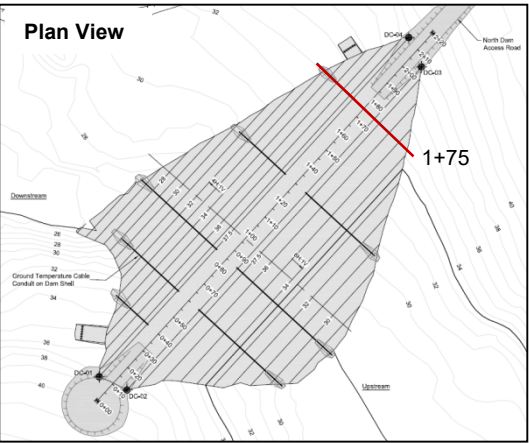


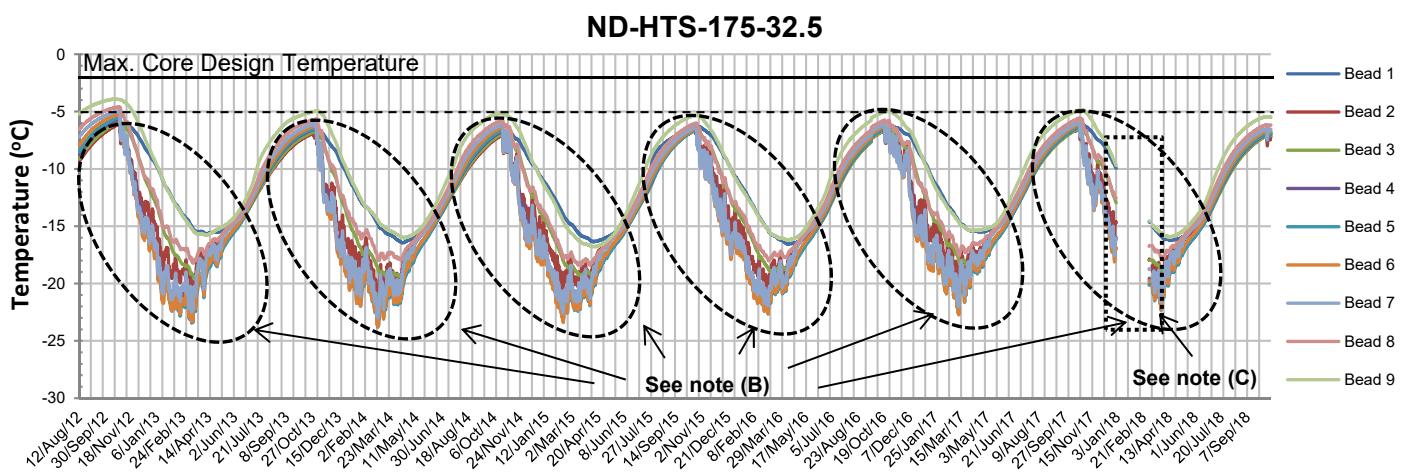
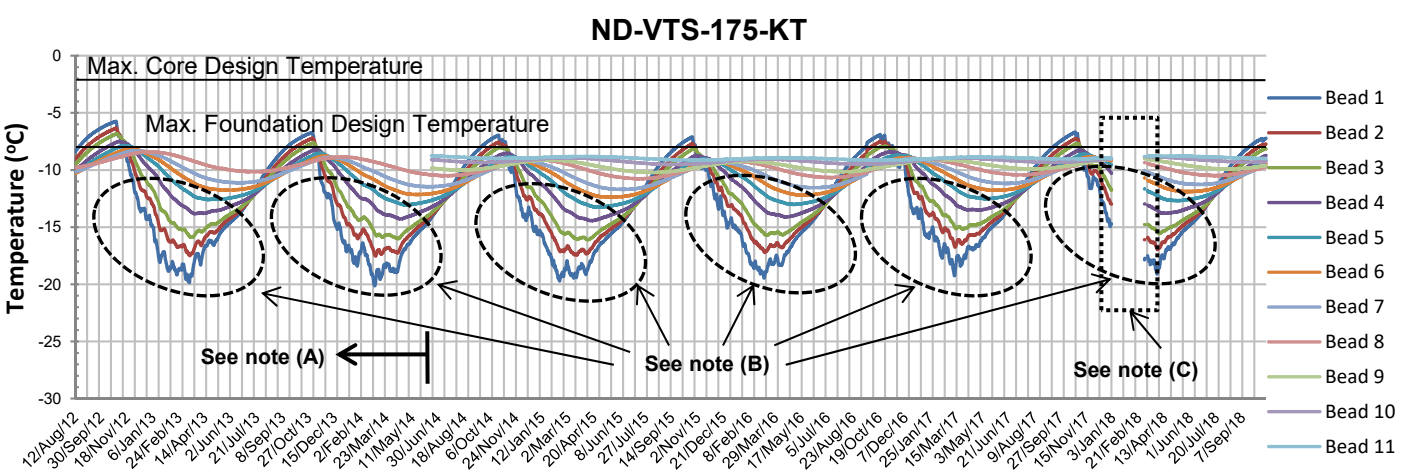
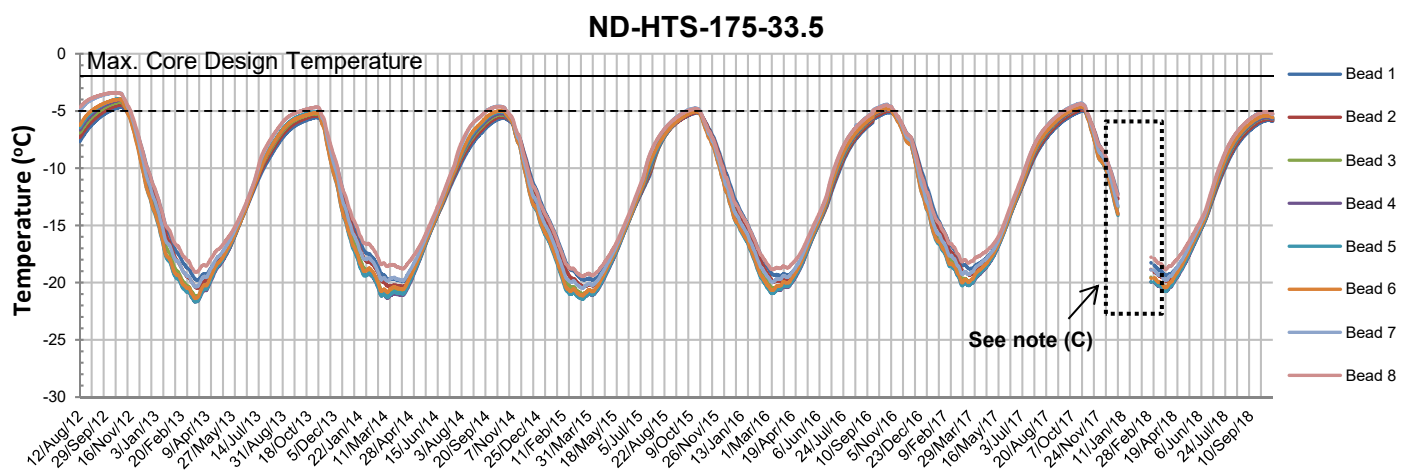
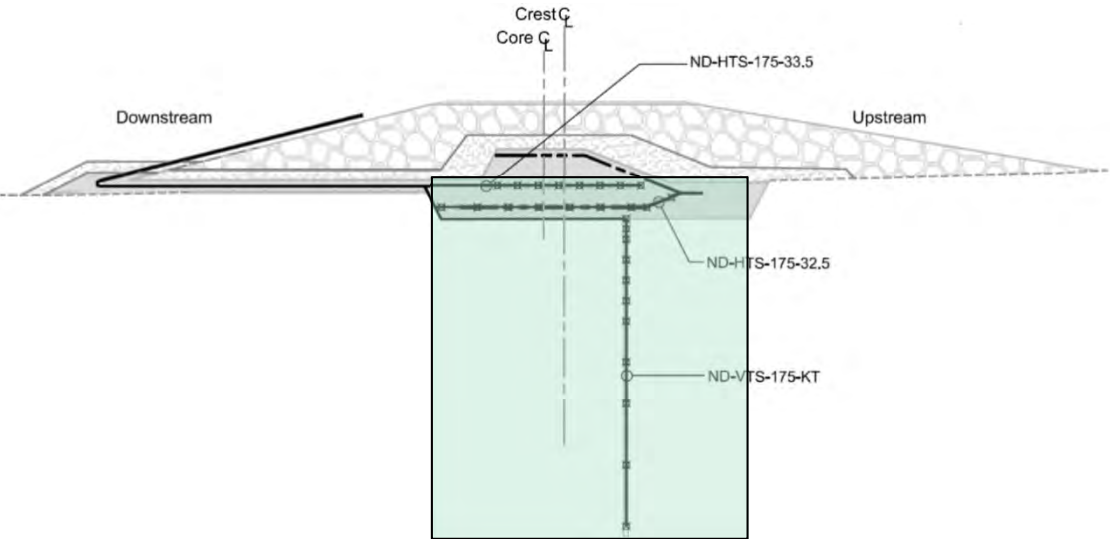


Legend:

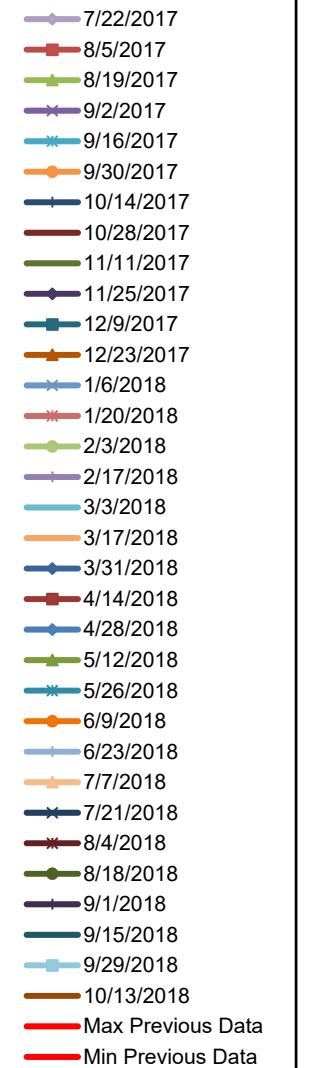
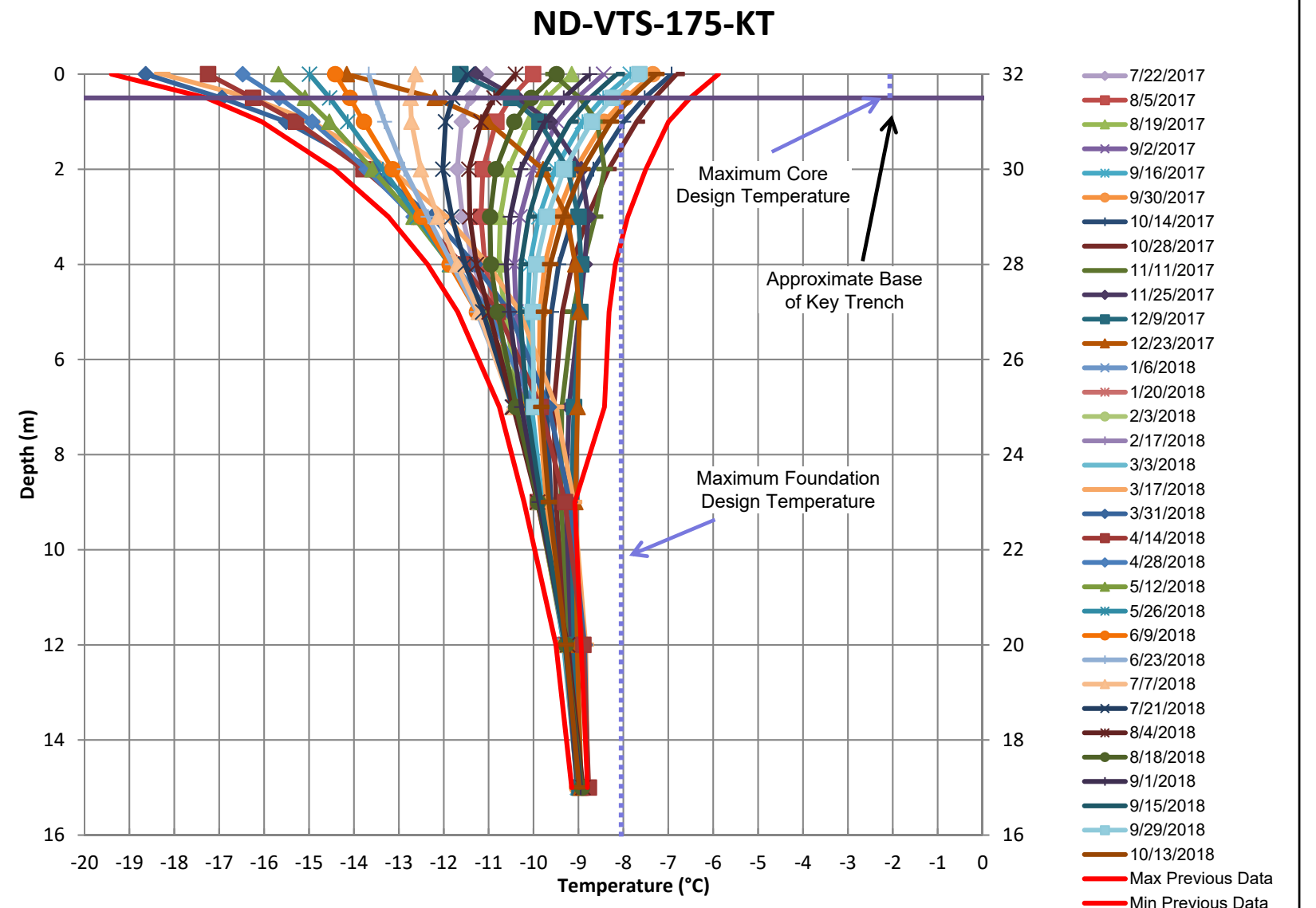
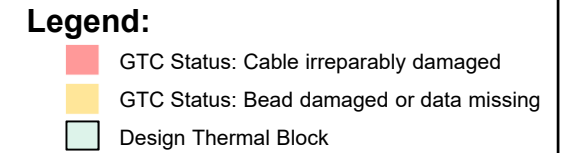
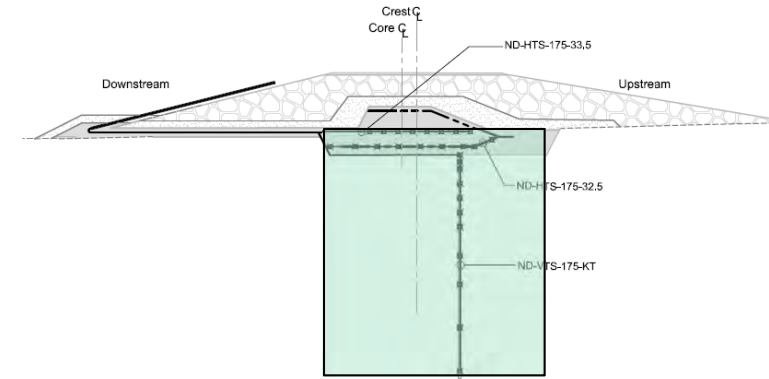
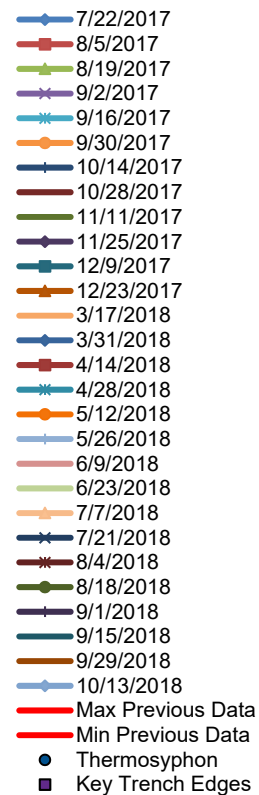
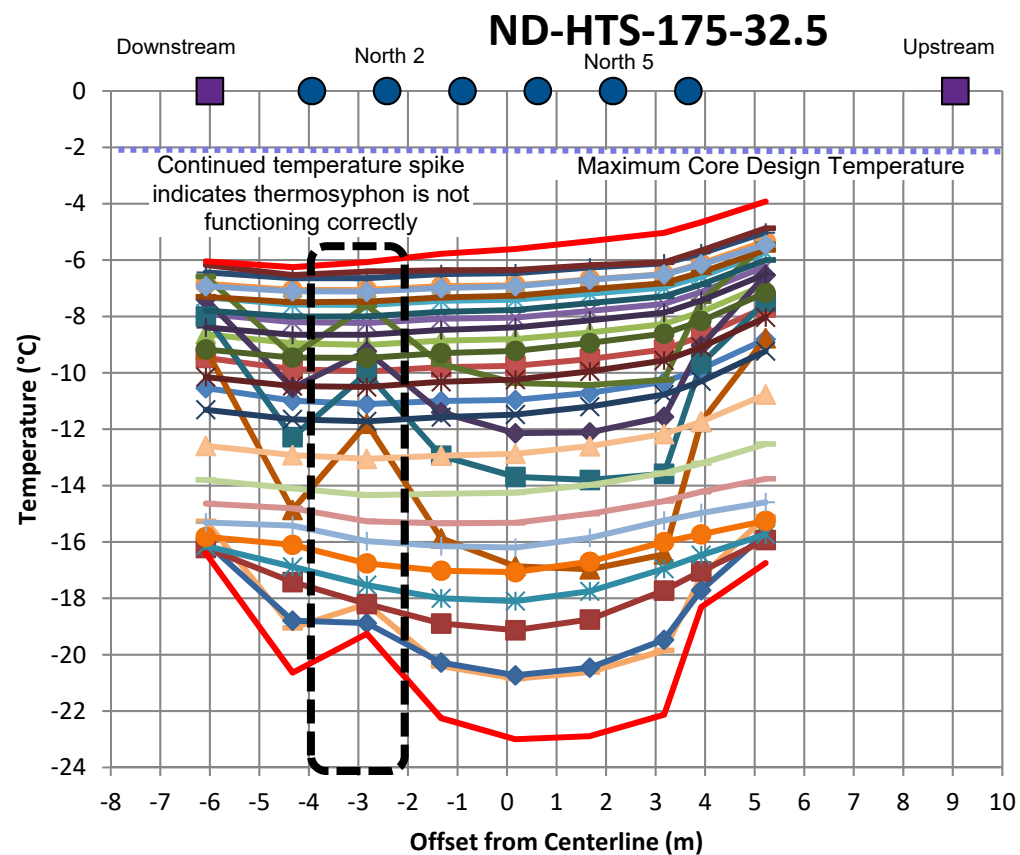
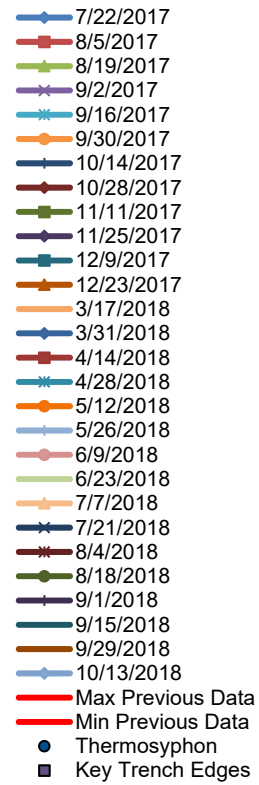
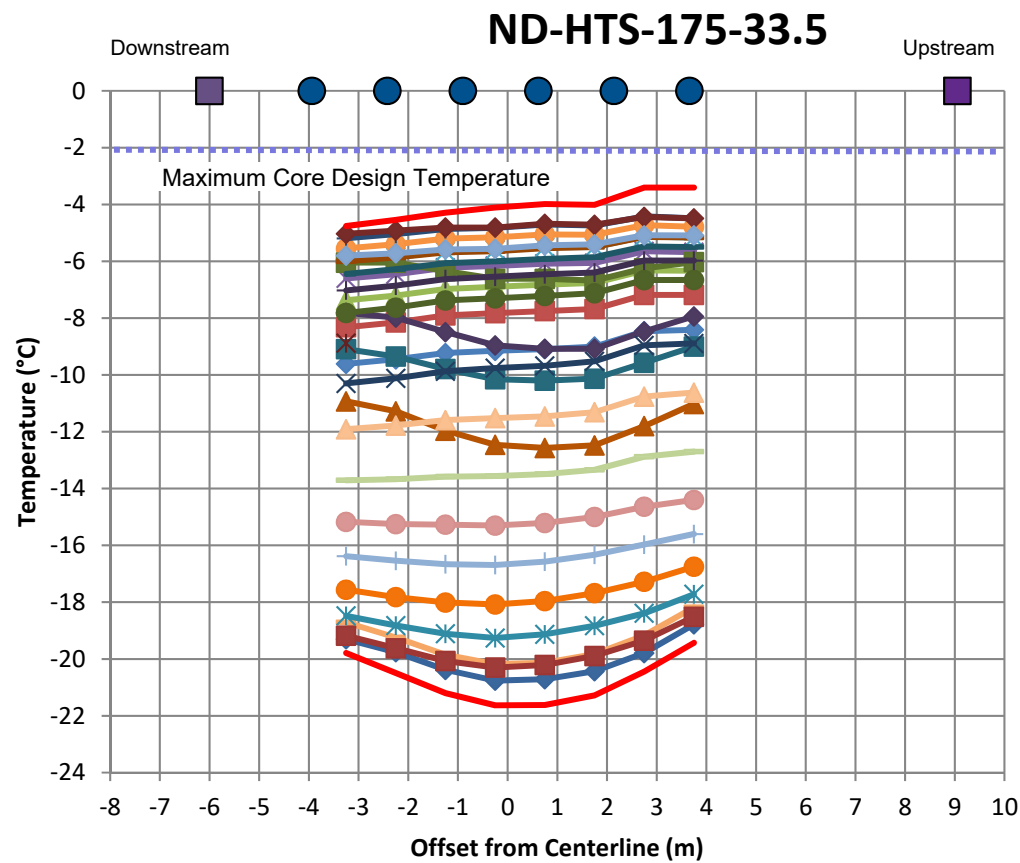
GTC Status: Cable irreparably damaged

GTC Status: Bead damaged or data missing

Design Thermal Block



- Notes:**
- Bead numbers increase from downstream to upstream (horizontal) and top to bottom (vertical)
 - **(A)** Incorrectly connected to datalogger at ND-HTS-175-33.5; therefore, no readings for beads 9, 10 and 11.
 - **(B)** Variation in Ground Temperature Cable readings during winter months due to close proximity of Ground Temperature Cable beads to thermosyphon pipes.
 - **(C)** Data logger was disconnected from January 1, 2018 to March 3, 2018 for recalibration



Note:

- Previous Data was recorded between August 2012 and July 2017
- Data logger was disconnected from January 1, 2018 to March 3, 2018 for recalibration



Job No: 1CT022.028
Filename: AppB_1CT022.028_ND_GTC



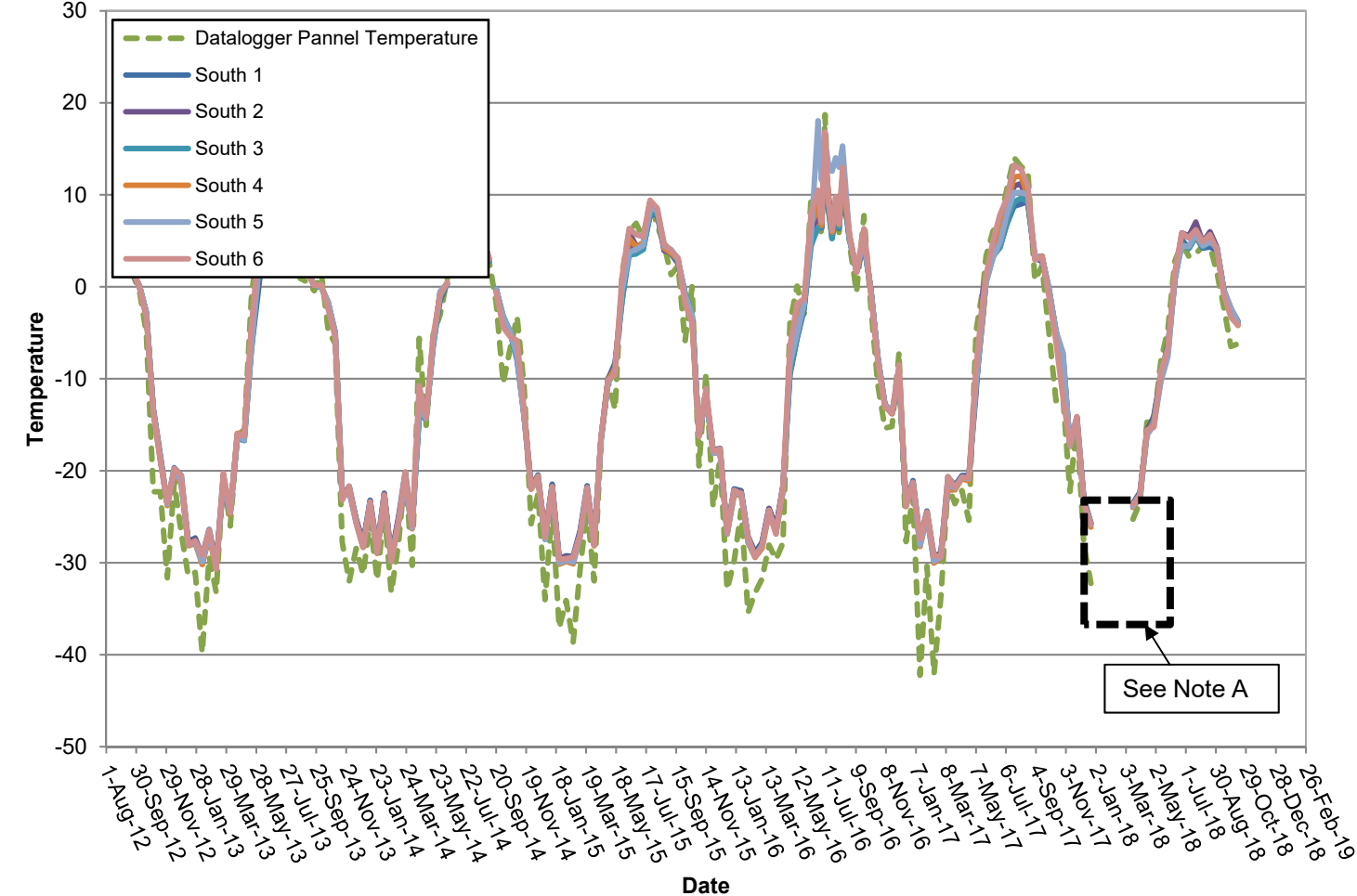
DORIS TIA

2018 Annual Geotechnical Inspection

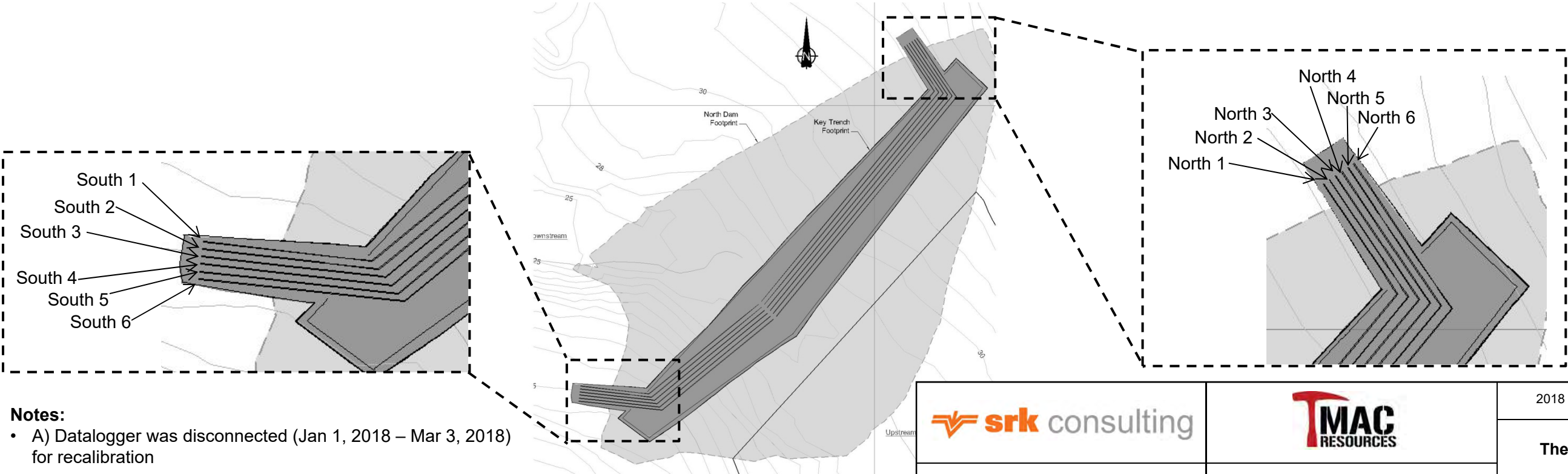
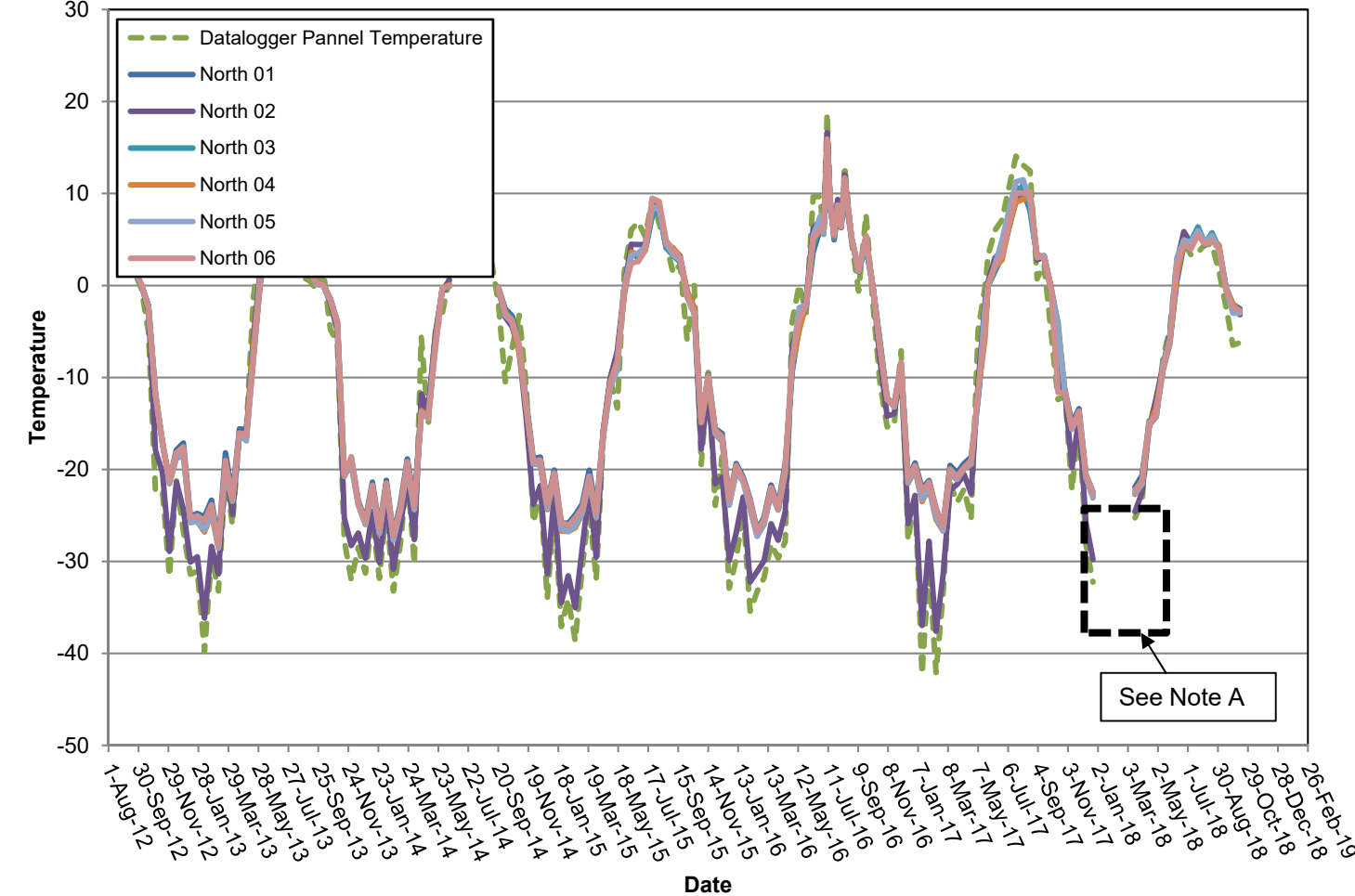
Station 1+75
Ground Temperature Cable Readings
by Location

Date: Jan. 2019
Approved: PL
Figure: **B.16**

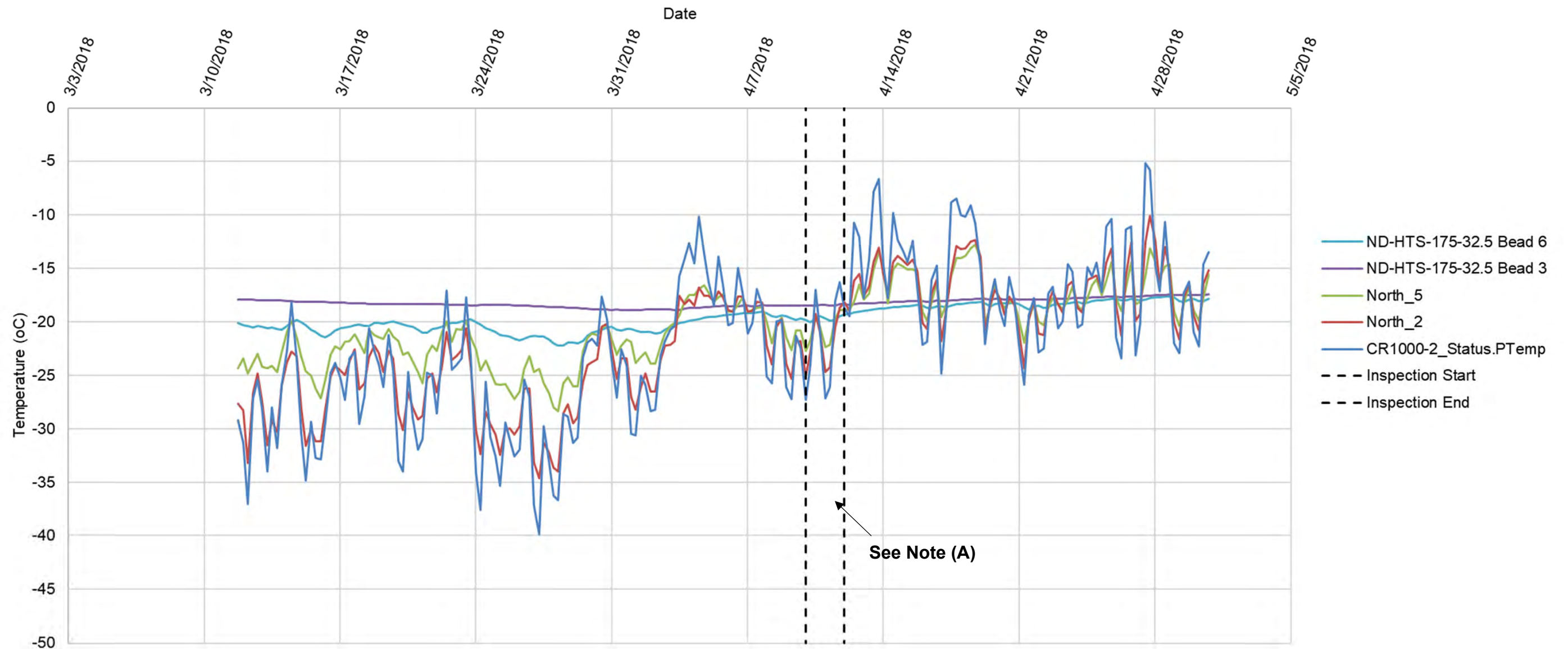
South Thermosyphon Monitoring



North Thermosyphon Monitoring



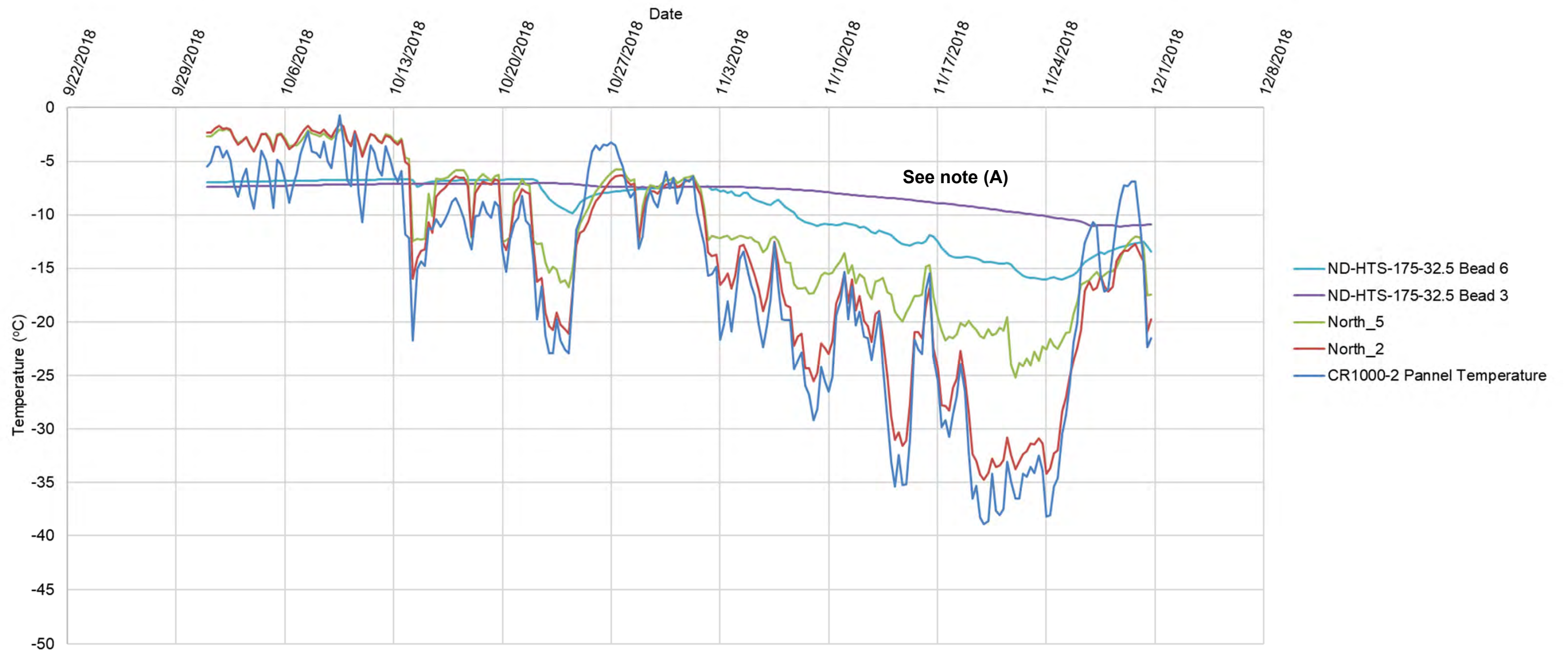
- Notes:**
- A) Datalogger was disconnected (Jan 1, 2018 – Mar 3, 2018) for recalibration



Notes:

- The monitoring period shown illustrates the transition from active to dormant thermosyphons on the North Bank between March 10th to April 30th, 2018. In March, North 2 closely follows the air temperature, while the other thermistors are substantially warmer.
- **(A)** During the Arctic Foundations of Canada (AFC) inspection on April 10th and 11th, 2018, limited temperature differential was observed between North 2 and the other north thermosyphons (North 5 used here). The thermosyphon monitoring data indicates that the thermosyphons were nearly dormant during the days of the inspection as they transitioned from the active to the dormant period.

		2018 Annual Geotechnical Inspection		
		North 2 Thermosyphon Performance During Inspection		
Job No: 1CT022.028 Filename: AppendixC_Thermosyphons.pptx	DORIS TIA	Date: Jan. 2019	Approved: PDL	Figure: C.2

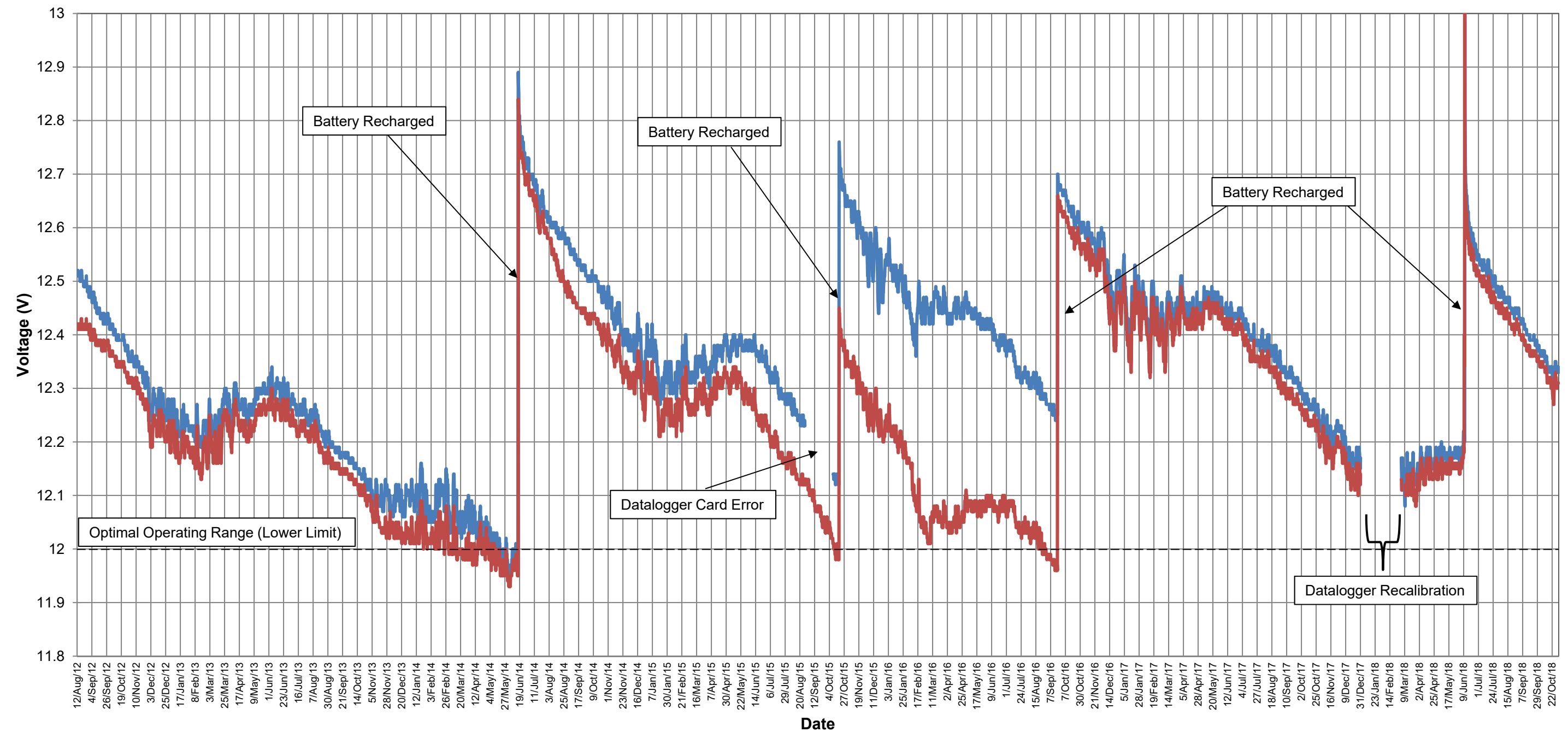


Notes:

- The monitoring period shown illustrates the transition from dormant to active thermosyphons on the North Bank between October 1st to November 30th 2018.
- **(A)** Based on a comparison of the North Bank thermosyphons, temperature at the North 2 thermosyphon continues to indicate limited temperature differential between air and thermosyphon riser temperatures when compared to the temperature of North 5 (for example). This is also supported by the GTC beads located near the pipes in the key trench.
 - Bead 3 is near North 2 (limited function)
 - Bead 6 is near North 5 (fully functional)

		2018 Annual Geotechnical Inspection		
		North Bank Thermosyphons Fall Performance		
Job No: 1CT022.028 Filename: AppendixC_Thermosyphons.pptx	DORIS TIA	Date: Jan. 2019	Approved: PDL	Figure: C.3

Appendix D – Datalogger Battery Levels



— CR1000-1 (Station 0+40, 0+60 and 0+85)

— CR1000-2 (Station 0+40, 0+60 and 0+85)

Notes:

1. Operating voltage range is 9.6 to 16 V
2. Optimal operating voltage is 12 to 14 V
3. Datalogger will shut down if voltage drops below 9.6 V



Job No: 1CT022.028
Filename: AppendixD_1CT022.028_Batteries.pptx



DORIS TIA

2018 Annual Geotechnical Inspection

Battery Voltage with Time

Date: Jan. 2019	Approved: PDL	Figure: D.1
--------------------	------------------	-----------------------

Date	Inclinometers Measured						Data Quality
	070-1	070-2	070-3	120-1	120-2	120-3	
14-Sep-17	x	x	x	x	x	x	
14-Oct-17	x	x	x	x	x	x	
16-Nov-17	x	x	x	x	x	x	
16-Dec-17	x	x	x	x	x	x	
16-Jan-18	x	x	x	x	x	x	070-2 Data logger issue
16-Feb-18	x	x	x	x	x	x	
21-Mar-18	x	x	x	x	x	x	
20-Apr-18	x	x	x	x	x	x	
19-May-18	x	x	x	x	x	x	
8-Jun-18	x	x	x	x	x	x	
7-Jul-18	x	x	x	x	x	x	
3-Aug-18	x	x	x	x	x	x	
29-Sep-18	x	x	x	x	x	x	
21-Oct-18	x	x	x	x	x	x	070 -2 Missing data point, readings at 9 m left blank
DATA CUT OFF FOR 2018 AGI							

Notes:

- 1. Green marks good quality survey data
- 2. Yellow marks survey data with zeros or error values replaced
- 3. Orange marks poor quality survey data (excluded from graphs or modified)
- 4. Blue marks a duplicate survey data with similar data, taken +/-1 day.

