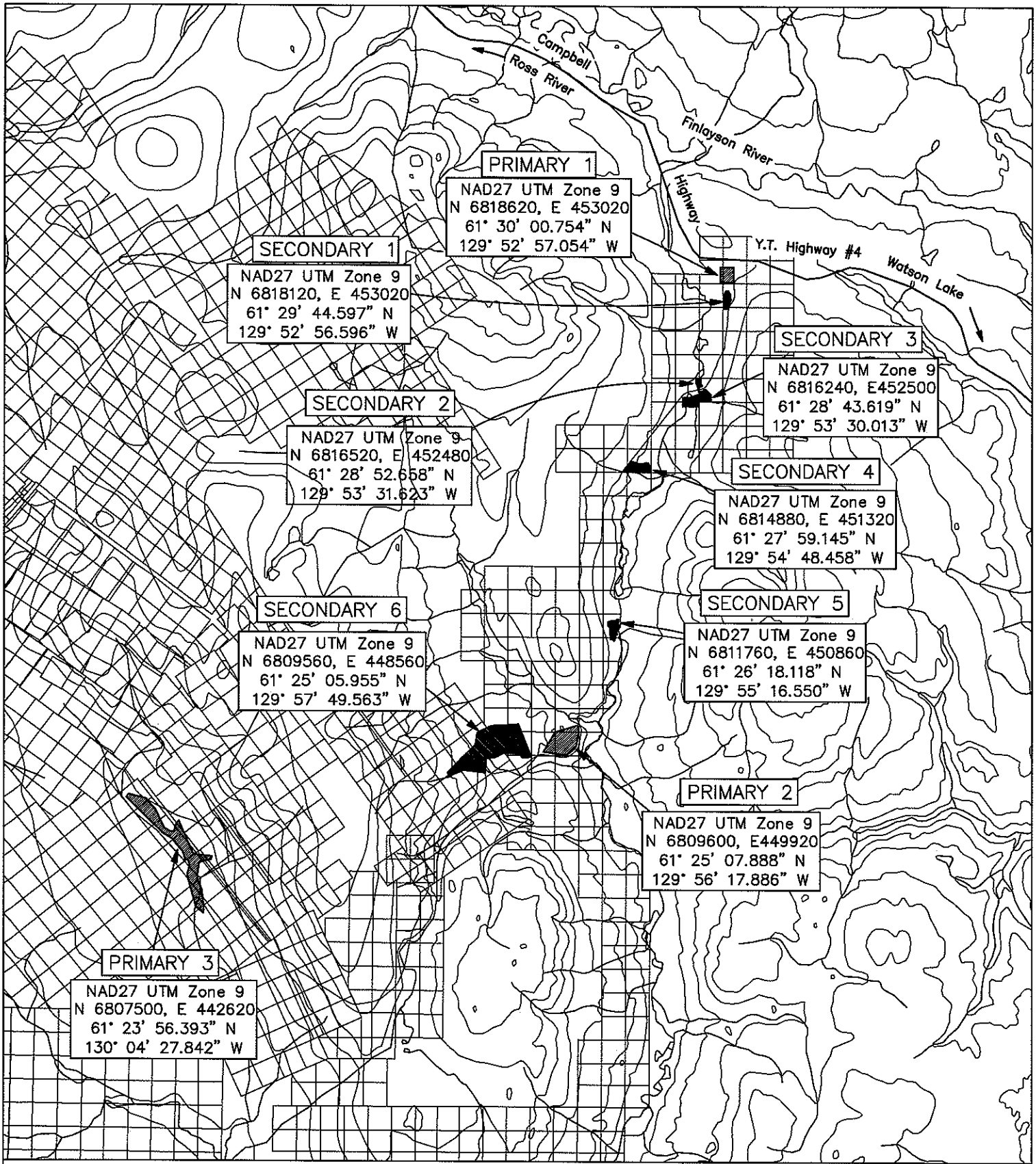
Figure 3 - Wolverine Access Road
Proposed Borrow Sources

S:\INFO\DWG\LOGOS\YZC_Logo.jpg

Yukon Engineering Services

SCALE: 1:100 000	DRAWN: GCC	PROJECT: E06-015
DRAWING: Borrow Targets\Figure 3	CHECKED: PK	DATE: 31/07/06

TESTPIT LOGS



Yukon Zinc Corporation
Wolverine Access Road

Figure 3 - Wolverine Access Road
Proposed Borrow Sources

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Yukon Engineering Services

SCALE: 1:100 000	DRAWN: GCC	PROJECT: E06-015	
DRAWING: Borrow Targets\Figure 3	CHECKED: PK	DATE: 31/07/06	

TESTPIT LOGS

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP01
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6814855 E451073	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – some sand, black, moist			
	■					SAND (TILL) – gravelly, some silt, well graded sand, fine to medium grained angular gravel, compact, damp, medium grey – coarse gravels and some cobbles throughout			2.0
1.0							FROZEN Nf, Vc, 5–10%		4.0
							UNFROZEN		6.0
2.0	■								8.0
						END OF TESTPIT 2.4 m – very hard excavating			10.0
3.0									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 2.4 m
COMPLETE: 06/07/11

06/08/16 11:53AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP02
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6814672 E450975	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						GRAVEL (TILL) – sandy, some silt, compact, moist, brownish grey	
1.0						SAND (EOLIAN) – fine to medium grained, uniform, damp, dark grey	
						– coarse gravel and cobbles below 1.8 m	
						– becomes silty below 1.8 m	
2.0						– becomes gravel, sandy below 2.0 m	
						– very compact below 2.5 m	
3.0						END OF TESTPIT 3.5 m – very hard excavating	
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

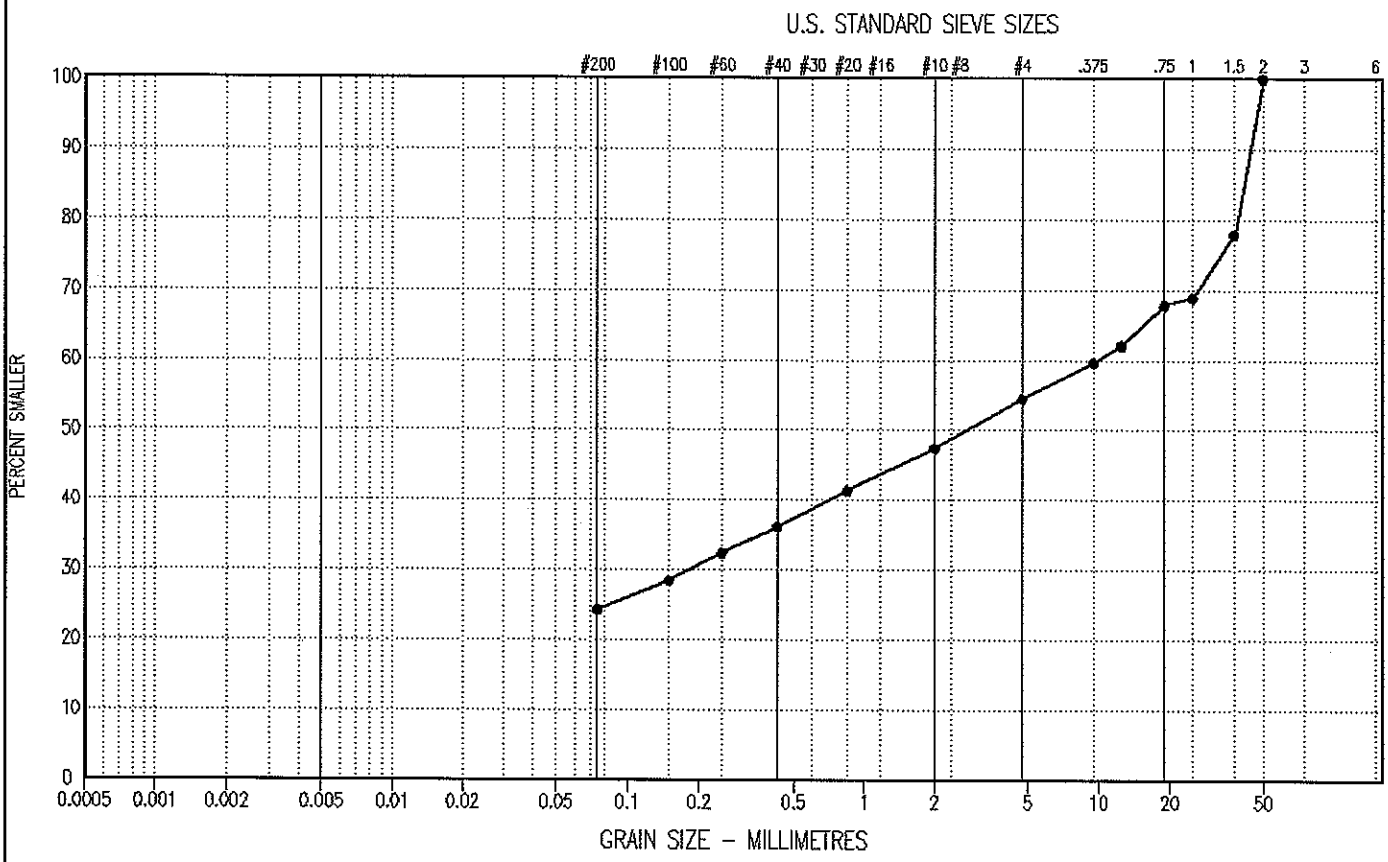
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 3.5 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

06/08/16 11:50AM (YUKONPD4)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP02	2.00 – 2.20	--- 24 ---		30	46	–	–	

Project: 0201-1200197 Date Tested: 06/04/08 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP03
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6814451 E450810	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND (TILL) – gravelly, silty, very compact, moist, grey – coarse gravel and cobbles below 0.5 m			
1.0	■								4.0
2.0	■								8.0
3.0						END OF TESTPIT 3.0 m – very hard excavating			10.0
4.0									14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 3 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

06/08/16 11:50AM (YUKONP04)

Proposed Access Road	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP04
Wolverine Lake, YT	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
	UTM ZONE: 8 N6814047 E450657	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT – silty, black, frozen	UNFROZEN		0.0
						GRAVEL (TILL) – sand, silty, fine to medium grained, damp, light greyish brown	FROZEN Vc, 15–20%		
						END OF TESTPIT 0.4 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.4 m
COMPLETE:

06/08/16 11:50AM (YUKONPD4)

Proposed Access Road	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP05
Wolverine Lake, YT	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
	UTM ZONE: 8 N6813706 E450641	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ▨ NO RECOVERY ▩ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT – silty	UNFROZEN
						SILT (TILL) – sandy, trace of gravel	
	■					BEDROCK – highly weathered, highly fractured, fine to coarse angular particles, saturated, dark brown	
1.0						– becomes competent with depth	
						END OF TESTPIT 1.5 m (REFUSAL)	
2.0							
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 1.5 m
REVIEWED BY: JRT	COMPLETE:

06/08/16 11:51AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP06
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6813566 E450634	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SILT (TILL) – sandy, gravelly, well graded sand, fine to medium grained subangular gravel, compact, damp, light brownish grey – gravel content increases with depth			
1.0									2.0
									4.0
	■					BEDROCK (PHYLLITE) – highly weathered, coarse angular particles, grey			
						END OF TESTPIT 1.8 m (REFUSAL)			6.0
2.0									
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1.8 m
COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP07
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6813351 E450560	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (TILL) – silty, sandy, coarse subrounded gravel, compact, damp, grey			
1.0						– some gravel below 1.0 m			2.0
									4.0
2.0						– difficult to excavate below 2.0 m			6.0
									8.0
						END OF TESTPIT 2.7 m (REFUSAL) – becomes very compact at 2.7 m			
3.0									10.0
									12.0
4.0									14.0

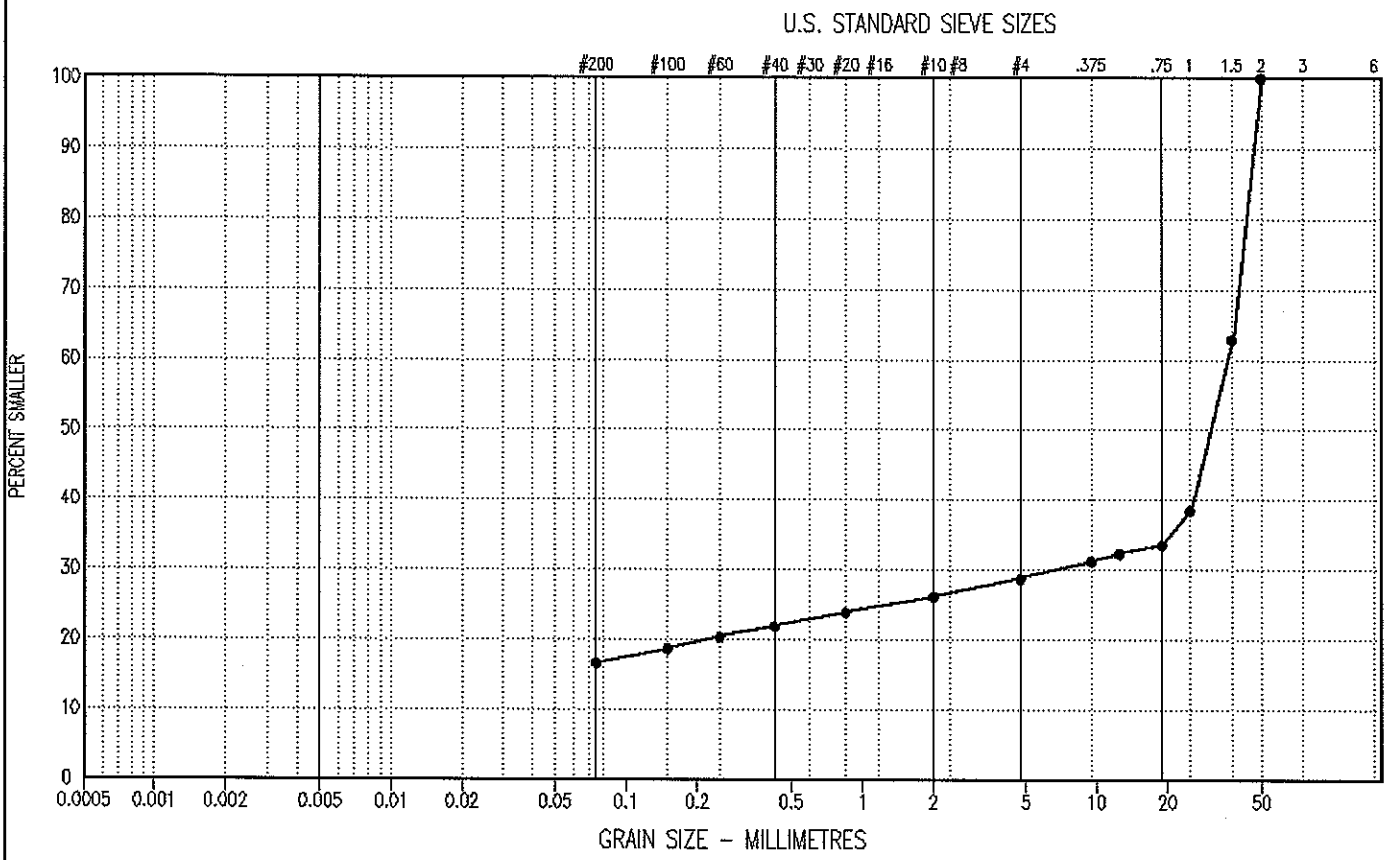
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2.7 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

06/08/16 11:51AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	1200197-TP07	0.50 – 0.70	---	17 ---	11	72	–	–	

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP08
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6813127 E450490	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (FLUVIAL) – sandy, trace to some silt, well graded subrounded gravel, coarse sand, compact, dry, reddish brown			
1.0	■								2.0
									4.0
						– colour changes to light grey around 1.8 m – major sloughing below 2.5 m – trace to no silt below 1.8 m			6.0
2.0									
									8.0
3.0	■								10.0
						END OF TESTPIT 3.5 m – slough below 3.5 m			12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB	COMPLETION DEPTH: 3.5 m
REVIEWED BY: JRT	COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP09
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6812946 E450471	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	FROZEN
						SAND – silty, fine grained, blackish grey – some coarse angular gravel below 0.4 m	UNFROZEN
1.0							
2.0							
						GRAVEL – sandy and silty, well graded subrounded gravel, compact, damp, grey	
3.0						END OF TESTPIT 3.0 m (REFUSAL) – very difficult excavating below 2.5 m	
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

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COMPLETION DEPTH: 2.5 m
COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP10
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6812746 E450456	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 ■ PERCENT SAND ■ 20 40 60 80 PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, blackish grey			
	■					GRAVEL AND SAND – (COLLUVIAL) – trace of silt, well graded subrounded gravel, coarse sand, compact, moist, dark brownish grey	FROZEN Nbe, Vc, 5–10%	▲ ● ■	
						END OF TESTPIT 0.5 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

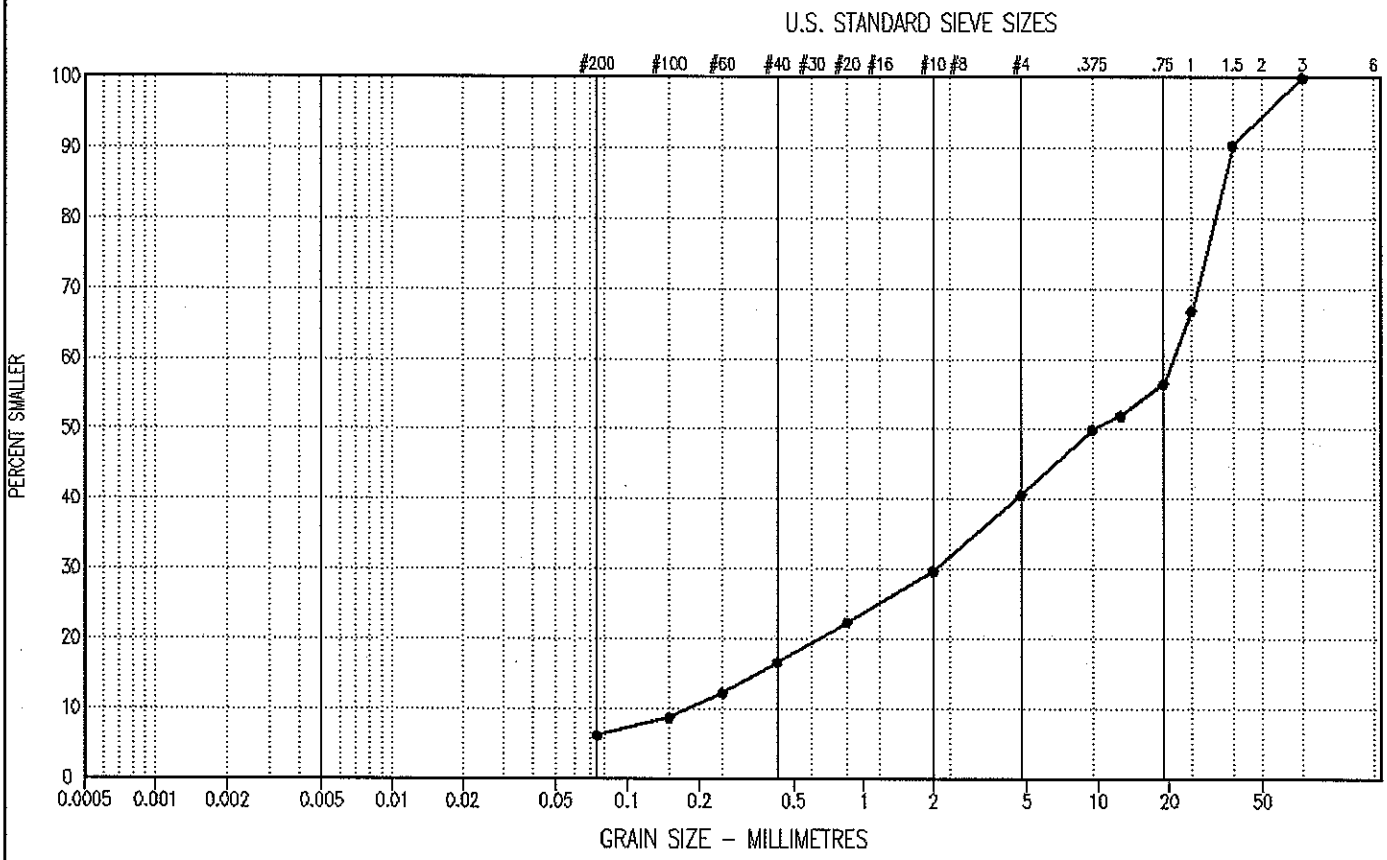
LOGGED BY: JSB	COMPLETION DEPTH: 0.5 m
REVIEWED BY: JRT	COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP10	0.30 – 0.50	---	6 ---	34	60	111.3	1.1	GW-GM

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP11
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6812575 E450461	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, blackish grey			
						GRAVEL (TILL) – sandy, some silt, well graded, subrounded gravel, coarse sand, mottled brown	FROZEN Vx, 20–30%		
						END OF TESTPIT 0.3 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.3 m
COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP84)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP12
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6812245 E450509	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, blackish grey			
						GRAVEL (TILL) – sandy, silty, well graded subrounded gravel, coarse sand, mottled brown	FROZEN Vc, 10–15%		
						END OF TESTPIT 0.3 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.3 m
COMPLETE: 06/07/11

06/08/16 11:51AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP13
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6811952 E450589	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0	■					ORGANIC ROOT MAT	UNFROZEN
						SILT – sandy, fine grained, blackish grey	
						GRAVEL – sandy, trace to some silt, subrounded well graded gravel, coarse sand	FROZEN Vc, 30–40%
						END OF TESTPIT 0.3 m (REFUSAL)	
1.0							
2.0							
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 0.3 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

06/08/16 11:52AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP14
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6811710 E450674	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (TILL) – sandy, silty, subrounded well graded gravel, coarse sand, moist, grey	FROZEN Vc, 15–20%		
						END OF TESTPIT 0.3 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.3 m
COMPLETE:

06/08/16 11:52AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP15
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6811463 E450757	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 ■ PERCENT SAND ■ 20 40 60 80 PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, medium grey – becomes gravelly below 0.2 m			
						END OF TESTPIT 0.3 m (REFUSAL)	FROZEN Vx, Vr, 10–15%		
1.0									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.3 m
COMPLETE: 06/07/11

06/08/16 11:52AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP16
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6811231 E450771	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, compac, very moist to wet, dark brown – gravelly below 0.2 m	FROZEN Vx, Vr, 20–25%		
1.0						END OF TESTPIT 0.3 m (REFUSAL)			2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 0.3 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

06/08/16 11:52AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP17
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6810971 E450764	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN	0.0
	■					SILT (TILL) – sandy, some gravel, some clay, well graded sand, fine to medium grained subrounded gravel, compact, damp, medium grey – becomes gravelly below 0.3 m		
							FROZEN Vx, Vr, 10–15%	
1.0						END OF TESTPIT 0.6 m (REFUSAL)		2.0
								4.0
2.0								6.0
								8.0
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.6 m
COMPLETE: 06/07/11

06/08/16 11:52AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP18
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6810610 E450651	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						SAND – some gravel, trace of silt, well graded, subangular gravel, coarse sand, wet, compact, medium grey	---------- FROZEN Nf, Vs, 5–10%
1.0	■						
						– becomes gravelly around 1.5 m	
2.0	■					END OF TESTPIT 2.0 m	
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ (20 40 60 80)
■ PERCENT SAND ■ (20 40 60 80)
PLASTIC M.C. LIQUID (10 20 30 40)

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
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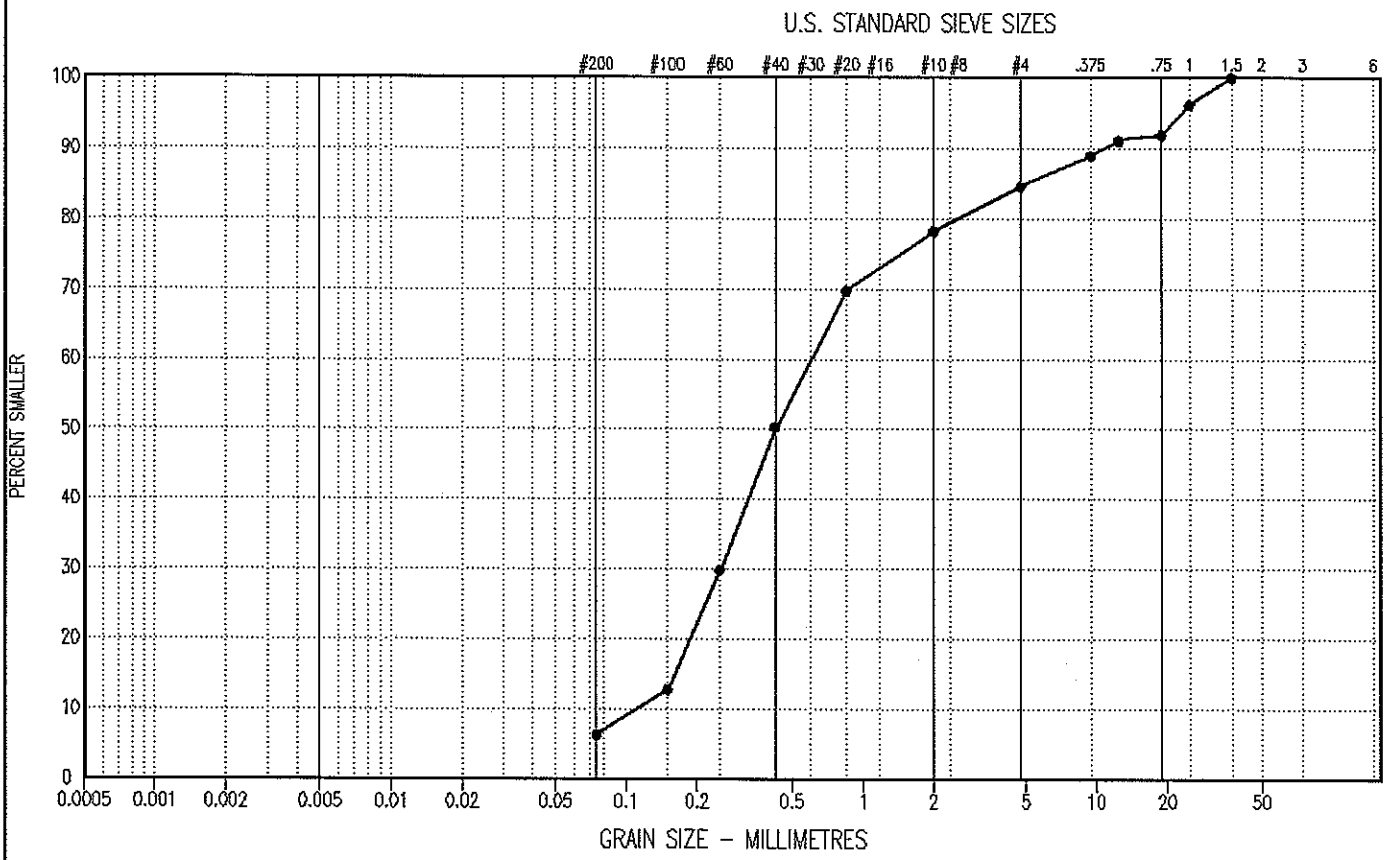
06/08/16 11:52AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	1200197-TP18	1.80 – 2.00	---	6 ---	78	16	5.4	0.8	SP-SM

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP19
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6810343 E450663	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND – silty, gravelly, well graded sand, fine to medium grained gravel, moist, compact, medium grey			
						– becomes coarser grained, gravel increasing in content around 0.5 m			2.0
1.0	■								4.0
						END OF TESTPIT 1.3 m (REFUSAL)	FROZEN Nbn, Vs, 10–15%		
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 1.3 m
COMPLETE: 06/07/11

06/08/16 11:52AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP20
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6810184 E450502	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT (TILL) – sandy, trace of gravel, well graded sand, fine to medium grained subangular gravel, compact, moist, medium grey – gravel below 0.2 m, well graded, subrounded	FROZEN Vc, trace		2.0
1.0						END OF TESTPIT 0.3 m (REFUSAL)			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 0.3 m
COMPLETE: 06/07/11

06/08/16 11:52AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP21
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6810070 E450307	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					SILT (TILL) – gravelly, sandy, fine to medium grained, subrounded gravel, well graded sand	
1.0						– gravel content increases and becomes coarser around 1.2 m – some silt below 1.2 m	
	■						
2.0						END OF TESTPIT 2.0 m – some slough below 1.2 m	
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

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	REVIEWED BY: JRT	COMPLETE: 06/07/11
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Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP22
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809913 E450203	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND (TILL) – silty, gravelly, well graded sand, fine to medium grained subangular gravel, compact, damp, grey – some silt around 0.4 m – becomes coarser gravel around 1.0 m			2.0
1.0	■					– becomes silty, some gravel around 1.0 m			4.0
						END OF TESTPIT 1.7 m (REFUSAL)			6.0
2.0									8.0
3.0									10.0
									12.0
4.0									14.0

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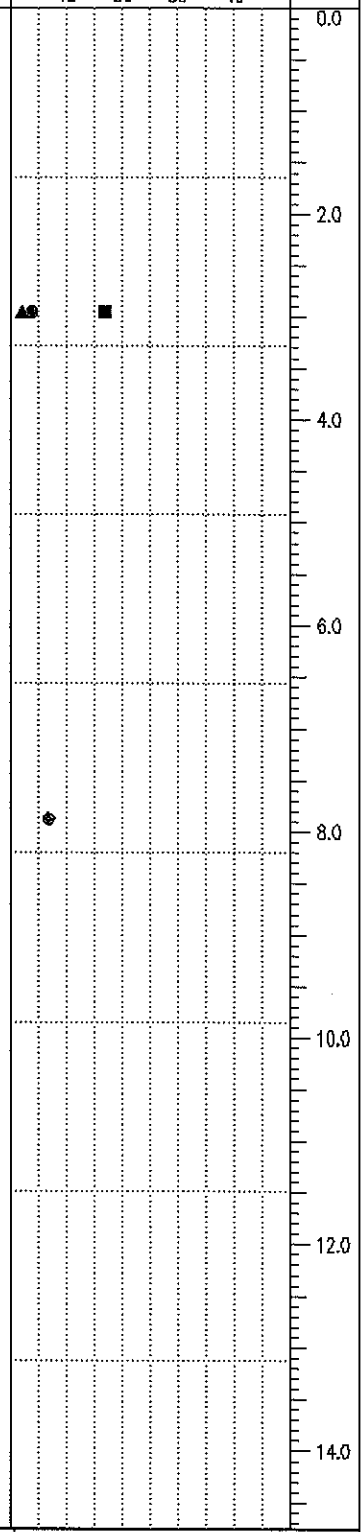
COMPLETION DEPTH: 1.7 m
COMPLETE: 06/07/11

06/08/16 11:53AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP23
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809612 E450215	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						GRAVEL AND SAND – trace of silt, fine to medium grained subrounded gravel, medium to coarse sand, compact, damp, greyish brown – coarser gravels and cobbles from 0.1 to 1.0 m – becomes cleaner with depth	
1.0							
2.0						– coarser gravels below 2.0 m – colour changes to light grey around 2.0 m – trace to some silt below 2.0 m	
						END OF TESTPIT 2.5 m (REFUSAL)	FROZEN Nbn, Vs trace
3.0							
4.0							



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB REVIEWED BY: JRT	COMPLETION DEPTH: 2.5 m COMPLETE: 06/07/11
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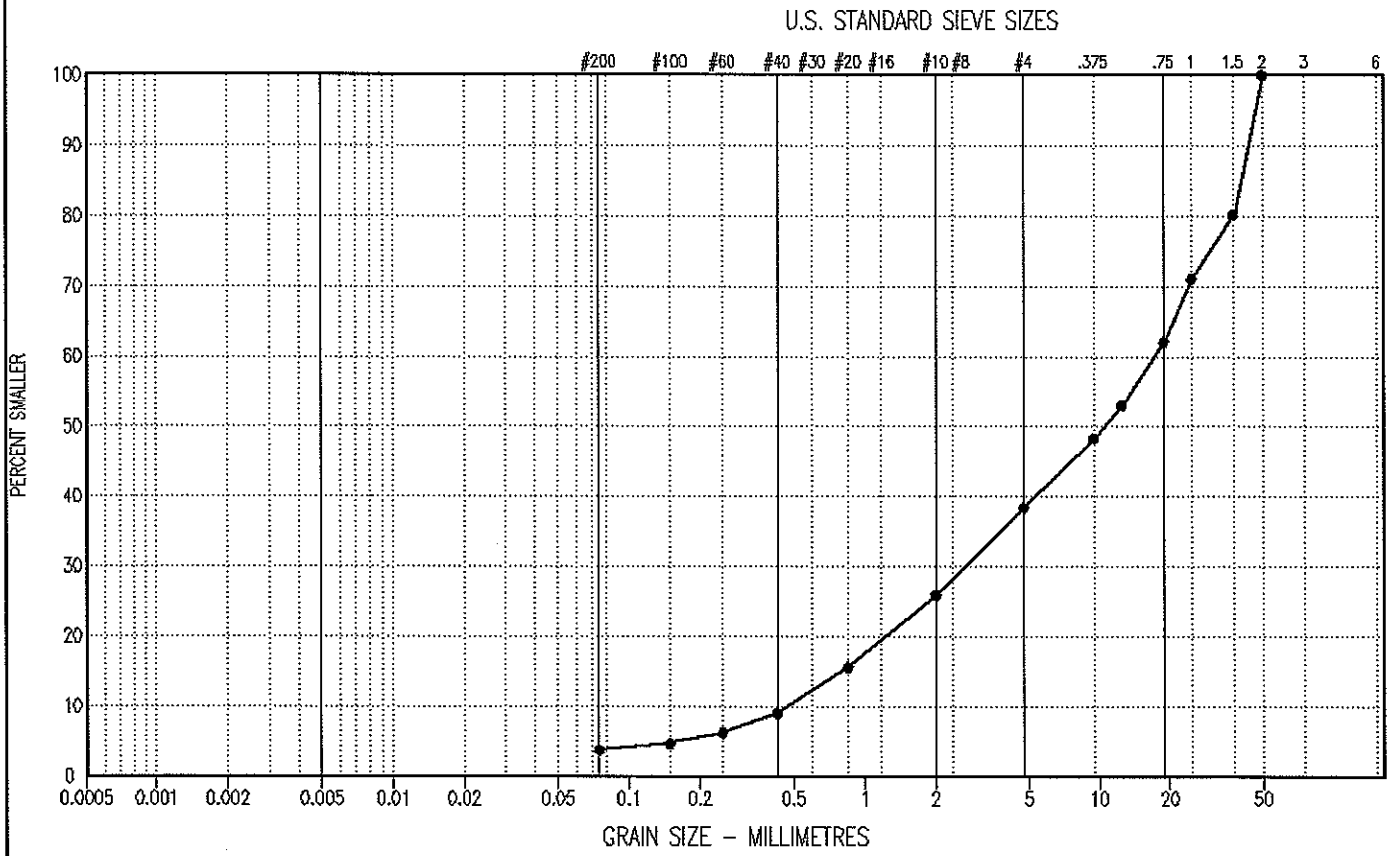
PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197–TP23	0.80 – 1.00	---	4 ---	34	62	35.6	1.0	GP

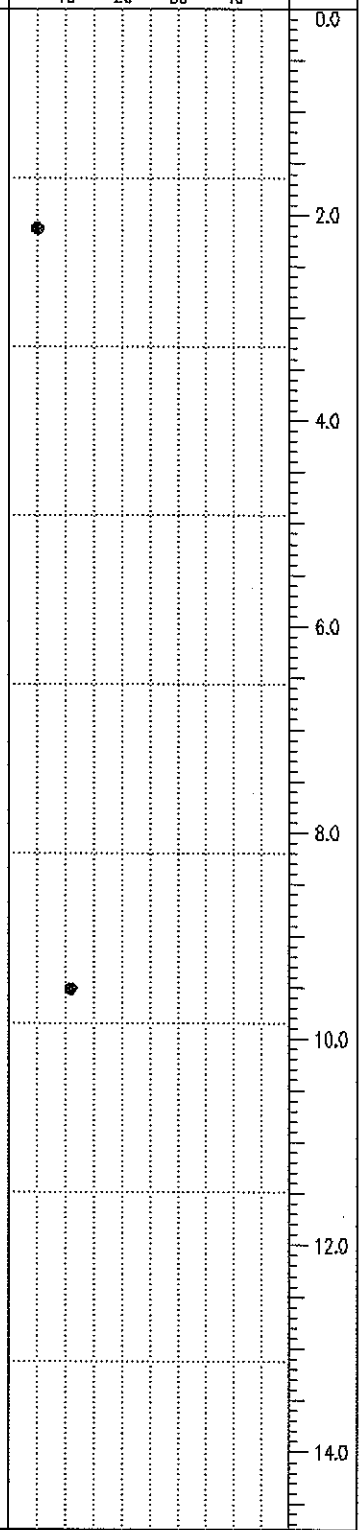
Project: 0201–1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP24
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809366 E450123	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						SAND (COLLUVIUM) – gravelly, some silt, medium to coarse sand, well graded subangular gravel, compact, damp, light greyish brown	
1.0						– coarser gravel below 1.2 m	
						SAND (TILL) – silty, gravelly, trace of clay, well graded sand, fine to medium grained subangular gravel, compact, damp, grey	
2.0							
3.0						END OF TESTPIT 3.0 m (REFUSAL)	FROZEN Vr, Vx, 5–10%
4.0							



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 3 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
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Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP25
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809287 E449853	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND – gravelly, trace of silt, well graded sand and angular gravel, compact, moist, reddish brown			
						– some gravel below 0.8 m – colour changes to medium grey around 0.8 m			2.0
1.0									4.0
						SAND (TILL) – silty, gravelly, trace of clay, well graded sand, fine to medium grained subangular gravel, compact, damp, grey			6.0
2.0									8.0
						END OF TESTPIT 2.2 m (REFUSAL)			10.0
3.0									12.0
4.0									14.0

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COMPLETION DEPTH: 2.2 m
COMPLETE: 06/07/11

06/08/16 11:53AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP26
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809312 E449628	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 ■PERCENT SAND■ 20 40 60 80 PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, compact, moist, dark brown			
	■					SAND – gravelly, trace to some silt, well graded sand, fine to medium grained gravel, compact, moist, reddish brown			
1.0									2.0
									4.0
						– gravel content increases becoming coarser below 1.5 m			
2.0									6.0
	■						FROZEN Nbn, Vs trace		8.0
						END OF TESTPIT 2.5 m (REFUSAL)			
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT	COMPLETE: 06/07/11
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Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP27
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809280 E449368	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
						SILT – sandy, trace of fine gravel		
						GRAVEL (TILL) – sandy, some silt, trace of clay, well graded sand, subrounded gravel, light grey – coarse gravels and cobbles throughout testpit		2.0
1.0								4.0
2.0						– trace to some silt below 2.0 m	FROZEN Vc, Vr, trace	6.0
						END OF TESTPIT 2.4 m (REFUSAL)		8.0
3.0								10.0
4.0								12.0
								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

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	REVIEWED BY: JRT	COMPLETE: 06/07/11
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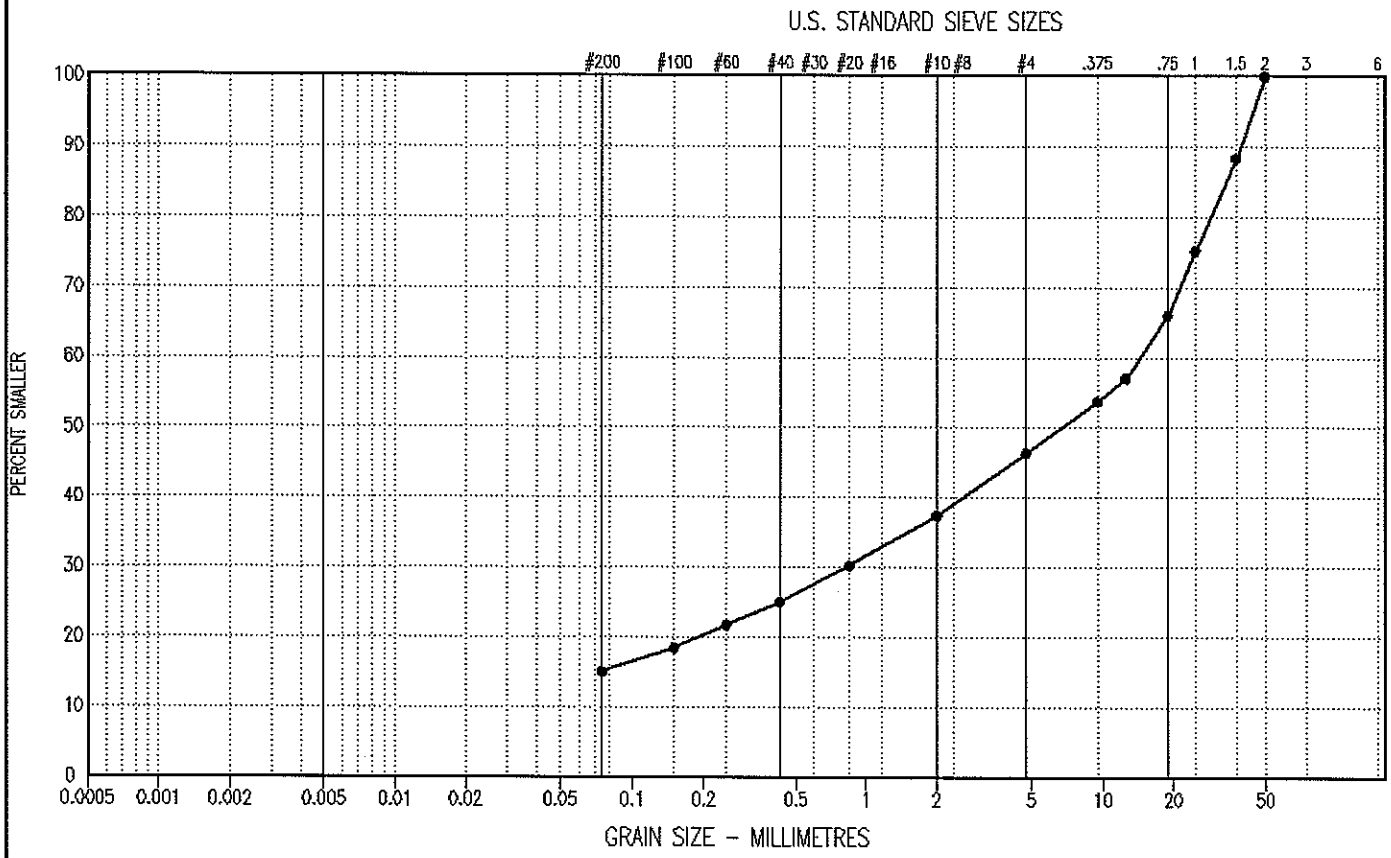
EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION CLAY %	SILT %	SAND %	GRAVEL %	Cu	Cc	U.S.C
●——●	1200197-TP27	0.80 – 1.00	---	15	31	54	–	–	

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP28
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809186 E449222	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL AND SAND (TILL) – silty, trace of clay, well graded sand, fine to medium grained subangular gravels, compact, damp, light greyish brown – gravel content increases with depth – becomes silty below 0.4 m		●	
1.0									2.0
									4.0
2.0	■							●▲■	6.0
						END OF TESTPIT 2.4 m	FROZEN Vc, 5–10%		8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

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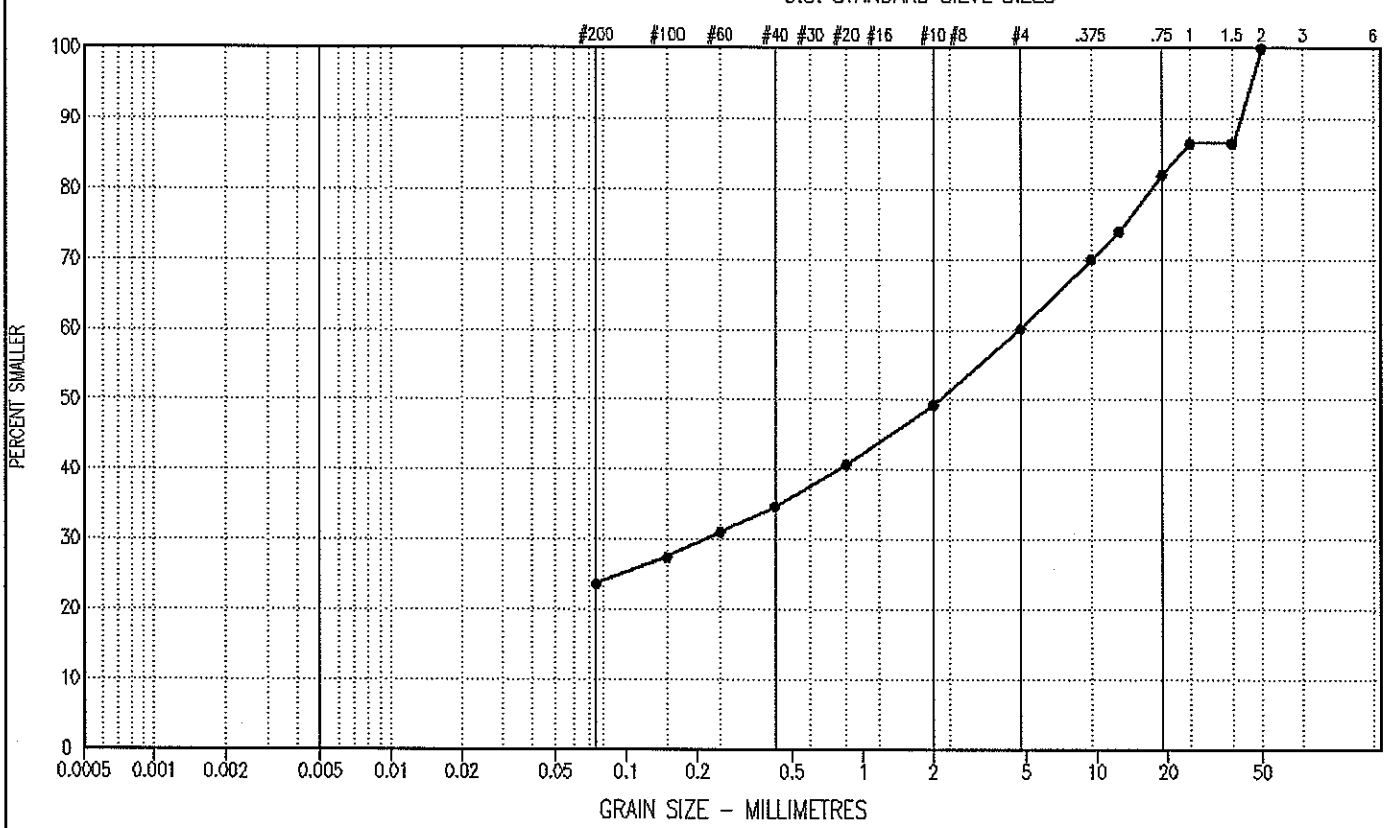
COMPLETION DEPTH: 2.4 m
COMPLETE: 06/07/11

06/08/16 11:53AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP28	2.20 – 2.40	---	24 ---	36	40	–	–	

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP29
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809053 E449036	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					SAND (TILL) – gravelly, silty, well graded angular sand and gravel, compact, moist, light grey – coarser gravels and cobbles below 0.5 m	
1.0							
2.0	■					END OF TESTPIT 2.0 m (REFUSAL)	FROZEN Vc, Vr trace
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

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	REVIEWED BY: JRT	COMPLETE: 06/07/11
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Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP30
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808965 E448792	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▯▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND (TILL) – silty, trace of clay, gravelly, compact, damp, coarse angular sand and gravel, dark grey			2.0
1.0						– coarser gravel, some cobbles below 1.2 m – colour changes to greyish brown around 1.2 m			4.0
							FROZEN Vc, Vr trace		6.0
2.0						END OF TESTPIT 2.0 m (REFUSAL)			8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 2 m
COMPLETE: 06/07/11

06/08/16 11:54AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP31
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808936 E448518	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0	■					ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND (TILL) – silty, gravelly, trace of clay, well graded sand and angular gravel, compact, damp, medium grey	FROZEN Vx, 10–15%		
						END OF TESTPIT 0.3 m			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 0.3 m
COMPLETE: 06/07/11

06/08/16 11:54AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP32
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6809099 E448354	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (TILL) – sandy, trace of silt, coarse angular sand and gravel, moist, compact, grey – becomes coarser gravel with cobbles below 0.4 m			
1.0									2.0
									4.0
							FROZEN Vx, Vr trace		
						END OF TESTPIT 1.8 m (REFUSAL)			6.0
2.0									
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

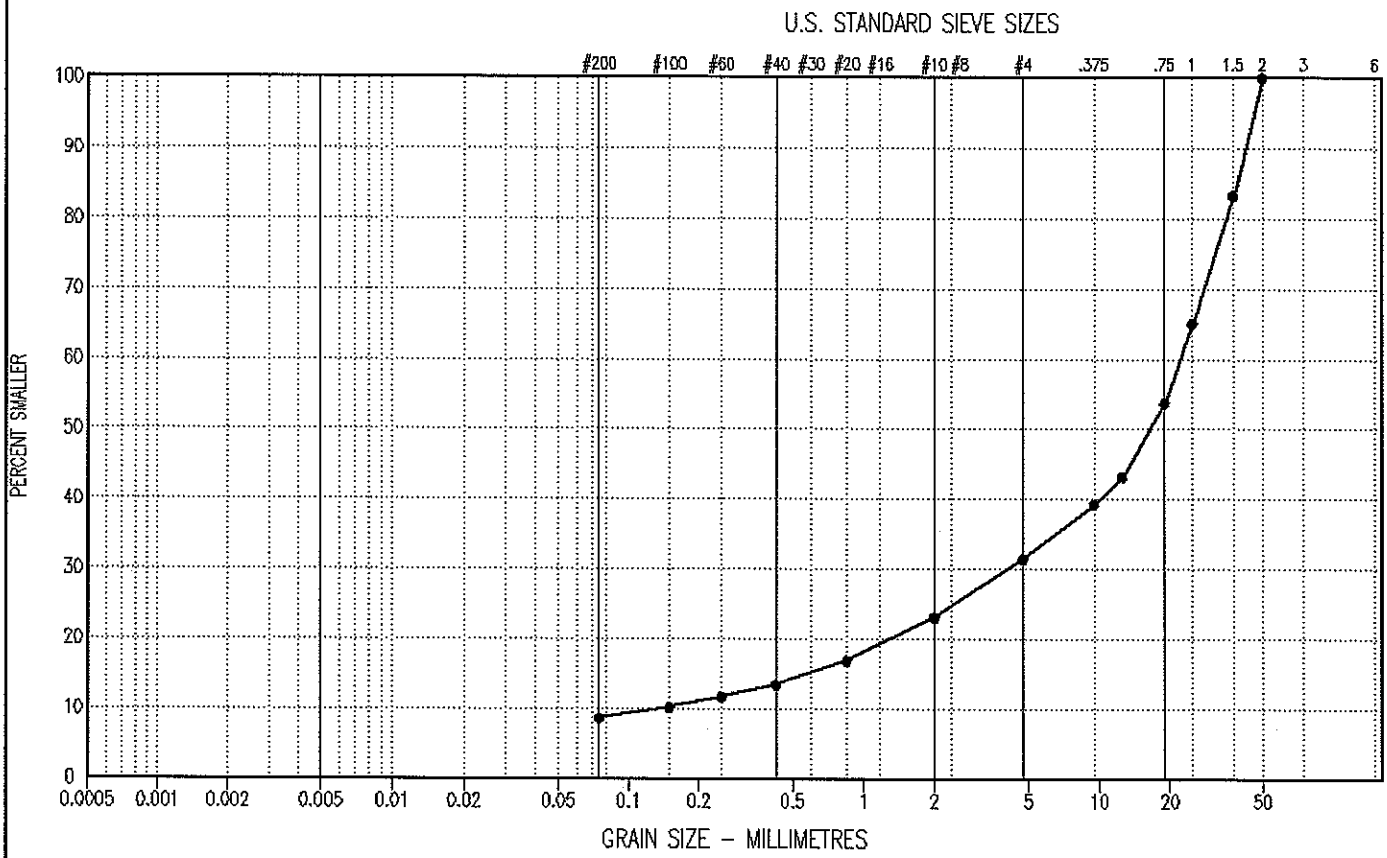
COMPLETION DEPTH: 1.8 m
COMPLETE: 06/07/11

06/08/16 11:54AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●—●	1200197–TP32	1.60 – 1.80	---	9 ---	22	69	153.2	5.6	GP–GM

Project: 0201–1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP33
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808902 E448255	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, moist, compact, reddish brown			
	■					SAND (TILL) – silty, gravelly, trace of clay, coarse sand and gravel, subangular, compact, moist, grey			
1.0						– coarser angular gravels and cobbles below 1.2 m			2.0
						– less sand and silt below 1.5 m			4.0
	■					BEDROCK (black meta-volcanic) – fairly fractured, good quality	FROZEN Vx, Vr trace		6.0
2.0						END OF TESTPIT 2.0 m (REFUSAL)			
3.0									8.0
									10.0
4.0									12.0
									14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2 m
	REVIEWED BY: JRT	COMPLETE: 06/07/11
		Page 1 of 1

08/08/16 11:54AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP34
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808637 E448223	ELEVATION:

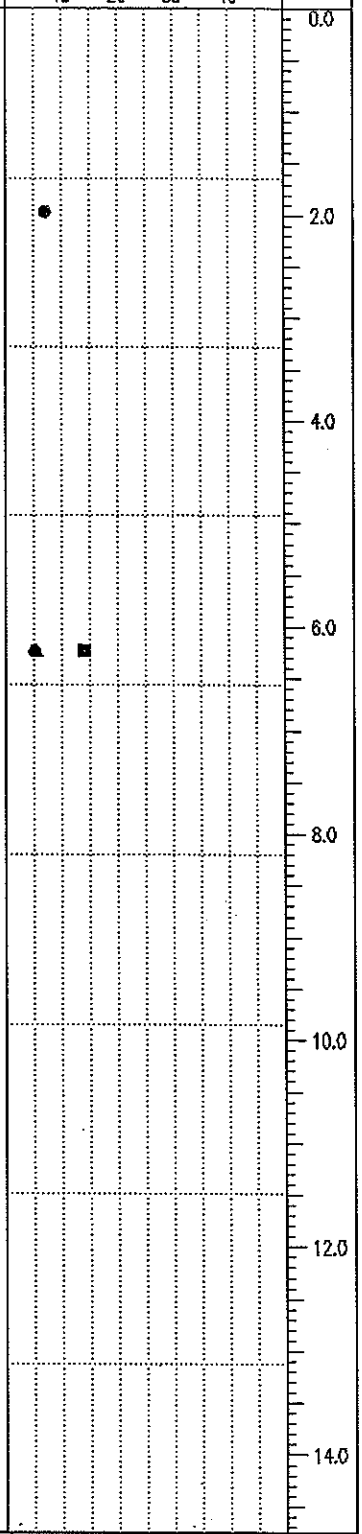
SAMPLE TYPE ■ GRAB SAMPLE ⧸ NO RECOVERY ☒ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					GRAVEL – sandy, coarse, some silt, coarse angular gravel and sand, compact, moist, grey	
1.0						– coarser gravels and cobbles below 0.8 m – less sand with depth – some silt below 1.0 m	
	■						FROZEN Vx, Vr trace
2.0						END OF TESTPIT 2.0 m	
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40



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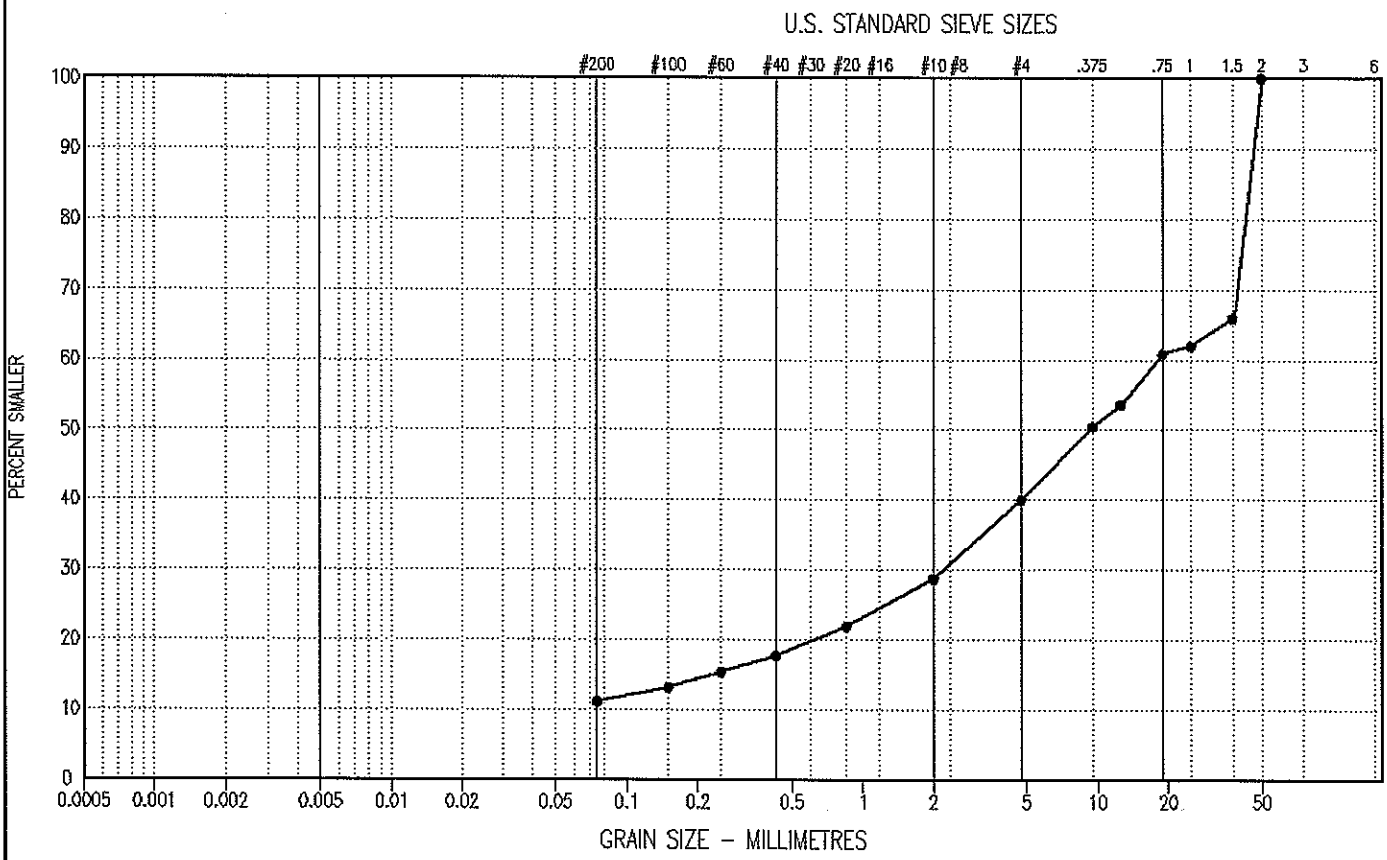
COMPLETION DEPTH: 2 m
COMPLETE: 06/07/11

06/08/16 03:53PM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●	1200197-TP34	1.80 – 2.00	---	11	---	28	61	–	8.4	GP-GM

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP35
Proposed Access Road	EXCAVATOR: 320 C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808410 E448086	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, compact, medium brown			
						SAND (TILL) – gravelly, silty, trace of clay, well graded, angular sand and gravel, compact, moist, medium brown			2.0
1.0									4.0
	■					BEDROCK – sand and silt infilled, highly weathered and fractured, fair quality			
							FROZEN Vc, Vr trace		6.0
2.0						END OF TESTPIT 1.8 m (REFUSAL)			
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 1.8 m
REVIEWED BY: JRT	COMPLETE: 06/07/11
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06/08/16 11:54AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP36
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808251 E447904	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⧸ NO RECOVERY ☒ STANDARD PEN. ☰ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, compact, moist, dark brown			
						BEDROCK (PHYLLITE) – sand and silt, infilled, angular, weathered and highly fractured – major sloughing throughout testpit			2.0
1.0						– large cobbles with some boulder sized angular rock below 1.0 m			4.0
						END OF TESTPIT 1.5 m – sloughing			6.0
2.0									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 1.5 m
REVIEWED BY: JRT	COMPLETE: 06/07/11
	Page 1 of 1

06/08/16 11:54AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP37
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808066 E447667	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND (TILL) – gravelly, coarse grained angular sand and gravel, compact, moist, grey – angular cobbles and boulders below 0.4 m – gravel content increases below 0.8 m			2.0
1.0									4.0
	■								6.0
2.0						END OF TESTPIT 1.8 m			8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 1.8 m
COMPLETE: 06/07/12

06/08/16 11:54M (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP38
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807972 E447578	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
						GRAVEL (TILL) – sandy, silty, coarse grained angular gravel and sand, compact, damp, light greyish brown		
						– some silt below 0.5 m		2.0
1.0	■					– becomes coarser grained with cobbles throughout		4.0
2.0	■					– becomes silty below 2.0 m – less gravel below 2.0 m		6.0
						END OF TESTPIT 2.5 m – some sloughing		8.0
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80
■ PERCENT SAND ■ 20 40 60 80
PLASTIC M.C. LIQUID
10 20 30 40

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2.5 m
	REVIEWED BY: JRT	COMPLETE: 06/07/12
		Page 1 of 1

06/08/16 11:54AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP39
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807773 E447410	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL (FLUVIAL) – sandy, some silt, well graded subrounded, subangular gravel and sand, compact, moist, light reddish grey – some cobbles throughout		●	
1.0						– trace of silt below 1.0 m			2.0
									4.0
2.0	■							▲● ■	6.0
									8.0
						END OF TESTPIT 2.5 m – some sloughing throughout			
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

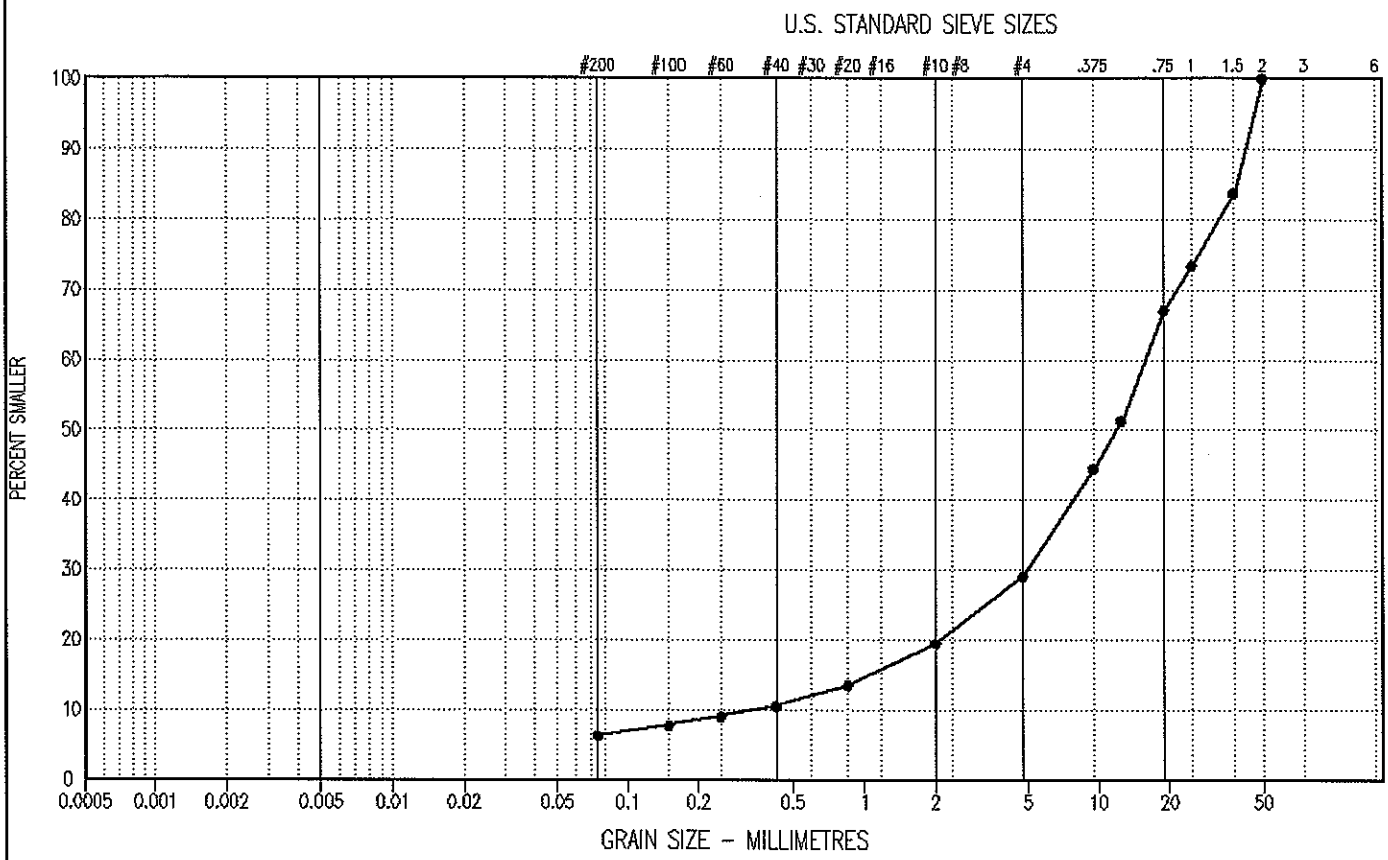
LOGGED BY: JSB	COMPLETION DEPTH: 2.5 m
REVIEWED BY: JRT	COMPLETE: 06/07/12
	Page 1 of 1

06/08/16 11:55AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP39	1.80 – 2.00	---	6 ---	23	71	43.5	4.3	GP-GM

Project: 0201-1200197 Date Tested: 06/08/07 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP40
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807605 E447255	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, trace of fine gravel, moist, medium grey			
	■					GRAVEL – sandy, some silt, well graded angular gravel and sand, compact, moist, grey – cobbles throughout testpit			
1.0									2.0
									4.0
2.0	■					END OF TESTPIT 2.0 m – sloughing throughout			6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 2 m
COMPLETE: 06/07/12

06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP41
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807339 E447200	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL – sandy, trace of silt, coarse grained, angular gravel and sand, compact, dry, grey			
						– cobbles throughout			2.0
1.0									4.0
						– becomes gravelly below 1.5 m			
						BEDROCK – highly fractured, angular, fair quality, medium grey			6.0
2.0						– becomes competent with depth			8.0
						END OF TESTPIT 2.5 m (REFUSAL)			
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

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COMPLETION DEPTH: 2.8 m
COMPLETE: 06/07/12

06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP42
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807154 E447239	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
						GRAVEL – some sand, some silt, coarse grained angular gravel and sand, compact, moist, brownish grey – cobbles and boulders throughout – trace of silt below 0.5 m – no samples obtained due to coarseness of material		
1.0								2.0
								4.0
2.0						END OF TESTPIT 1.5 m (REFUSAL)		6.0
								8.0
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

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REVIEWED BY: JRT

COMPLETION DEPTH: 1.5 m
COMPLETE: 06/07/12

06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP43
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806980 E447259	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						GRAVEL – some sand, trace of silt, coarse grained angular gravel and sand, compact, damp, reddish grey	
						– cobbles throughout gravel	
						– becomes finer grained below 0.8 m – colour changes to grey below 0.8 m	
1.0							
2.0						END OF TESTPIT 2.2 m (REFUSAL)	
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

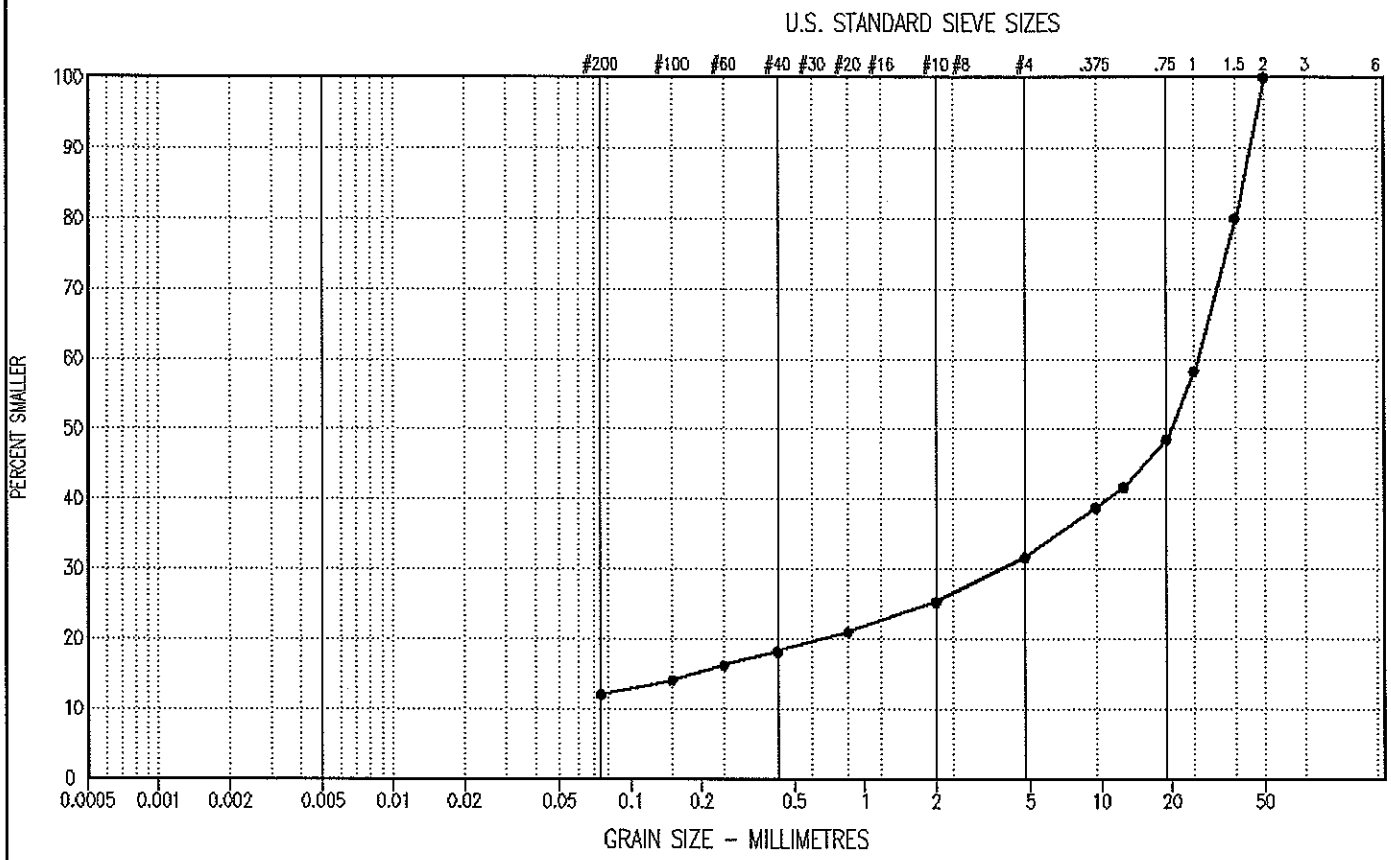
COMPLETION DEPTH: 1.5 m
COMPLETE: 06/07/12

06/06/16 11:55AM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●	1200197-TP43	0.80 – 1.00	---	12 ---	19	69	–	–	GM

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP44
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806731 E447312	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL (FLUVIAL) – sandy, trace silt, coarse grained angular gravel and sand, compact, moist, greyish brown – cobbles and some boulders present below 0.5 m			
1.0						END OF TESTPIT 1.1 m – pit previously excavated by operator during original clearing			2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 1.1 m
REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP45
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806137 E447109	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND – silty, fine to medium grained			
						BEDROCK – sand and silt infilled, highly fractured, weathered, fair quality			
						– becomes more competent with depth			2.0
1.0						END OF TESTPIT 1.0 m (REFUSAL) – no samples obtained due to material coarseness			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1 m
COMPLETE: 06/07/12

06/08/16 11:55AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP46
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805942 E447007	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL – sandy, trace of silt, coarse grained, compact, moist, dark brown			
						– angular cobbles with some boulder below 0.5 m			2.0
1.0						– colour changes to medium grey 0.5 m			4.0
						BEDROCK – competent			
						END OF TESTPIT 1.2 m (REFUSAL)			6.0
2.0									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

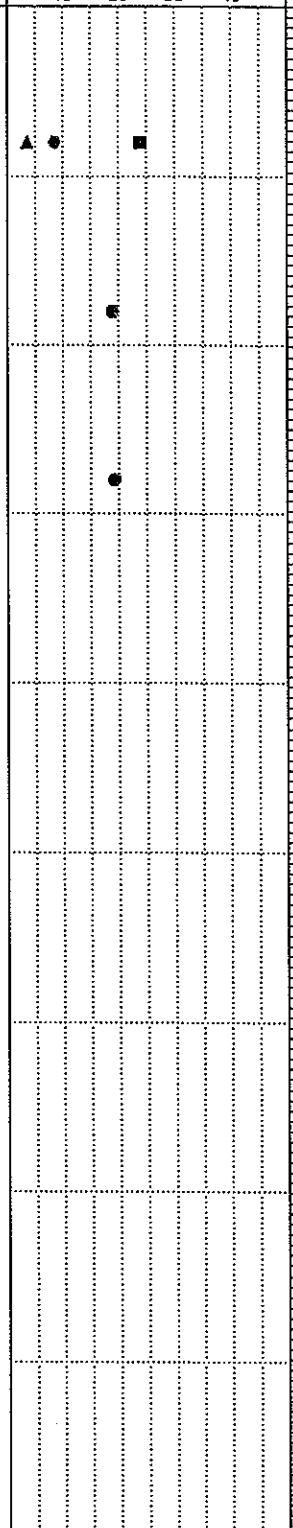
COMPLETION DEPTH: 1.2 m
COMPLETE: 06/07/12

06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP47
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805801 E446958	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					SAND AND GRAVEL – trace silt, coarse angular gravel, well graded sand, compact, moist, dark brown	
1.0	■					SAND – some silt, fine to medium grained, loose to compact, very wet, grey	
	■					– becomes silt, some sand, fine grained around 1.2 m – water encountered, possibly from upper gravels	
2.0						END OF TESTPIT 1.5 m – sloughing throughout	
3.0							
4.0							



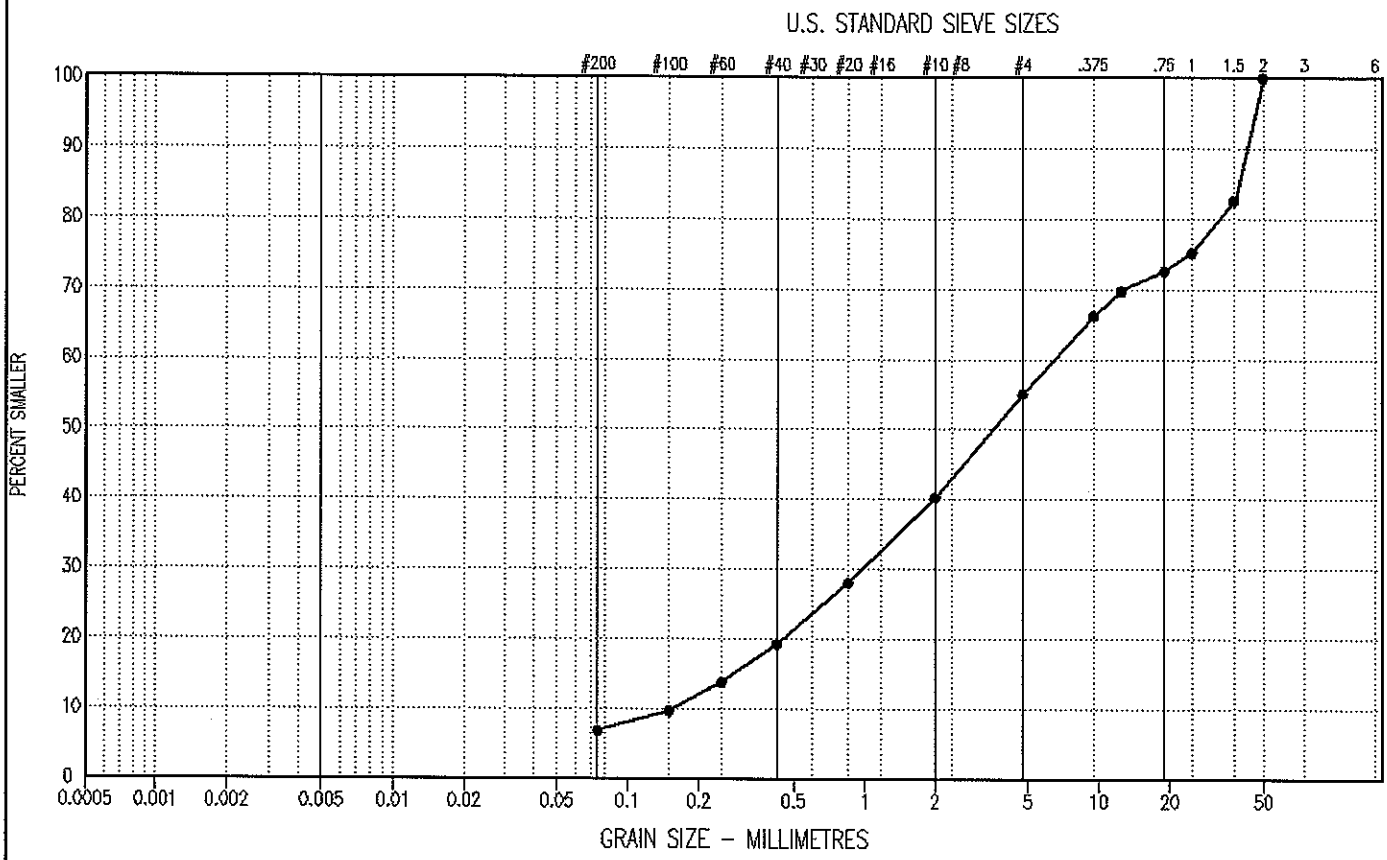
EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 1.5 m
	REVIEWED BY: JRT	COMPLETE: 06/07/12
		Page 1 of 1

06/08/16 03:53PM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP47	0.30 – 0.50	---	7 ---	48	45	43.0	1.0	SP-SM

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP48
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805524 E446902	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⧸ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (FLUVIAL) – some sand, trace of silt, coarse angular gravel, compact, damp, dark brown			
	■					– cobbles throughout			
1.0									2.0
									4.0
	■					SAND (TILL) – silty, gravelly, well graded sand, fine to medium grained, subangular gravel, compact, damp, medium grey			6.0
2.0						END OF TESTPIT 2.0 m			
									8.0
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT

COMPLETION DEPTH: 2 m
COMPLETE: 06/07/12

06/08/16 11:56AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP49
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805229 E446838	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (FLUVIAL) – sandy, trace of silt, coarse angular gravel, coarse sand, compact, moist, grey – cobbles from 0.2 to 0.5 m – gravel becomes well graded below 0.5 m			2.0
1.0									4.0
2.0						END OF TESTPIT 2.2 m			6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 2.2 m
REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:56AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP50
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805009 E446764	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND (TILL) – silty, trace of fine gravel, fine grained, compact, moist, light grey – becomes gravelly, subrounded, well graded around 0.4 m – angular cobbles and some boulders below 0.4 m			2.0
1.0									4.0
						BEDROCK – competent			6.0
2.0						END OF TESTPIT 1.3 m (REFUSAL)			8.0
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT

COMPLETION DEPTH: 1.3 m
COMPLETE: 06/07/12

06/08/16 11:56AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP51
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804778 E446617	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						BEDROCK (PHYLLITE) – highly fractured, weathered, sand and silt infilled, brown – water encountered at 0.6 m – becomes competent with depth			2.0
1.0						END OF TESTPIT 0.8 m (REFUSAL)			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 0.8 m
REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:56AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP52
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804612 E446429	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL (TILL) – sandy, silty, trace of clay, coarse angular gravel and sand, compact, damp, reddish brown			
	■					SILT (TILL) – sandy, some gravel, well graded sand, fine to medium grained, angular, compact, moist, grey			2.0
1.0						END OF TESTPIT 1.0 m (REFUSAL)			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 1 m
COMPLETE: 06/07/12

06/08/16 11:56AM (YUKONP24)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP53
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804525 E446184	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						BEDROCK – sand and silt infilled, highly fractured, slightly weathered – large boulder sized pieces encountered			
1.0						END OF TESTPIT 0.5 m (REFUSAL)			2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT

COMPLETION DEPTH: 0.5 m
COMPLETE: 06/07/12

06/08/16 11:56AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP54
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804486 E445998	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT – sandy, fine grained, compact, moist, dark brown			
						BEDROCK – sand and silt infilled, fractured, weathered			
						END OF TESTPIT 0.4 m (REFUSAL)			
1.0									2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT

COMPLETION DEPTH: 0.4 m
COMPLETE: 06/07/12

06/08/16 11:56AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP55
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804530 E445757	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND – gravelly, silty, coarse grained, compact, moist, reddish brown			
						GRAVEL (TILL) – sandy, silty, trace of clay, coarse angular gravel and sand, compact, damp, grey			2.0
						BEDROCK – fractured, competent			
1.0						END OF TESTPIT 0.8 m (REFUSAL)			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:55AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP56
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804649 E445551	ELEVATION:

SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL (PHYLLITE) – some sand, some silt, coarse angular gravel and sand, compact, moist, grey			
1.0						SAND (TILL) – gravelly, silty, trace of clay, coarse angular sand and fine to medium gravel, compact, wet, grey			4.0
						END OF TESTPIT 1.2 m (REFUSAL)			
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 1.2 m
	REVIEWED BY: JRT	COMPLETE: 06/07/12
		Page 1 of 1

06/08/16 11:57AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP57
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804810 E445295	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL (TILL) – sandy, silty, trace of clay, coarse angular gravel and sand, compact, moist, grey – cobbles and some boulders throughout testpit		●▲■	2.0
1.0									4.0
						BEDROCK – competent END OF TESTPIT 1.2 m (REFUSAL)			6.0
2.0									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

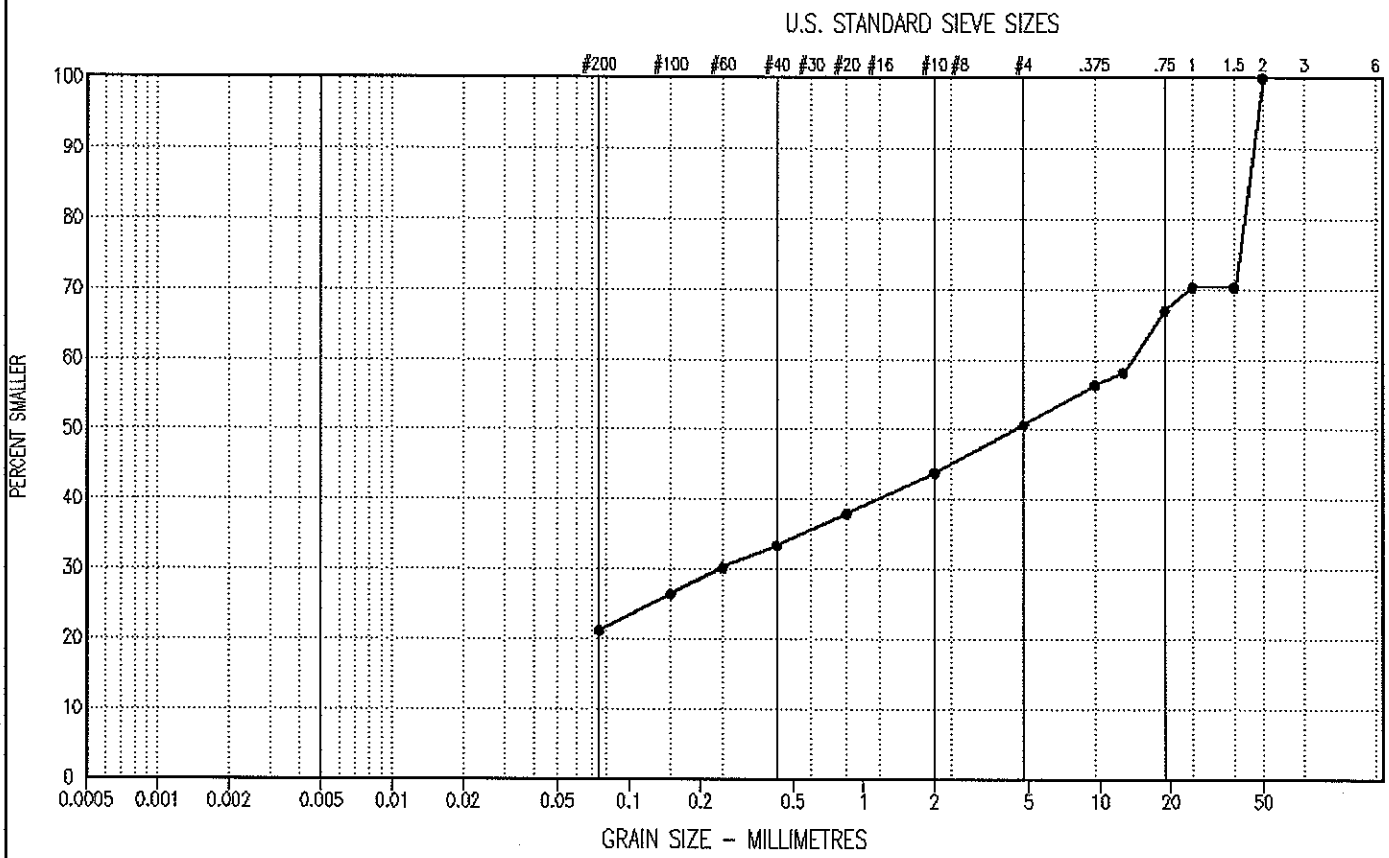
COMPLETION DEPTH: 1.2 m
COMPLETE: 06/07/12

06/08/16 03:53PM (YUKONP04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●——●	1200197-TP57	0.40 – 0.60	--- 21 ---		29	50	–	–	

Project: 0201-1200197 Date Tested: 06/08/07 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP58
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6804986 E445059	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SILT – sandy, fine grained, compact, moist, grey			
						BEDROCK (PHYLLITE) – sand and silt, infilled, weathered, highly fractured, flat, angular, elongated, grey – cobble and boulder sized pieces throughout – competent at 0.5 m			
1.0						END OF TESTPIT 0.5 m (REFUSAL)			2.0
									4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 0.5 m
COMPLETE: 06/07/12

06/08/16 11:57AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP59
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805103 E444861	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
	■					SILT – sandy, fine grained silt, moist, dark brown		
						GRAVEL – sandy, some silt, coarse grained, angular, compact, moist, grey – flat, elongated, poor quality rock pieces		
1.0								2.0
								4.0
2.0	■					END OF TESTPIT 2.0 m		6.0
								8.0
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 2 m
COMPLETE: 06/07/12

06/08/16 11:57AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP60
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805286 E444641	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SILT (TILL) – sandy, gravelly, silty, trace of clay, well graded sand, fine to medium grained angular gravel, compact, moist, dark grey			
						– becomes less sand and gravel			
1.0	■					BEDROCK (PHYLLITE) – poor quality, highly fractured			2.0
									4.0
						END OF TESTPIT 1.5 m (REFUSAL)			
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

LOGGED BY: JSB	COMPLETION DEPTH: 1.5 m
REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:57AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP61
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805366 E444469	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
	■					SAND (TILL) – silty, gravelly, trace of clay, well graded sand, fine to medium grained, subangular gravel, compact, moist, grey		
1.0	■					BEDROCK (PHYLLITE) – poor quality, highly weathered, soft, flat, elongated particles – some cobble sized more competent pieces below 1.0 m		2.0
								4.0
2.0						– competent at 1.8 m END OF TESTPIT 1.8 m (REFUSAL)		6.0
								8.0
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

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Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1.8 m
COMPLETE: 06/07/12

06/08/16 11:57AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP62
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805539 E444207	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ⫼ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
						SILT – sandy, some gravel	
	■					BEDROCK (PHYLLITE) – poor quality, soft, highly fractured, greyish black	
1.0	■					– some coarser and cobble sized pieces below 1.0 m – more competent with depth	
						END OF TESTPIT 1.6 m (REFUSAL)	
2.0							
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 1.6 m
	REVIEWED BY: JRT	COMPLETE: 06/07/12
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06/08/16 11:57AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP63
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805686 E494080	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SILT AND SAND – gravelly			
	■					BEDROCK (PHYLLITE) – silt and sand infilled, good quality, highly fractured, moist grey			
						– cobble, some boulders below 0.8 m			
1.0									2.0
						– competent at 1.2 m			4.0
						END OF TESTPIT 1.2 m (REFUSAL)			
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1.2 m
COMPLETE: 06/07/12

06/08/16 11:57AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP64
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6805912 E443912	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲PERCENT SILT OR FINES▲ 20 40 60 80 / ■PERCENT SAND■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND (TILL) – silty, gravelly, trace of clay, well graded sand, fine to medium grained angular gravel, compact, moist, grey			
						– some cobble present below 0.8 m			2.0
1.0						BEDROCK (PHYLLITE) – good quality, high fractured, silt infilled, grey			
						– competent at 1.2 m			4.0
						ENDO OF TESTPIT 1.4 m (REFUSAL)			
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

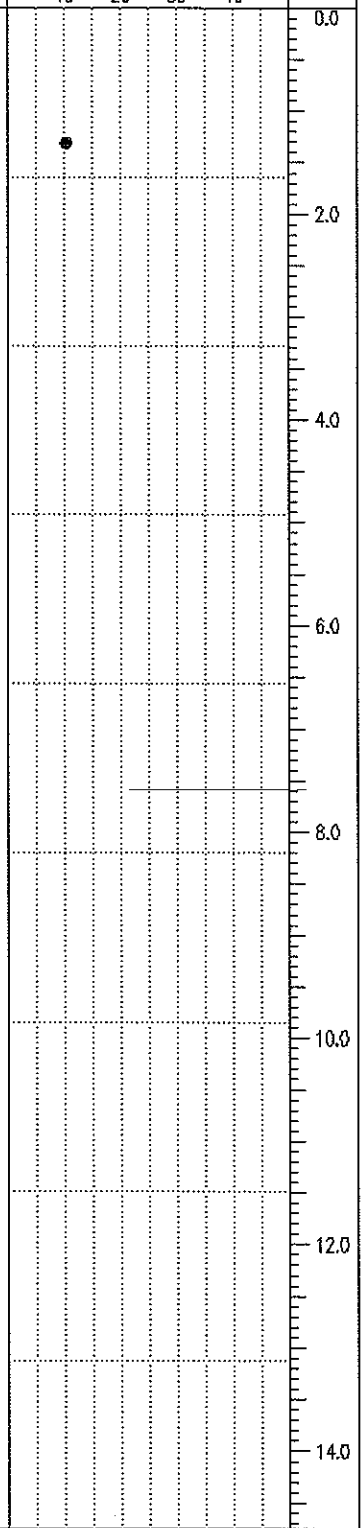
COMPLETION DEPTH: 1.4 m
COMPLETE: 06/07/12

06/08/16 11:58AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP65
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806071 E443702	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					SAND (TILL) – silty, gravelly, trace of clay, well graded sand, fine to medium grained angular gravel, compact, moist, grey – cobbles below 0.6 m	
1.0							
2.0							
3.0							
4.0						BEDROCK – competent END OF TESTPIT 1.2 m	



EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 1.2 m
	REVIEWED BY: JRT	COMPLETE: 06/07/12
		Page 1 of 1

06/08/16 11:58AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP66
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806125 E443750	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND (TILL) – silty, gravelly, trace of clay, well graded sand, coarse angular gravel			
1.0									4.0
	■					– very competent, hard digging below 1.8 m			
2.0						END OF TESTPIT 2.0 m (REFUSAL)			6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 2 m
REVIEWED BY: JRT	COMPLETE: 06/07/12

06/08/16 11:58AM (YUKONPD4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP67
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806252 E443668	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▭ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL – sandy, silty, coarse, angular, compact, moist, dark brown – cobbles, some boulders from 0.2 to 0.6 m – finer grained gravels below 0.6 m – colour changes to reddish brown below 0.6 m			2.0
1.0									4.0
2.0	■					BEDROCK (PHYLLITE) – poor quality, highly fractured, flat, angular			6.0
	■					– becomes competent at 2.5 m			8.0
3.0						END OF TESTPIT 2.5 m – sloughing from upper layers			10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2.5 m
	REVIEWED BY: JRT	COMPLETE: 06/07/13
		Page 1 of 1

06/08/16 11:58AM (YUKON04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP68
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806390 E443591	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					SAND (RESIDUUM) – silty, trace of gravel, angular, moist, compact, reddish brown			
						– mottled reddish brown, grey			2.0
1.0						– less gravel, becomes fine grained with depth below 1.0 m			4.0
	■								
									6.0
2.0									
	■								8.0
						END OF TESTPIT 2.5 m – sloughing			
3.0									10.0
									12.0
4.0									14.0

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06/08/16 11:58AM (YUKONPB4)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP69
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806588 E443501	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▯ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					GRAVEL (TILL) – sandy, silty, trace of clay, well graded gravel, compact, moist, grey – cobbles, some boulders below 0.2 m – colour changes to blackish grey below 0.6 m	
1.0	■					BEDROCK (PHYLLITE) – poor quality, angular, highly fractured, soft, dark grey	
2.0						– becomes competent with depth	
						END OF TESTPIT 2.5 m (REFUSAL) – some sloughing throughout	
3.0							
4.0							

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

EBA Engineering Consultants Ltd. Whitehorse, Yukon	LOGGED BY: JSB	COMPLETION DEPTH: 2.5 m
	REVIEWED BY: JRT	COMPLETE: 06/07/13
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06/08/16 11:58AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP70
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6806860 E443409	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT			0.0
	■					GRAVEL – sandy, silty, coarse grained angular gravel and sand, compact, moist, blackish brown			
							FROZEN Nbn, Vs, 15–20%		2.0
	■					SILT – sandy, gravelly, fine to medium grained, angular sand and gravel, grey			
1.0						END OF TESTPIT 0.8 m (REFUSAL)			4.0
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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COMPLETION DEPTH: 0.8 m
COMPLETE: 06/07/13

06/08/16 11:58AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP71
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807042 E443340	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION
0.0						ORGANIC ROOT MAT	UNFROZEN
	■					SAND (RESIDUUM) – silty, some gravel, coarse grained angular sand and gravel, compact, moist, light grey – interbedded layer of silt throughout	
1.0						– colour changes to reddish brown below 1.0 m	
	■					– sand and gravel becomes softer finer gravel below 1.8 m – silt content increases with depth – colour changes to mottled grey, brown and red	
2.0							
3.0							
	■					GRAVEL (TILL) – sandy, some silt, coarse angular gravel and sand, compact, saturated, dark brown	
4.0						END OF TESTPIT 4.0 m	

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID

10 20 30 40

Depth(ft): 0.0, 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 14.0

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REVIEWED BY: JRT	COMPLETE: 06/07/13
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06/08/16 11:58AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP72
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807314 E443235	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						SAND (TILL) – silty, gravelly, fine grained, moist, compact, dark grey			
1.0						– gravel content increases and becomes coarser below 1.2 m			4.0
2.0						– trace of gravel below 2.0 m – very compact, difficult to excavte beyond 2.0 m			8.0
3.0						END OF TESTPIT 2.8 m (REFUSAL)			10.0
4.0									12.0
									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 2.8 m
REVIEWED BY: JRT	COMPLETE: 06/07/13
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06/08/16 11:58AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP73
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807641 E443119	ELEVATION:

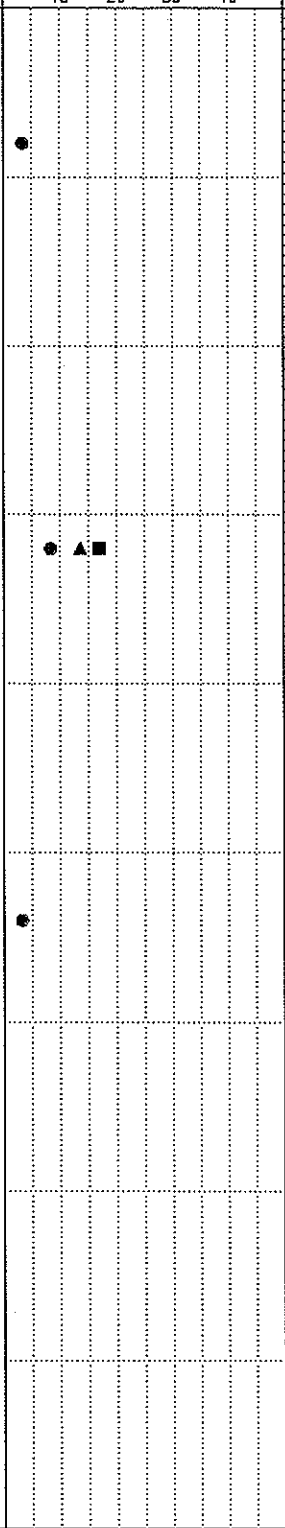
SAMPLE TYPE: GRAB SAMPLE | NO RECOVERY | STANDARD PEN. | 75 mm SPOON | CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN	0.0
						GRAVEL (FLUVIAL) – sandy, trace of silt, well graded subrounded gravel and sand, loose, damp, reddish brown – becomes silty below 0.5 m – colour changes to medium grey around 0.5 m		
1.0								2.0
								4.0
2.0						– becomes trace of silt below 2.0 m – coarse sand below 2.0 m		6.0
								8.0
						END OF TESTPIT 2.5 m (REFUSAL)		
3.0								10.0
								12.0
4.0								14.0

▲ PERCENT SILT OR FINES ▲ 20 40 60 80

■ PERCENT SAND ■ 20 40 60 80

PLASTIC M.C. LIQUID 10 20 30 40



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	REVIEWED BY: JRT	COMPLETE: 06/07/13
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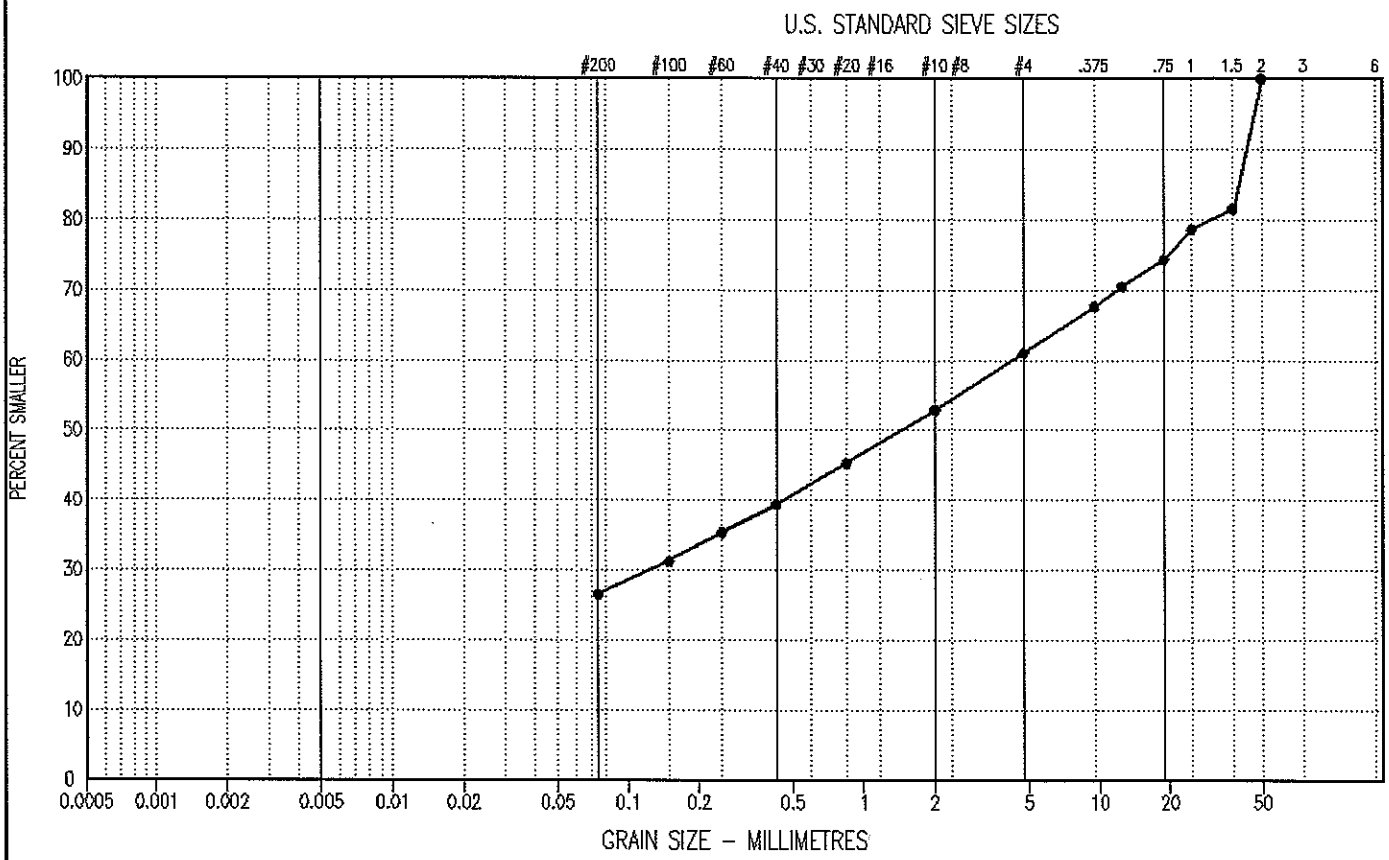
06/08/16 11:59AM (YUKONF04)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●	1200197-TP73	1.50 – 1.70	--- 27 ---		34	39	–	–	

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP74
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807834 E442996	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ▨ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL (FLUVIAL) – sandy, silty, well graded angular gravel and sand, compact, moist brown – cobbles and some boulders throughout			
1.0	■					– becomes trace of silt around 1.0 m			4.0
						BEDROCK – competent			
2.0						END OF TESTPIT 1.8 m			6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

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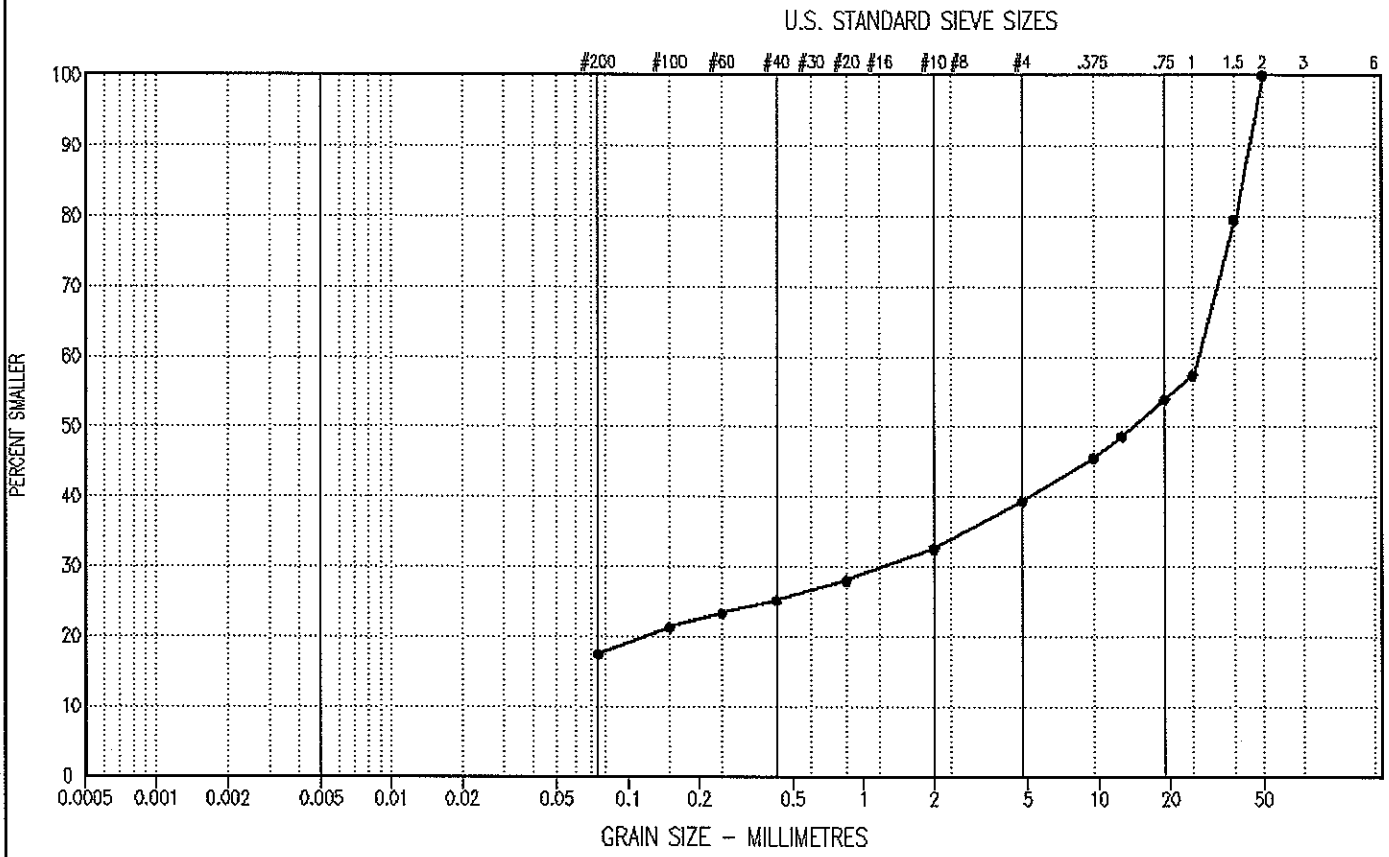
LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1.8 m
COMPLETE: 06/07/13

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION CLAY %	SILT %	SAND %	GRAVEL %	Cu	Cc	U.S.C
●——●	1200197-TP74	1.30 – 1.50	---	17 ---	22	61	–	–	

Project: 0201-1200197 Date Tested: 06/08/04 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP75
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6807834 E442996	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ▤ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
						GRAVEL – sandy, silty, coarse grained angular gravel, well graded sand, compact, moist, grey – cobbles and boulders throughout			
1.0									2.0
									4.0
						END OF TESTPIT 1.4 m (REFUSAL)			
2.0									6.0
									8.0
3.0									10.0
									12.0
4.0									14.0

EBA Engineering Consultants Ltd.
Whitehorse, Yukon

LOGGED BY: JSB
REVIEWED BY: JRT

COMPLETION DEPTH: 1.4 m
COMPLETE: 06/07/13

06/08/16 11:59AM (YUKONP04)

Geotechnical Investigation	CLIENT: Yukon Engineering Services	TEST PIT NO: 1200197-TP76
Proposed Access Road	EXCAVATOR: 320C TRACKED EXCAVATOR	PROJECT NO: 1200197
Wolverine Lake, YT	UTM ZONE: 8 N6808186 E442777	ELEVATION:

SAMPLE TYPE ■ GRAB SAMPLE ⊘ NO RECOVERY ⊠ STANDARD PEN. ☰ 75 mm SPOON ▥ CRREL BARREL

Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	USC	SOIL SYMBOL	SOIL DESCRIPTION	GROUND ICE DESCRIPTION	▲ PERCENT SILT OR FINES ▲ 20 40 60 80 / ■ PERCENT SAND ■ 20 40 60 80 / PLASTIC M.C. LIQUID 10 20 30 40	Depth(ft)
0.0						ORGANIC ROOT MAT	UNFROZEN		0.0
	■					GRAVEL – sandy, silty, well graded gravel and sand, angular, compact, moist, grey – cobbles and boulders throughout			2.0
1.0									4.0
						END OF TESTPIT 1.2 m (REFUSAL)			6.0
2.0									8.0
3.0									10.0
									12.0
4.0									14.0

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LOGGED BY: JSB	COMPLETION DEPTH: 1.2 m
REVIEWED BY: JRT	COMPLETE: 06/07/13
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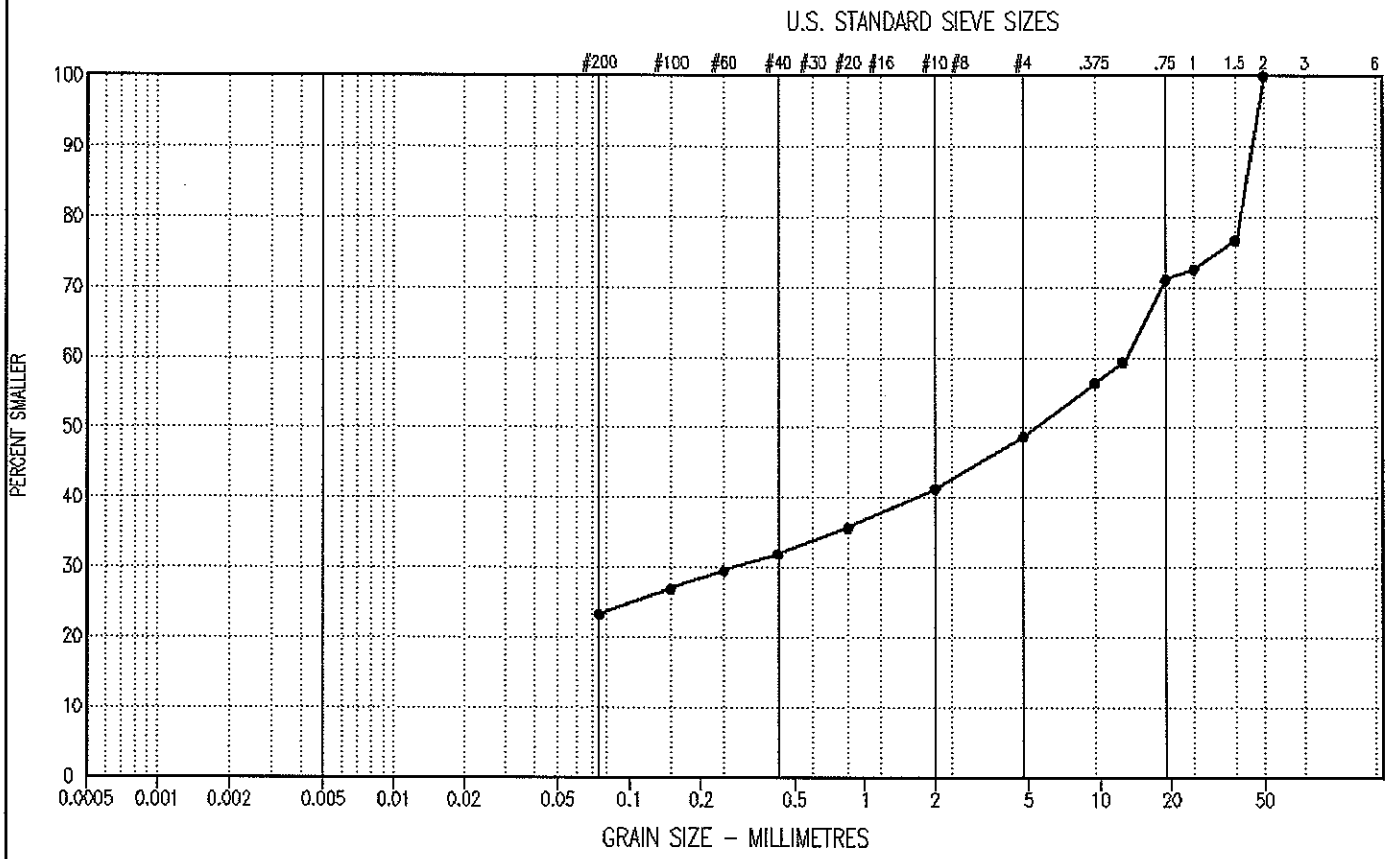
06/08/16 11:59AM (YUKONP84)

EBA Engineering

PARTICLE SIZE – ANALYSIS OF SOILS

CLAY	SILT	SAND			GRAVEL	
		FINE	MEDIUM	COARSE	FINE	COARSE



SYMBOL	BOREHOLE NUMBER	DEPTH (m)	DESCRIPTION				Cu	Cc	U.S.C
			CLAY %	SILT %	SAND %	GRAVEL %			
●	1200197-TP76	0.50 – 0.70	--- 23 ---		25	52	–	–	

Project: 0201-1200197 Date Tested: 06/08/10 BY: PF

Tested in accordance with ASTM D422 unless otherwise noted.

STATION	EASTING	NORTHING	ASPECT	UPSLOPE GRADIENT	DOWNSLOPE GRADIENT	STATE	ICE	PRINCIPAL COMPONENT	PRINCIPAL COMPONENT MODIFIERS		USC SYMBOL	MATERIAL ORIGIN	TERRAIN SYMBOL	PIT DEPTH (m)	PARTICULARS
26JD-1	453428	6818645	NNW	26	22	unfrozen	-	SAND	gravelly	trace silt	GM-GP	colluvium bedrock	Cv/Ra		about 0.5m weathered rock and minor till overlying bedrock; bedrock outcrops common;uniform slope; dry; platy jointing meta-volcanics(?).
26JD-2	453230	6818265	SW	25	22	unfrozen	-	SAND	gravelly	trace silt	GM-GP	colluvium bedrock	Cx/R		about 0.5m weathered rock and minor till overlying bedrock; irregular slope: bedrock outcrops of narrow 3m relief ridges trending downslope; dry; platy jointing meta-volcanics(?); hardness 5-6; jointing is steeply dipping 55° South
26JD-3	453242	6818120	W	15	10	frozen below 0.33m	Nbn	GRAVEL	sandy		GP	colluvium bedrock	pOv/Rj		shallow, sidehill bog with 0.45 peat/organics overlying colluvium and bedrock; in area of 60m wide swale; uniform slope; permafrost
26JD-4	453026	6817753	W	18	0	frozen below 0.30m	Vs-20	SAND	some silt	trace gravel	SM	colluvium bedrock	pOv/gzsCvR		sidehill bog; uniform slope; benchy hillslope; ~20% visible ice, weakly stratified; ice crystals up to 12mm; permafrost
26JD-5	452928	6817361	W	10	10	Stream Crossing							pOv/C?/R?		channel width: 0.35m; depth: 0.07m; meandering; flowing within sidehill bog;
26JD-6	452882	6817321	W	12	10	frozen below 0.28m	Nbn	SAND	some silt		SM	colluvium bedrock	pOv/Cv/R		shallow, sidehill bog with 0.28 peat/organics overlying colluvium and (bedrock?); sidehill bog area; uniform slope; permafrost
26JD-7	452733	6816898	W	18	20	frozen below 0.28m	Nf	SAND	gravelly		GW	glaciofluvial	pOv/FGt		shallow sidehill boggy area with moss cover
27JD-8	451269	6814955	110° SE	20	14	frozen below 0.28m	Nbn	SAND	silty	some gravel	GM	till or colluvium	gzsCb		talus slope?
27JD-9	451094	6814689	103° E	10	8	unfrozen	-	SAND	gravelly	silty	GM	till or colluvium	[Mx]Cv		some sub-rounded clasts (till) mixed with colluvium (angular and sub-angular clasts); moist slope; talus slope?
27JD-10	451116	6814773		10	10	Stream Crossing									variable width and depth; average channel width: 0.8m; depth: 0.15m;
27JD-11	451393	6815193	105° E	13	12	unfrozen	-	SAND	gravelly	trace silt	GM-GP	till or colluvium	gsCb		trace rounded gravel (till)
27JD-12	451543	6815491	E	20	14	Stream Crossing									channel width: 0.8m; depth: 0.11m; uniform slope; within shallow, wide swale
27JD-13	451562	6815548	130° SE	20	24	unfrozen	-	SAND	gravelly	some silt	GM	till or colluvium	gsCb//Mx		some sub-rounded clasts (till) with sub-angular clasts (colluvium)
27JD-14	451757	6815863	130° SE	30	35	unfrozen	-	SAND	gravelly		GW	till or colluvium	gsCb		dry slope; talus? Slope
	451757	6815843				Stream Crossing									located 20m south of 27JD14; similar in size to 27JD12
27JD-15	451967	6816200	115° SE	20	12	frozen below 0.30m	Nbn	SAND	silty	organics	-	till or colluvium + organics	pOx/C		shallow sidehill bog area with moss cover; C and O mixed within seasonally active layer.
27JD-16	452079	6816434	E	12	0	Stream Crossing									channel width: 0.60m; depth: 0.10m; flowing within sidehill bog; flows into flat wetland at this location.
27JD-17	452146	6816555	E	6	15	frozen below 0.32m	Nbn	-	-	-	-	organic	pOv/[C]	0.59	"refusal" in frozen organics at 0.59m; mostly non-visible ice, but a shallow peat layer included a discontinuous 20mm thick strata of 50% visible stratified ice.
27JD-18	452274	6816294	0	5	0	unfrozen	-	SAND	some silt	some gravel	GM	alluvium	zgsAp	0.40	
27JD-19	452322	6816348				Stream Crossing: Light Creek									estimated present channel width: 1.4m; depth: 0.25m; estimated full bank width: 5.0m; estimated full bank depth: 0.5m.
27JD-20	452399	6816394	0			unfrozen	-	SAND	gravelly		GW	glaciofluvial	gsFGt	0.64	on flat-topped, low relief ridge between Light Creek and Pitch Creek; eroded FG terrace; sloughing on gully sideslopes noted 30m NE of this site
27JD-21	452454	6816441				Stream Crossing: Pitch Creek									estimated present channel width: 1.1m; depth: 0.1m; estimated full bank width: 4.5m; estimated full bank depth: 1.6m.
27JD-22	452563	6816470	0			unfrozen	-	SAND and	GRAVEL				gsFGr	0.60	eroded glaciofluvial terrace
27JD-23	452741	6816688	270° W	20	15	frozen below 0.32m	Nbn	-	-	-	-	organic	pOv/[C?]	0.45	sidehill bog; uniform slope; "refusal" within frozen organics at 0.45m; same terrain polygon back to 50m N of 27JD22.
27JD-24	453747	6818790	0			unfrozen	-	GRAVEL	some sand			bedrock	sgCx/R	0.70	south side cutslope at Robert Campbell Highway; on crest of broad, rounded low-relief ridge oriented SW-NE;
27JD-25	453916	6818763	0			unfrozen	-	GRAVEL	and SAND			glaciofluvial	sgFGt	4	gravel borrow pit on Robert Campbell Highway 200m east of access road; glaciofluvial terrace; ~10% oversize (>75mm)

APPENDIX

APPENDIX A *General Conditions

GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

3.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

4.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.

5.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgmental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

6.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

7.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

8.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

9.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

10.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

11.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

12.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the client's expense upon written request, otherwise samples will be discarded.

13.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practising under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

14.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

15.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EBA shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EBA shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

The Client recognizes and agrees that electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.