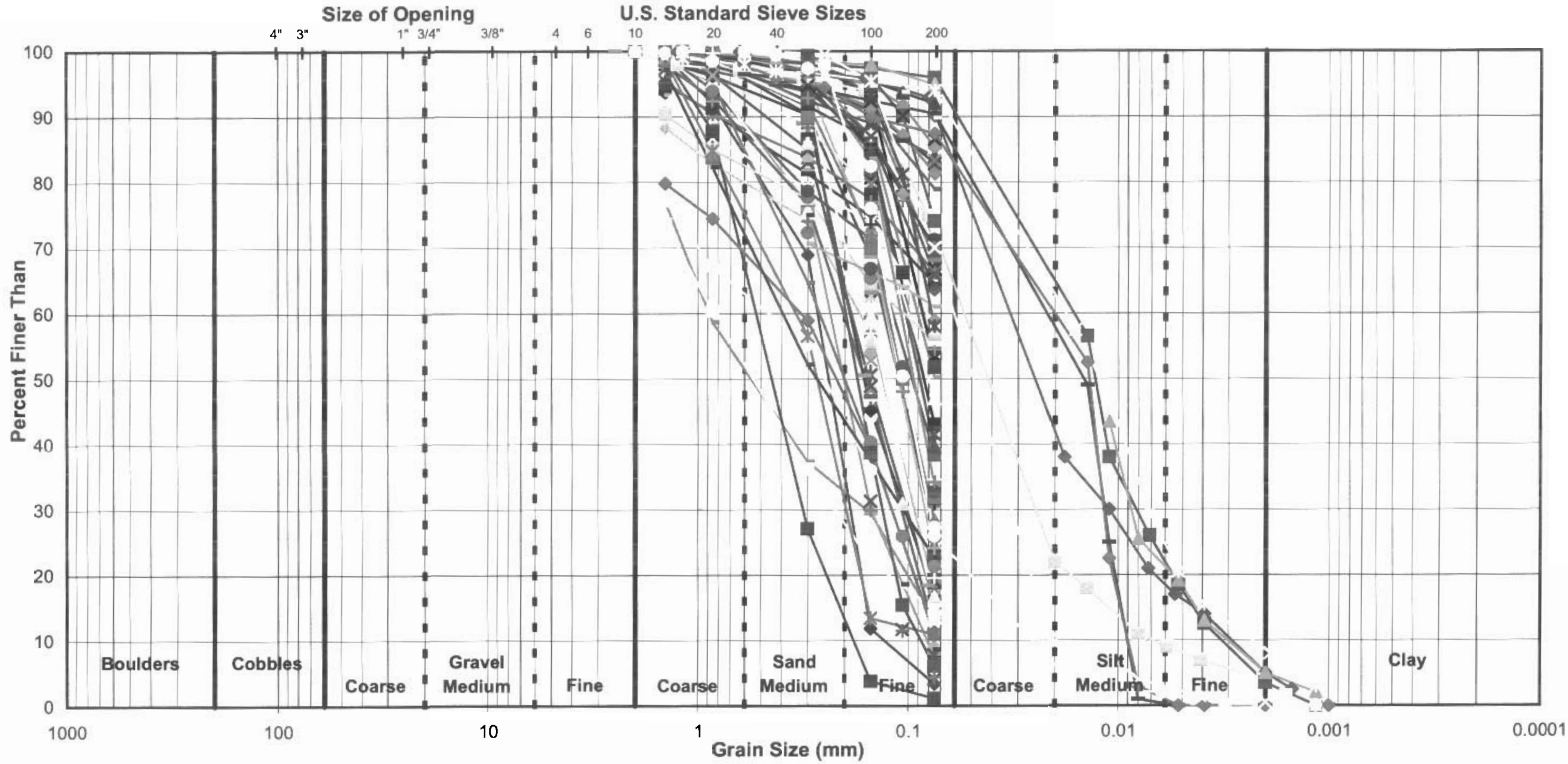
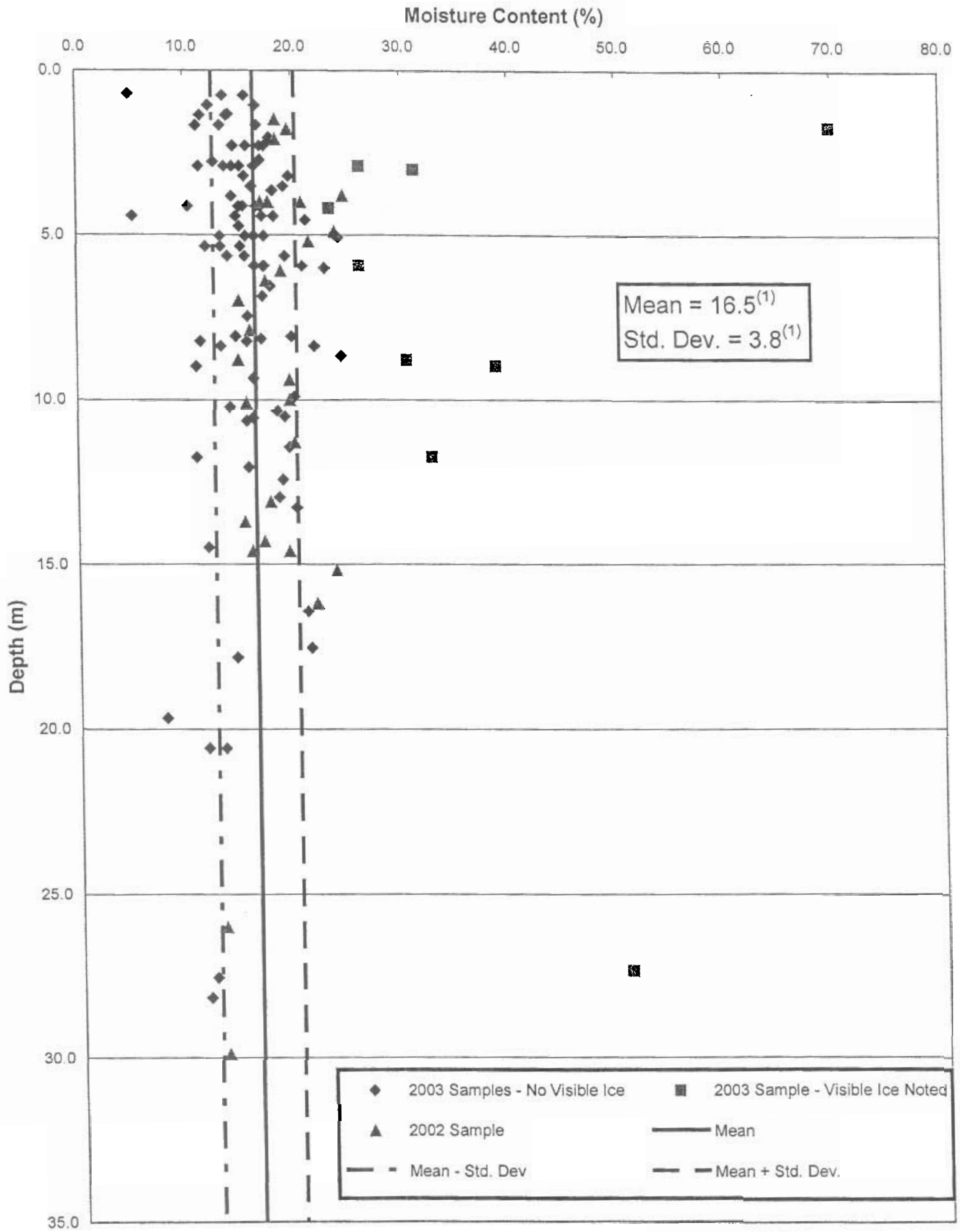


Note:
1. 120 samples tested.
2. D_{50} ranges between 0.55 to 0.015 mm.

BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY	PROJECT: ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS
CLIENT: NANISIVIK MINE, A DIVISION OF CANZINCO LTD.	TITLE: GRAIN SIZE DISTRIBUTION ANALYSIS SURFACE CELL TAILINGS
	PROJECT NO. 0255-008-03
	DWG. NO. FIGURE 8



Note: (1) Calculated from 108 samples of tailings collected in 2002 and 2003 in Surface Cell and Test Cell Dike and toe of WT Dike containing no visible ice.

SCALE:	As Shown	DESIGNED:	GKC
DATE:	JANUARY 2004	CHECKED:	GKC
DRAWN:	SLF	APPROVED:	JWC

CLIENT: NANISIVIK MINE, A DIVISION OF CANZINCO LTD.

BGC Engineering Inc.
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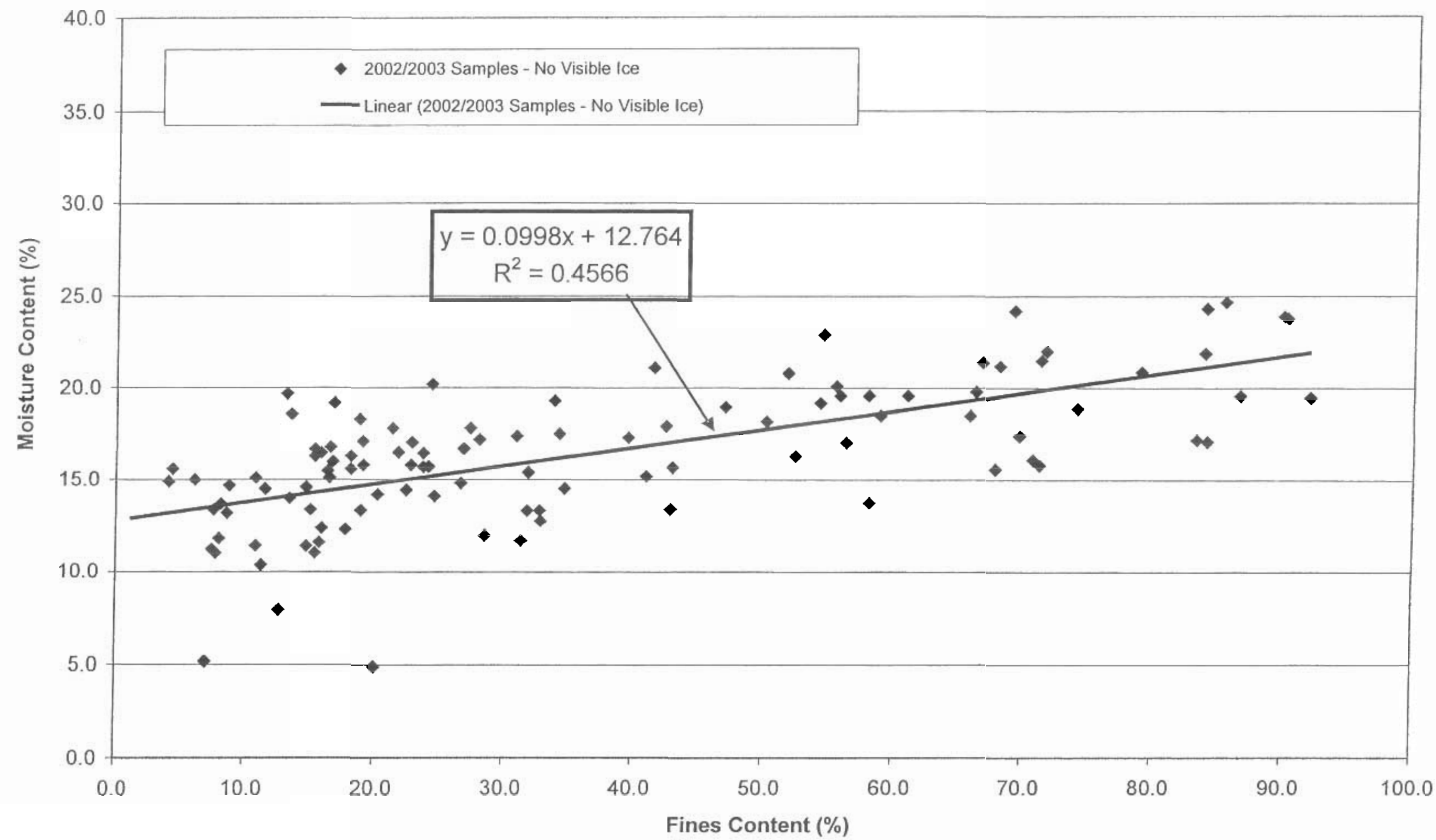
Calgary, Alberta. Phone: (403) 250-5185

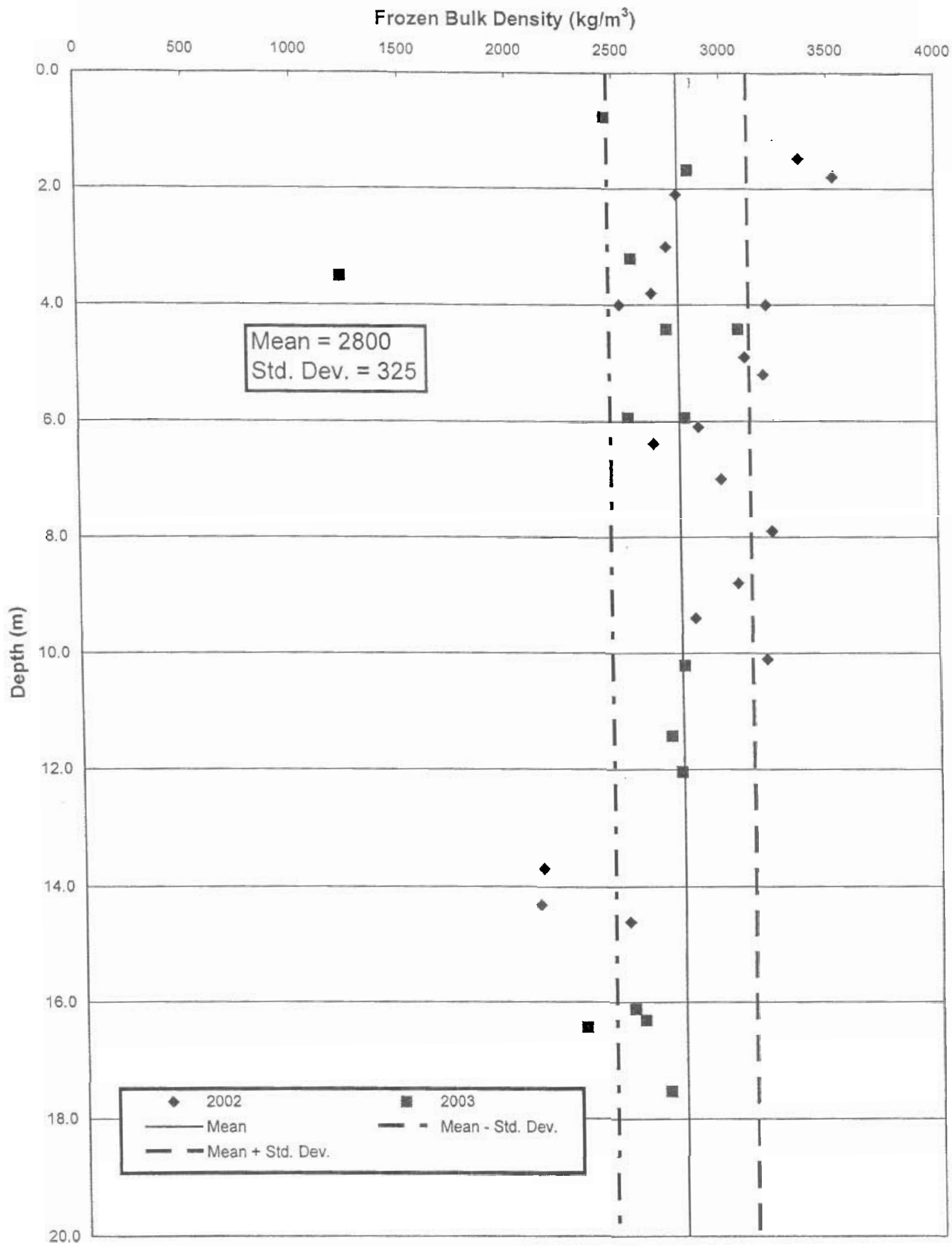
PROJECT: ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS

TITLE: MOISTURE CONTENT PROFILE TAILINGS

PROJECT No.	DWG. No.	REV.
0255-008-03	9	0



DATE: JAN 2004	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT	ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS		
			TITLE	RELATIONSHIP BETWEEN MOISTURE CONTENT AND FINES CONTENT - TAILINGS		
		CLIENT NANISIVIK MINE, A DIVISION OF CANZINCO LTD.	PROJECT No. 0255-008-03		DWG. No. 10	REV. 0



Note: mean and standard deviation calculated considering samples collected in 2002 and 2003.

SCALE:	As Shown	DESIGNED:	GKC
DATE:	JAN 2004	CHECKED:	GKC
DRAWN:	SLF	APPROVED:	JWC

CLIENT: NANISIVIK MINE, A DIVISION OF CANZINCO LTD.

PROJECT: ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS

TITLE: FROZEN BULK DENSITY PROFILE - TAILINGS

BGC Engineering Inc.
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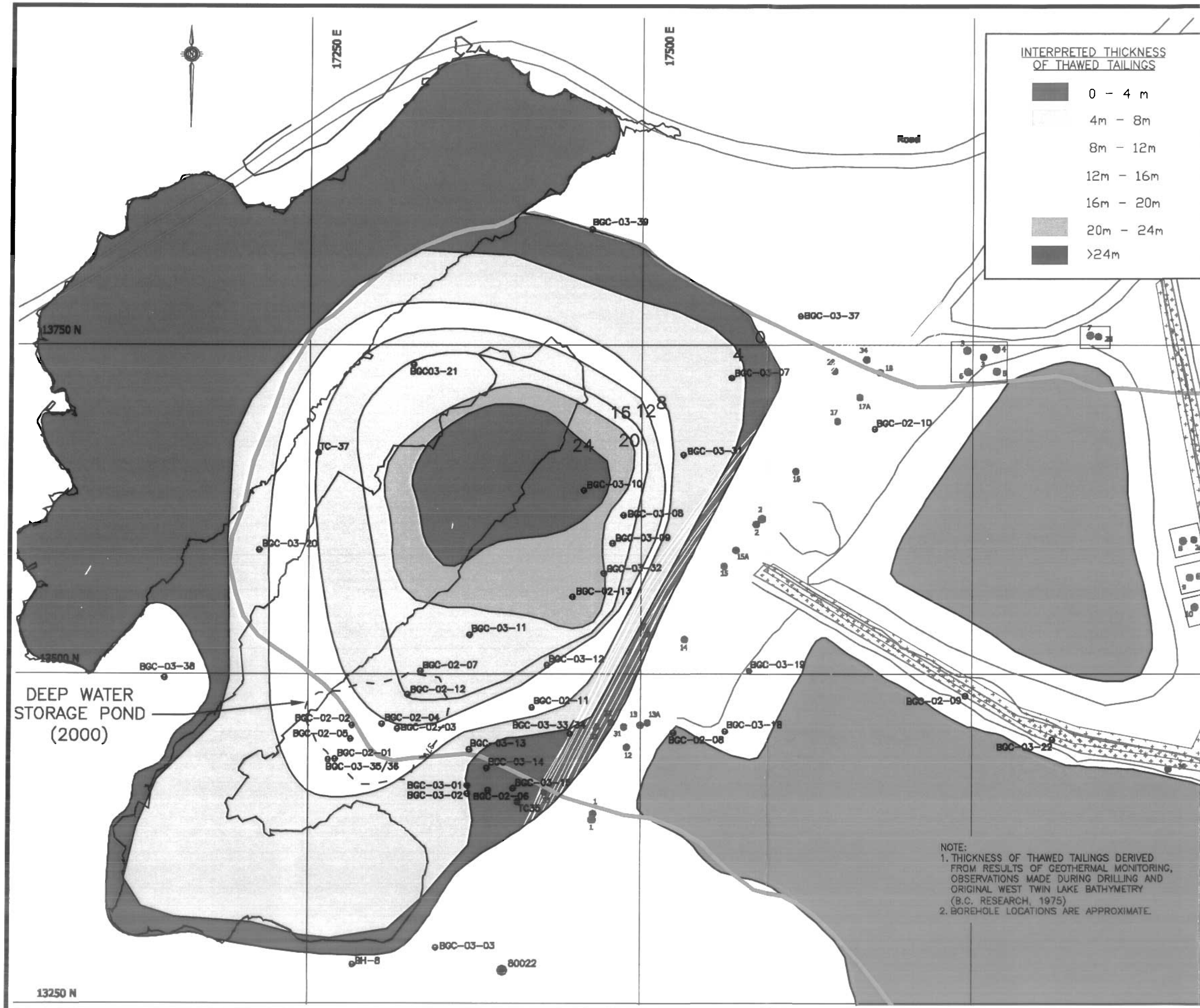
Calgary, Alberta. Phone: (403) 250-5185

PROJECT No.	DWG. No.	REV.
0255-008-03	11	0



CLIENT: NANISIVIK MINE
A DIVISION OF CANZINCO LTD.

LEGEND

- 2002/2003 GEOTECHNICAL BOREHOLE/TEST PIT
- ORIGINAL LAKE OUTLINE (APPROXIMATE)
- CURRENT AREA OF PONDED WATER IN SURFACE CELL (SEPTEMBER 2003)
- SYMBOL DENOTES THERMOCOUPLE LOCATION
- SYMBOL DENOTES FROST GAUGE LOCATION

60m 0 60m 120m 160m

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	JAN 2004
DRAWN:	CJT
DESIGNED:	GKC
CHECKED:	JWC
APPROVED:	JWC

PROJECT: ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS

TITLE: SURFACE CELL TALIK MAGNITUDE AND EXTENT

PROJECT No.	DWG No.	REV.
0255-008-03	13	0

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0255-008-03 007 FIGURE_13.dwg

NOTE:
1. RESERVOIR AND TEST CELL TOPOGRAPHY DERIVED FROM DRAWING New Final Bath V14.dwg SUPPLIED BY NANISIVIK MINE.
2. THICKNESS OF THAWED TAILINGS DERIVED FROM RESULTS OF GEOTHERMAL MONITORING, OBSERVATIONS MADE DURING DRILLING AND ORIGINAL WEST TWIN LAKE BATHYMETRY (B.C. RESEARCH, 1975)
3. BOREHOLE LOCATIONS ARE APPROXIMATE.

CLIENT: NANISIVIK MINE
A DIVISION OF CANZINCO LTD.

LEGEND

- 2002/2003 GEOTECHNICAL BOREHOLE/TEST PIT
- ORIGINAL LAKE OUTLINE (APPROXIMATE)
- SYMBOL DENOTES THERMOCOUPLE LOCATION
- SYMBOL DENOTES FROST GAUGE LOCATION

REV.	DATE	REVISION NOTES	DRAWN	CHECKED	APPROVED

SCALE:	AS SHOWN
DATE:	JAN 2004
DRAWN:	CJT
DESIGNED:	GKC
CHECKED:	JWC
APPROVED:	JWC

PROJECT: ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS

TITLE: TEST CELL TALIK MAGNITUDE AND EXTENT

PROJECT No.	DWG No.	REV.
0255-008-03	15	0

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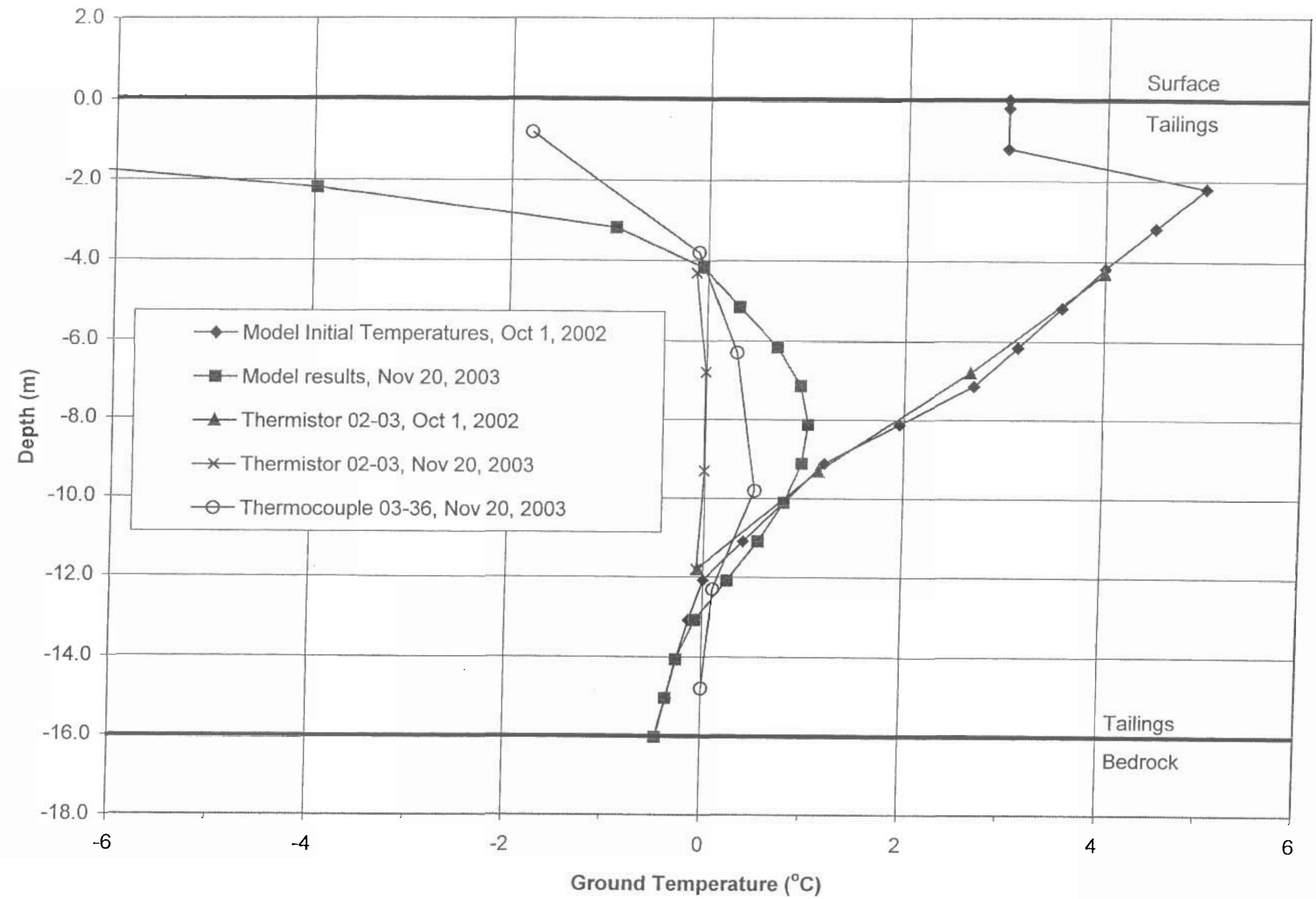
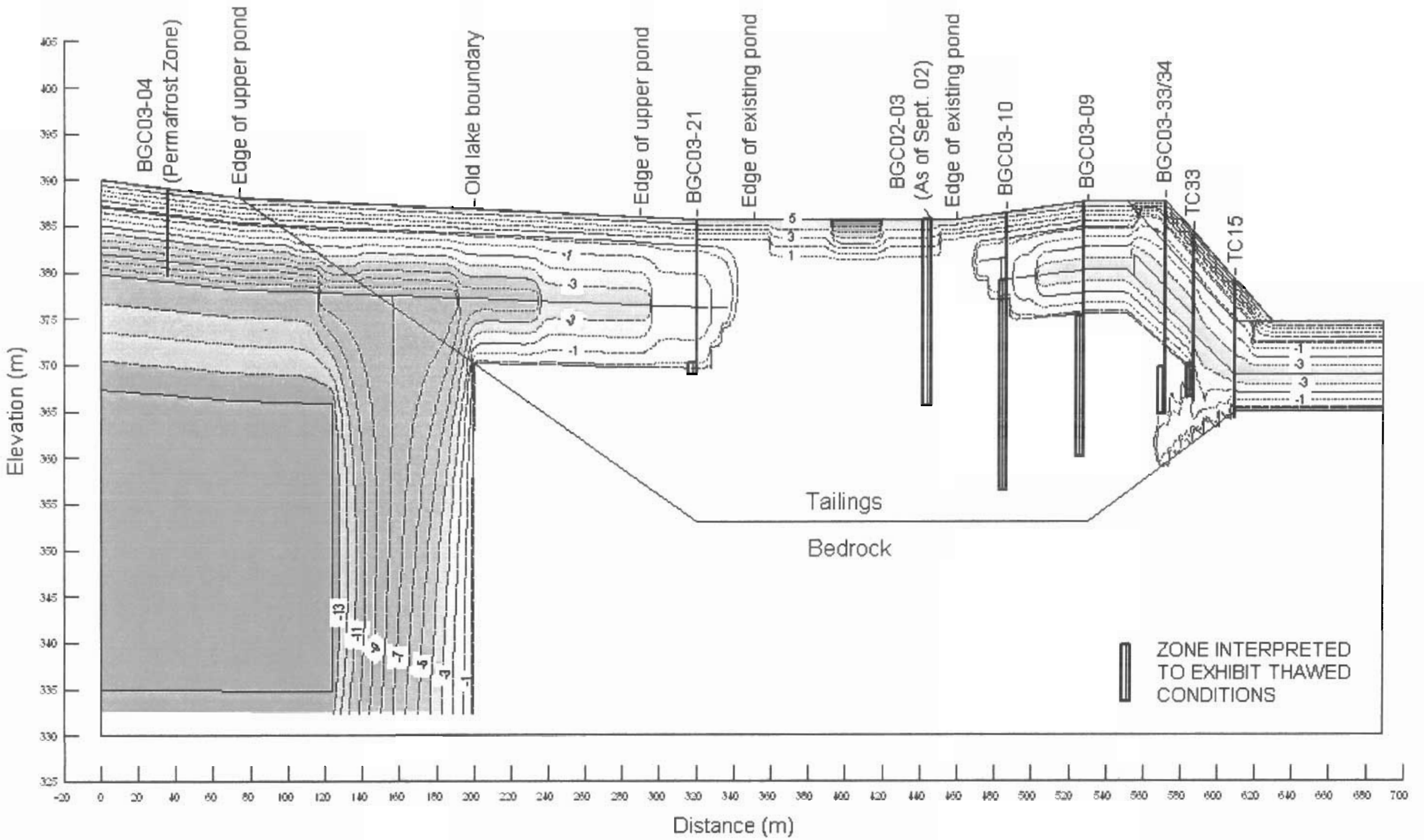
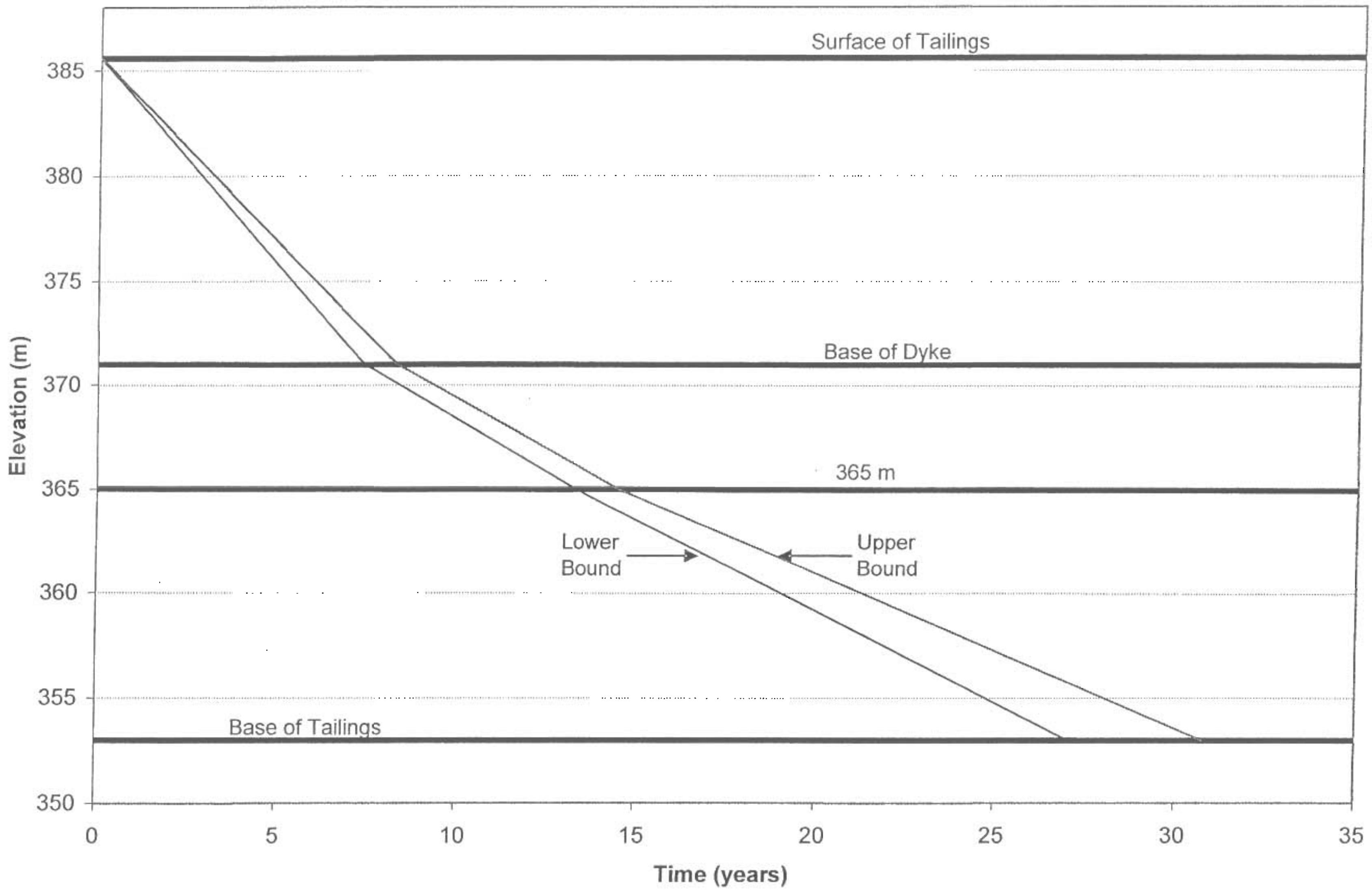


DATE: JAN 2004	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS	
			TITLE RESULTS OF CALIBRATION MODELING	
AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.		CLIENT NANISIVIK MINE, A DIVISION OF CANZINCO LTD.	PROJECT No. 0255-008-03	DWG. No. 16 / REV. 0



DATE: JAN 2004	DRAWN SLF	**BGC ENGINEERING INC.** AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS		
			TITLE MODEL GEOMETRY AND INITIAL GEOTHERMAL CONDITIONS		
		CLIENT NANISIVIK MINE, A DIVISION OF CANZINCO LTD.	PROJECT No. 0255-008-03	DWG. No. 17	REV. 0



DATE: JAN 2004	DRAWN SLF	BGC ENGINEERING INC. AN APPLIED EARTH SCIENCES COMPANY Calgary, Alberta Phone: (403) 250-5185	PROJECT ASSESSMENT OF SURFACE CELL AND TEST CELL TALIKS		
			TITLE ENVELOPE OF FREEZE-BACK		
		CLIENT NANISIVIK MINE, A DIVISION OF CANZINCO LTD.	PROJECT No. 0255-008-03	DWG. No. 18	REV. 0

APPENDIX I – CLIMATE DATA REVIEW

Appendix I - Climate Data Review

1. Climate Stations

The relevant baseline climatic data required for this study includes air temperature, precipitation, evaporation, wind speed and solar radiation. Atmospheric Environment Services (AES) of Environment Canada maintains a network of climate monitoring stations in Nunavut, which have systematically collected some of the required data. An AES station exists at the airport in Nanisivik and DIAND maintained a weather station at the WTDA between 1993 and 2001. However, not all required climate data is available from the Nanisivik weather station; some information had to be extrapolated from other weather stations. Table I-1 identifies the different weather stations that are proximal to Nanisivik.

When available, and of sufficient quality, climatic data was used from the Nanisivik Airport AES Station. The airport is located 10 km from, and 270 m higher in elevation than the WTDA. Climate data that was used from this station includes maximum and minimum air temperature, maximum and minimum relative humidity values and precipitation. The DIAND station at the WTDA was installed to calculate the average annual evaporation rate between 1993 and 2001, but its data sets are not consistent through the year.

Despite the proximity of the Arctic Bay weather station, climate data comparisons with the Nanisivik AES Station are significantly different. Mean annual air temperatures for Nanisivik and Arctic Bay differ by approximately 1.3°C, demonstrating the influence of elevation and proximity to the ocean. As a result, the Arctic Bay station was not considered representative for Nanisivik or the WTDA.

The average wind speed values and snow depth readings were derived from the Resolute Airport Station. Historically, wind speed values were not recorded from the Nanisivik Station. The Resolute weather station was chosen for snow depth readings since records have been kept at this location since 1955, whereas only partial snow depth data is available at Nanisivik since 1981. The Nanisivik Station contains insufficient data to develop appropriate snow depth monthly average values.

2. Air Temperature

The long-term daily air temperature data recorded at the Nanisivik Station were analyzed to determine the mean and extreme monthly temperature distributions for the project site. Table I-2 summarizes the resulting statistics of mean monthly air temperatures. The estimated long-term mean monthly air temperatures range from -30.3°C in February to +4.9°C in July. Based on the long term mean data (1977-2000), the mean annual air temperature (MAAT) for the site is -15.1°C. The highest MAAT occurred in 1977 and was recorded to be –13.9° C. The lowest recorded MAAT occurred in 1986 and was recorded to be –16.8°C.

Figure I-1 illustrates yearly MAAT values versus time for the history of the climatic records (1977-2002) at the Nanisivik Station. A linear regression trend line has been added to the plot to help identify trends in the data. From the 20 years of available data (6 years missing), an apparent trend of 0.6°C/decade of warming can be seen in the Nanisivik weather data. The coefficient of determination, r^2, for the trend at Nanisivik was only 0.22, (or 22% correlation) a low value considering perfect correlation would result in a value of 1.0. The same plot, Figure I-2, was developed for the Resolute data since a much larger database (1948-2000) was available. From the Resolute data, a warming trend of 0.12°C/decade was determined, based on an even lower correlation value of only 0.037.

Long-term temperature data from the Nanisivik Station was also used to determine the 1 in 100 warm year temperatures for the area. Monthly data from the period 1976 to 2000 was analyzed; incomplete monthly data was removed from the analysis. The analysis was completed according to the following procedure:

1. The average monthly temperatures were determined. As noted above, only complete monthly data available from the Nanisivik station was used.
2. The monthly averages were used to calculate MAAT and standard deviation of the MAAT.
3. Assuming that the MAAT values were normally distributed, the mean and standard deviations were used to determine the average temperature for a warm year with a return period of 100 years.
4. The individual monthly temperatures for the 1 in 100 warm year were determined by addition of the difference of the average yearly temperature (point 2) and the 100 year warm year (point 3) to the average monthly temperatures.

As a result, the 1 in 100 year warm annual temperature is estimated to be -13.3°C.

The air freezing index (AFI) and the air thawing index (ATI) were calculated for Nanisivik using the long-term mean daily air temperatures from the Nanisivik Station. The AFI is defined as the accumulation of mean daily temperatures below zero degrees Celsius during a one year period. Similarly, the ATI is defined as the accumulation of mean daily temperatures above zero degrees Celsius during a one year period. The mean AFI and ATI values for Nanisivik amounted to 5824 and 275°C-days, respectively.

3. Precipitation

The recorded precipitation data at the Nanisivik Station was selected to represent the project site precipitation characteristics due to its close proximity and similar elevation. Table I-3 presents the mean monthly and historical extreme precipitation values for the project site based on that data. Hence, Nanisivik has a mean precipitation value of 240 mm/year, not accounting for snowfall undercatch.

Figure I-3 illustrates total snowfall accumulations over time for the Nanisivik Airport weather station and the Resolute weather station. For thermal modeling purposes, comparisons were made to the Resolute data since the records were more complete at that station. Nineteen of the 23 years of available precipitation data for Nanisivik contained incomplete data, whereas Resolute had only 2 years of incomplete data within its 52 years of data. As can be seen, the maximum mean snow accumulation at Nanisivik is approximately 23 cm. Additionally, the total snow accumulation at the Resolute Station was observed to be approximately 5 cm higher than at Nanisivik.

Golder (1998) conducted a frequency analysis on the annual precipitation series at the Nanisivik Airport climate station to derive extreme annual precipitation rates for the project site. The results for selected return periods are presented in Table I-4, which shows that the derived extreme annual precipitation for 1 in 100 year return period is 380 mm.

Golder (1998) also estimated short duration extreme rainfall events for Nanisivik. Available short duration extreme rainfall data from the AES station at Pond Inlet was used in their analysis due to the lack of available site specific data for Nanisivik. The resulting extreme rainfall depths for various durations and frequencies ranging from 2 to 100 year return periods are summarised in Table I-5. The results indicate that a 24 hour 1:100 year precipitation event would amount to 36 mm of precipitation.

Golder (1998) also provided an assessment of Probable Maximum Precipitation (PMP). Huschke (1959) defines the PMP as “the greatest depth of precipitation, for a given duration, meteorologically possible for given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends”. CDA (1999) notes that the PMP is a description of the upper physical bound to precipitation that the atmosphere can produce. Hence, a PMP value is considered an upper bound parameter available for design of the tailings ponds and other drainage facilities.

Golder (2002) estimated the PMP for Nanisivik to be approximately 140 mm. It was recognized that very limited short duration rainfall data is available in the Baffin region and that the PMP value is only an estimate based on readily available data.

4. Lake Evaporation

Site specific evaporation data for the WTDA were collected by Mr. Bob Reid (DIAND - Yellowknife) between 1993 and 2001. The results of the study are summarized in Table I-6. The lake evaporation rates provided by Mr. Reid were reviewed to provide a basis for estimating the monthly and annual lake evaporation rates. The results indicate that the mean annual evaporation at the WTDA is approximately 200 mm/year. Based on mean climatic conditions, precipitation exceeds lake evaporation by approximately 40 mm per year.

5. Global Warming

Climate change, and more specifically, global warming, is an on-going phenomena in the world today and its affects appear to be magnified at northern latitudes. Environment Canada (1995) notes that mean annual temperatures within the Mackenzie Valley have increased by 1.7°C over the last century. Burn (2002) notes that near surface permafrost in the Mackenzie Delta has warmed rapidly in response to regional climate warming; he also notes though, that warm permafrost in southern and central Yukon has showed little response to climate warming. Beilman et al. (2000) indicates that the southern limit of permafrost in Western Canada has moved northward by 39 km on average. Alternatively though, some records for the eastern Arctic and northern Quebec (Allard et al. 1995) previously showed cooling occurring over the same time period in which Mackenzie Valley warming has been documented. That observation has recently been superseded by Allard et al. (2002) that notes that permafrost warming is now occurring in northern Quebec, beginning with summer temperatures in 1993 and winter temperatures in 1995.

There is still much debate in both the scientific and the public circles on whether climate change is a natural phenomena or caused by anthropogenic ("man-made) inputs to the atmosphere, or some combination of the two. Anthropogenic climate warming is caused by "greenhouse gases" such a carbon dioxide (CO_2), methane (CH_4) and water vapour. These gases trap the Earth's outgoing radiation, and hence, warm the planet. Both carbon dioxide and methane are generated by industrial activity and the use of fossil fuels. Natural phenomena such as sun spots and solar activity are also potential causes for global warming.

Regardless of the causes, air temperature warming in the western Canadian Arctic has occurred. Figure I-4 shows almost 60 years of recorded air temperatures at Yellowknife (62°27'N), along with a linear regression line fitted to the data points. Based on the coefficient of determination of only 0.16 (for context, a value of 1.0 would indicate perfect correlation while a value of 0 would indicate no correlation), a warming trend of approximately 0.3°C/decade is indicated. The data for Inuvik, in the Mackenzie Delta at 69°18'N, was also plotted and Figure I-5 displays the results. Based on 40 years of records, and a coefficient of determination of 0.36 (i.e. 36% of the data correlates with one another), a warming trend of 0.77°C/decade is indicated by the air temperature history. This correlation value is quite low for the regression but warming in the permafrost has been measured, as noted earlier in Burn (2002).

For the eastern Arctic, warming indications are not clear. As reviewed in Section 1.1.2, linear regression of 20 annual data points from the Nanisivik Station provided a warming trend of 0.6°C/decade with a coefficient of determination of only 0.22 (i.e. only 22% of the data is correlated with each other). For the Resolute Station, with 52 annual data points and hence a much larger sample population for statistical assessment, a warming of only 0.1°C/decade was indicated but the coefficient of determination was only 0.04, indicating almost no correlation.

Hence, the Nanisivik and Resolute weather stations do not indicate any statistically significant warming within the data sets analysed (up to 2000). It is possible that eastern Arctic warming may be indicated at other Nunavut or northern Quebec locations or in more recent data (after 2000).

Environment Canada (1998) has published temperature guidelines as a consistent basis for planning and impact assessment for long-term projects in the North. Based on increasing concentrations of greenhouse gases, and using complex General Circulation Models (GCM's), the IPCC (1995) estimates a range of estimates for global warming values. Often quoted scenarios are the "Best Estimate' and the "High Sensitivity" values of 2.0°C and 3.5°C for the global temperature warming between 1990 and 2100. These global increases are then converted into regional warming values, based on the use of GCM's.

Environment Canada (1998 – Tables 1 and 2) provides values for the expected temperature increases by season, latitude and decade. The following limitation is noted though with the temperature increase values provided:

> "…they can be considered nominal temperature change scenarios for northern North America to the north and west of Hudson's Bay (emphasis by BGC). There is still considerable uncertainty on both the direction and magnitude of impact of global warming in the northeastern part of North America."

As a result, the values are provided but Environment Canada notes that they are likely not appropriate for the eastern Arctic. Unfortunately, there are no other guidelines for temperature increases in the eastern Arctic at the current time. Tables I-7 and I-8 therefore provide the interpolated temperature increase values proposed for Nanisivik, based on the Environment Canada guidelines. As a result, mean annual air temperatures increases of 2.8°C and 5.0°C for the Best Estimate and the High Sensitivity cases respectively, would be applied to the "current" MAAT value of –15.1°C. As a result, the Best Estimate MAAT for 2100 would be equivalent to –12.3°C and the High Sensitivity MAAT for 2100 would be –10.1°C.

For context with these values, and by means of a nearby and recent example, EBA (2001) provided an assessment of global warming values for the closure design relative to Polaris Mine, located at 76°N, just north of the Nanisivik latitude. Within that assessment, the Best Estimate and High Sensitivity values were 3.0°C/100 years and 5.1°C/100 years, respectively. As a result, the interpolated values in Tables I-7 and I-8 are just slightly less than the values used by EBA, as would be expected due to the slightly lower latitude of Nanisivik.

In addition to Polaris, Table I-9 provides a summary of global warming estimates (and the 1 in 100 year warm year values) used on other northern projects. As a result, the design values proposed for Nanisivik are intermediate between the noted values for FOX-M (to the south) and Polaris (to the north).