APPENDIX E02
North Dam Technical Memorandums

SRK Consulting (Canada) Inc.
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Memo

To:	Mark Valeriote (JDS) Greg Blaylock (JDS)	**Date:**	January 24, 2011
cc:	Maritz Rykaart (SRK)	**From:**	Lowell Wade (SRK)
Subject:	Doris North – North Dam Fillet Construction	**Project #:**	1CH008.033

Request for Information

The "fillet" is the area of material below the up-stream liner and the base of the key trench. The technical specifications call for the construction of the "fillet" to be placed and compacted in thin horizontal lifts. This will be difficult due to limited space and narrow width of each lift which will become progressively narrower as the "fillet" reaches the top of the key trench. It has been proposed the fillet be constructed in a series of wedge shaped layers using moisture conditioned core material which is slightly drier than specified for constructing the core of the North Dam. This will allow the core material to be placed on an incline and not slump prior to freezing in-place. The core material will be place and compacted using an excavator bucket. The sequencing of the lifts are shown in the attached three figures.

Response

SRK does not have an issue with the proposed construction methodology. No changes to the IFC drawing will be required

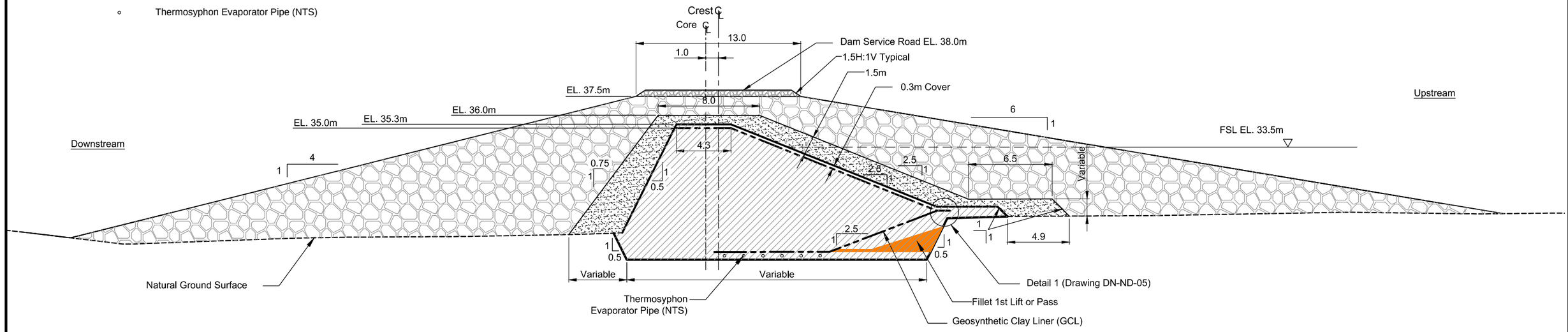
Figures

LEGEND

- Natural Ground
- Geosynthetic Clay Liner (GCL)
- Stratigraphic Boundary
- Core Material
- Transition Material
- Run of Quarry (ROQ)
- Surfacing Material
- Bedrock
- Peat
- Thermosyphon Evaporator Pipe (NTS)

NOTES

1. North dam typical cross section taken from drawing, DN-ND-02 as SRK Engineering drawings for the North Dam, Doris North Project, Nunavut Canada. Drawing Issued for Construction, Revision 0, Project No. 1CH008.027, dated December 2010.



B
DN-ND-01

NORTH DAM TYPICAL

0 1.5 3 4.5 6 7.5
Horizontal Scale 1:150(m)

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Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CH008.027
FILE NAME: DN-ND-02_Fillet Cons 01.dwg

NEWMONT
NORTH AMERICA

HOPE BAY MINING LTD.

Doris North Project

North Dam
Fillet Construction

DATE:	APPROVED:	FIGURE:
Jan. 2011	LW	1

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LEGEND

- Natural Ground
- Geosynthetic Clay Liner (GCL)
- Stratigraphic Boundary
- Core Material
- Transition Material
- Run of Quarry (ROQ)
- Surfacing Material
- Bedrock
- Peat
- Thermosyphon Evaporator Pipe (NTS)

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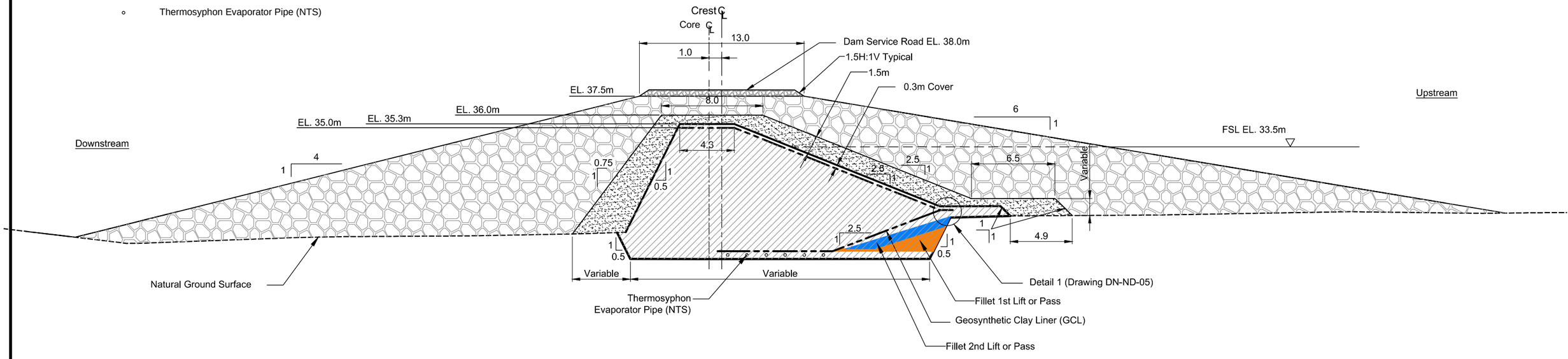

B
DN-ND-01

NORTH DAM TYPICAL

0 1.5 3 4.5 6 7.5
Horizontal Scale 1:150(m)

SRK Consulting Engineers and Scientists, Vancouver B.C.	NEWMONT NORTH AMERICA	Doris North Project
SRK JOB NO.: 1CH008.027	HOPE BAY MINING LTD.	North Dam Fillet Construction
FILE NAME: DN-ND-02_Fillet Cons 01.dwg		DATE: Jan. 2011 / APPROVED: LW / FIGURE: 2

J:\01_SITES\Hope Bay\ACAD\2010 Drawings\NorthDam2010\DN-ND-02_Fillet Cons 01.dwg

LEGEND

- Natural Ground
- Geosynthetic Clay Liner (GCL)
- Stratigraphic Boundary
- Core Material
- Transition Material
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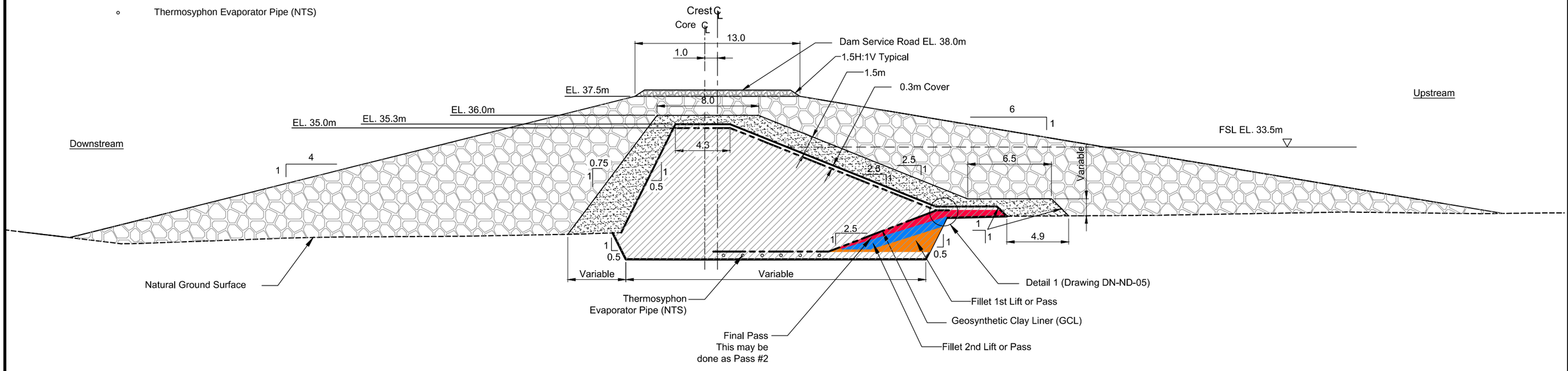

B
DN-ND-01

NORTH DAM TYPICAL

0 1.5 3 4.5 6 7.5
Horizontal Scale 1:150(m)

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Vancouver B.C.

SRK JOB NO.: 1CH008.027
FILE NAME: DN-ND-02_Fillet Cons 01.dwg

NEWMONT
NORTH AMERICA

HOPE BAY MINING LTD.

Doris North Project

North Dam
Fillet Construction

DATE:	APPROVED:	FIGURE:
Jan. 2011	LW	3

J:\01_SITES\Hope Bay\ACAD\2010 Drawings\NorthDam2010\DN-ND-02_Fillet Cons 01.dwg

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Memo

To:	Mark Valeriote, Greg Blaylock	**Date:**	February 15, 2011
cc:		**From:**	Lowell Wade, Maritz Rykaart
Subject:	Hope Bay Project – North Dam Additional Key Trench Excavation in Peat Zone	**Project #:**	1CH008.033

A zone of peat within the base of the key trench had been identified during the detailed design stage, and as per the IFC Drawings additional characterization and subsequent further excavation of this zone would be done during construction. Nine drill holes were completed in this zone as part of the Percolation Test Program, and the results confirmed the presence of peat and ice rich material in six of these holes, extending to depths of about 5 m below original ground level.

This peat and ice rich material must be completely removed, and replaced with saturated core material to ensure the integrity and performance of the dam. The additional excavation is about 625 m^3 and consists of a trapezoidal cut with a horizontal 5 m base width at chainage 0+095, and 2H:1V slopes in the west and east directions intercepting the design key trench base at changes 0+82 and 0+99 respectively. The north and south sides of the additional excavation will be consistent with the existing key trench side slopes of 0.5H:1V. The additional excavation is variable in depth, with a maximum depth of about 5 m below original ground, or 2.6 m below the original key trench base design depth.

The attached Figures 1 through 6 illustrate the extent of the excavation, and provide stake-out coordinates for the additional excavation. A digital ACAD file will be submitted for use by the contractor.

It should be noted that the north and south wall of the additional excavation will be near vertical high-walls in frozen ice rich material, and the Contractor must be instructed to take special precaution to ensure the safety of all workers when working in these areas.

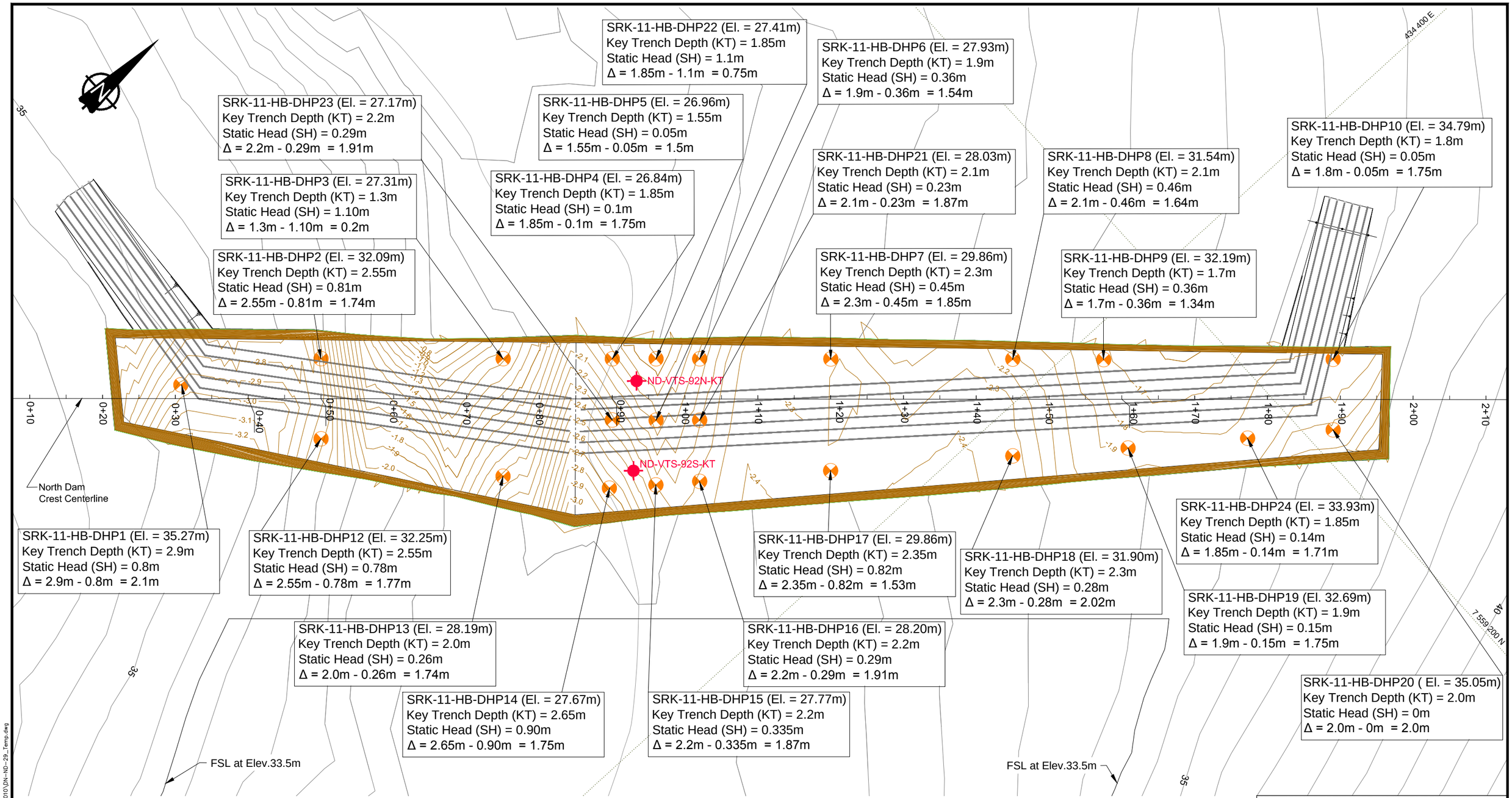
In is anticipated that this additional excavation will be sufficient to completely remove any remaining organic and ice rich material; however, final approval of the extent of the excavation will still be subject to a visual assessment of the excavated area, especially to the south, where complete definition of the organic zone was not confirmed through drilling.

This additional excavation will require backfilling with saturated core material, consistent with the specifications set out for the core superstructure. To potentially facilitate quicker freeze back of each lift, consideration could be given to placer thinner lifts and using fans to blow cold air over the placed material to accelerate freeze back.

Two additional vertical ground temperature cables are to be installed within this excavation after it has been backfilled. There are ground temperature cables already on site, intended for the bridge abutments which can be used for this purpose; however, the lead lengths of these cables will have to be extended. The quote for the additional lead lengths required is included in Attachment 1.

---------- END OF MEMO ----------

Figures



GROUND TEMPERATURE CABLE DETAILS

STRING #	STRING NAME	SERIES #	STRING TYPE	CHAINGE (m)	ELEVATION (m)	OVERALL CABLE LENGTH (m)	CABLE LOCATION	BEAD LOCATION IN METERS (MEASURED FROM END)							
								#1	#2	#3	#4	#5	#6	#7	#8
25	ND-VTS-92N-KT	H	Vertical	92	n/a	128	Additional Keytrench Excavation	0	2.5	3.5	4	4.5	5	5.6	-
26	ND-VTS-92S-KT	H	Vertical	92	n/a	128	Additional Keytrench Excavation	0	2.5	3.5	4	4.5	5	5.6	-

ADDITIONAL VERTICAL GROUND TEMPERATURE CABLE STRING STAKE OUT POINTS

ID	NORTHING	EASTING
ND-VTS-92N-KT	7559137.11	434362.88
ND-VTS-92S-KT	7559128.50	434371.70

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Vancouver B.C.

SRK JOB NO.: 1CH008.033
FILE NAME: DN-ND-29_Temp.dwg

NEWMONT
NORTH AMERICA

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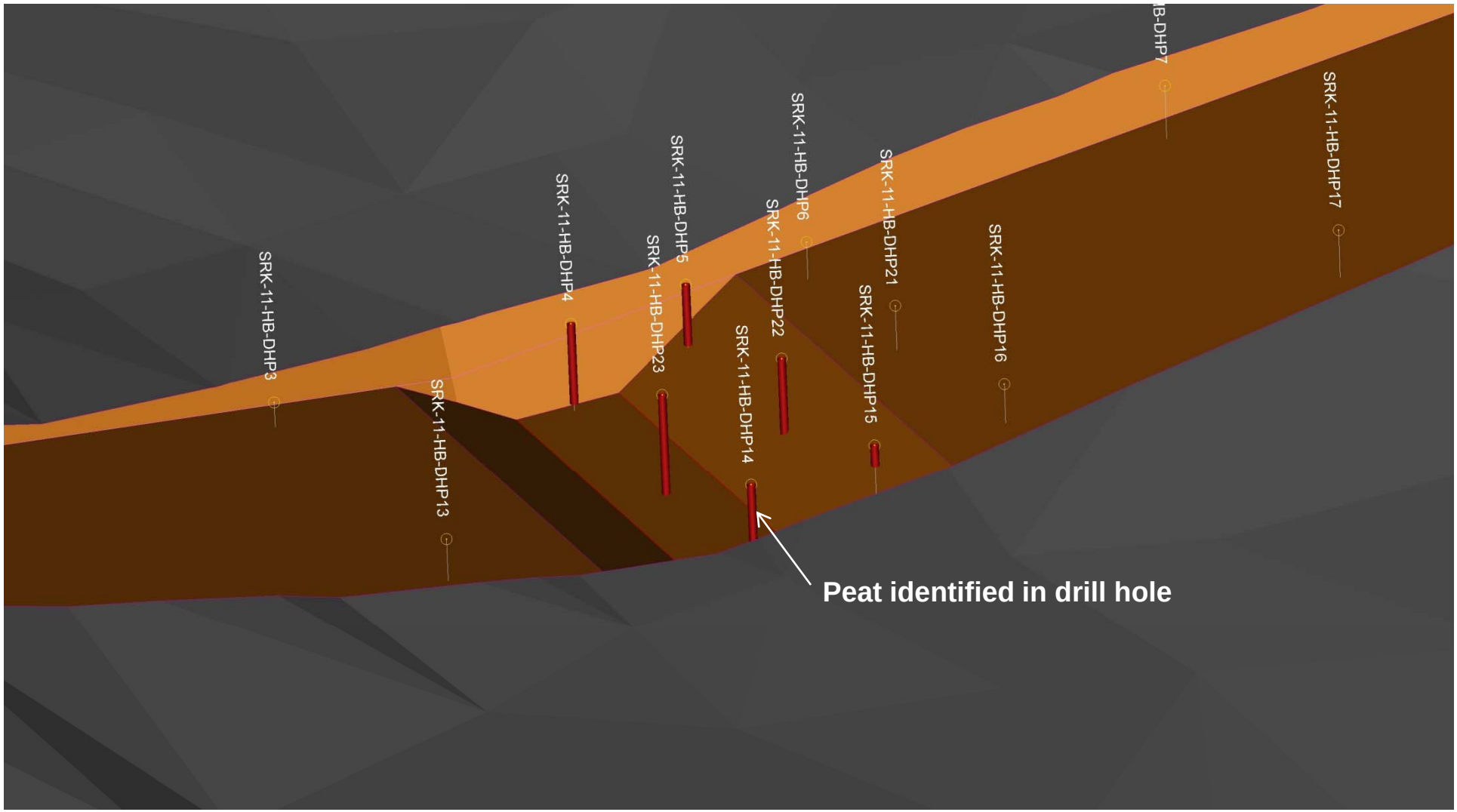
Doris North Project

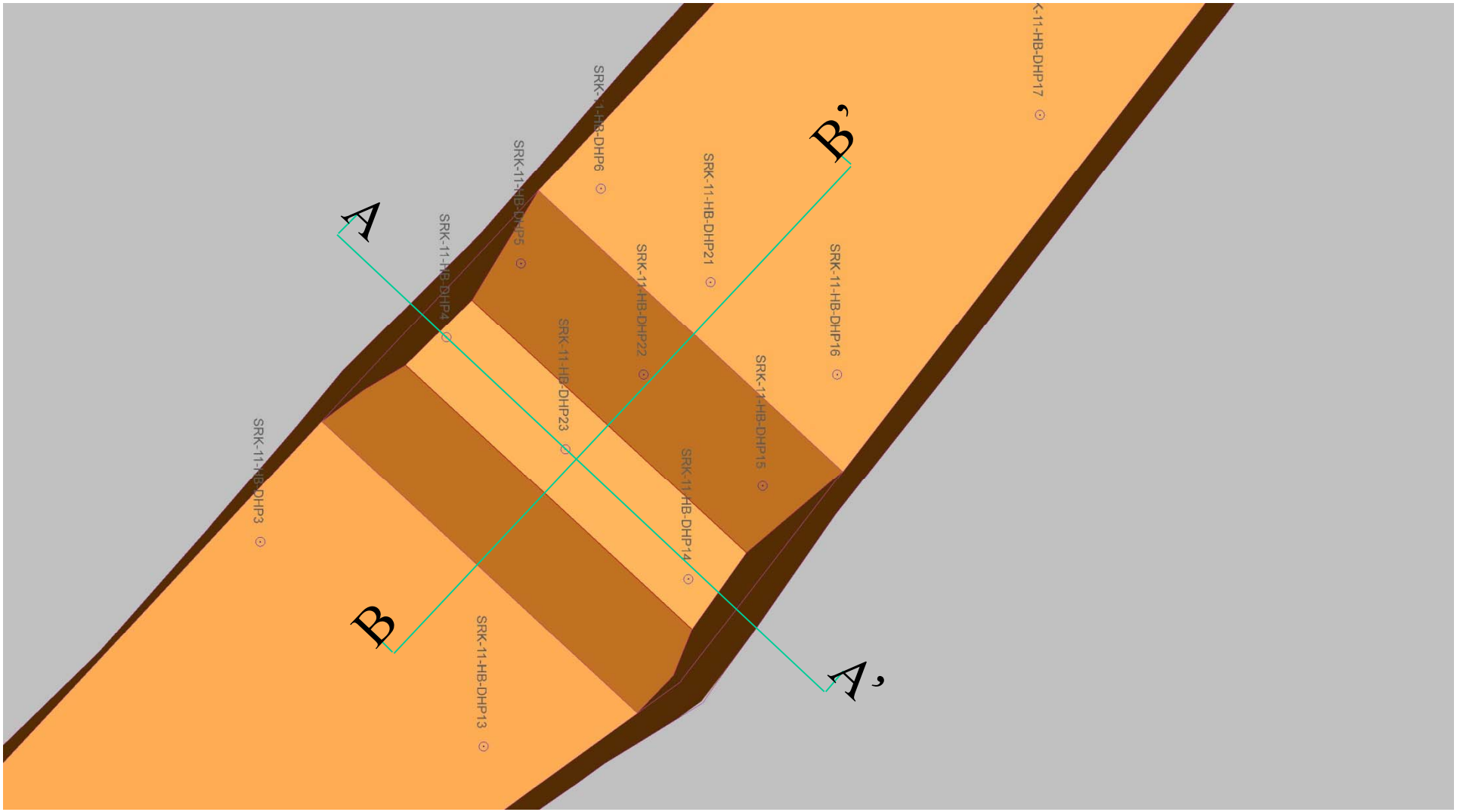
North Dam
Percolation
Test Borehole Locations

DATE:	APPROVED:	FIGURE:
Feb. 2011	EMR/LW	1

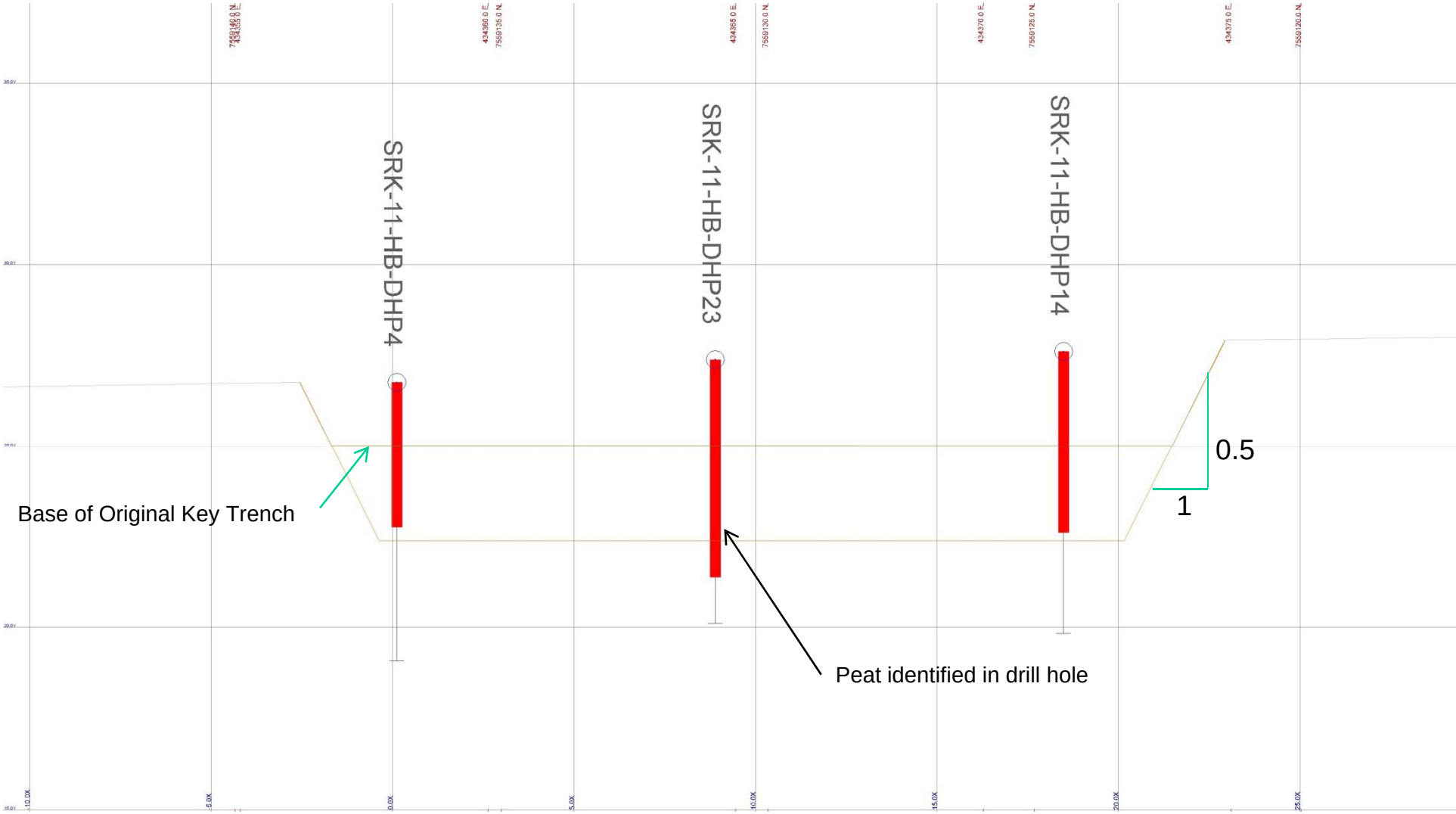
J:\01_SITES\Hope Bay\ACAD\2010 Drawings\NorthDam2010\DN-ND-29_Temp.dwg



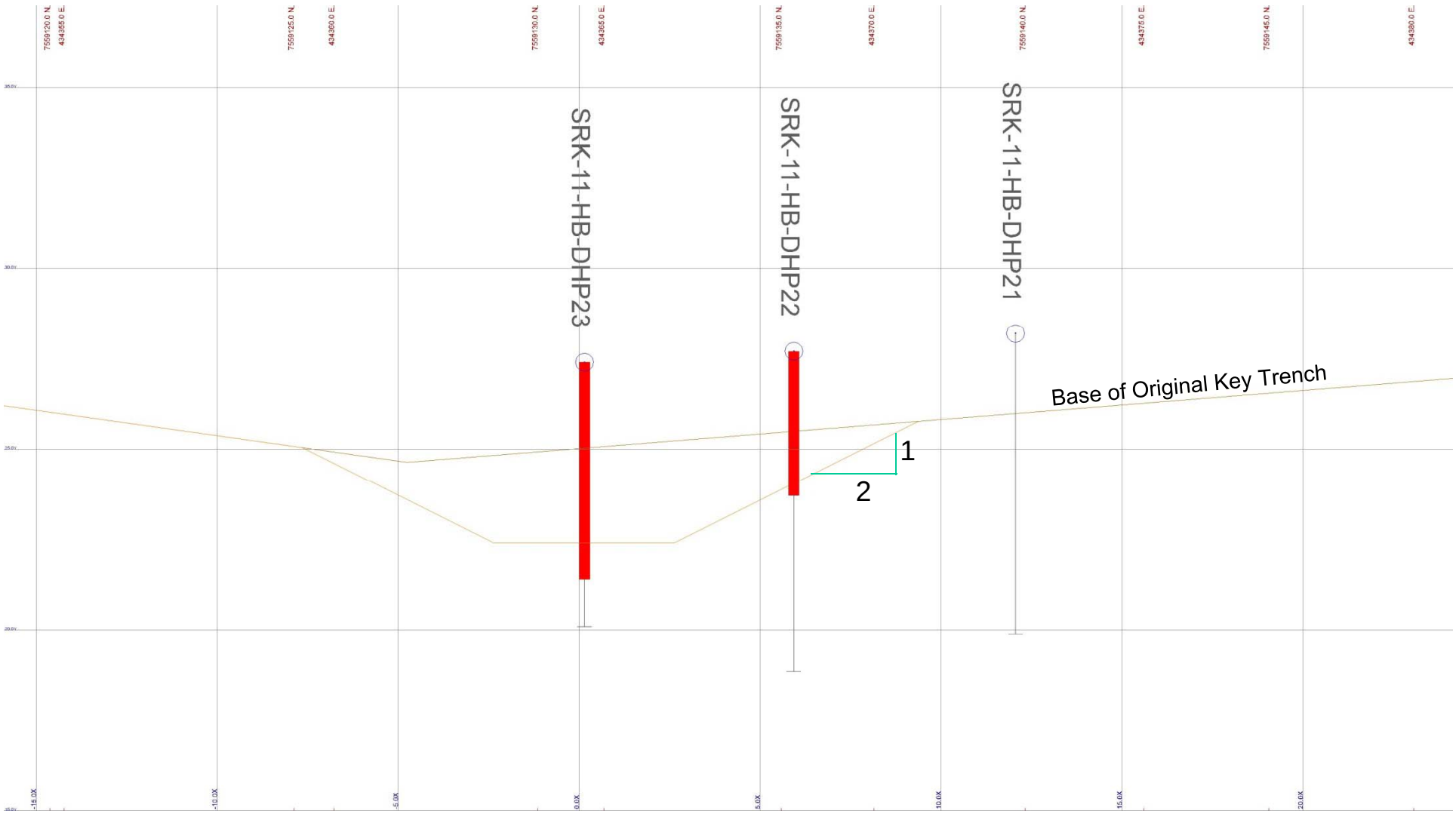
SRK Consulting Engineers and Scientists VANCOUVER	NEWMONT NORTH AMERICA	Doris North Project
		North Dam **Additional Key Trench Excavation** **3D View**
Job No: 1CH008.033 Filename: Figure 2_6_NorthDam_20110214.pptx	**HOPE BAY MINING LTD.**	Date: February 2011 / Approved: LW / Figure: **2**



SRK Consulting Engineers and Scientists VANCOUVER	NEWMONT NORTH AMERICA	Doris North Project
Job No: 1CH008.033 Filename: Figure 2_6_NorthDam_20110214.pptx	**HOPE BAY MINING LTD.**	**North Dam** **Additional Key Trench Excavation** **Plan View**
		Date: February 2011 / Approved: LW / Figure: **3**



SRK Consulting Engineers and Scientists VANCOUVER	NEWMONT NORTH AMERICA	Doris North Project
		North Dam **Additional Key Trench Excavation** **Section A-A'**
Job No: 1CH008.033 Filename: Figure 2_6_NorthDam_20110214.pptx	**HOPE BAY MINING LTD.**	Date: February 2011 / Approved: LW / Figure: **4**



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VANCOUVER

NEWMONT
NORTH AMERICA

Doris North Project

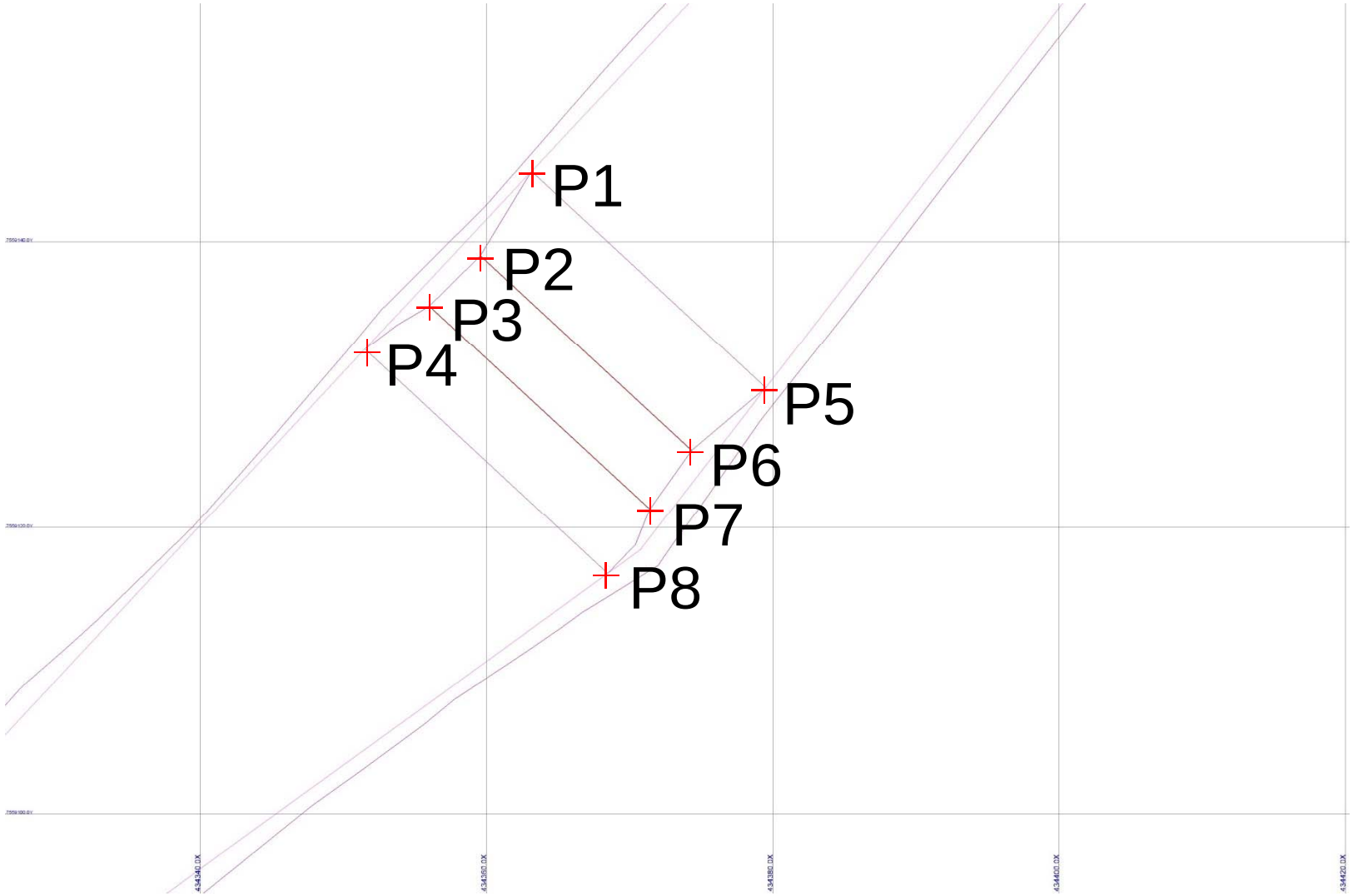
North Dam
Additional Key Trench Excavation
Section B-B'

Job No: 1CH008.033

Filename: Figure 2_6_NorthDam_20110214.pptx

HOPE BAY MINING LTD.

Date:	Approved:	Figure:
February 2011	LW	**5**



P1 434363.1 E
7559144.9 N
25.774 Z

P2 434359.6 E
7559139.0 N
22.400 Z

P3 434356.0 E
7559135.5 N
22.400 Z

P4 434351.5 E
7559132.5 N
25.035 Z

P5 434379.5 E
7559129.8 N
25.764 Z

P6 434374.3 E
7559125.4 N
22.400 Z

P7 434371.4 E
7559121.3 N
22.400 Z

P8 434368.5 E
7559116.8 N
25.057 Z

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NORTH AMERICA

Doris North Project

North Dam
Additional Key Trench Excavation
Plan showing Stake Out Points

Job No: 1CH008.033

Filename: Figure 2_6_NorthDam_20110214.pptx

HOPE BAY MINING LTD.

Date:	Approved:	Figure:
February 2011	LW	**6**

Attachment 1
Ground Temperature Cable and Extension Quote

Certificate of Compliance

RST Instruments Ltd., 200 - 2050 Hartley Ave., Coquitlam, British Columbia, Canada V3K 6W5

Thermistor Strings

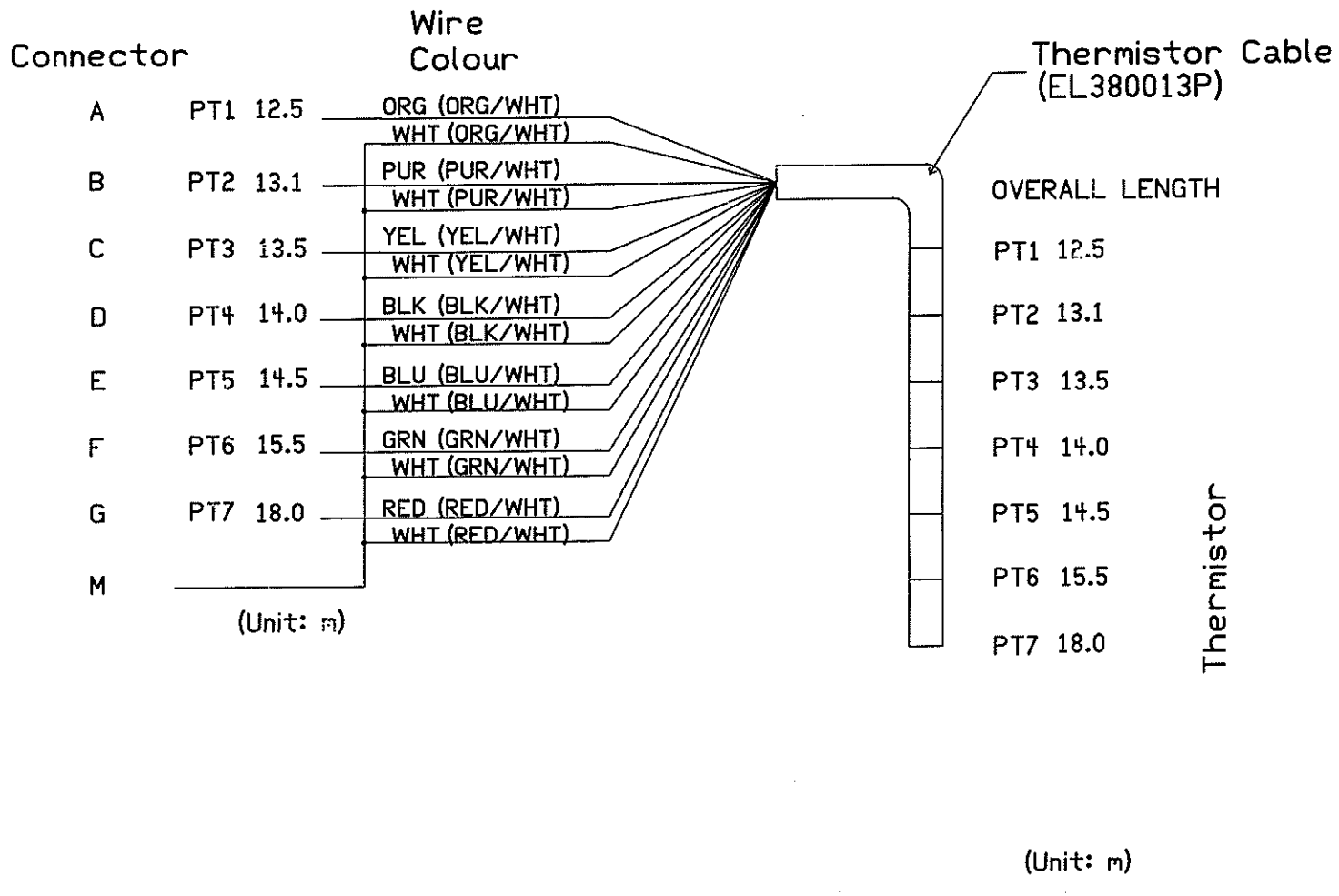
Customer:	NUNA CONTRACTING	Number of Points:	7
Work Order:	Q017563	Length:	18 m
Thermistor Type:	3 kΩ		

This is to certify that Thermistor Strings S/N: TS3014 –TS3025 meets the RST Instruments specifications for the product.

Technician: H. Chang Date: September 2, 2010

THM0008A

Applied Science Technologists and Technicians of British Columbia
22724
A.C.
AL CULLEY
ASCT



S/N: TS3014 - TS3025

Co:	RST INSTRUMENTS LTD
Title:	THERMISTOR CABLE
J/N:	WOQ017563 Revision: A
Author:	WY Size: A
Date:	2010/08/17 Sheet 1 of 1

Resistance versus Temperature Relationship 3000 Ohm NTC Thermistors

Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp	Ohms	Temp
201.1K	-50	16.60K	-10	2417	30	525.4	70	153.2	110
187.3K	-49	15.72K	-9	2317	31	507.8	71	149.0	111
174.5K	-48	14.90K	-8	2221	32	490.9	72	145.0	112
162.7K	-47	14.12K	-7	2130	33	474.7	73	141.1	113
151.7K	-46	13.39K	-6	2042	34	459.0	74	137.2	114
141.6K	-45	12.70K	-5	1959	35	444.0	75	133.6	115
132.2K	-44	12.05K	-4	1880	36	429.5	76	130.0	116
123.5K	-43	11.44K	-3	1805	37	415.6	77	126.5	117
115.4K	-42	10.86K	-2	1733	38	402.2	78	123.2	118
107.9K	-41	10.31K	-1	1664	39	389.3	79	119.9	119
101.0K	-40	9796	0	1598	40	376.9	80	116.8	120
94.48K	-39	9310	1	1535	41	364.9	81	113.8	121
88.46K	-38	8851	2	1475	42	353.4	82	110.8	122
82.87K	-37	8417	3	1418	43	342..2	83	107.9	123
77.99K	-36	8006	4	1363	44	331.5	84	105.2	124
72.81K	-35	7618	5	1310	45	321.2	85	102.5	125
68.30K	-35	7252	6	1260	46	311.3	86	99.9	126
64.09K	-33	6905	7	1212	47	301.7	87	97.3	127
60.17K	-32	6576	8	1167	48	282.4	88	94.9	128
56.51K	-31	6265	9	1123	49	283.5	89	92.5	129
53.10K	-30	5971	10	1081	50	274.9	90	90.2	130
49.91K	-29	56.92	11	1040	51	266.6	91	87.9	131
46.94K	-28	5427	12	1002	52	258.6	92	85.7	132
44.16K	-27	5177	13	965	53	250.9	93	83.6	134
39.13K	-25	4714	15	895.8	55	236.2	95	79.6	135
36.86K	-24	4500	16	863.3	56	229.3	96	77.6	136
34.73K	-23	4297	17	832.2	57	222.6	97	75.8	137
32.74K	-22	4105	18	802.3	58	216.1	98	73.9	138
30.87K	-21	3922	19	773.7	59	209.8	99	72.2	139
29.13K	-20	3748	20	746.3	60	203.8	100	70.4	140
27.49K	-19	3583	21	719.9	61	197.9	101	68.8	141
25.95K	-18	3426	22	694.7	62	192.2	102	67.1	142
24.51K	-17	3277	23	670.4	63	186.8	103	65.5	143
23.16K	-16	3135	24	647.1	64	181.5	104	64.0	144
21.89K	-15	3000	25	624.7	65	176.4	105	62.5	145
20.70K	-14	2872	26	603.3	66	171.4	106	61.1	146
19.58K	-13	2750	27	582.6	67	166.7	107	59.6	147
18.52K	-12	2633	28	562.8	68	162.0	108	58.3	148
17.53K	-11	2523	29	543.7	69	157.6	109	56.8	149
								55.6	150

Temperature calculated using:

Steinhart-Hart Linearization

$$T_C = \frac{1}{C_0 + C_1(\ln R) + C_3(\ln R)^3} - 273.15$$

3000 Ohm @ 25C NTC Thermistor

C_0= 0.0014051

C_1= 0.0002369

C_3= 0.0000001019

lnR= Natural Log of Resistance

T_c= Temperature in °C

R S T INSTRUMENTS LTD.

200 - 2050 Hartley Avenue
Coquitlam BC V3K 6W5
Phone: (604) 540-1100 Ext.
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www.rstinstruments.com

ISO 9001

Quote

Q019160

CUSTOMER NO. SRKRO1

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VANCOUVER BC V6E 3X2
(604) 681-4196 Ext.
LOWELL WADE, M.SC., P.ENG.

EST. SHIP DATE	SHIP VIA	F.O.B.	TERMS	ORDER NUMBER
	TO BE DETERMINED	Our Dock	NET 30 DAYS	Q019160

ORDER DATE	P.O. NUMBER	SALESPERSON
15-Feb-11		Rodrigo Camelo

L#	PART NUMBER	DESCRIPTION	QTY.	U/M	UNIT PRICE	TOTAL
		EXTENSION CABLE FOR EXISTING THERMISTOR STRINGS (SERIAL NUMBERS: TS3014 AND TS3025 AS PER Q017563)				
	EL380013P	13 PAIR 24 AWG STC, 1xKEVLAR #49, WATER BLOCKED PU JACKET *Cable lengths: 2@110M*	220.00	M	12.2500	2,695.00
	VW2106-LC	19 PIN CONNECTOR & CAP INSTALLED ON CABLE *EACH CABLE LEAD HAS 1 MALE AND 1 FEMALE CONNECTOR*	4.00	EA	106.0000	424.00
	ELTM1030	AQUASEAL WATERPROOFING TAPE *ELECTRICAL TAPE SHOULD BE APPLIED ON TOP OF AQUASEAL TAPE*	2.00	EA	55.0000	110.00

Validity of quote: 60 Days
Estimated delivery: TBA
Subject to RST Instruments Sales Terms and Conditions (http://www.rstinstruments.com/StandardTerms.pdf).

	NET AMOUNT	3,229.00
	BC 12% HST	387.48
CDN DOLLARS	**TOTAL DUE**	3,616.48

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Engineers and Scientists

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Fax: 604.687.5532

Memo

To:	Mark Valeriote, Greg Blaylock	**Date:**	February 18, 2011
cc:	Lowell Wade, Iozsef Miskolczi	**From:**	John Kurylo, Maritz Rykaart
Subject:	Hope Bay Project – North Dam Additional Excavation of Massive Surface Ice	**Project #:**	1CH008.033

Visual inspection of the upstream and downstream slopes of the key trench at chainage 0+95 to 1+00 confirms the presence of a zone of massive surface ice, as much as 0.5 m thick and about 4 to 6 m in width. It has been noted in the field that thinner lenses of ice interlaced with layers of ice saturated alluvium extend to a depth of about 1.5 m below ground; this is above the invert level of the key trench. Reconnaissance inspection suggests that the surface ice follows along the Tail Lake Creek course, and therefore its presence is directly related to the normal flow of the Creek. Due to the direct correlation to the Creek it is estimated that this zone of surface ice should be approximately constrained around the vicinity of chainage 0+80 to 1+00. If this ice remains in place, and should it thaw, it could lead to local differential settlement of the transition and ROQ zones in this area.

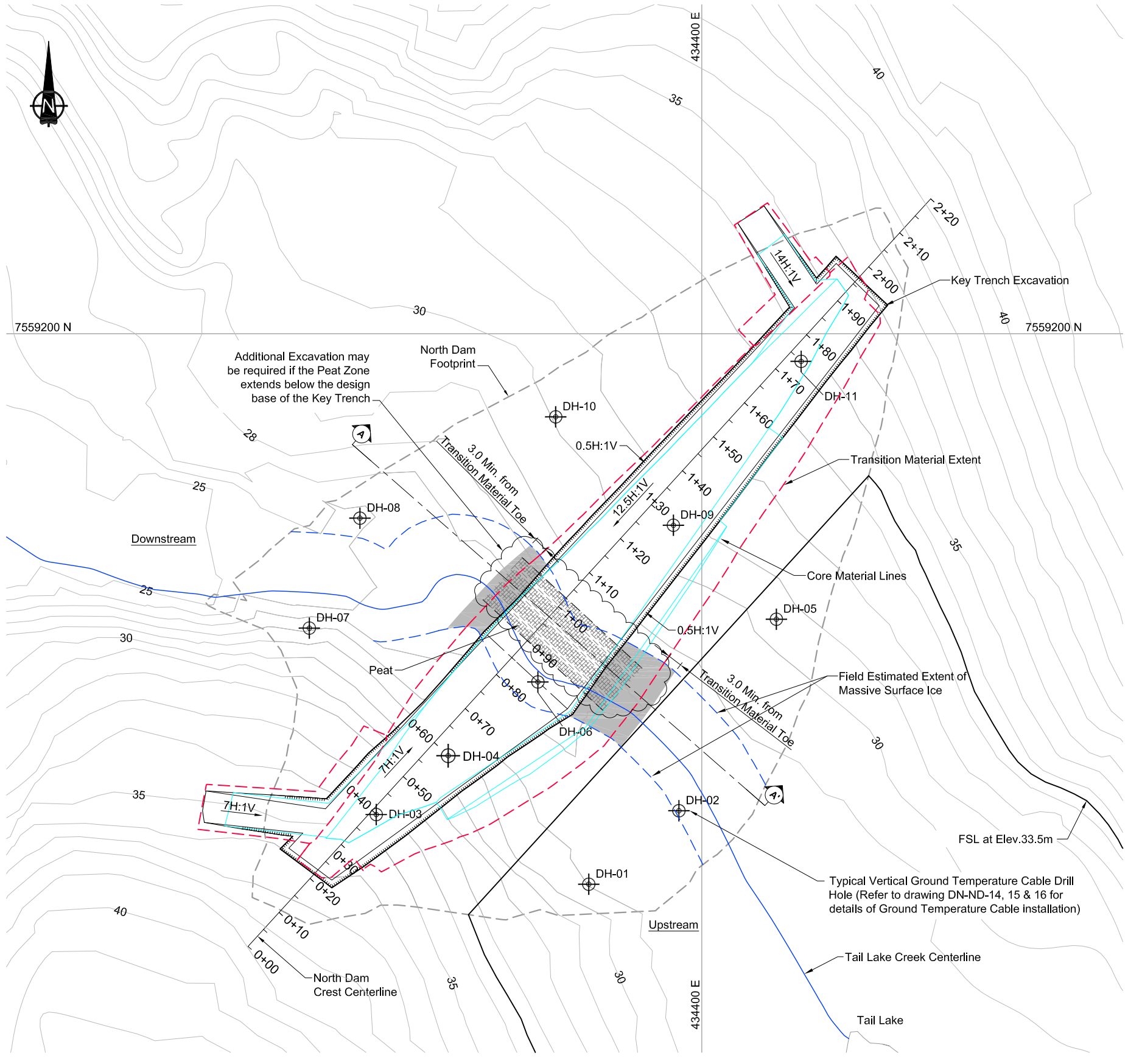
To prevent this settlement from happening, the zones of massive ice needs to be removed and replaced with suitable fill. Rather than using mass excavation techniques, SRK recommends that the ice be visually chased at surface and only relevant section be ripped out. Dental cleaning is not required, with the intent being to remove massive ice rather than smaller lenses of ice less than 10 cm. It should be noted that this ice should be chased to at least 3 m beyond the interface point between the Transition and ROQ zones, both upstream and downstream. Details on the required minimum upstream and downstream extents of this massive surface ice excavation can be found in figure ND-IE1 and ND-IE2.

Core material or out of spec core material (i.e. core reject) is a suitable fill material for the areas where surface ice is encountered outside of the key trench footprint. This material does not have to be placed saturated and compacted. Further details of the required excavation backfilling can be found on figure ND-IE2.

Detailed as-built surveys of the excavated and subsequently backfilled zones must be completed. Final approval of the extent of the excavation will be subject to a visual assessment of the excavated area.

---------- END OF MEMO ----------

Figures



0 5 10 15 20 25
Scale in Metres

LEGEND

- Estimated Areas where Additional Massive Surface Ice Excavation Required
- Field Estimate of Area where Massive Surface Ice may be Encountered
- Extent of Transitional Material
- Core Material Crest/Toe Lines
- Toe of Dam ROQ

NOTES

1. The final key trench and massive surface ice extent and depth will be determined in the field by the Engineer.
2. Volume presented is approximate and based on average excavation depth of 1.5m.

NORTH DAM QUANTITIES		
Item	Unit	Quantity
Estimated Massive Surface Ice Excavation	m³	760

SRK Consulting
Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CH008.033
FILE NAME: 1CH008_033-Excavation Plan.dwg

NEWMONT NORTH AMERICA

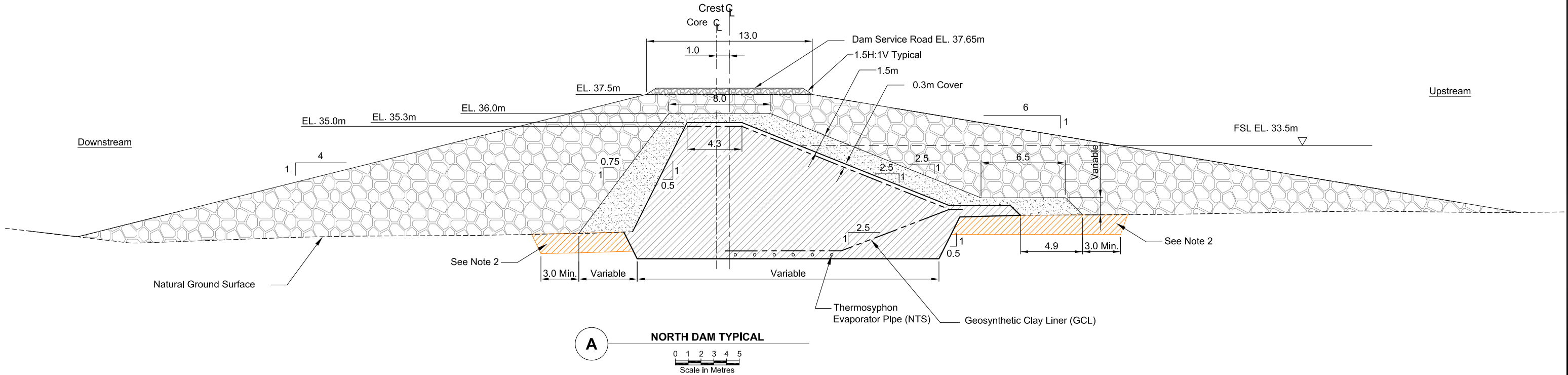
HOPE BAY MINING LTD.

Doris North Project

North Dam
Additional Massive
Surface Ice Excavation

DATE: Feb. 18, 2011
APPROVED: JK/EMR
FIGURE: ND-IE1

J:\01_SITES\Hope Bay\ACAD\2010 Drawings\NorthDam2010\1CH008_033-Excavation Plan.dwg



A **NORTH DAM TYPICAL**

0 1 2 3 4 5
Scale in Metres

LEGEND

- Natural Ground
- Geosynthetic Clay Liner (GCL)
- Core Material
- Transition Material
- Run of Quarry (ROQ)
- Surfacing Material
- Bedrock
- Peat
- Thermosyphon Evaporator Pipe (NTS)

NOTES

1. The final key trench and massive surface ice extent and depth will be determined in the field by the Engineer.
2. Surface ice and ice lenses to be excavated within this area, if encountered. Excavation is to be backfilled with core or out of spec. core material (ie. core reject). Material is not required to be saturated.

SRK Consulting
Engineers and Scientists
Vancouver B.C.

SRK JOB NO.: 1CH008.033
FILE NAME: 1CH008_033-Excavation Section.dwg

NEWMONT
NORTH AMERICA

HOPE BAY MINING LTD.

Doris North Project

North Dam Section
Additional Massive Ice Excavation

DATE:	APPROVED:	FIGURE:
Feb. 18, 2011	JK/EMR	ND-IE2

J:\01_SITES\Hope Bay\ACAD\2010 Drawings\NorthDam2010\1CH008_033-Excavation Section.dwg

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Technical Memo

To:	Mark Valeriote	**Date:**	April 15, 2011
Company:	Hope Bay Mining Limited	**From:**	Maritz Rykaart, Lowell Wade
Copy to:	Greg Blaylock, Kevin Mather	**Project #:**	1CH008.033.0213
Subject:	North Dam Close-out Plan for April/May 2011 - FINAL		

1 Introduction

Construction of the North Dam will have to be suspended in the near future due to the onset of warmer temperatures, which is preventing the timely and effective freeze-back of the core material. Furthermore, unless the Doris Creek Bridge is completed before the Doris Creek ice bridge becomes impassable, there will be no means to haul Run of Quarry (ROQ) and core material to the dam site.

This Technical Memo documents SRK's recommendations for thermal protection of the partially completed North Dam. It outlines plans for water management during the next seven months, until construction activities can resume when ambient air temperatures are consistently below -10ºC. This should be in late fall or early winter of 2011.

2 Minimum Design Height

Based on the current construction schedule, the earliest tailings will be deposited into Tail Lake is in the fall of 2012. To allow for tailings deposition, the fish-out of Tail Lake is scheduled for the summer of 2011. Once the fish-out is completed at the end of summer 2011, Tail Lake can also receive water from the Doris North Sedimentation and Pollution Control Ponds as well as the treated sewage effluent from Doris North Camp.

SRK reassessed the water balance for Tail Lake, taking into consideration the expected rise in water levels for the summer and fall season of 2011 and the only natural inflows from the Tail Lake catchment, and zero outflows due to the presence of the North Dam. Under this scenario, the water level is expected to rise from the normal level in Tail Lake of 28.3 m to between 28.9 m and 29.3 m, depending on which combination of anticipated climatic events are modelled. Based on that analysis, SRK is recommending that a minimum interim design height for the North Dam be set at 29.8 m which includes 0.5 m freeboard over the maximum anticipated water level rise in Tail Lake for the 2011 summer and fall seasons.

3 Preferred Close-out Plan

The preferred close-out plan (Figure 1) will continue the construction of the North Dam in accordance with the design, but with temporary modifications as follows:

- Install all evaporator pipes and radiators and commission the thermosyphons.
- Cover all evaporator pipes with saturated core material.
- Install all of the lower GCL (even those at elevation greater than 29.8 m), and cover with at least 500 mm (2 lifts) of saturated core material.
- Continue to construct the frozen core superstructure, as per design to elevation 29.8 m. This includes the installation of the upper CGL as appropriate, and covering it with saturated core material.

- It is expected that at least a portion of the uppermost saturated core material will degrade over the summer season, and will have to be removed when construction commences. Therefore, adequate cover is required over the elements embedded within the core (i.e. the evaporator pipes, GCL and ground temperature cables) such that when this sacrificial layer is removed there is no risk of damaging embedded elements.
- Sacrificial single bead ground temperature cables should be installed within the upper zone of the core material and in the layer containing embedded elements to allow monitoring of the sacrificial core material to assist with defining how much needs to be removed when dam construction commences.
- Complete the construction of both upstream and downstream abutments of the dam to elevation 29.8 m (this includes both ROQ and Transition material).
- Cover all of the exposed core material with 3 m of ROQ to act as temporary thermal protection until dam construction commences (a "marker" material layer could be placed if deemed necessary from a constructability perspective).

4 Contingency Close-out Plans

In the event there are not enough sufficiently cold days remaining this season to allow this plan from being implemented, a contingency close-out plan is required.

It is anticipated that construction on the dam will proceed as long as practical, with the goal of achieving the preferred close-out plan as documented above. However, it is realized that construction may have to cease, at any day, due to the inability to achieve timely freeze-back of the individual lifts of saturated core material. Under this scenario the upper elevation of the placed core material and associated liner will be at a lower elevation than the minimum interim design elevation of 29.8 m. Therefore, alternate measures need to be implemented to manage the rising water level in Tail Lake, to minimize the risk of degrading any placed core material which may lead to costly and time consuming rework when construction recommences. Two possible contingency plans are presented below.

4.1 Contingency Close-out Plan A

This contingency close-out plan, illustrated on Figure 2, consists of the following elements:

- Install a geosynthetic clay liner (GCL) on the upstream face of the dam up to elevation 29.8 m (note that this could be substituted with a HDPE liner if necessary; however, the HDPE would have to be sandwiched between two 12-oz geotextile layers, and/or appropriate bedding layers). The neat line quantity for this liner (not accounting for overlap and wastage) is about 1,100 m^2.
- The liner (GCL or HDPE) should be keyed as far as practical, into original ground at the toe of the dam to penetrate below the active zone (about 0.5 to 1 m deep) and be embedded into frozen ground. It is recognized that the ground will be frozen, therefore excavation of this trench will not be easy; however, to cut off the seepage path leading to the exposed core material an effective key trench is required.
- At the crest, the liner (GCL or HDPE) does not need a tuck trench but it needs to extend at least 1.5 m beyond the crest and should be covered with at least 0.5 m of select ROQ to act as ballast.
- On the slope, the HDPE liner needs to be covered with at least 1 m of select ROQ to ensure a confining load (should HDPE be used, no confining load is required; however, covering the liner with a nominal lift (300 mm) of crush material would be advantageous to counter the heat sink created by the black surface of the HDPE).
- The key trench should be backfilled with core material to ensure protection of the liner. If the key trench bottom surface is highly irregular, bentonite powder should be used to ensure a good seal between the liner and the excavation. The backfilled key trench should be covered with at least 1 m of select ROQ extending 1 m upstream of the key trench limit to provide thermal insulation.

- A primary sump, excavated at least 1 m below the lowest original ground level needs to be installed through the existing ROQ material downstream of the liner (approximately at station 0+85), but upstream of the core material (at least 10 m upstream). The sump should consist of a vertical corrugated steel pipe culvert (at least 24-inches in diameter), perforated at the base. A trash pump with an automated level switch should be installed in the pipe culvert to transfer any seepage bypassing the liner back to Tail Lake. *SRK will provide an estimate of the seepage rate to allow sizing of the pump*.
- A secondary sump, complete with trash pump and level sensor, similar to the first is required in the low spot of the key trench on top of the core material (approximately at station 0+85). *SRK will provide an estimate of the seepage rate to allow sizing of the pump*.
- It is anticipated that at least a portion of the uppermost saturated core material will degrade over the summer season, and will have to be removed when construction recommences. Therefore, an adequate cover is required over the elements embedded within the core (i.e. the evaporator pipes, GCL and ground temperature cables) such that when this sacrificial layer is removed there is less risk of damaging embedded elements. As stated above, the minimum saturated core over these elements prior to close-out is therefore 0.5 m (2 lifts)
- If there is not sufficient time to cover the embedded elements within the core with at least 0.5 m (2 lifts) of saturated core material prior to close-out, the embedded elements should not be installed at this time.
- Cover all of the exposed core material with 3 m of ROQ to act as a temporary thermal protection until dam construction commences (a “marker” material layer could be placed if deemed necessary from a constructability perspective).
- Sacrificial single bead ground temperature cables should be installed within the sacrificial upper zone of the core material and in the layer with embedded elements to allow monitoring of the sacrificial core material to assist with defining how much material needs to be removed when dam construction recommences.
- Sacrificial single bead ground temperature cables need to be installed in the liner key trench to monitor ground temperatures during the summer months.
- A pump system should be put in place to allow for the water level in Tail Lake to be maintained at its pre-impoundment level of 28.3 m. Water should be discharged past the dam to its natural outflow downstream of the dam. It is recognized that approval for this may have to be obtained from the Regulatory bodies, and authorization will need to be obtained very quickly; such that the water levels can be controlled.

5 Contingency Close-out Plan B

The following elements describe this contingency close-out plan, as illustrated on Figure 3:

- Rather than terminating the fillet zone at the design elevation for the lower GCL, extend the fillet zone to elevation of 29.8 m where appropriate. This additional fillet will be constructed in accordance with the approved variance for fillet construction, and will continue rising at a slope of 2.5:1.
- The final crest width of the extended fillet zone, at elevation 29.8 m, must be at least 3.5 m wide. The upstream slope of the extended fillet can be 1:1 down to original ground.
- Prior to extending the fillet zone as described above, the tundra vegetation must be stripped from the footprint where this extended fillet material will be placed.
- Cover the extended fillet with GCL by extending the lower GCL coming from the key trench. Terminate the GCL 1 m beyond the crest of the 29.8 m elevation on the horizontal surface.
- Cover the entire GCL surface with at least 500 mm (2 lifts) of saturated core material.
- It is anticipated that at least a portion of the uppermost saturated core material will degrade over the summer season, and will have to be removed when construction recommences. Therefore, adequate cover is required over the elements embedded within the core (i.e. the evaporator pipes, GCL and ground temperature cables) such that when this sacrificial layer is removed there is less risk of damaging embedded elements. As stated above, the minimum saturated core over these elements prior to close-out is 0.5 m (2 lifts)

- If there is not sufficient time to cover the embedded elements within the core with at least 0.5 m (2 lifts) of saturated core material prior to close-out, the embedded elements should not be installed at this time.
- Cover all of the exposed core material with 3 m of ROQ to act as temporary thermal protection until dam construction commences (a "marker" material layer could be placed if deemed necessary from a constructability perspective).
- Sacrificial single bead ground temperature cables should be installed within the sacrificial upper zone of the core material and in the layer with embedded elements. This will allow for monitoring of the sacrificial core material to assist with defining how much material will be needed to be removed when the dam construction recommences.
- Sacrificial single bead ground temperature cable needs to be installed in the upstream zone of the extended fillet zone to monitor ground temperatures during the summer months.
- A sump needs to be installed in the low spot of the key trench on top of the core material (approximately at station 0+85). The sump should consist of a vertical corrugated steel pipe culvert (at least 24-inches in diameter), perforated at the base. A trash pump with an automated level switch should be installed in the pipe culvert to transfer surface inflows downstream of the extended fillet zone back to Tail Lake. *SRK will provide an estimate of the inflow rate to allow sizing of the pump*.
- A pump system should be put in place to allow the water level in Tail Lake to be maintained at its pre-impoundment level of 28.3 m. Water should be discharged past the dam to its natural outflow downstream of the dam. It is recognized that approval for this may have to be obtained from the Regulatory bodies, and authorization will need to be obtained very quickly; such that the water levels can be controlled.

6 Risks Associated with Close-out Plan

Given the circumstances, not completing the North Dam at this time is not a choice, but a necessity. The recommended close-out plans as described in this memo should allow for minimal damage to rework, but is not without risk, as documented below:

- The upstream liner will not result in a perfect seal, and therefore the success of the system relies heavily on the ability to pump back seepage via the primary sump. Should this seepage pump back station fail, there is a possibility that a portion of the core may get flooded which could result in thermal degradation and damage to the core. Upon recommencement of construction, these damaged sections will have to be excavated and replaced, which could be extremely difficult and time consuming.
- It should also be noted that it may not be possible to visually ascertain how much of the core may have been compromised.
- Removal of the ROQ or sacrificial core when dam construction recommences could result in damage to embedded elements in the core, as well as the exposed ground temperature cable leads. Any damaged elements will have to be replaced.
- Excavation of the key trench along the upstream toe of the dam could result in increased early thaw degradation of the toe. Remedial work may be required.
- There may by climatic conditions which exceed the water balance scenarios simulated in determining the interim maximum water level rise in Tail Lake. Under such conditions the liner may overtop, the seepage pumps may be inundated and the core could be flooded and damaged.
- It is possible that if seepage and/or overtopping occur there may a discharge of water downstream of Tail Lake that could exceed the Water Licence Limits (including TDS, Salinity and Ammonia).

7 Selection of a Close-out Plan

SRK recommends that contingency close-out Plan B be implemented. Specific details on placement of the single bead ground temperature cables, placement of the sump and extent of the ROQ cover,

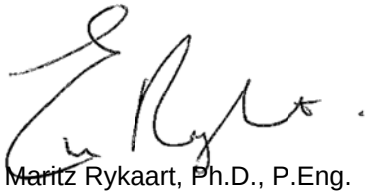
etc. will be developed collaboratively between SRK, the EPCM Manger and the Contractor, but the concept described in this Technical Memo will need to be adhered to.
It should also be noted that SRK will prepare a re-commissioning plan, to determine how the dam construction is to proceed when construction recommences later in 2011.

8 Initiation of Close-Out Plan

A decision to cease placing frozen core material, and implement either of the close-out plans as presented should be made based on a review of the long-term (7-day) weather forecast for Cambridge Bay. The trigger should be a warming trend of three or more days where the daily high temperature is above -10^{o}C, or as agreed between HBML and SRK.

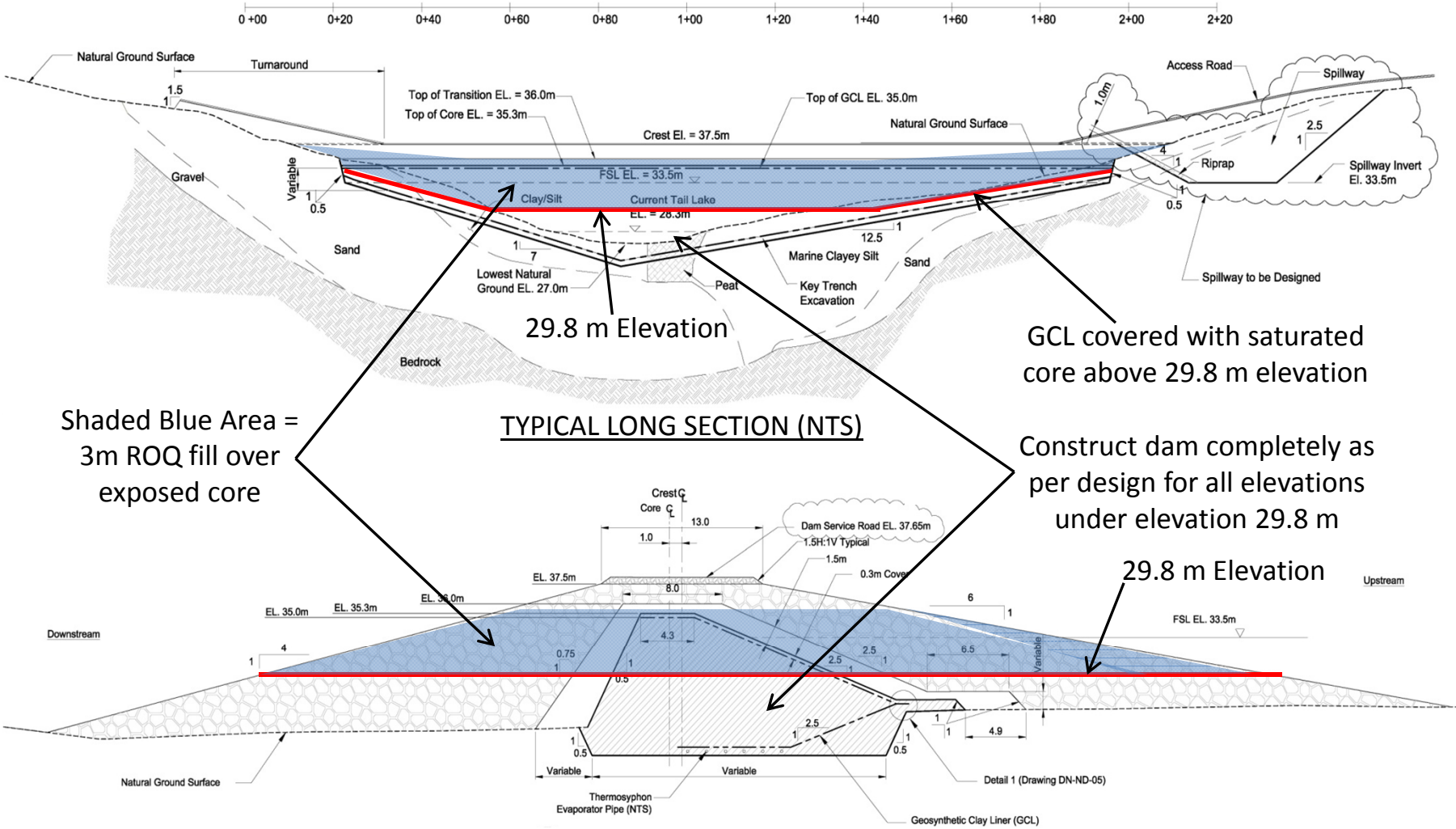
Regards

SRK Consulting (Canada) Inc.



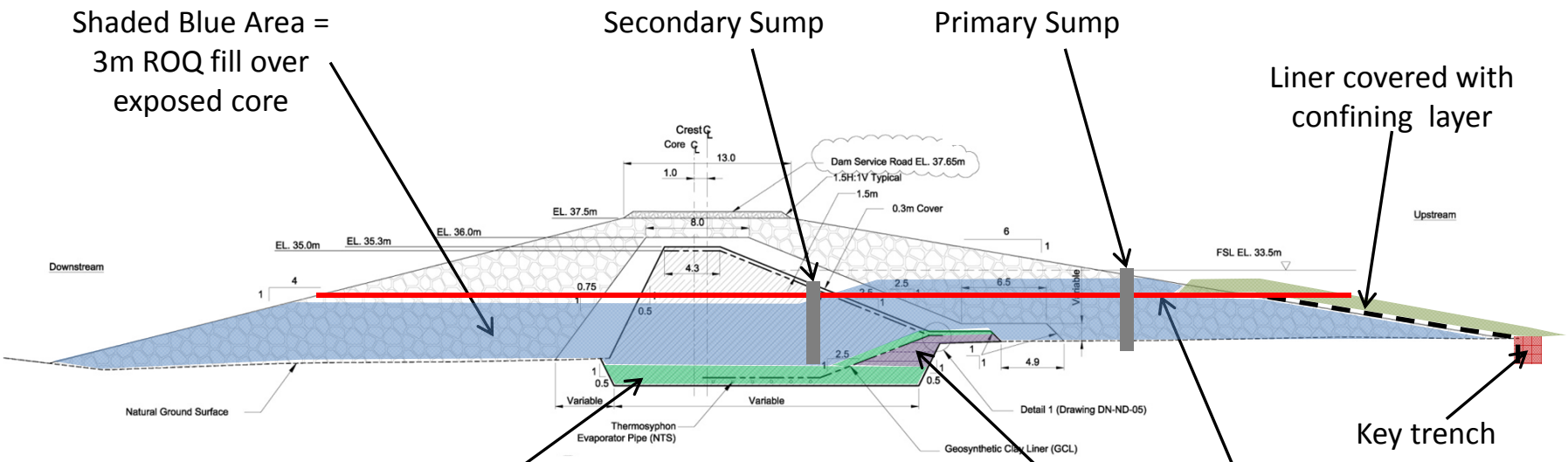
Maritz Rykaart, Ph.D., P.Eng.
Principal Consultant

Figures

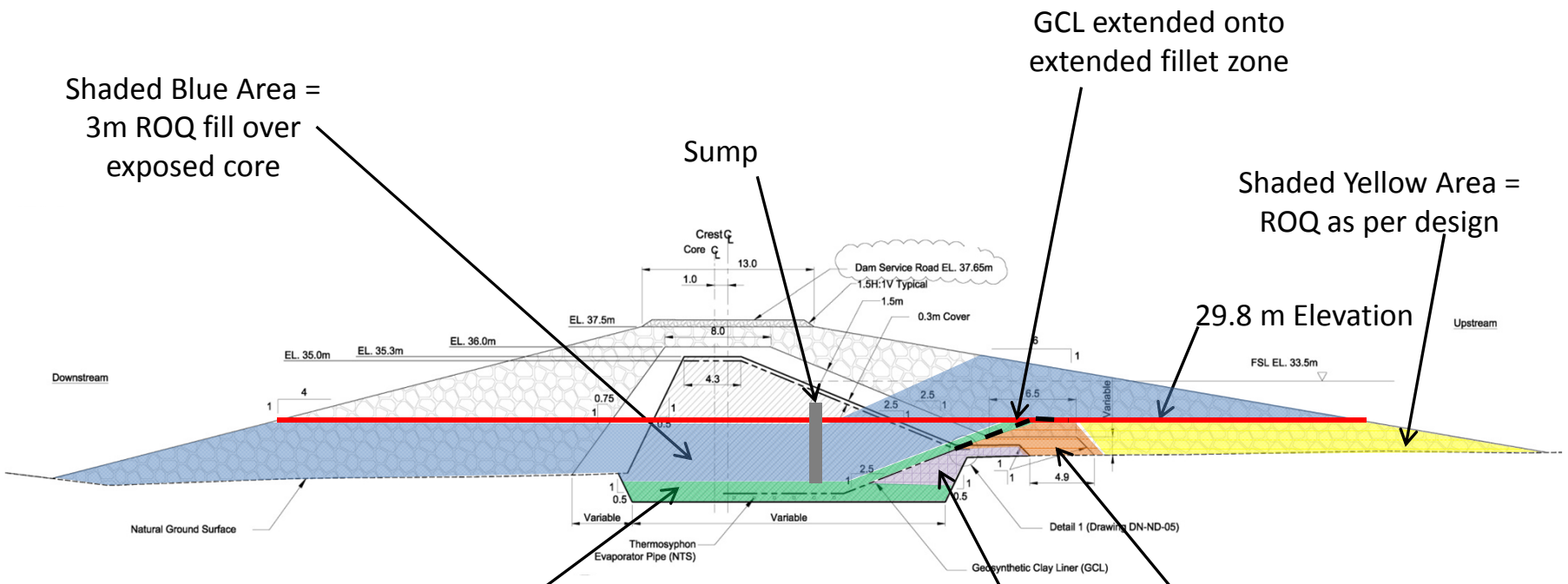


TYPICAL CROSS SECTION (NTS)

srk consulting	**HOPE BAY MINING LIMITED**	North Dam
		Preferred Close-out Plan
Job No: 1CH008.033.0213 Filename: Close-out Plan Drawings.pptx	Doris North Project	Date: April 15, 2011 / Approved: EMR / Figure: **1**



srk consulting	HOPE BAY MINING LIMITED	North Dam
		Contingency Close-out Plan A
Job No: 1CH008.033.0213 Filename: Close-out Plan Drawings.pptx	Doris North Project	Date: April 15, 2011 / Approved: EMR / Figure: 2



TYPICAL CROSS SECTION (NTS)

srk consulting	HOPE BAY MINING LIMITED	North Dam
		Contingency Close-out Plan B
Job No: 1CH008.033.0213 Filename: Close-out Plan Drawings.pptx	Doris North Project	Date: April 15, 2011 / Approved: EMR / Figure: 3

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Memo

To:	Kevin Mather	**Date:**	July 8, 2011
Company:	JDS Engineering	**From:**	Maritz Rykaart
Copy to:	Chris Hanks, Christine Kowbel	**Project #:**	1CH008.033
Subject:	Tail Lake Water Level		

On April 15, 2011 SRK prepared a close-out plan for temporary cessation of construction of the North Dam due to the onset of warmer temperatures, which prevented timely freeze-back of the core material.

At that time SRK reassessed the water balance for Tail Lake, taking into consideration the expected rise in water levels for the summer and fall season of 2011. Considering only natural inflows from the Tail Lake catchment, and zero outflows due to the presence of the North Dam, the water level in Tail Lake was estimated to rise from the normal level in Tail Lake of 28.3 m to between 28.9 m and 29.3 m, depending on which combination of anticipated climatic events were modeled. Based on that analysis, SRK recommended that a minimum interim design height for the North Dam core be set at 29.8 m which included 0.5 m freeboard over the maximum anticipated water level rise in Tail Lake for the 2011 summer and fall seasons. This was subsequently implemented and the dam core was constructed to an elevation of 29.8 m.

Water level measurements in Tail Lake taken since June 17, 2011has confirmed that the level is raising significantly faster than what was anticipated, most likely due to the water in Tail Lake having been at an above normal initial elevation when dam construction started. By July 8, 2011 the water level in Tail Lake has reached the interim FSL of 29.3 m leaving only the design freeboard remaining.

Further re-evaluation of the water balance, using the available rate of infill as calibration leads SRK to conclude that emergency measures should be put in place to manage the water level in Tail Lake to prevent overtopping of the partially completed frozen core structure. Such overtopping would lead to complex, time-consuming and expensive repairs once dam construction resumes in November or December of 2011.

The water balance was rerun once again considering a number of different anticipated climatic events, including average precipitation, wetter than normal precipitation, reduced evaporation potential, and inflow of extreme storm events and we have concluded that should the water level in Tail Lake reach 29.5 m immediate measures should be put in place to lower the water level in Tail Lake. This is based on the fact that a 1:100 year, 24-hr duration storm event would result in a water level rise in Tail Lake of about 0.25 m.

Regards

SRK Consulting (Canada) Inc.

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