BOREHOLE LOG

PROJET: Iqaluit Airport
SITE: Emergency access road
BOREHOLE NO.: IQA_AERO_DDH_13_11
COORDINATES: X:522395.6141 Y:7069861.2674
ELEVATION: 24
START DATE: 14-05-2013
END DATE: 14-05-2013

Instrumentation
- Temperature sensor (Decagon ECT)
- Temperature sensor (YSI 44033)
- Volumetric water content, temperature and bulk electrical conductivity (Decagon 5ET)
- Volumetric water content (Decagon EC-5)
- Pressure sensor

Instrumentation
- PVC casing

Sampling method
- Excavation
- Diamond core
- Slit spoon
- Destructive

Recovery
- Recovered
- No recovery

Sample state
- *Ud-F* Undisturbed and frozen
- *Ud-Uf* Undisturbed and unfrozen
- *D-F* Disturbed and frozen
- *D-Uf* Disturbed and unfrozen

C/H/N
- *w* Water content (%)
- *p* Bulk density (g/cm-3)
- C Carbon (%)
- H Hydrogen (%)
- N Nitrogen (%)

Depth (m)	Instrumentation	Stratigraphy	Image	CT (HU) 3071 / -1024	TI profile (HU) -1024 / 1024 / 3071	Soil description	Sampling method	Recovery	Sample state	Sample name	Volume (%) Soil / Ice / Air (0 – 100)	Water content (%)	Salinity (ppm)	Grain size G	Grain size S	Grain size M-C	Consistency wl	Consistency wp	Consistency Ip	Consistency IL	USCS	Consol. kPa 25	Consol. kPa 50	Consol. kPa 100	C/H/N w	C/H/N p	C/H/N C	C/H/N H	C/H/N N	Radiocarbon dates 14C (BP)	Radiocarbon dates ±	Radiocarbon dates Material
0.00						Gravel and sand with small brown cobble (embankment). Pore ice.			D-Uf	13_11_0-59		2.8		46.7	49.1	4.2					SP											
									D-Uf	13_11_59-110																						
-1.00									D-Uf	13_11_110-170																						
									D-Uf	13_11_170-230		4.2		7.6	84.6	7.9	18.1				SW-SM											
-2.00																																
						Fine brown gravel and caorse to medium sand. Occasional layer of ice-rich dark brown peat. This unit correspond to the natural terrain surface before construction.			Ud-F	13_11_239-249		13.7		10.0	73.1	16.9	26.0	21.4	4.7	-1.6	SM-SC										
										13_11_249-257		14.0																				
										13_11_257-271		17.4																				
						Subhorizontal cryoturbated lamination of gravelly				13_11_271-275		15.1		1.2	63.8	35.0					SM											

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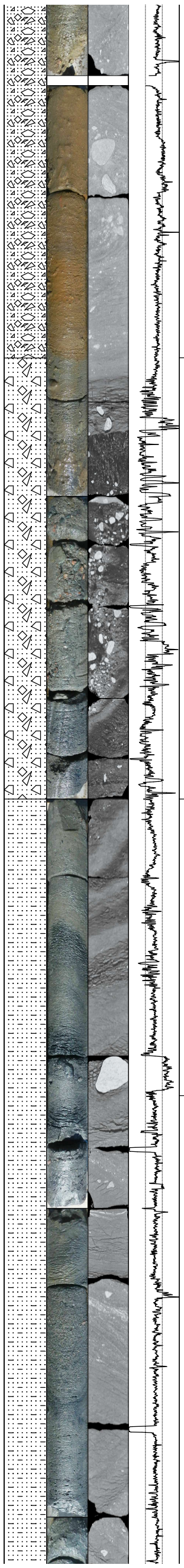

Stratigraphic information

Depth (m)	Soil description
	medium to fine beige sand (paleo active layer?).
-3.00	Gray silty fine sand with medium gravel. Fine ice lenses from 3,40 to 3,50 m. Very ice rich with many elongated air bubbles between 3,50 and 3,59 m. Crustal cryostructure in the coarser sediment from 3,61 to 3,95 m and reticulated ice lenses between 3,97 and 4,13 m. This is interpreted as the transient layer (previous top of the active layer).
-4.00	Silty fine sand who's color alternate between gray and black. Presence of subhorizontal fine ice lenses in the darker layer. Occasional microfault. Very small subrounded cobble from 4,60 to 4,66 m.
-5.00	Silty fine sand embedded with subhorizontal bedding of fine gravel and coarse sand. Really coarse gravel and small boulder from 5,97 and 6,07 and 10,40 and 10,45 m. Occasional oxydized layer and heavy minerals. Horizontal and inclined fine ice lenses. Presence of microfaults (dessication or sediment overload?).

Sampling characteristic / **Laboratory analysis**

Sample name	Sampling method	Recovery	Sample state	Volume (%) (Soil / Ice / Air)	Water content (%)	Salinity (ppm)	Grain size G	Grain size S	Grain size M-C	Consistency wl	Consistency wp	Consistency Ip	Consistency IL	USCS	Consol. kPa 25	Consol. kPa 50	Consol. kPa 100	C/H/N w	C/H/N p	C/H/N C	C/H/N H	C/H/N N	Radiocarbon dates 14C (BP)	±	Material
13_11_275-283					14.8																				
13_11_290-303			Ud-F		13.6		14.1	52.5	33.5	18.9	16.1	2.8	-0.9	SM											
13_11_304-308					12.2																				
13_11_309-312					14.3																				
13_11_312-322							17.0	48.1	35.0					SM											
13_11_322-336					18.2		4.3	49.8	45.9	19.9	17.3	2.6	0.4	SM		3.71	6.39								
13_11_336-345					31.9																				
13_11_345-346					142.2																				
13_11_346-356							4.4	68.5	27.1					SM											
13_11_356-359					144.9																				
13_11_359-366			Ud-F		59.4																				
13_11_366-377					48.6																				
13_11_377-388					51.5																				
13_11_388-395					46.5																				
13_11_395-403					74.1		3.5	57.4	39.1					SM											
13_11_407-413					110.4																				
13_11_414-428			Ud-F		48.4		6.1	62.5	31.4	22.4				SM											
13_11_460-469					23.8																				
13_11_469-476					34.5																				
13_11_476-484					23.8																				
13_11_482-491			Ud-F		30.1	0.5																			
13_11_491-496																							14560	45	Organic Mater
13_11_496-506					20.9		2.2	87.3	10.5					SP-SM											
13_11_506-514					24.1		0.0	89.7	10.3					SP-SM											
13_11_514-522					26.1																				
13_11_522-529					26.3																				
13_11_529-537					25.9		0.3	46.3	53.5	22.5	16.9	5.6	1.6	ML-CL											
13_11_539-548					23.1																				

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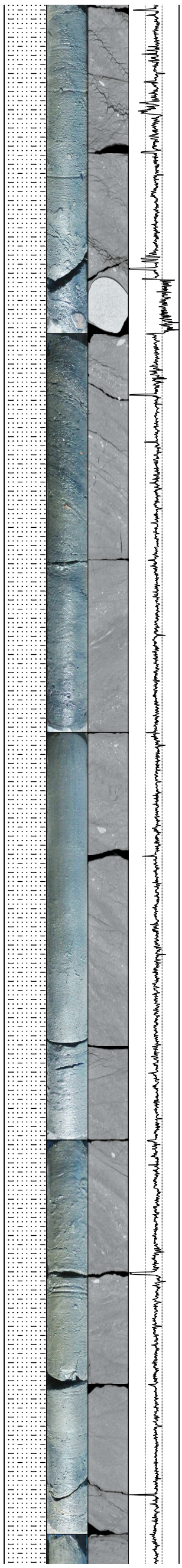

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			Ud-F	13_11_548-561	25.6																				
				13_11_561-569	27.7																				
				13_11_569-575	30.7																				
				13_11_575-587	22.7		0.9	58.1	40.9	21.3	17.8	3.5	1.4	SM											
				13_11_587-596	26.0																				
-6.00				13_11_596-600	20.3																				
			Ud-F	13_11_606-619	20.7																				
				13_11_619-628																					
				13_11_628-636	20.5																				
				13_11_636-646	22.6																				
			Ud-F	13_11_678-690	21.9		0.6	45.8	53.6	21.7	18.1	3.6	1.1	ML											
				13_11_690-698	21.3																				
				13_11_698-703	22.2																				
-7.00			Ud-F	13_11_735-750	22.9		0.0	70.3	29.7	23.6				SM											
			Ud-F	13_11_750-759	22.8																				
				13_11_759-766	20.8																				
				13_11_766-773	24.4																				
				13_11_773-782	24.3																				
				13_11_782-791	22.2																				
-8.00				13_11_797-809	23.1																				
				13_11_809-819	27.4																				

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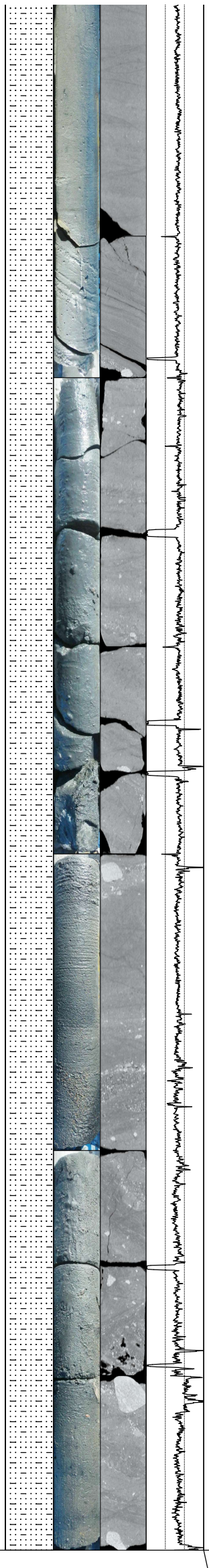

Depth (m)	Sampling method	Sample state	Sample name	Water content (%)	Salinity (ppm)	Grain size G	Grain size S	Grain size M-C	Consistency wl	Consistency wp	Consistency Ip	Consistency IL	USCS
		Ud-F	13_11_862-871	25.4		0.0	44.8	55.2	23.1	17.7	5.5	1.4	ML-CL
			13_11_871-879	26.5									
			13_11_879-884	17.1									
		Ud-F	13_11_882-895	19.2	0.9								
-9.00			13_11_895-908	20.2									
			13_11_908-918	19.5									
			13_11_918-926	18.3									
			13_11_926-940	20.1									
			13_11_940-946	20.3									
			13_11_946-956	19.2									
		Ud-F	13_11_956-1003										
-0.00		Ud-F	13_11_1002-1021	23.2		2.7	82.0	15.3	24.2				SM
			13_11_1021-1040	22.4									
			13_11_1040-1049	13.4									
			13_11_1049-1057	20.5		1.1	75.0	24.0	22.4	20.3	2.1	0.1	SM

End of borehole at 10,64 m.

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