

Tyhee NWT Corp

ISSUED FOR USE
2009 GEOTECHNICAL INSPECTION OF AIRSTRIP, APRON AND ACCESS ROAD
YELLOWKNIFE GOLD PROJECT, NT

Y14101177

October 1, 2009



October 1, 2009

Mackenzie Valley Land and Water Board
P.O. Box 2130
7th Floor – 4910 50th Avenue
Yellowknife, NT
X1A 2P6

Attention: Mr. Jason Ash

Dear Mr. Ash:

**Re: Type “A” Land Use Permit MV2005C0001
2008 Airstrip Geotechnical Report**

Please find attached a report entitled “ 2009 Geotechnical Inspection of Airstrip, Apron and Access Road – Yellowknife Gold Project, NT” completed by EBA Engineering on the Discovery airstrip, dated October 1, 2009 as per Clause # 94 and # 96 of our amended Land Use Permit MV2005C0001.

The information provided in the 2009 report includes all data collected to date including a summary of maintenance work carried out by Tyhee NWT Corp site personnel in 2009 on the airstrip, access road and apron area. You will note that in Section 3.2, EBA suggests that revising the submission date to November 30 of each year would enable an inspection to be held that would increase the understanding of the temperature regimes in some boreholes. With this in mind, Tyhee NWT Corp respectfully requests that the submission date for the 2010 and any subsequent Airstrip Geotechnical Reports be November 30 for the year reported.

Please acknowledge receipt and we look forward to receiving approval from the Board that this submission satisfies the terms and conditions of the amended land use permit.

Should you have any questions concerning this matter, please contact me on my cell (780) 975-2550

Yours truly,

Original signed by “H.R. Wilson”

Hugh R. Wilson
Vice President – Environment and Community Affairs

Cc: Clint Ambrose, INAC (Via e-mail only)
Carolyn Cornell, Tyhee Development Corp (via e-mail only)
Doug Levesque, Tyhee NWT Corp (via e-mail only)

TABLE OF CONTENTS

	PAGE
1.0 INTRODUCTION.....	1
2.0 BACKGROUND.....	1
3.0 MONITORING RESULTS	2
3.1 Groundwater Levels.....	2
3.2 Ground Temperatures	2
4.0 OTHER OBSERVATIONS / INFORMATION.....	3
4.1 General.....	3
4.2 Airstrip	4
4.3 Apron	4
4.4 Access Road.....	4
5.0 CLOSURE.....	5

TABLES

Table 1	Groundwater Monitoring Summary
Table 2	Temperature Monitoring Summary – Borehole 17; Cable 1803
Table 3	Temperature Monitoring Summary – Borehole 18; Cable 1804
Table 4	Temperature Monitoring Summary – Borehole 19; Cable 1801
Table 5	Temperature Monitoring Summary – Borehole 20; Cable 1800
Table 6	Temperature Monitoring Summary – Borehole 21; Cable 1802

FIGURES

Figure 1	Site Plan
----------	-----------

PHOTOGRAPHS

1.0 INTRODUCTION

This report describes EBA's Engineering Consultants Ltd.'s (EBA's) findings from an annual inspection and monitoring program related to Tyhee NWT Corp's (Tyhee's) continued use of the existing airstrip, apron and access road at the Yellowknife Gold Project (YGP, formerly the Discovery Mine site). It is understood that an annual inspection is required to comply with Condition #94 of Tyhee's Land Use Permit MV2005C0001. The latest inspection of the subject area was conducted by Ed Hoeve, P.Eng., of EBA, on August 18, 2009.

2.0 BACKGROUND

Since the late 1990's Indian and Northern Affairs Canada (INAC) have been completing environmental reclamation work for the mine site. In an effort to contain the tailings, a cap made from silty clay excavated from a local borrow source has been placed on the tailings in a nominal 0.3 m thickness. In order to protect the clay cap from erosion, a protective armour rock layer of 100 mm minus crushed rock was placed on top of the silty clay cap. The armour rock also had a nominal thickness of 0.3 m. Since completion of the tailings cap in 2000, numerous "frost boils" have been identified and can be characterized where fine material, either from the silty clay layer or from the tailings beneath, have migrated upward through the armour rock.

INAC completed their reclamation work in the fall of 2005. As part of the mine reclamation, INAC planned to decommission the existing airstrip. Tyhee applied for and received an amendment to its current land use permit from the MVLWB that allows Tyhee to continue using the airstrip to support ongoing advanced exploration and site access needs. INAC expressed a concern over whether continued use of the airstrip might exacerbate their efforts to mitigate the frost boil phenomena and its possible implication on long-term reclamation integrity.

EBA conducted a site investigation of the airstrip, apron and access road area, in the late summer of 2005, in order to support continued operations of the airstrip and provide data for a potential upgraded design for long-term use of the airstrip during the operational phase of the YGP. EBA's investigation included two areas of frost boil occurrence near the airstrip with the objective that this data might assist INAC in determining the mechanism of frost boil formation. Standpipe piezometers and thermistor cables were installed during the site investigation. The site investigation is documented in a report entitled "Airstrip and Access Road Geotechnical Evaluation, Yellowknife Gold Project – Discovery Mine, N.W.T.", prepared for Tyhee by EBA and submitted by Tyhee to the MVLWB in November 2005.

This letter presents the thermistor and piezometer monitoring results to date and describes other information related to the operation of the airstrip, apron and access road.

3.0 MONITORING RESULTS

3.1 GROUNDWATER LEVELS

Groundwater levels measured to-date are presented on Table 1. Figure 1 shows standpipe piezometer locations with respect to the airstrip and the surrounding area.

Over the monitoring period, two standpipes have remained dry (at Boreholes 13 and 33); one standpipe has always had water (Borehole 22); and the remaining seven have shown intermittent water content.

In general, the groundwater levels appear to fluctuate approximately 1 to 2 meters annually. The highest annual groundwater levels occurred between June and September, and the lowest annual groundwater levels occurred between December and May.

Two monitoring visits were conducted over the past year, on May 7 and on August 18, 2009. During both of these monitoring visits, groundwater was encountered at the four locations where it is often detected, and it was not encountered in the other six locations, where it is not often detected. Groundwater levels were generally higher in 2009 than in 2008 in those locations where it could be measured.

However, it should be noted that groundwater was measured in 7 of 10 standpipe piezometers in August of 2008, whereas, it was only measured in 4 of 10 standpipe piezometers in August of 2009. This seems to correlate with the observation that there was much ponded water on the ground surface at the time of the August 2008 monitoring visit, suggesting that the standpipe piezometers were influenced by recent rainfall. There was little ponded surface water at the time of the August 2009 monitoring visit.

3.2 GROUND TEMPERATURES

Figure 1 shows the locations of the thermistor cables. Ground temperatures measured to-date are presented on Tables 2 to 6. While the plots appear “busy”, the intent is to show the range of observed ground temperatures over the monitoring period. To assist with interpreting the information, the readings from this past year (2009) have been plotted with a heavier line weight than prior readings, with May’s data being plotted in red and August’s data being plotted in black.

The thermistor cable at Borehole 19, near the north end of the airstrip was destroyed by snow clearing equipment during the winter of 2007. The thermistor cable at Borehole 20, in the former settlement area, near the centre of the airstrip, was severed by snow clearing equipment during the winter of 2009. Readings were taken from the individual wires at Borehole 19 and 20 cables during the August 2009 monitoring visit.

The 2007 inspection report provided a thorough discussion of the variations in ground temperature, following a year of regular monitoring. Ground temperatures were only

measured twice during each of the subsequent years. While nothing was recorded to contradict previous interpretations, some supplemental observations can be noted.

The ground temperatures recorded in 2009 in the off-airstrip areas (Area 7 and Area 4; Tables 2 and 3) are within the range of previously measured temperatures.

The ground temperatures recorded in 2009 under the airstrip (Tables 4 to 6) are at the cold end of the range of previously recorded ground temperatures. This suggests a gradual cooling of the ground beneath the airstrip, likely as a result of snow clearing in the winter, which eliminates the insulation from the ground surface. Somewhat cooler annual air temperatures over the last couple of years may also have contributed to this apparent ground cooling, but it was not evident in the off-airstrip areas.

This cooling effect is most pronounced at the location of Borehole 20 near the centre of the airstrip (Table 5). The deepest sensors at that location all indicate progressive cooling since the cable was installed. This is the area of past settlement, which was attributed to thaw of permafrost. As the ground settled, by moisture draining away, the capacity of soil moisture to buffer seasonal temperature fluctuations diminishes, permitting the ground to gradually cool.

At the time of the August 2009 monitoring visit, the ground was frozen below a depth of about 4 m at the north end of the airstrip (Borehole 19; Table 4) and below a depth of about 3 m at the south end of the airstrip (Borehole 21; Table 6). This should not be interpreted to mean that there is permafrost at these locations. The ground at depth will continue to warm into the fall, so ground temperatures will likely rise above 0 °C.

In that regard, the required submission date for the annual inspection report is not ideal. The objective of measuring ground temperatures in late April or early May is to record the coldest ground temperatures in an annual cycle. It would be preferable to collect another set of readings in late October, to record the warmest ground temperatures in an annual cycle. The August monitoring visit is done because the inspection report is due at the beginning of October. If the report submission date was changed to the end of November, a set of readings could be obtained in late October, and incorporated in to the report.

4.0 OTHER OBSERVATIONS / INFORMATION

4.1 GENERAL

No “frost boils” were observed on the airstrip, apron or access road areas. No changes in the quantity or characteristics of the “frost boils” in the vicinity of Boreholes 17, 18 or 26 were noticed. It is likely that these features are changing over time, but if so, it is gradual, not dramatic, so difficult to notice during intermittent examinations.

As there was little activity at the site for most of the year, there was little maintenance activity in connection with the airstrip, apron and road.

4.2 AIRSTRIP

Maintenance comprised grading/dragging the airstrip; approximately 28 m³ of screened gravel was added to the airstrip over the past year.

In early August, the thermistor casing at Borehole 20, near the centre of the airstrip, began to appear through the gravel surface (Photo 1). The area around the casing was exposed during the August monitoring visit (Photo 2), to attempt to find an explanation. The conclusion was that the upper portion of the casing was likely raised by frost-jacking, and then exposed by reworking of the surface gravel from grading and aircraft traffic.

The casing was heated, laid over on its side, and buried, about 0.3 m deep (Photo 3). This should not impact the operation of the thermistor cable, nor future airstrip maintenance activities.

The frost action in the last year seems to have resulted in frost-jacking in most of the instrumentation. The pipe stick-up is always recorded at each standpipe piezometer location. At the time of the August 2009 monitoring visit, the pipe stick-up at each standpipe piezometer location was higher than the average of all previous measurements at that location. The differences ranged from 0.02 m to 0.13 m, and averaged 0.07 m.

A new area of settlement developed along the west half of the airstrip, over the summer (Photo 4). It is about 290 m from the south end of the airstrip. It impacts an area about 30 m long and 10 m wide. There has been about 0.1 to 0.2 m of settlement in this area. The cause is unknown, but it could be attributed to localized permafrost thaw, perhaps in response to the generally increased groundwater levels, and associated flow, in 2008 and 2009.

4.3 APRON

There was no maintenance activity on the apron over the last year. No changes were observed.

4.4 ACCESS ROAD

There was no maintenance activity on the road over the last year. No changes were observed.

5.0 CLOSURE

We trust the information presented herein satisfies your present requirements. Please contact the undersigned if you require additional information.

Respectfully submitted,
EBA Engineering Consultants Ltd.



T.E. Hoeve, P.Eng.
Project Director, NT/NU Region
Direct: 867.766.3728 x114
ehoeve@eba.ca



TABLES



TABLE 1
GROUNDWATER LEVEL MONITORING SUMMARY
TYHEE, YELLOWKNIFE GOLD PROJECT

BOREHOLE	11	26	12	22	33	34	13	35	17	18
GROUND ELEVATION (m)	301.91	301.89	303.02	303.01	306.53	306.38	308.24	308.01	307.54	302.45
DATE	GROUNDWATER ELEVATION (m)									
25-Aug-05	<298.84	<299.68	300.42	300.44	<305.02	<305.47	<306.29	<306.91	305.14	<301.86
3-Aug-06	<298.84	<299.68	302.11	299.79	<305.02	<305.47	<306.29	<306.91	306.24	<301.86
14-Sep-06	299.82	<299.68	302.35	299.63	<305.02	<305.47	<306.29	<306.91	306.43	301.97
19-Oct-06	299.53	<299.68	301.81	299.70	<305.02	<305.47	<306.29	<306.91	305.77	301.98
14-Dec-06	<298.84	<299.68	300.68	299.85	<305.02	<305.47	<306.29	<306.91	304.90	<301.86
22-Feb-07	<298.84	<299.68	299.73	299.26	<305.02	<305.47	<306.29	<306.91	304.92	<301.86
19-Apr-07	<298.84	<299.68	299.76	299.03	<305.02	<305.47	<306.29	<306.91	304.90	<301.86
28-Jun-07	<298.84	<299.68	301.92	301.74	<305.02	<305.47	<306.29	<306.91	306.47	<301.86
23-Aug-07	<298.84	<299.68	301.48	300.35	<305.02	<305.47	<306.29	306.97	305.24	302.00
8-May-08	<298.84	<299.68	<299.60	299.87	<305.02	<305.47	<306.29	<306.91	<304.74	<301.86
14-Aug-08	<298.84	300.31	301.25	300.55	<305.02	306.00	<306.29	307.68	304.77	302.34
7-May-09	<298.84	<299.68	299.84	301.97	<305.02	<305.47	<306.29	<306.91	306.17	301.90
18-Aug-09	<298.84	<299.68	301.88	301.59	<305.02	<305.47	<306.29	<306.91	306.36	302.06

Note: "<" symbol indicates there was no water in the standpipe at the time of reading, implying that the groundwater level at that location was below the bottom of the standpipe piezometer.

TABLE 2
TEMPERATURE MONITORING SUMMARY
THERMISTOR CABLE NEAR AREA 7, WEST SIDE OF AIRSTRIP
BOREHOLE 17; CABLE 1803
TYHEE, YELLOWKNIFE GOLD PROJECT

SENSOR DEPTH (m)	1	2	3	4	5	6	7	8	9
CALIBRATION	0.0	0.2	0.5	1.0	2.0	4.0	6.0	8.0	10.0
	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01	0.03	0.00	-0.02
DATE	TEMPERATURE (deg. C)								
25-Aug-05	19.0	12.9	12.2	11.2	6.8	3.3	2.4	2.2	2.1
3-Aug-06	26.2	20.6	17.1	15.0	9.2	3.3	2.6	2.3	2.3
14-Sep-06	7.2	8.5	10.9	11.6	9.8	4.6	3.5	2.9	2.5
19-Oct-06	-1.7	-0.6	1.8	4.4	6.4	5.0	4.1	3.4	2.8
14-Dec-06	-6.2	-3.6	-1.7	0.0	2.1	4.0	3.9	3.6	3.2
22-Feb-07	-7.9	-4.4	-2.8	-1.1	1.0	3.0	3.2	3.2	3.1
19-Apr-07	-2.3	-1.6	-1.4	-1.0	0.6	2.5	2.7	2.7	2.8
28-Jun-07	22.6	15.4	11.8	3.0	0.5	2.1	2.4	2.5	2.6
23-Aug-07	10.3	9.9	12.5	12.7	8.6	3.2	2.7	2.5	2.5
8-May-08	5.5	-0.2	-0.7	-0.7	0.6	2.2	2.5	2.6	2.7
14-Aug-08	22.0	17.5	16.0	15.7	13.1	2.9	2.5	2.4	2.4
7-May-09	1.8	-0.4	-0.5	-0.2	0.8	2.3	2.6	2.7	2.7
18-Aug-09	14.5	15.5	16.0	13.8	8.8	2.9	2.5	2.4	2.5

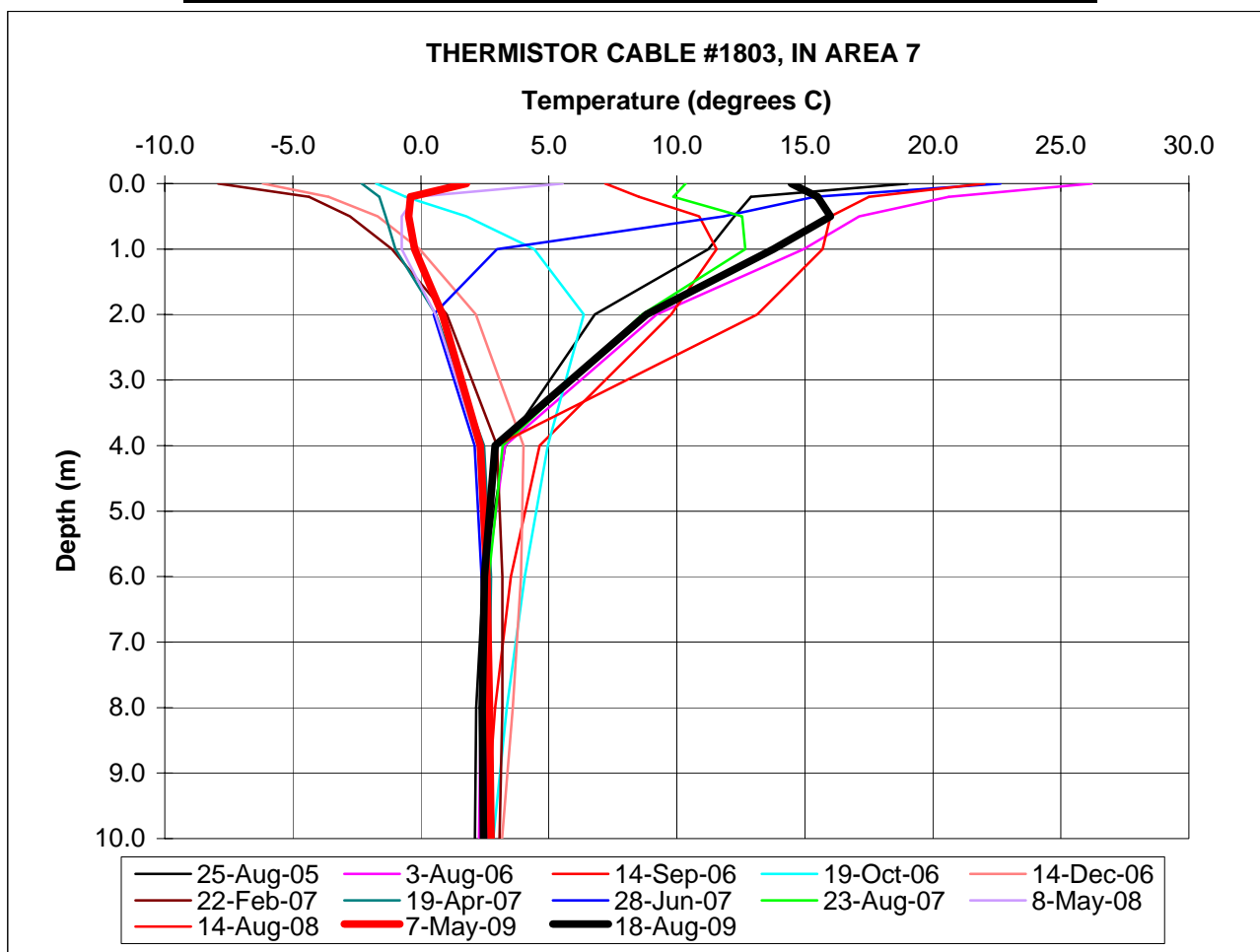


TABLE 3
TEMPERATURE MONITORING SUMMARY
THERMISTOR CABLE NEAR AREA 4, EAST SIDE OF AIRSTRIP
BOREHOLE 18; CABLE 1804
TYHEE, YELLOWKNIFE GOLD PROJECT

SENSOR DEPTH (m)	1	2	3	4	5	6	7	8	9
CALIBRATION	-0.02	0.00	-0.01	-0.02	-0.02	-0.01	-0.01	0.00	-0.02
DATE	TEMPERATURE (deg. C)								
25-Aug-05	15.9	11.9	10.8	10.0	8.6	5.9	3.8	2.4	1.7
3-Aug-06	26.0	18.2	14.9	13.1	10.6	6.7	4.2	2.9	2.2
14-Sep-06	6.4	6.5	9.5	10.5	10.0	7.8	5.8	4.3	3.2
19-Oct-06	-1.2	-0.1	2.2	3.9	5.6	6.7	6.0	4.9	3.8
14-Dec-06	-5.0	-3.7	-2.6	-1.3	0.3	2.8	3.9	4.1	3.8
22-Feb-07	-9.4	-6.6	-4.8	-3.5	-2.2	0.1	1.5	2.4	2.8
19-Apr-07	-4.1	-3.5	-2.9	-2.6	-2.2	-0.9	0.3	1.3	1.9
28-Jun-07	18.9	16.4	13.5	9.7	5.9	2.4	1.2	1.1	1.4
23-Aug-07	9.9	10.0	11.6	11.6	10.2	7.3	4.9	3.3	2.3
8-May-08	1.7	-0.4	-1.3	-1.8	-2.0	-1.0	0.1	1.0	1.7
14-Aug-08	20.4	15.4	14.5	14.5	13.1	10.0	7.7	3.9	2.0
7-May-09	-0.1	-0.8	-1.1	-1.2	-1.2	-0.6	0.3	1.2	1.8
18-Aug-09	14.0	14.7	13.6	11.8	9.8	6.3	3.8	2.5	2.0

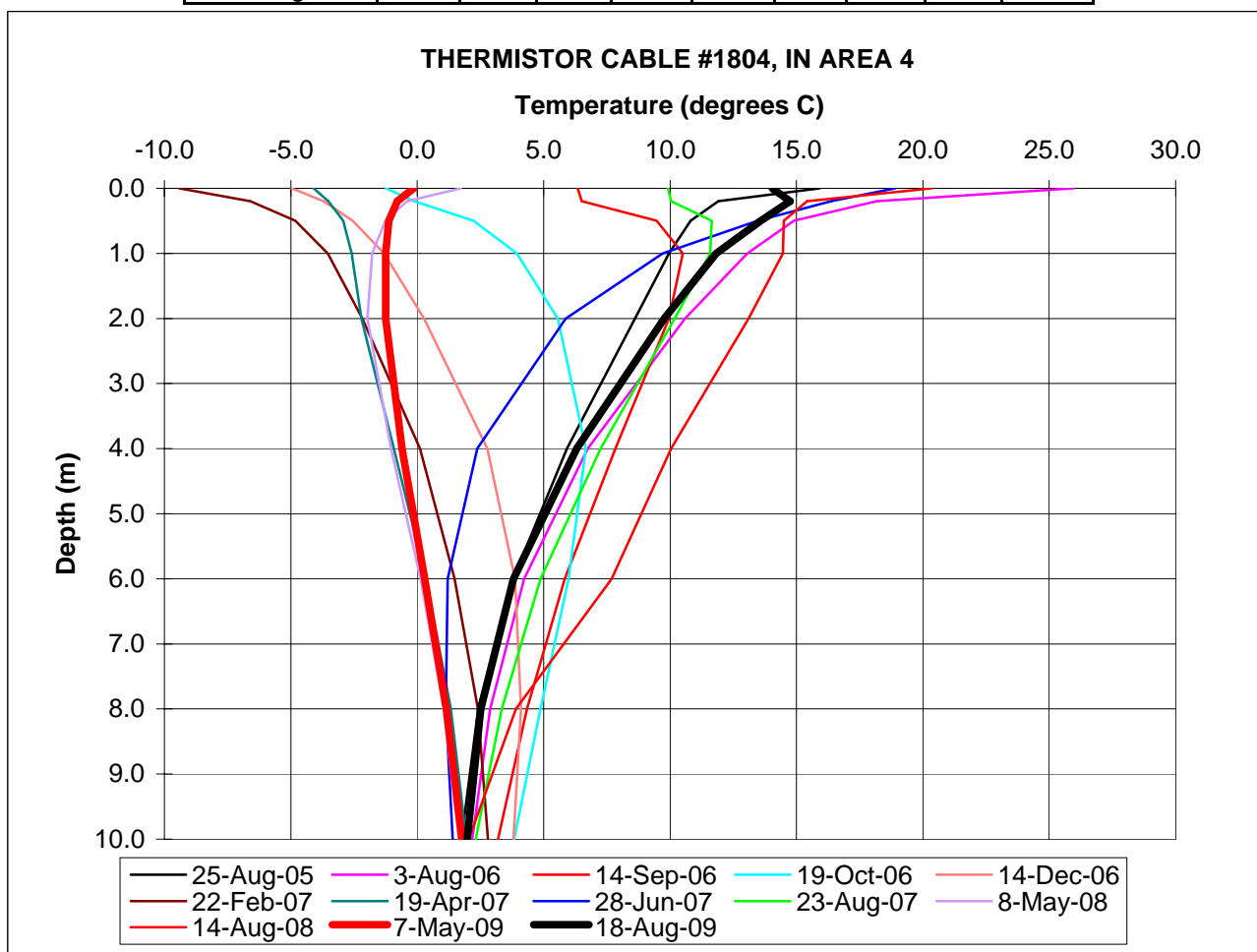
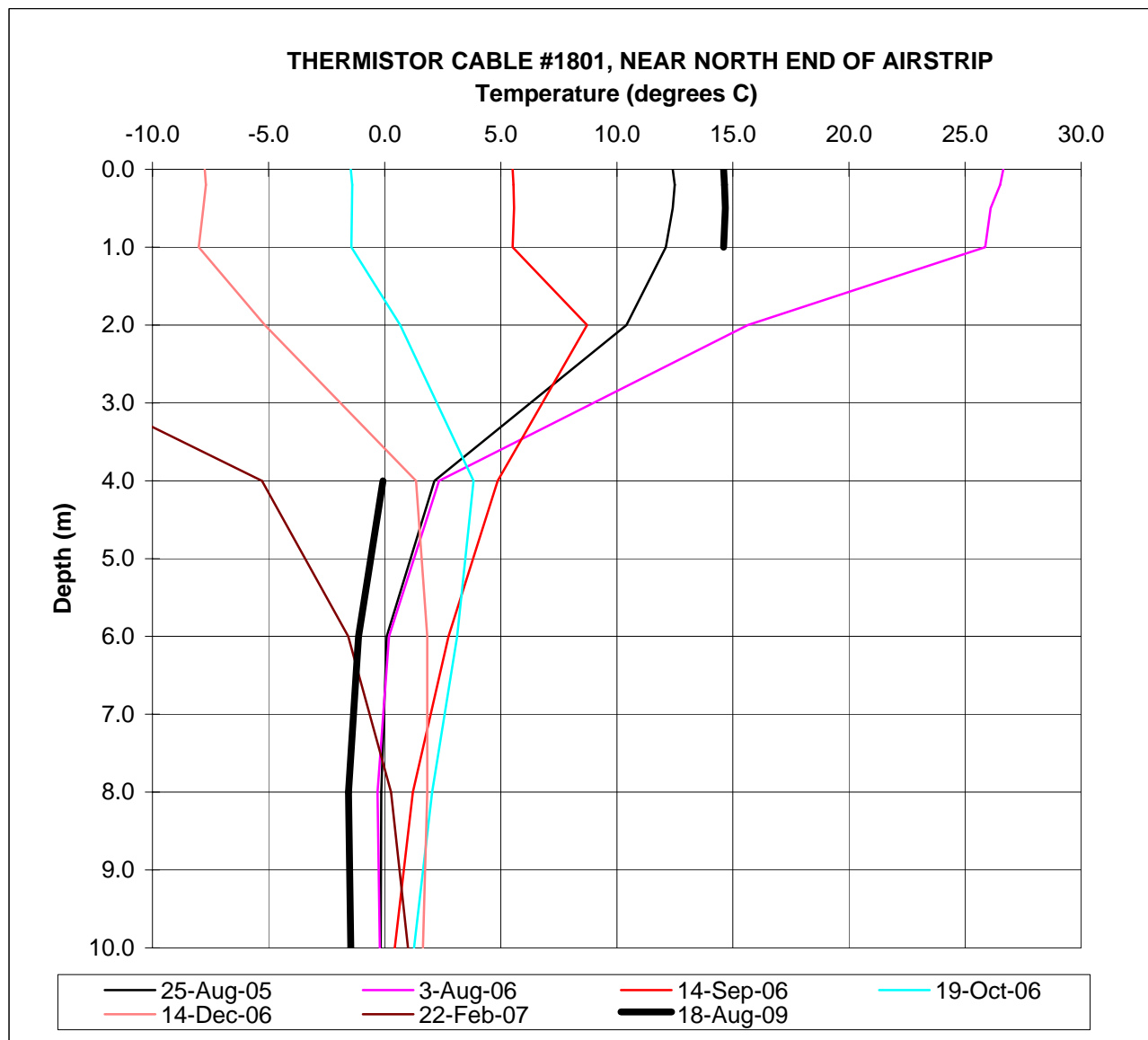


TABLE 4
TEMPERATURE MONITORING SUMMARY
THERMISTOR CABLE NEAR NORTH END OF AIRSTRIP
BOREHOLE 19; CABLE 1801
TYHEE, YELLOWKNIFE GOLD PROJECT

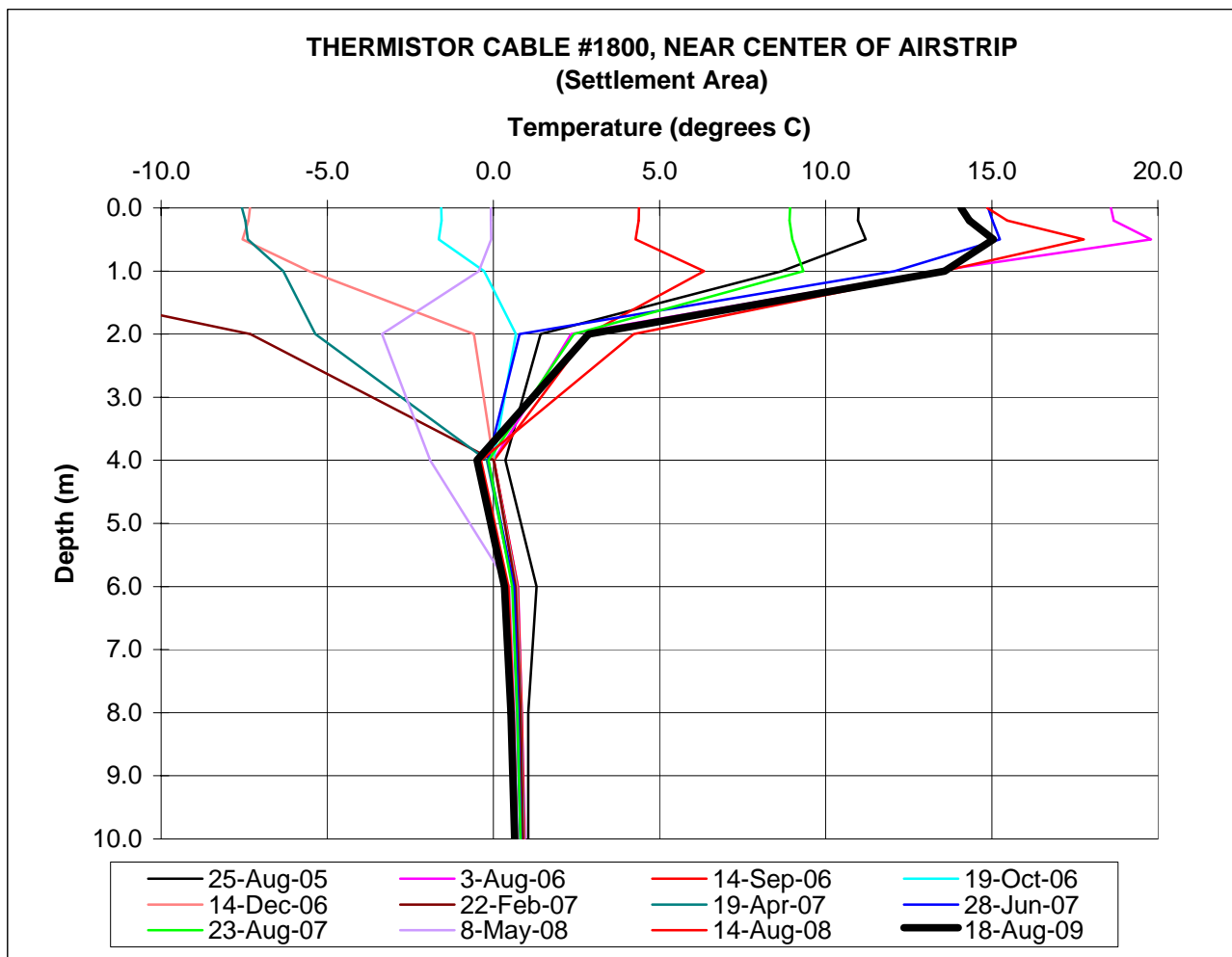
SENSOR DEPTH (m) CALIBRATION	1	2	3	4	5	6	7	8	9
	0.0	0.2	0.5	1.0	2.0	4.0	6.0	8.0	10.0
	-0.01	0.00	-0.02	-0.01	-0.01	-0.02	-0.02	0.01	-0.01
DATE	TEMPERATURE (deg. C)								
25-Aug-05	12.4	12.5	12.4	12.1	10.4	2.2	0.1	-0.1	-0.2
3-Aug-06	26.6	26.5	26.1	25.9	15.6	2.3	0.2	-0.3	-0.2
14-Sep-06	5.5	5.5	5.6	5.5	8.7	4.9	2.8	1.2	0.4
19-Oct-06	-1.5	-1.4	-1.4	-1.4	0.7	3.8	3.1	2.0	1.3
14-Dec-06	-7.7	-7.7	-7.8	-8.0	-5.2	1.4	1.8	1.8	1.7
22-Feb-07	-24.6	-24.6	-24.5	-24.6	-18.9	-5.3	-1.6	0.3	1.0
18-Aug-09	14.6	14.6	14.7	14.6		-0.1	-1.1	-1.6	-1.5



Note: Cable destroyed by snow clearing after February 22, 2007; read wires in August 2009.

TABLE 5
TEMPERATURE MONITORING SUMMARY
THERMISTOR CABLE NEAR CENTER OF AIRSTRIP
BOREHOLE 20; CABLE 1800
TYHEE, YELLOWKNIFE GOLD PROJECT

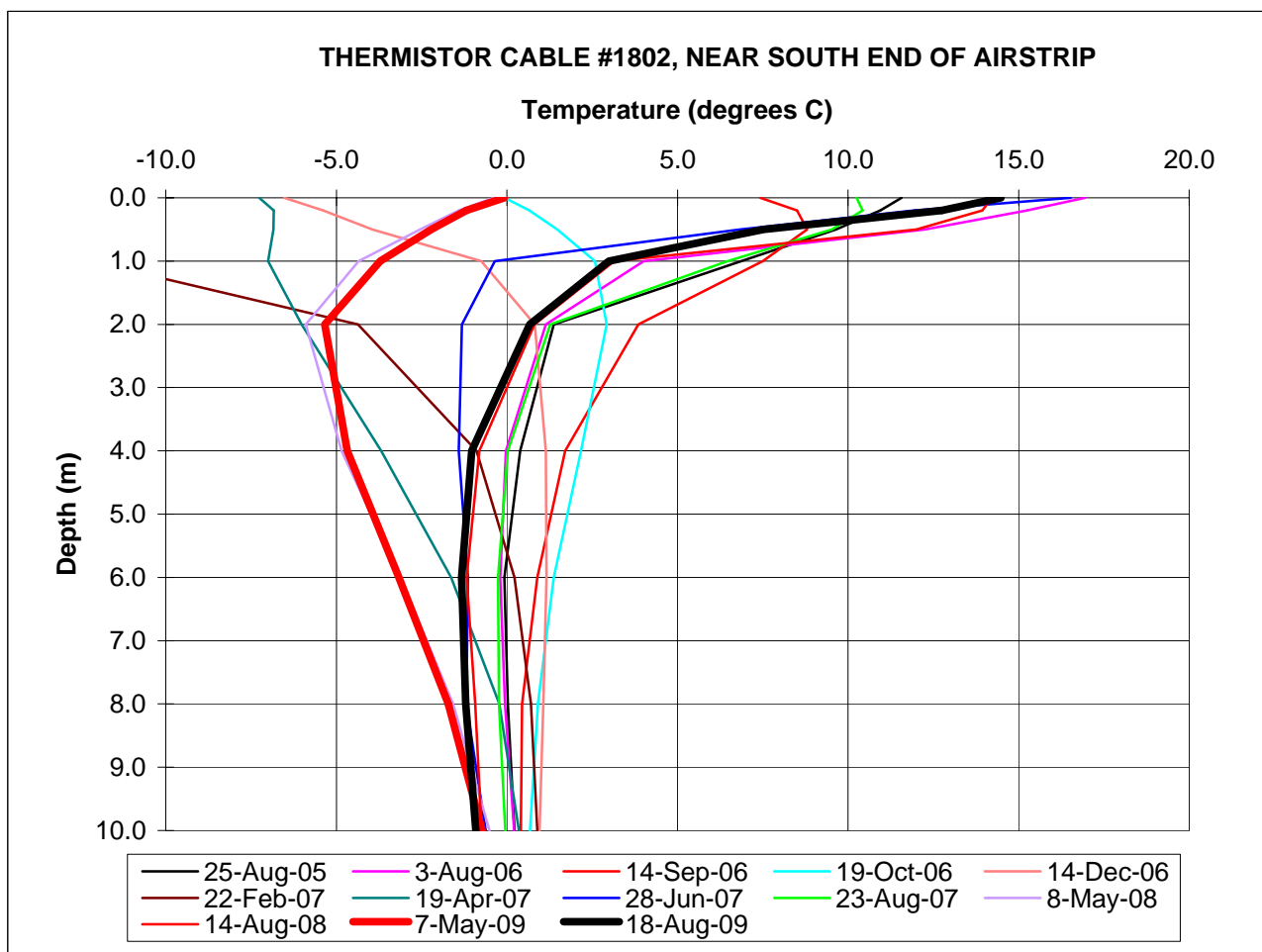
SENSOR DEPTH (m)	1	2	3	4	5	6	7	8	9
CALIBRATION	-0.01	0.01	-0.02	-0.01	-0.01	-0.02	-0.02	0.00	-0.02
DATE	TEMPERATURE (deg. C)								
25-Aug-05	11.0	11.0	11.2	8.7	1.4	0.4	1.3	1.1	1.0
3-Aug-06	18.6	18.7	19.8	13.3	2.3	0.0	0.7	0.9	0.9
14-Sep-06	4.4	4.4	4.3	6.3	2.9	0.0	0.7	0.9	0.9
19-Oct-06	-1.6	-1.6	-1.6	-0.3	0.7	0.0	0.7	0.8	0.9
14-Dec-06	-7.3	-7.4	-7.5	-5.5	-0.6	0.0	0.7	0.8	0.9
22-Feb-07	-20.7	-20.7	-21.2	-16.4	-7.3	0.0	0.7	0.8	0.9
19-Apr-07	-7.6	-7.5	-7.4	-6.3	-5.4	-0.2	0.6	0.7	0.8
28-Jun-07	14.9	15.0	15.2	12.1	0.8	-0.2	0.6	0.8	0.8
23-Aug-07	8.9	8.9	9.0	9.3	2.4	-0.1	0.6	0.7	0.8
8-May-08	-0.1	-0.1	-0.1	-0.4	-3.4	-1.9	0.5	0.6	0.7
14-Aug-08	14.9	15.5	17.8	13.5	4.2	-0.4	0.5	0.6	0.7
18-Aug-09	14.1	14.3	15.0	13.6	2.9	-0.5	0.3	0.5	0.6



Note: Cable destroyed by snow clearing prior to May 7, 2009; read wires in August.

TABLE 6
TEMPERATURE MONITORING SUMMARY
THERMISTOR CABLE NEAR SOUTH END OF AIRSTRIP
BOREHOLE 21; CABLE 1802
TYHEE, YELLOWKNIFE GOLD PROJECT

SENSOR	1	2	3	4	5	6	7	8	9
DEPTH (m)	0.0	0.2	0.5	1.0	2.0	4.0	6.0	8.0	10.0
CALIBRATION	-0.02	0.01	-0.02	0.00	-0.01	-0.01	0.03	-0.02	-0.01
DATE	TEMPERATURE (deg. C)								
25-Aug-05	11.6	10.9	9.6	6.9	1.4	0.4	-0.1	0.0	0.2
3-Aug-06	16.9	15.2	12.3	4.0	1.1	0.0	-0.2	-0.1	0.2
14-Sep-06	7.4	8.5	8.8	7.5	3.9	1.7	0.9	0.4	0.4
19-Oct-06	-0.1	0.7	1.5	2.6	2.9	2.2	1.4	0.9	0.7
14-Dec-06	-6.5	-5.4	-3.9	-0.7	0.8	1.1	1.2	1.1	1.0
22-Feb-07	-20.3	-18.2	-16.1	-12.2	-4.4	-0.9	0.2	0.7	0.9
19-Apr-07	-7.3	-6.8	-6.8	-7.0	-6.0	-3.7	-1.6	-0.2	0.4
28-Jun-07	16.5	11.9	6.8	-0.4	-1.3	-1.4	-1.1	-1.2	-0.6
23-Aug-07	10.2	10.4	9.5	6.5	1.3	0.0	-0.3	-0.2	0.0
8-May-08	-0.4	-1.4	-2.5	-4.3	-5.9	-4.8	-3.1	-1.6	-0.5
14-Aug-08	14.2	13.9	12.0	3.1	0.8	-0.8	-1.2	-0.9	-0.7
7-May-09	-0.1	-1.2	-2.2	-3.7	-5.3	-4.7	-3.2	-1.7	-0.7
18-Aug-09	14.5	12.7	7.5	3.0	0.7	-1.0	-1.3	-1.2	-0.9





FIGURES



LEGEND


- Standpipe Piezometer Location
- Thermistor Location
- Standpipe & Thermistor Location

NOTES

Base data source: Tyhee Airphoto georeferenced to 1:50,000 National Topographic Database

TYHEE AIRSTRIP INSPECTION

Site Plan

PROJECTION		DATUM	
UTM Zone 12N		NAD83	
Scale: 1:3,500			
0.05	0.025	0	0.05
			
Kilometres			
FILE NO.			
Y14101177_FIG 1_RO.cdr			
PROJECT NO.	DWN	CKD	REV
Y14101177	DRG	TEH	0
OFFICE	DATE		
EDM	September 30, 2009		

Tyhee NWT Corp.
EBA Engineering Consultants Ltd. 

Figure 1



PHOTOGRAPHS





Photo 1

Area of exposed thermistor casing, at the location of Borehole 20, looking south



Photo 2

Area around thermistor casing at Borehole 20, dug up



Photo 3
Location of Borehole 20, following burial of thermistor casing, looking east



Photo 4
Looking south at settlement area, about 290 m from south end of airstrip