September 24, 2025

Karen Kharatyan
Nunavut Water Board
PO Box 119
Gjoa Haven, NU
X0B 1J0

Re: Agnico Eagle's Response to Comments on the Water Licence 2AM-MEL1631 Modification – Pump Development within Permafrost and Water Storage in Pits

Dear Mr. Kharatyan,

Agnico Eagle thanks the Nunavut Water Board, Kivalliq Inuit Association, Crown-Indigenous Relations and Northern Affairs Canada, Environment and Climate Change Canada, and Fisheries and Oceans Canada for their assumptions, comments and review on the Water Licence 2AM-MEL1631 Modification for mining of the Pump development within permafrost (with in-pit portal), and water storage in pits. Our responses are provided in the enclosed.

As per the direction received from the NWB on September 5, 2025, should a conference call be required to discuss outstanding issues, Agnico Eagle's preferred date is October 15, 2025; however, October 24th is also feasible.

Should you have any questions or require further information, please contact the undersigned at your convenience.

Regards,

Colleen Prather
colleen.prather@agnicoeagle.com
Superintendent, Permitting & Regulatory Affairs

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NUNAVUT WATER BOARD (NWB)

Interested Party:	**NWB**	**Rec No.:**	**NWB**
Re:	**Assumptions**		

Assumption by Interested Party:

1. *Agnico Eagle will not be seeking an amendment to the terms and conditions of NIRB Project Certificate No.006 for the proposed activities (see for example the NIRB's query in relation to Term and Condition #25 specifically).*
2. *By way of this modification, the Licensee is not seeking to amend any terms and conditions in the Licence.*
3. *By way of this modification, the Licensee is not seeking a change from the requirement in Part F, Item 10 of the Licence, which prescribes: "Saline Groundwater shall be managed separately from surface contact water and not directed to the contact water management system".*

Agnico Eagle's Response to Request:

Agnico Eagle will not be seeking an amendment to the terms and conditions of NIRB Project Certificate No.006.

Agnico Eagle is not seeking a change from Water Licence 2AM-MEL1631 Part F, Item 10, and confirms that appropriate water management practices will be followed as outlined in the Licence.

As per response to CIRNAC-02 and ECCC-02, when needed, new verification monitoring stations will be established through a modification to Schedule I, Table 2 of Type A Water Licence 2AM-MEL1631 (similar to the previous addition of station MEL-32), in coordination with the NWB.

KIVALLIQ INUIT ASSOCIATION (KivIA)

Interested Party:	KivIA	Rec No.:	KivIA-01
Re:	Use of Mined Out Pits to Store Water		

Request Made by Interested Party:
There still exists uncertainty on the impact on permafrost from the storage of saline water in mined out open pits. Therefore, the KIA requests that additional thermal and hydrogeological studies be completed in the immediate area of the open pits planned for saline water storage.

Agnico Eagle's Response to Request:
Agnico Eagle engaged WSP to create an updated thermal and hydrogeological model to account for the storage of saline water in pits. The reports of these models have been appended to this document.

The Groundwater Management Plan submitted with the Modification application included the groundwater inflows from the updated hydrogeological model. The inflows to the Pump mine are minimal (max 135 m^3/day) compared to the Tiriganiaq mining area (max 1,625 m^3/day) (Appendix B of this response submission).

The thermal model was used to inform the hydrogeological model on the state of permafrost below the pit over time (Appendix A of this response submission). The thermal model predicted no thaw (i.e., ground temperature does not increase above 0°C) by the end of operations directly below pits holding saline water. Cryopeg (i.e., ground temperature which does not increase above -3°C) is predicted to be present between the bottom of the pit and the Pump mine. No seepage is expected from the pit to the surrounding freshwater environment.

References:
WSP. 2025a. Meliadine Mine – Predicted Open Pit and Underground Mine Groundwater Flow Interactions. WSP CA0042236.1659-MEL2025-018-TM-Rev1, June 2025.

WSP. 2025b. Thermal Assessment of Proposed Pit Flooding with Saline and Fresh Water. WSP CA0048562.4439-001-TM-Rev0, February 2025.

Interested Party:	KivIA	Rec No.:	KivIA-02
Re:	Pump Underground Workings		

Request Made by Interested Party:
The deepest portion of the proposed Pump underground development will be very close to the deepest extent of known permafrost. The proposed underground workings will introduce warm air into the permafrost through the mine ventilation system and the daily mining activities, so there is a reasonable possibility that permafrost could degrade and intersect with the saline water that is currently below the known limits of the permafrost. Therefore, the KIA requests that additional thermal and hydrogeological studies be completed in the immediate area of the proposed underground workings to determine the impact of underground mining on permafrost integrity. The " lessons learned" from the underground mining at the Tiriganiaq gold deposit could help inform the potential impacts of the proposed Pump underground workings.

Agnico Eagle's Response to Request:
Agnico Eagle will not be introducing warm air into the underground. Heat will only be generated from daily mining activities. To assess the impact of mining on permafrost degradation, a thermal model had been created by WSP, which is appended to this document (Appendix A of this response submission). The thermal model results were used to create a hydrogeological model to assess the groundwater inflow to the mine. As seen from these models, there is minimal inflow to the Pump mine (max 135 m^3/day) compared to the Tiriganiaq mining area (max 1,625 m^3/day).

Interested Party:	**KivIA**	**Rec No.:**	**KivIA-03**
Re:	**Saline Water at Closure**		

Request Made by Interested Party:
Please confirm that all saline water will be removed from the site at closure, either by discharge to Itivia Harbour or discharge into the completed underground workings.

Agnico Eagle's Response to Request:
Agnico Eagle clarifies that this approach is already reflected in the Interim Closure and Reclamation Plan (Agnico Eagle 2025), which states: "*During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake.*"

Reference:
Agnico Eagle. 2025. Interim Closure and Reclamation Plan – Update 2024, March 2025.

Interested Party:	KivIA	Rec No.:	KivIA-04
Re:	Security at the Meliadine Project		

Request Made by Interested Party:
Long term storage of saline water in pits was not contemplated in the current security assessment for the Meliadine Project. Additional security will be required to cover these activities.

Agnico Eagle's Response to Request:
Agnico Eagle does not anticipate changes to the current security estimate with the inclusion of water storage in mined-out pits, as pits are already included in the financial security. In addition, the closure approach remains unchanged. The probability of this event to occur is unlikely; the cost for this pumping activity would be approximately 3% of the total contingency amount being carried in RECLAIM, therefore an update to security is not justified.

In addition, as stated in the Interim Closure and Reclamation Plan (Agnico Eagle 2025), Agnico Eagle does not intend to indefinitely store saline water in the pits: "*During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake.*"

Reference:
Agnico Eagle. 2025. Interim Closure and Reclamation Plan – Update 2024, March 2025.

CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Interested Party:	CIRNAC	Rec No.:	CIRNAC-01
Re:	Modifications Requirements – PUMP02 Underground Portal		

Request Made by Interested Party:
CIRNAC recommends that NWB in consultation with NIRB provide guidance and clarification on whether the proposed underground portal is within the scope of the current project certificate and can be authorized through a water licence modification. If NWB decides to proceed with the modification request, CIRNAC recommends that Agnico Eagle provide a security estimate for this undertaking as it has not been included within the current security estimate.

Agnico Eagle's Response to Request:
As per correspondence from the NWB on September 5, 2025, this Modification has been deemed non-significant to the Terms and Conditions of both Water Licence 2AM-MEL1631 and Project Certificate No.006 and therefore will move on to the next round of consideration through technical review.

With respect to security, Agnico Eagle does not agree that security needs to be revised. The portal will be located in a pit that will ultimately be flooded; therefore, no remediation or security is required.

Interested Party:	**CIRNAC**	**Rec No.:**	**CIRNAC-02**
Re:	**Modifications Requirements – Use of Mined-Out Pits**		

Request Made by Interested Party:
CIRNAC recommends that Angico Eagle:

a) *Apply for approval to use any mined-out pit for saline water storage on a pit-by-pit basis, and the request for approval shall be accompanied by:*
    - *a thermal study evaluating permafrost degradation in the in-pit lake and proposed mitigations;*
    - *a hydrogeological study of groundwater flow and contaminant transport to receiving environments; and*
    - *an updated water balance and water quality model (with current source terms) that evaluates compliance with environmental quality criteria in-pit (water and sediment).*

b) *Provide a security estimate, considering the financial and environmental liability, for storing saline water in each pit.*

c) *Further the eventual disposal of said Saline Ground water placed in Pits, if approved, should be included in a revised Closure Plan that details how this saline water will be removed form site or treated to prevent or mitigate any long term environmental damage that may occur.*

Agnico Eagle's Response to Request:
Response to bullet a)
Agnico Eagle would like to clarify that the intent of this Modification application is to seek consolidated approval for the use of mined-out pits TIRI02, WES02, WES03, and PUMP02 for the storage of both contact water and saline groundwater. Comprehensive assessments, such as a thermal, a hydrogeological and a water balance and water quality model, have already been completed for these pits and the results were included in the Management plans submitted with the Modification application. We believe a consolidated approval process is appropriate, efficient, and fully capable of meeting regulatory requirements. A summary of the requested studies is as follows:

- Thermal study (provided as Appendix A in this response submission) – thermal modelling was completed for this modification and model results indicate that the storage of saline water in pits will result in the development of cryopeg but would not cause the bedrock to thaw above $0^{o}C$. Agnico Eagle will continue Permafrost Terrain Monitoring using thermistors, as outlined in Section 3.3 of the Groundwater Management Plan. The results of the thermal model were used to inform the hydrogeological model to estimate groundwater inflows, which were presented in the Groundwater Management Plan.
- Hydrogeological study (Appendix B of this response submission) – results were included in the Groundwater Management Plan, submitted with this modification. Specifically, Section 2.1

presents updated groundwater inflow predictions, including the seepage associated with water storage in mined-out pits (see Table 2 from the Groundwater Management Plan below).

Groundwater Management Plan (Version 13) - Page 4

Table 2: Predicted Groundwater Inflows to the Underground Mine according to the Operational and WLA numerical groundwater inflows models.

Year	Operational Groundwater Model		2025 Updated Groundwater Model for Tiriganiaq and Pump Underground			
	Tiriganiaq Predicted Groundwater Inflows (m^3/day)	Tiriganiaq Predicted TDS (mg/L)	Tiriganiaq Predicted Groundwater Inflows (m^3/day)	Pump Predicted Groundwater Inflows (m^3/day)	Tiriganiaq Predicted TDS (mg/L)	Pump Predicted TDS (mg/L)
2022	-	-	400	-	58,000	-
2023	300	58,500	575	-	58,000	-
2024	450	57,000	700	-	56,500	-
2025	450	57,000	975	-	53,500	-
2026	475	56,500	1,450	<25	50,500	58,000
2027	475	56,500	1,625	50	50,500	58,500
2028	450	56,500	1,450	75	52,500	55,000
2029	475	54,000	1,375	100	54,000	53,000
2030	475	53,500	1,350	125	55,000	49,500
2031	475	53,500	1,515[a]	135[b]	55,000	49,000

Source: Table 5 from (WSP 2024d) and Table 2 from (WSP, 2025)

Note:
(a) Includes seepage from pits: WES02 (80m³/day) and WES03 (10m³/day). Note that no seepage is expected from Tiri02 pit.
(b) Includes seepage from pit Pump02 (<10m³/day).

- Water balance and water quality model – an updated water balance water quality model was completed for this Modification and submitted as Appendix A of the Water Management Plan. Post-closure water quality predictions were provided and compared against applicable guidelines. Moreover, once water storage begins in WES02, WES03, TIRI02, and PUMP02, new verification monitoring stations will be established through a modification to Schedule I, Table 2 of Type A Water Licence 2AM-MEL1631 (similar to the previous addition of station MEL-32), in coordination with the NWB.

Response to bullet b) and c)

Agnico Eagle does not anticipate changes to the current security estimate with the inclusion of water storage in mined-out pits, as pits are already included in the financial security. In addition, the closure approach remains unchanged. As stated in the Interim Closure and Reclamation Plan (Agnico Eagle, 2025), Agnico Eagle does not intend to indefinitely store saline water in the pits: "*During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake.*" See also response to KivIA-03.

Reference:

Agnico Eagle. 2025. Interim Closure and Reclamation Plan – Update 2024, March 2025.

Interested Party:	**CIRNAC**	**Rec No.:**	**CIRNAC-03**
Re:	**Mixing Saline Groundwater and Contact Water**		

Request Made by Interested Party:
CIRNAC recommends, in the event that the NWB approves this request that Agnico Eagle revise relevant management plans to remove any "OR" linkage and include a consolidated "Pond Functions" table defining the type of water storage, sources and discharge pathways for each of the storage ponds for approval prior to any discharge taking place. A process for the verification of these new plans should also be implemented by the proponent so that accidental discharges can be avoided.

Agnico Eagle's Response to Request:
Agnico Eagle clarifies that the general statement in the Modification Request cover letter:

"*Use of mined-out pits to store saline or contact water*"

was intended to broadly summarize the scope of the proposed changes. If approved by the NWB, all conditions of the Water Licence and relevant management plans will continue to be fully implemented.

The Water Management Plan submitted with the Modification outlines the types of water that will be stored in each pit (e.g., Table 11, extracted below). The monitoring program already within the Water Management Plan serves as a process of verification to ensure compliance and prevent accidental discharges.

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Table 11: Water Management Infrastructures to be Constructed

Pond/ Treatment	Source Water	Receives Water From	Routes Water To
CP1	Contact Water	PUMP01/CP9 WES01 WES04 WEN01 B5 North B5 South FZONE02 A8 A6 SP6	discharges (in order of priority) to Itivia Harbour via Waterline, then Meliadine Lake via EWTP
A8	Contact Water	A8	CP1
A6	Contact Water	A6	CP1
TIR03	Contact Water	TIR03	CP5
PUMP01/CP9	Contact Water	PUMP03 PUMP04 WRSF6	CP1
PUMP02	Saline Water	PUMP UG Pump Saline WRSF	TIRI02 (if available) or SP1
WES01	Contact Water	WES01	CP1
WES02	Saline Water	TIRI02 SP1	WES02 (after treatment), which discharges to Itivia Harbour via Waterline
WES03	Contact Water	CP3 CP4 CP5 CP2.5	discharges (in order of priority) to Itivia Harbour via Waterline, then Meliadine Lake via EWTP
WES04	Contact Water	WES04	CP1

Interested Party:	**CIRNAC**	**Rec No.:**	**CIRNAC-04**
Re:	**Missing Details for PUMP04**		

Request Made by Interested Party:
CIRNAC recommends that Agnico Eagle either remove PUMP04 references from the Water management plan or supplement the modification request with PUMP04 details matching those provided for PUMP02.

Agnico Eagle's Response to Request:
Agnico Eagle clarifies that the following statement in the Water Management Plan:

> *"CP9 constructed within the footprint of PUMP01 will be used to capture the runoff from the PUMP area including WRSF6, future Pits from the PUMP area (i.e. PUMP04 and PUMP02 prior being used for excess saline storage) will also be pumped to PUMP01 prior to transfer to CP1."*

was to indicate that CP9 will collect runoff from pits in the PUMP area. Only PUMP02 will eventually be excluded from this system once it is used for saline water storage (as stated in the Water Management Plan, extracted below). PUMP04 was mentioned solely to show it is part of the PUMP area, not to suggest it will be used for saline storage.

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> Saline contact water from the Underground Mine is collected in underground sumps, transported to a clarification system, and subsequently recirculated for use in various underground operations. Excess saline contact water is pumped to surface and management is planned as follows:
>
> - Stored in Tiriganiaq Pit 2 (TIRI02) until it is unavailable.
> - The PUMP02 pit will be used as a saline water sump once mining of the PUMP02 deposit is complete and will continue to capture saline runoff from the temporary Pump Underground WRSF.
> - The WES02 pit will also be used as a saline water reservoir once mining of the WES02 deposit is complete.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-05
Re:	Pumping Out Saline Water Before Reflooding		

Request Made by Interested Party:
CIRNAC recommends that Agnico Eagle update relevant management plans to reflect that saline water storage ponds will be emptied entirely before their final reflooding at closure.

Agnico Eagle's Response to Request:
Agnico Eagle acknowledges CIRNAC's concern regarding the need to fully empty mined-out pits used for saline water storage prior to final reflooding; however, this approach is already reflected in the Interim Closure and Reclamation Plan (Agnico Eagle 2025), which states: "*During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake.*"

This was also reiterated in the Water Management Plan that was submitted with the Modification application: "*Flooding of the open pits with excess surface water will be such that water quality is to meet the closure objectives set out in the Meliadine Mine Interim Closure and Reclamation Plan. Transfer of remaining surface saline water in the open pits to the Underground Mine workings.*"

Reference:
Agnico Eagle. 2025. Interim Closure and Reclamation Plan – Update 2024, March 2025.

Interested Party:	**CIRNAC**	**Rec No.:**	**CIRNAC-06**
Re:	**Uncertainty in Groundwater Predictions**		

Request Made by Interested Party:
CIRNAC recommends that Agnico Eagle perform additional hydraulic-test campaigns and update the groundwater model calibration. Include uncertainty bounds (e.g., ± 25 % on inflow rates) and design storage/pumping capacity to accommodate worst-case scenarios.

Agnico Eagle's Response to Request:
The calibration of the hydrogeological model submitted with the Water Licence Amendment in 2024 (WSP 2024a), was based on predicted and observed inflow values from the Tiriganiaq mine. This model predicted higher groundwater inflows compared to the observed inflows in 2024 (predicted range: 700 – 1,625 m^3/day; observed: 316 m^3/day), showing that the model was created conservatively (upper bound – worst case scenarios). The results of the updated hydrogeological model, presented in the Groundwater Management Plan submitted with the Modification application and Appendix B of this document, are based on the same calibration as the model submitted with the Water Licence Amendment. Since the model is created conservatively and the Pump mine inflows contribute minimally to the overall groundwater inflows, compared to the Tiriganiaq mine, the calibration of the model is deemed sufficient for the prediction of groundwater inflows for the management of groundwater.

As mentioned in the Groundwater Management Plan, Section 3.1, the groundwater quality and quantity are monitored during operations to verify predicted values. Such data can be used to modify the model in lieu of hydraulic testing. Based on such data at the Tiriganiaq mine, an updated hydrogeological model was created in 2024 (WSP 2024b) and presented in the 2024 Annual Report (dated March 2025), which accounted for lower groundwater inflows observed. Moving forward, Agnico Eagle will continue to collect data, monitor the groundwater inflows and make any adjustments to the model if necessary, as previously done for the Tiriganiaq mine.

References:
WSP. 2024a. Updated Hydrogeology Modelling Meliadine Mine. WSP Doc. CA0020476.6818-MEL2024_004-R-Rev0, January 2024.

WSP. 2024b. Updated Groundwater Modelling for Tiriganiaq Underground (22513890-947-R-RevA- GW Update).

ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC)

Interested Party:	**ECCC**	**Rec No.:**	**ECCC-01**
Re:	**Potential Impact of Saline Water Storage on Freshwater Waterbodies**		

Request Made by Interested Party:
ECCC recommends the Proponent provide a discussion on whether any connection or preferential pathways exist between the mined-out pits proposed to be used for saline water storage and the freshwater environment.

Agnico Eagle's Response to Request:
A Water Balance Water Quality Model was updated for the storage of saline water stored in the proposed mined-out pits (TIRI02, WES02, and PUMP02), included as Appendix A of the Water Management Plan. Under all conditions modeled, the water management infrastructure is shown to be capable of collecting, storing, and releasing saline water in a controlled manner, according to the existing licenses and management plans. The pits designated for saline water storage are intended for controlled discharge to Itivia Harbour, not the freshwater environment.

Furthermore, updated thermal (Appendix A of this response document) and hydrogeological (Appendix B of this response document) models were completed and results summarized in the Groundwater Management Plan, submitted with the Modification application. TIRI02, WES02, and PUMP02 pits are currently within permafrost. Thermal modelling predicts TIRI02 will remain within permafrost at the end of mining. WES03 has cryopeg and/or unfrozen rock below the west wall where it intersects with Lake A8. A cryopeg is also predicted to develop below the base of WES02 and PUMP02 and this degradation may enable some hydraulic connectivity between the pit lakes and the underground infrastructure. Based on seepage estimates provided by WSP in the 2025 hydrogeological assessment (Appendix B), the predicted inflows from pits WES02, WES03, and PUMP02 represents minimal proportion of the total groundwater inflow to the underground workings as stated in page 5 of the Groundwater Management Plan: "*Pit seepage inflows are minimal compared to the total groundwater inflow*."

Interested Party:	**ECCC**	**Rec No.:**	**ECCC-02**
Re:	**Monitoring Stations**		

Request Made by Interested Party:
ECCC recommends that additional verification monitoring stations are added once water storage begins in WES02, WES03, TIRI02, and PUMP02.

Agnico Eagle's Response to Request:
Agnico Eagle is aligned with ECCC's recommendation and will ensure appropriate monitoring stations are added once water storage begins in WES02, WES03, TIRI02, and PUMP02. This will be established through a modification to Schedule I, Table 2 of Type A Water Licence 2AM-MEL1631 (similar to the previous addition of station MEL-32), in coordination with the NWB.

Interested Party:	ECCC	Rec No.:	ECCC-03
Re:	Updates to Water Management Plan		

Request Made by Interested Party:
ECCC recommends the Proponent update the Water Management Plan to include deleted details related to Underground Water Management and Water Balance. These sections should also be updated to reflect any relevant details associated with the modification request.

Agnico Eagle's Response to Request:
To streamline the Water Management Plan and maintain its role as a high-level overview of operational strategies, these technical details will be relocated to the Annual Report, where updated information related to this Modification application will be provided as part of the 2025 Annual Report. However, these details remain generally available in the Water Balance and Water Quality Model Report – Appendix A of the Water Management Plan, as well as in the Groundwater Management Plan.

In practice, technical details such as groundwater modelling, assumptions, and water balance methods are more appropriately addressed in the Water Licence Annual Report, which presents the most current data and modelling inputs.

FISHERIES AND OCEANS CANADA (DFO)

Interested Party:	**DFO**	**Rec No.:**	**DFO-01**
Re:	**Modification**		

Request Made by Interested Party:
DFO has reviewed the Meliadine Mine Notice of Modification, Saline Water in-pit Storage, for water licence 2AMMEL1631, in accordance with DFO's mandate, and has no comments or recommendations at this time.

Agnico Eagle's Response to Request:
Agnico Eagle thanks DFO for their time and review on this Modification file.

APPENDIX A: Thermal Assessment of Proposed Pit Flooding with Saline and Freshwater

TECHNICAL MEMORANDUM

DATE February 21, 2025

Reference No. CA0048562.4439-001-TM-Rev0

TO Cecilia Zafiris
Agnico Eagle Mines Limited.

FROM Gabriella Wahl and Fernando Junqueira

EMAIL gabriella.wahl@wsp.com; fernando.junqueira@wsp.com

MELIADINE 2024 – THERMAL ASSESSMENT OF PROPOSED PIT FLOODING WITH SALINE AND FRESH WATER

1.0 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by Agnico Eagle Mines Ltd. (Agnico Eagle) to conduct supplemental thermal assessments of the future Wesmeg pits, Tiri02, and PUMP02 at Meliadine Mine to evaluate the potential effect of temporary saline and fresh water storage on the underlying permafrost conditions beneath each pit during operations until 2041.

2.0 SITE CONDITIONS

2.1 Regional Permafrost

The Meliadine site is in the zone of continuous permafrost. Permafrost refers to subsurface soil or rock where temperatures remain at or below 0°C for at least two consecutive years. The base of the permafrost is expected to be an undulating surface and the actual depth to permafrost is variable.

The land surface of the Meliadine site is underlain by permafrost except under lakes where water is too deep to freeze to the bottom during winter. Taliks (areas of unfrozen ground) are expected beneath a water body where the water depth is greater than the ice thickness. Closed talik formations show a depression in the permafrost and connect the lake waterbody with the sub-permafrost regime are expected for relatively deeper and larger lakes in the mine area.

Published data regarding permafrost indicates that the ground ice content in the region is expected to be between 0% and 10% (dry permafrost) based on Golder (2014).

2.2 Site Climactic Conditions

Table 1 presents a summary of the site climate data for air temperature and precipitation taken from Golder (2021a). The values presented in Okane (2021) are based on data available from Environment and Climate Change Canada (ECCC) for Rankin Inlet.

Table 1: Mean Climate Characteristics – Existing Conditions based on MEL/Rankin Weather Station

Month	Average Maximum Air Temperature (°C)	Average Minimum Air Temperature (°C)	Monthly Precipitation	
			Total Precipitation (mm)	Number of Days
January	-26.7	-33.9	17	26
February	-26.4	-33.7	15	24
March	-20.7	-29.2	23	26
April	-11.4	-20.4	32	21
May	-2.3	-8.9	20	22
June	8.1	0.6	33	15
July	15.1	6.3	46	15
August	13.2	6.3	61	18
September	6.4	1.4	50	21
October	-1.8	-7.2	57	27
November	-13.0	-20.8	40	26
December	-21.7	-29.2	25	27
Annual	**-6.7**	**-14.0**	**429**	**270**

2.3 Lake Elevation and Temperature

Bathymetric surveys of Lake A8 were provided by Agnico Eagle and used to develop temperature boundary conditions as described in Section 5.5. Bathymetric data for additional surrounding ponds and lakes were not available, and data provided by Agnico Eagle was interpolated based on the surrounding topography.

A portion of WES03 is planned to be constructed within Lake A8. Due to the depth and footprint of Lake A8, it is assumed Lake A8 will have the largest impact on the thermal regime of WES03, WES02, and PUMP02. Pond J7, located east of WES04, is not considered in the model sections as the shape of the lake is not thought to be conducive to prevalent talik conditions in the area. Lake A8 is considered within all model sections, and Pond J6 is considered within the thermal regime of WES04. As of March 2024, it is understood that Pond J6 is currently undergoing backfilling; it was included in steady-state phases of the numerical models to account for the talik zone created over time, but was removed during transient stages to account for plans to drain and backfill the lake. Ponds A9 and A38, adjacent to WES02 are already dewatered and backfilled, and are not considered in the model geometry.

Ice thickness measurements were available between January and April 2024 for the West portion of Lake A8. The average ice thickness over the monitoring period was found to be 1.2 m. Golder (2021) reported the average ice thickness of 1.7 m based on the SD-6 Thermal Regime Baseline Studies Report (Golder 2014) and used this reference ice thickness to calibrate thermal models aimed to determine existing permafrost conditions. The value of 1.7 m thickness was used in this study for consistency of existing permafrost conditions predicted in previous models (Golder 2021) that were calibrated based on deep thermistor strings.

2.4 Freezing Point of Process and Groundwater

Process Water

Maximum TDS concentration of 1690 mg/L was specified by Agnico Eagle for fresh water stored in each pit during operations.

Saline water is currently stored within Tiri02, where TDS concentration has been measured over time. Concentrations measured at the pond bottom between March 2022 and September 2023 ranged between 33,000 mg/L and 48,474 mg/L, with an average TDS concentration of approximately 38,600 mg/L. Thermistor strings installed within the pond have indicated that a relatively constant temperature of -1.9°C is maintained over time.

It is assumed that the other pits included in this study (i.e., WES02, WES03, WES04, and PUMP02) will receive process water with a similar salinity as measured in Tiri02 and that pond water will follow the same cooling pattern measured within Tiri02. The temperature function used to characterize process water stored in each pit is presented in Section 4.4 of this report.

Groundwater

WSP (2023) completed hydrogeological field investigations for the Tiriganiaq and Wolf deposits at the Meliadine Mine. An estimated groundwater salinity profile with depth was developed based on previous and current investigations. Salinity above the regional permafrost table suggested the salinity at a depth of approximately 125 metres below ground surface (mbgs) is 4,500 mg/L. Within the cryopeg, the salinity increases to approximately 60,000 mg/L. The freezing point of groundwater above the regional permafrost was estimated to be -0.3°C at a depth of approximately 125 mbgs based on the method presented in Andersland and Ladanyi (2004).

3.0 CONCEPTUAL CONSTRUCTION AND FLOODING SCHEDULES

Conceptual construction and flooding schedule was provided by Agnico Eagle which was only used to develop the underground workings construction sequence. Table 2 provides a summary of the schedule implemented within the numerical model.

Table 2: Summary of Construction and Flooding Schedule for Meliadine Pits and Underground Workings

Pit	Underground Construction Schedule	Pit Construction Schedule	Ultimate Flooding Elevation[(a)] (masl)	Start of Flooding
Tiri02 (TiriUG)	2024 to 2037	Fully constructed in Q1 2024	65.4	Completely flooded starting in Q1 2024
WES02	N/A		58.1	
WES03	N/A		58.1	
WES04	N/A		63.0	
PUMP02	2026 to 2032		55.9	

(a) Spill point elevation was used based on values provided by Agnico Eagle in “SPILL POINTS AND VOLUMES_ALL PITS_PLOM.xlsx”.
masl = meters above sea level; N/A = not applicable.

Further details on how the schedule was implemented are provided in Section 4.2 of this report.

4.0 NUMERICAL MODEL

4.1 Model Approach

The storage of saline and fresh water in the proposed pits were modelled in two dimensions (2D) to assess the depth of thawing and warming trends that could develop underneath each pit during the operational phase.

The operational phase was considered to start in Q1 2024, when modeling for Tiri02 was last calibrated in WSP (2024).

Three model sections were developed to capture the average and most critical initial conditions of each pit. The southernmost portion and west portion of WES03, as well as the underground workings beneath PUMP02 are currently scheduled to be constructed within the existing talik zone associated with Lake A8. A portion of the north face of WES04 is to be constructed in the existing area of Pond J6. The initial warmer conditions generated by each talik zone promote natural permafrost degradation and were considered in each model section within the steady-state model stage.

Each model section was evaluated assuming each pit stored either fresh water or saline water until the end of operations (Q4 2041), with a constant pond level as summarized in Table 1. Underground works were added progressively also following the schedule presented in Table 1, and assuming a minimum crown pilar of 100 m below the pits.

4.2 Model Sections and Geometry

As described in Section 4.1, three model cross-sections were developed, which are provided in Figures A-2 to A-4 in Attachment A:

- PLOM – East Alignment: captures the deepest portions of Tiri02, WES02, and portions of WES03 outside of Lake A8.
- PLOM – West Alignment: captures the deepest portion of WES03, which is constructed in Lake A8, deepest portion of PUMP02, and the western portion of WES02.
- PLOM – WES04: captures the deepest portion of WES04 aligned with Lake A8 and Lake J6, as well as the eastern portion of Tiri02.

Lake A8 is present within each model section to establish the effect of the existing talik within the local permafrost regime. Pond J6 is present in the WES04 Alignment, which is located within the proposed footprint of WES04. Figure 1 shows a plan view with the locations of all model sections used.

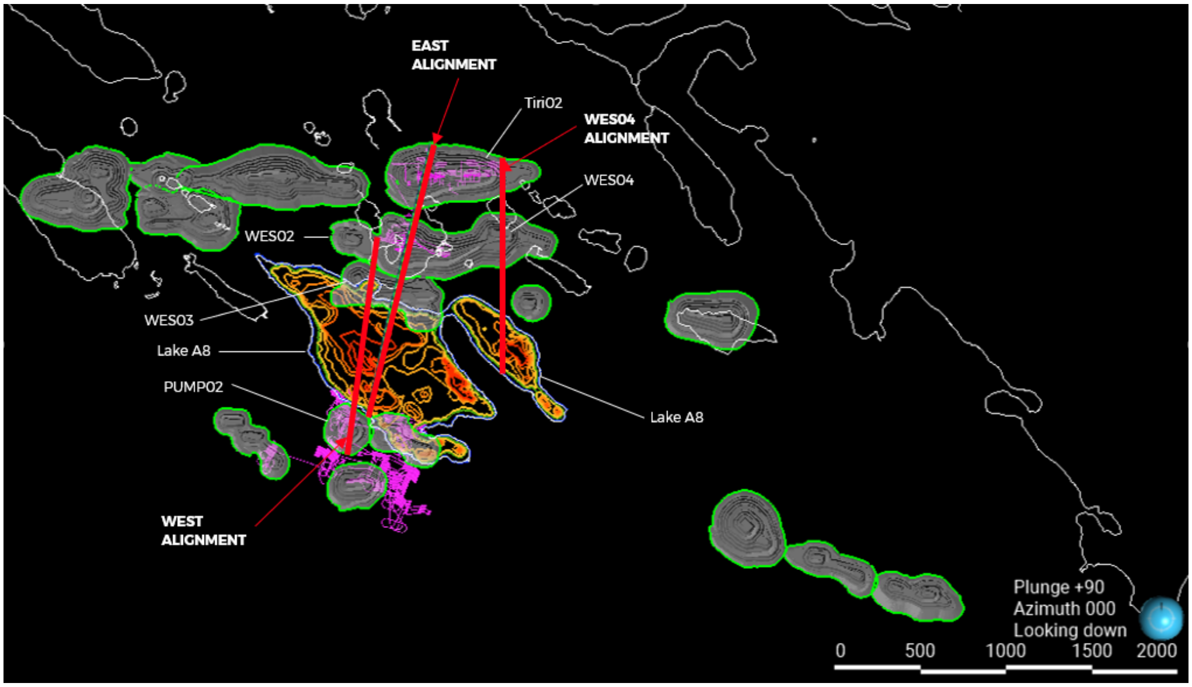

Figure 1: Plan View of Model Sections

Underground workings are planned to be constructed beneath Tiri02, and PUMP02. Progressive construction of the underground workings was implemented in the models as per the provided schedule, summarized in Table 2 and remain operational once constructed until the end of Q4 2041. The overall underground geometry was divided into equal increments based on the maximum and minimum elevations to achieve the ultimate construction schedule.

Each pit was assumed to be flooded to the specified elevation provided by Agnico Eagle, whichare summarized in Table 2. All pits are assumed to be constructed to the ultimate geometry at the start of the model in Q1 2024 and are instantaneously flooded to their ultimate elevation. This is a conservative assumption as it does not consider any potential freeze back that could occur during the construction period.

4.3 Material Properties

As part of previous studies (WSP Golder 2022; WSP 2024), calibration of the thermal regime underneath Tiri02 was completed, and used to determine the initial conditions for the remaining Wesmeg pits. No thermistor strings exist in locations of the future Wesmeg pits as well as PUMP02; therefore, the material properties and the geothermal gradient from WSP 2024 were applied to all proposed pits included in this study.

Overburden materials have been omitted from the 2D models considering that the primary focus of the study is to assess variations in thermal conditions beneath pits, in areas where overburden materials will be removed.

Table 3 summarizes the previously calibrated thermal properties of bedrock used in this study.

Table 3: Thermal Properties of Bedrock

Volumetric Water Content (%)	Thermal Conductivity (W/m°C)		Volumetric Heat Capacity ($MJ/m^3°C$)	
	Frozen	Unfrozen	Frozen	Unfrozen
1.0	3.2	3.2	1.8	1.8

W = Watts; MJ = mega joules.

4.4 Boundary Conditions

Table 4 summarizes the boundary conditions applied to steady-state models to establish initial conditions across each model section before pit construction and flooding.

Table 4: Summary of Steady-state Boundary Conditions

Boundary Condition	Type	Value	Units
Average annual ground surface temperature	Constant temperature	-7.9	°C
Lake water temperature	Constant temperature	Variable[(a)]	°C
Geothermal gradient	Heat flux	0.060	W/m^2

(a) Table 5 summarizes the lake surface temperature boundary conditions based on the depth of the lake.

Lake temperature was assigned to the ground surface of the model geometry based on the depth of the lake compared to the average ice thickness established in Golder (2021). Table 5 summarizes the criteria applied to the model geometry.

Table 5: Existing Lake Temperature Boundary Conditions

Boundary	Depth (m)	Temperature (°C)
Shallow Lake Conditions	< 1	-2.0
Intermediate Lake Conditions	< Average Ice Thickness	0
Deep Lake Conditions	> Average Ice Thickness	2.0

(a) Average ice thickness is considered to be 1.7 m based on Golder (2021).

For transient models simulating the proposed operational period, several different boundary conditions were used to represent the ground surface temperature, pit lake temperature during flooding, and air temperature within active underground tunnels. Table 6 provides a summary of boundary conditions used during the transient stage of each model section. From these boundary conditions, the temperature and salinity of pit lakes and the temperature of underground workings are the most important and consequential to the model results, together with the existing permafrost conditions beneath each pit.

Table 6: Summary of Boundary Conditions Used in Transient Model Stages

Boundary Condition	Type	Value	Units	Applicable Cross-section	Figure
Ground surface temperature	Step-function	Temperature varies with time	°C	All	2
Pit Lake Fresh water during flooding	Constant temperature	4	°C		-
Pit Lake Saline water during flooding	Step-function	Temperature varies with time	°C		3
Underground tunnels	Step-function	Temperature varies with time	°C	PLOM East Alignment (Tiri02UG) PLOM West Alignment (PUMP02UG)	2
Natural Lake Temperature	Constant temperature	Variable[(a)]	°C	All	-
Geothermal Gradient	Heat flux	0.060	W/m^2	All	-

(a) Table 5 summarizes the lake surface temperature boundary conditions based on the depth of the lake.

Figure 2 shows the monthly surface ground temperature and underground tunnel temperature functions. When underground tunnels are scheduled for construction, the underground temperature function is applied to the outer walls of each tunnel.

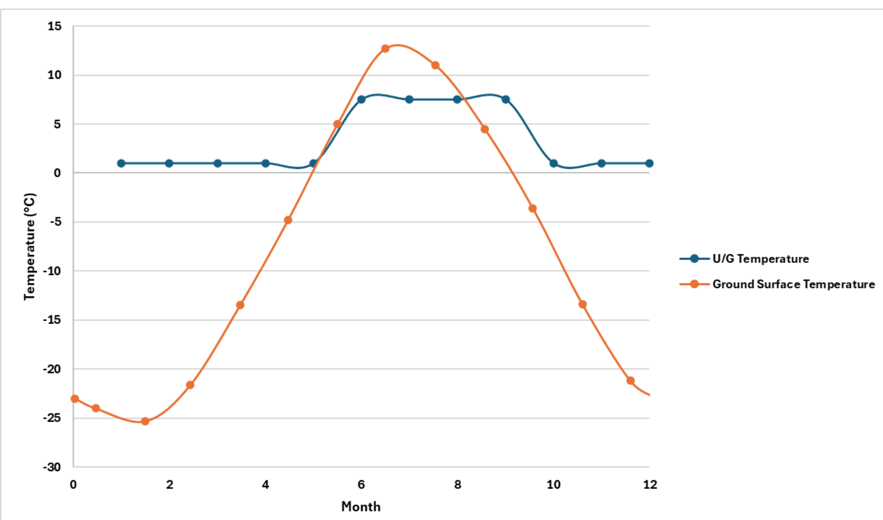

Figure 2: Ground Surface and Underground Air Temperature Functions

TH-01 and TH-02 installed within Tiri02 have measured the temperature of stored saline water between July 2021 to present. The measured temperature of flooded saline water with time was applied to each pit when flooded with saline process water. Over a duration of about 2 years, the temperature decreases from 11.4°C to -1.9°C. Figure 3 shows the progressive cooling of saline water used in transient models for all Wesmeg pits, PUMP02, and Tiri02.

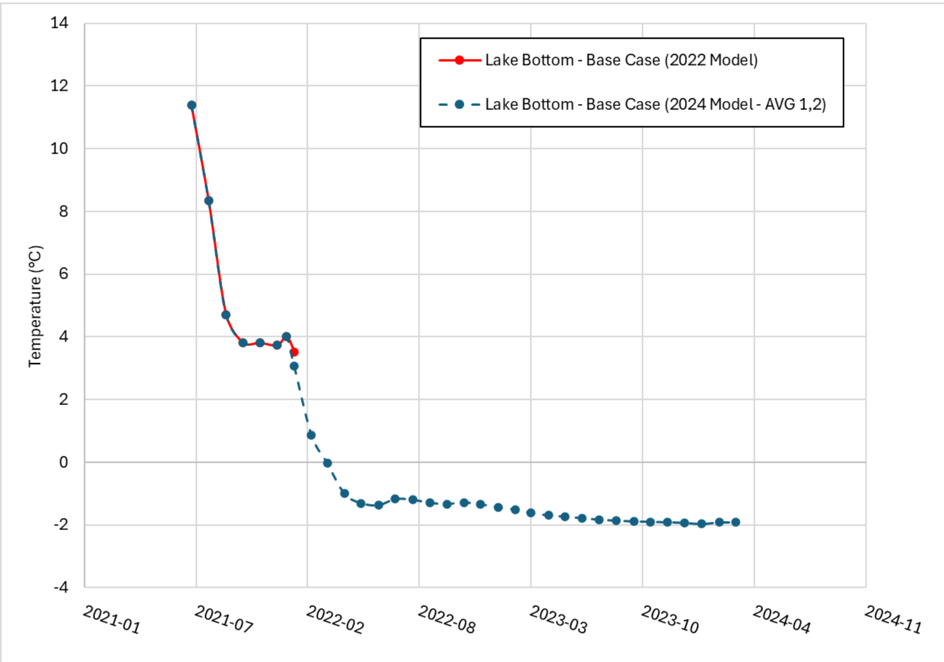

Figure 3: Model Saline Water Temperature Boundary Condition During Operations

4.5 Model Assumptions and Limitations

The models described in this study constitute a simplification of the field reality and carry assumptions and limitations that shall be taken into consideration during interpretation of model results. The most important model limitations and assumptions are as follows:

- The model considers a homogeneous bedrock mass, and the two-dimensional nature of the cross-sections cannot capture the dynamics of three-dimensional heat flow.
  - Heat introduced to the surrounding permafrost is maximized in two-dimensional analyses as it does not consider heat exchange in the third dimension.
- Mesh discretization for a large-scale model is established at larger finite elements (5–10 m), which can limit the way the model results can be used to support supplemental assessments. Larger mesh spacing means the computed temperatures are interpolated over a larger area and will not capture short term progression of temperatures over smaller areas. If detailed temperature distribution over specific target locations are required, the size of model geometry and mesh spacing should be reduced.

- Depth of cryopeg across WES02 and WES03 is expected to vary based on the proximity of the portion of the pit to Lake A8 and other surrounding ponds. Sections used to represent average and worst-case conditions across WES03 and WES02 represent a sample of cryopeg depth across each pit.
- The monthly ground surface temperature function has yet to be calibrated against site measurements, therefore; model results for areas adjacent to pits have less accuracy than model results for areas beneath the pits.
- Transient temperature conditions for saline water in each pit is assumed to follow the same cooling trend observed in Tiri02. The pit lake temperature will depend on salinity levels and may change from pit to pit.
- Bathymetry of Pond J6 was not measured and was estimated within the model section containing WES04.
  - The depth profile of Pond J6 was split into thirds according to inferred depth values (i.e., shallow, intermediate, and deep).
- A minimum 100 m crown pillar was applied beneath each pit
- This model does not consider potential stratification of TDS in each pit over time.
- Lake A8 is not drained and remains during construction and operations.

5.0 RESULTS

The predicted thermal regime beneath each pit was evaluated until the end of Q4 2041 to understand the effects of storing either saline or fresh water according to the proposed mine schedule. Figures in Attachment A show temperature contours across each model section, assuming either fresh or saline water, at the beginning of flooding (Q1 2024), and the end of Q4 2031 and Q4 2041.

The evolution of temperature profiles was evaluated underneath each pit. The locations where temperature profiles were extracted are shown in each thermal contour figure in Attachment A. Temperature profiles for each model section and water type are also included in Attachment A for the beginning of flooding (Q1 2024), and the end of Q4 2031 and Q4 2041.

In this study, the word cryopeg refers to frozen ground above a temperature of -3°C, assuming existing bedrock pore-water has high salinity of about 55,000 mg/L, which would cause the freezing point of the groundwater to depress to -3°C. Furthermore, the word fresh water refers to water with a freezing point of about 0°C.

The following sections provide an assessment of the thermal regime predicted for each cross-section.

5.1 East Alignment

The East Alignment section captures the deepest portions of WES02 and Tiri02 perpendicular to Lake A8, and considers the average conditions across WES03, where the southern wall is constructed within Lake A8.
The impacts of storing both saline and fresh water in each pit are discussed below.

5.1.1 WES02

Figure 4 provides temperature profiles predicted beneath WES02 along the east alignment assuming either fresh or saline water storage during operations. Figures A-4 to A-6, and A-10 to A-12 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-8 and A-14 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

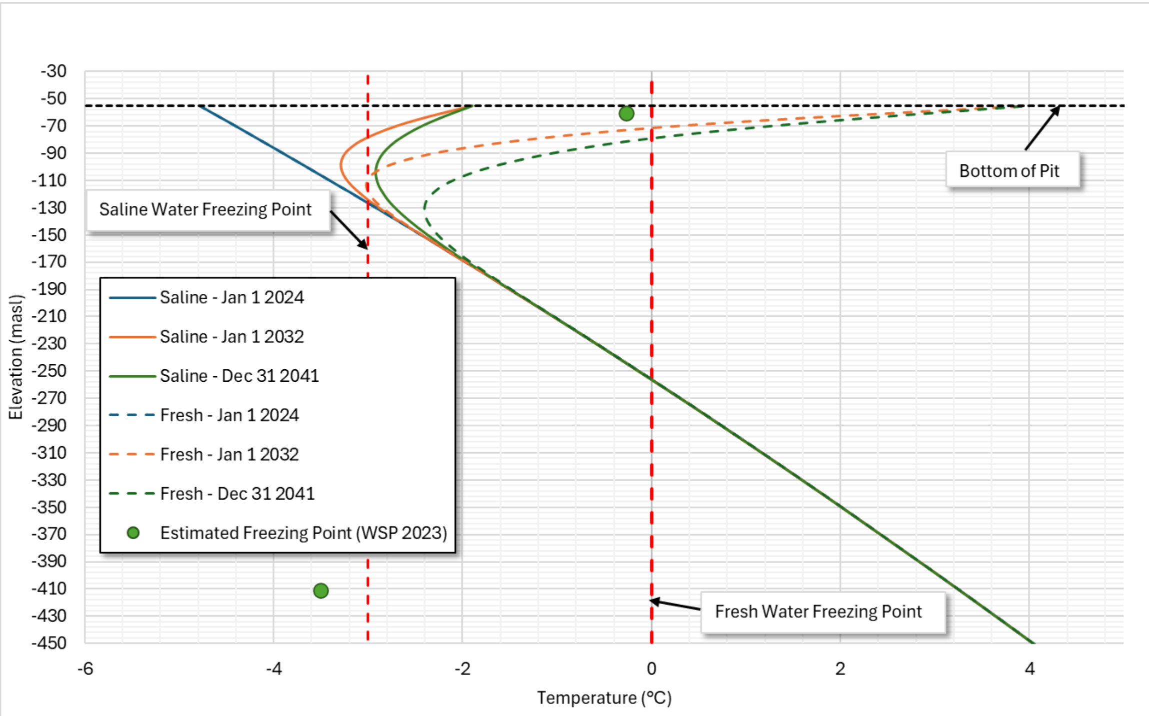

Figure 4: East Alignment – WES02 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

Temperatures beneath the pit are predicted to reach values above -3°C by the end of operations (Q4 2041). Directly beneath the pit, no thaw is observed as temperatures are not predicted to exceed 0°C until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

By Q1 2032, temperatures along the profile exceed -3°C. A portion of the underlying bedrock maintains temperatures between -2.4°C and 0°C at the end of operations, which is approximately 179 m in depth.

Thaw occurs beneath the pit due to the presence of fresh water during operations, which was predicted to be approximately 24 m by Q4 2041.

5.1.2 WES03

Figure 5 shows computed temperature profiles beneath WES03 along the east alignment assuming either fresh or saline water is stored during operations. Figures A-4 to A-6, and A-10 to A-12 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-7 and A-13 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

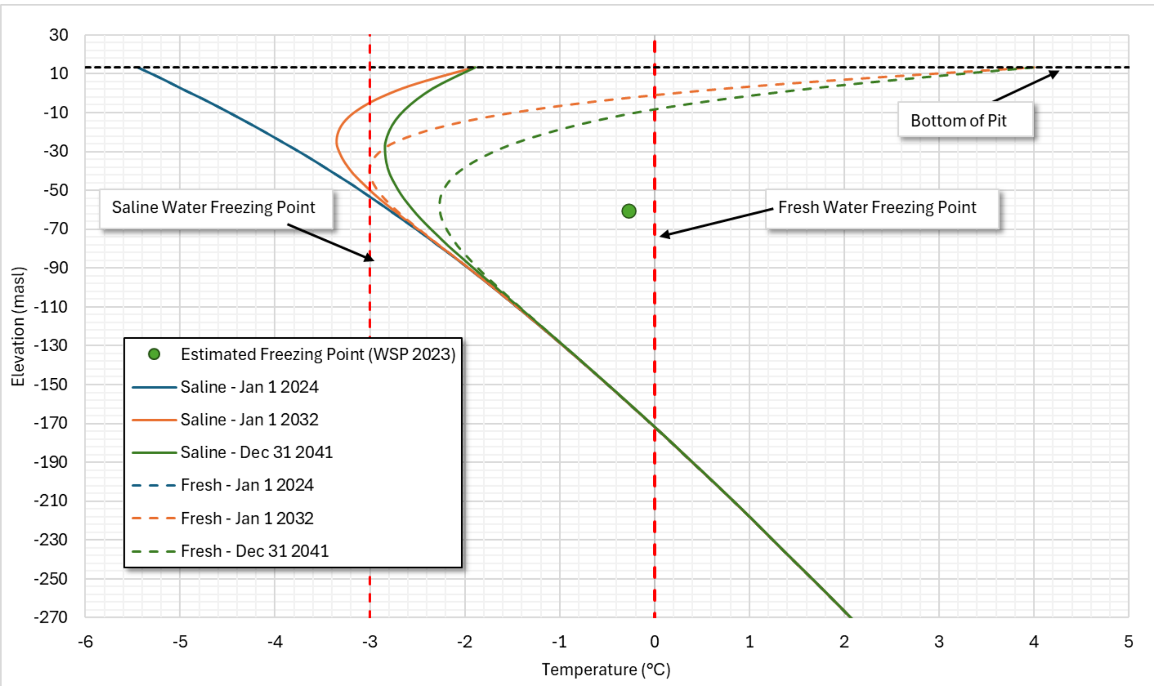

Figure 5: East Alignment – WES03 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

At the end of operations, temperatures exceeded -3°C along the entire temperature profile. Directly beneath the pit, no thaw is observed as temperatures are not predicted to exceed 0°C until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

Thaw occurs to a depth of approximately 22 m below the pit bottom due to the presence of fresh water during operations. Temperatures beneath the thawing front exceed -3°C beginning in Q1 2032.

5.1.3 Tiri02

Figure 6 provides temperature profiles predicted beneath Tiri02 along the east alignment assuming either fresh or saline water storage during operations. Figures A-4 to A-6, and A-10 to A-12 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-9 and A-15 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

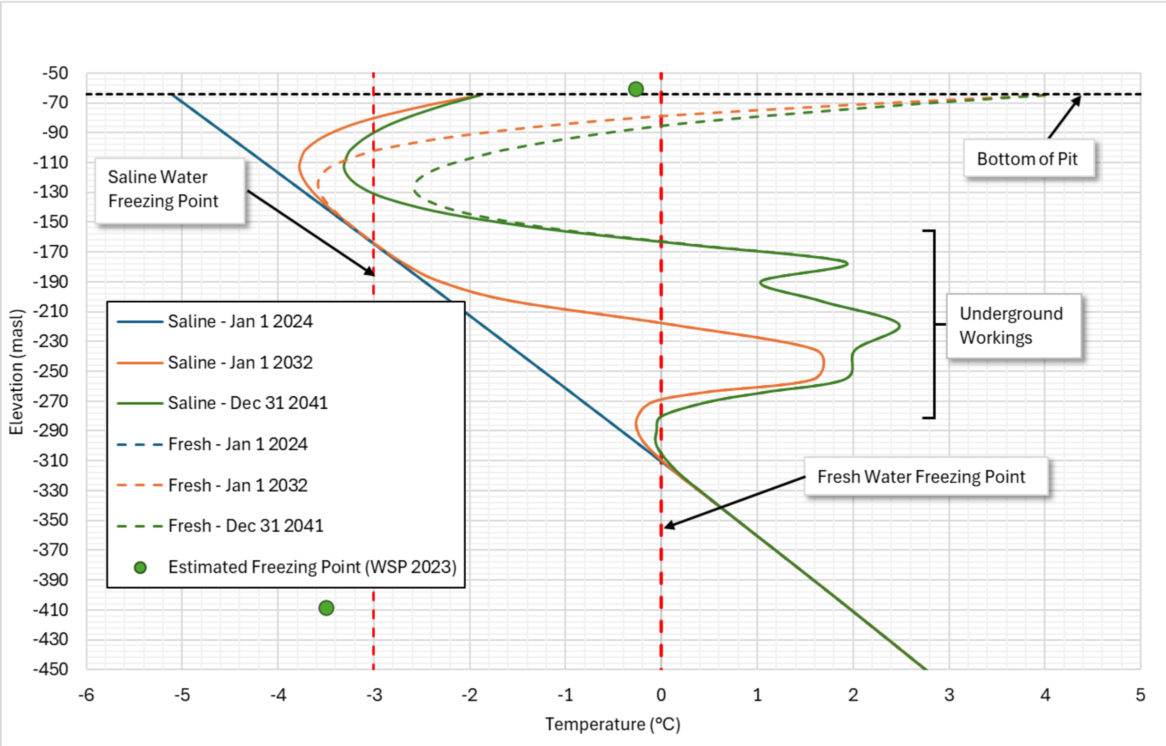

Figure 6: East Alignment – Tiri02 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

The presence of underground workings contributed the majority of thaw predicted underneath Tiri02.

Directly beneath the pit, no thaw is observed as a result of storing saline water during operations.

Temperatures are predicted to exceed -3°C between elevations -63 masl and -90 masl (27 m below the pit bottom) at the end of operations. A small zone of bedrock between elevations -90 masl and -130 masl is predicted to exhibit temperatures less than -3°C.

Fresh Water Storage

Thaw develops beneath Tiri02 due to the presence of fresh water during operations, to a depth of approximately 22 m by Q4 2041. Temperatures beneath the zone of thaw remain between -4°C and 0°C up to Q1 2032 and above -2.6° by Q4 2041 (end of operations).

5.2 West Alignment

The West Alignment section captures:

- deepest portion of WES03, which is partially constructed within the footprint of Lake A8
- deepest portion of PUMP02 nearest Lake A8, and accompanying underground workings underneath Lake A8
- western portion of WES02

The impacts of storing both saline and fresh water on the thermal regime beneath each pit are discussed below.

5.2.1 WES02

Figure 7 provides the resulting thermal regime beneath WES02 along the west alignment assuming either fresh or saline water was stored during operations. Figures A-16 to A-18, and A-22 to A-24 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-20 and A-26 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

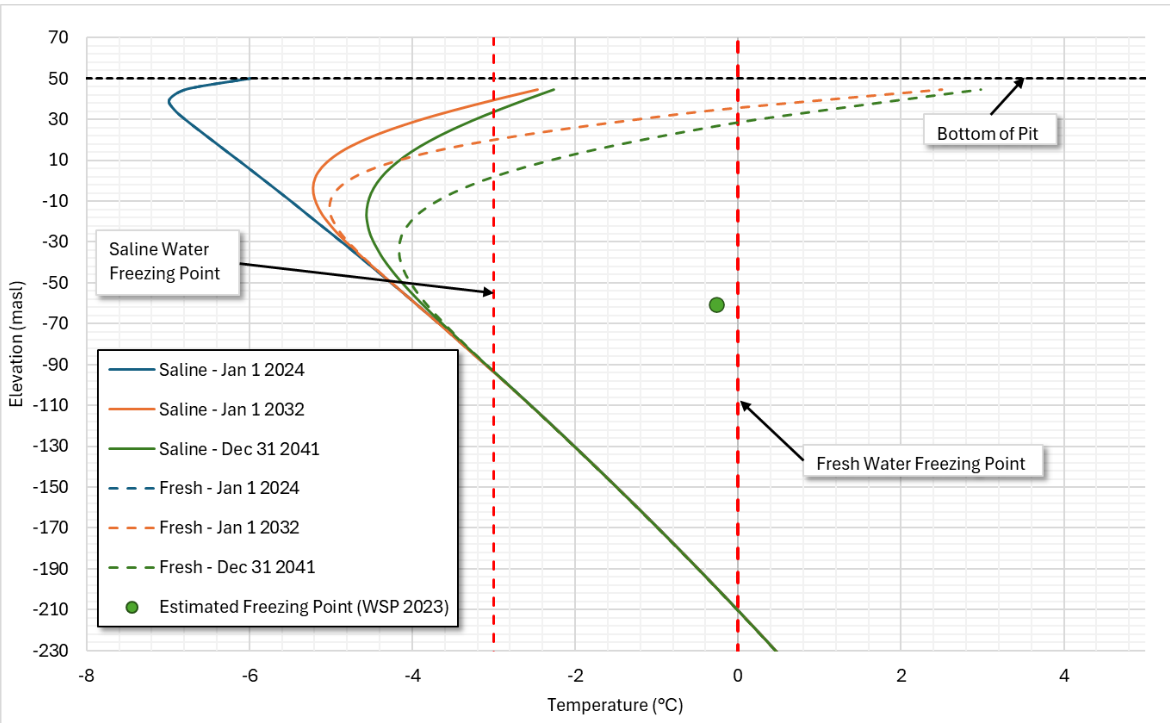

Figure 7: West Alignment – WES02 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

Temperatures are predicted to exceed -3°C between elevations of 50 masl and 26 masl by the end of operations, where temperatures exist between -3°C and -2°C. Temperatures remain below -3°C between elevations 26 masl and -94 masl through the end of operations.

Directly beneath the pit, no thaw is observed as a result of storing saline water. Temperatures are not predicted to exceed 0°C until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

A portion of bedrock beneath WES02 is predicted to thaw to approximately 20 m below the pit bottom by Q4 2041 due to the storage of fresh water.

Temperatures are predicted to exceed -3°C to a depth of 48 m below the pit bottom by the end of operations.

A zone of bedrock is predicted, between 2 masl and -94 masl, where temperatures remain below -3°C.

5.2.2 WES03

Figure 8 provides temperature profiles predicted beneath WES03 along the west alignment assuming either fresh or saline water storage during operations. Figures A-16 to A-18, and A-22 to A-24 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-19 and A-25 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

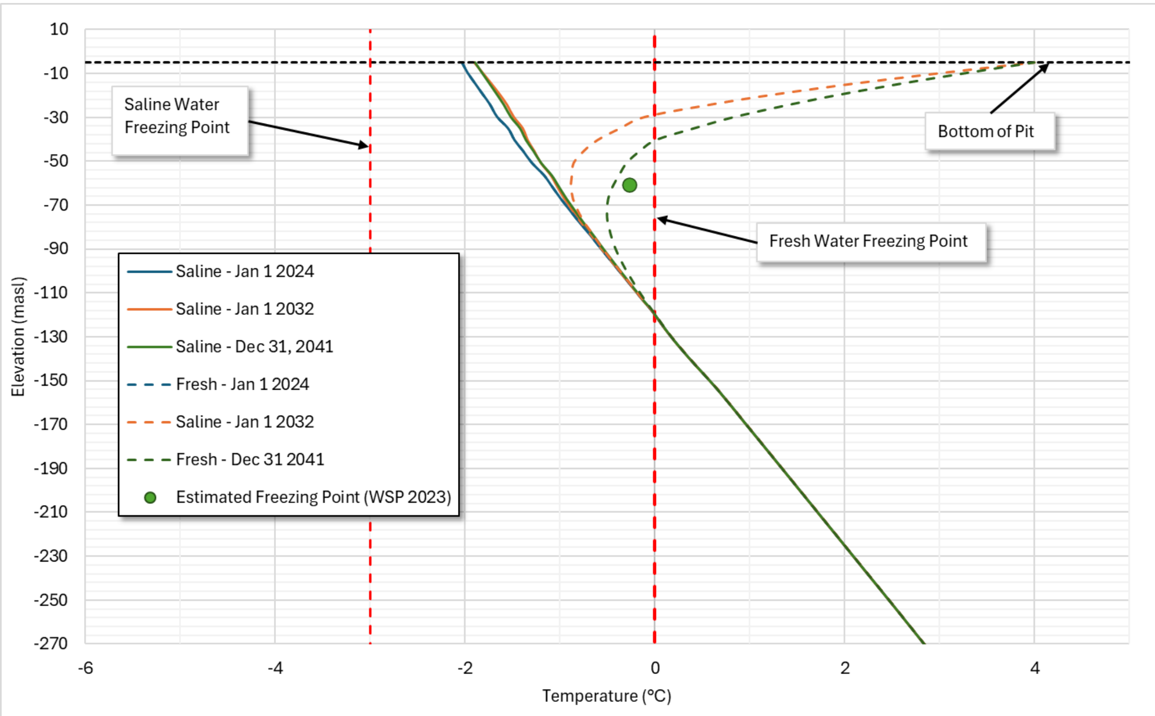

Figure 8: West Alignment – WES03 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

No significant changes in temperature were observed beneath WES03 due to the storage of saline water. The initial ground temperature is similar to the temperature maintained by the saline water stored within WES03.

Directly beneath the pit, no thaw is observed as a result of storing saline water during operations. Temperatures remain below 0°C beneath WES03 during operations until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

Degradation of permafrost, due to thaw, beneath WES03 occurs to an approximate depth of 42 m beneath the pit bottom by the end of operations.

Ground beneath the thawing front remains frozen above -1°C by Q1 2032, and above -0.5°C by Q1 2042, respectfully.

5.2.3 PUMP02

Figure 9 provides the resulting thermal regime beneath PUMP02 along the west alignment assuming either fresh or saline water was stored during operations. Figures A-16 to A-18, and A-22 to A-24 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-21 and A-27 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

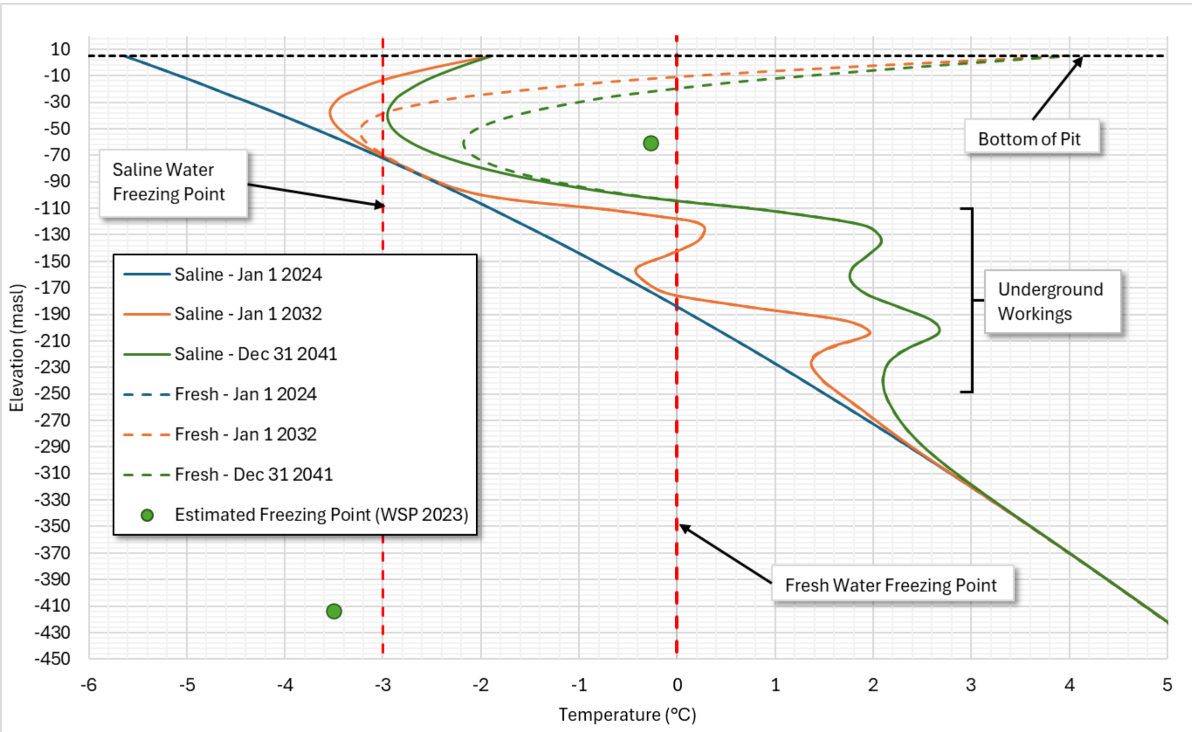

Figure 9: West Alignment – PUMP02 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

Underground workings contribute to the majority of permafrost degradation when storing saline water through the operational period. By Q4 2041, the distance from the bottom of the pit to ground temperatures greater than 0°C decreased by approximately 90 m.

By the end of operations, temperatures along the entire profile exceed -3°C. Directly beneath the pit, no thaw is predicted as a result of storing saline water during operations.

Fresh Water Storage

The depth of thaw predicted beneath PUMP02 assuming fresh water during operations was found to be approximately 15 m by the end of Q4 2041. Similar degradation of permafrost due to the underground workings was predicted when storing fresh water compared with saline water storage.

Fresh groundwater beneath PUMP02 remains frozen underneath the thawing front between -20 and -106 masl by the end of operations.

5.3 WES04 Alignment

This model section captures:

- Deepest portion of WES04, constructed within the footprint of previous Pond J6.
- Eastern portion of Tiri02.

Impacts of storing both saline and fresh water on the thermal regime beneath each pit are discussed below.

5.3.1 WES04

Figure 10 provides the resulting thermal regime beneath WES04, along the WES04 alignment, assuming either fresh or saline water was stored during operations. Figures A-28 to A-30, and A-33 to A-35 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios, respectfully. Figures A-31 and A-36 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios, respectively.

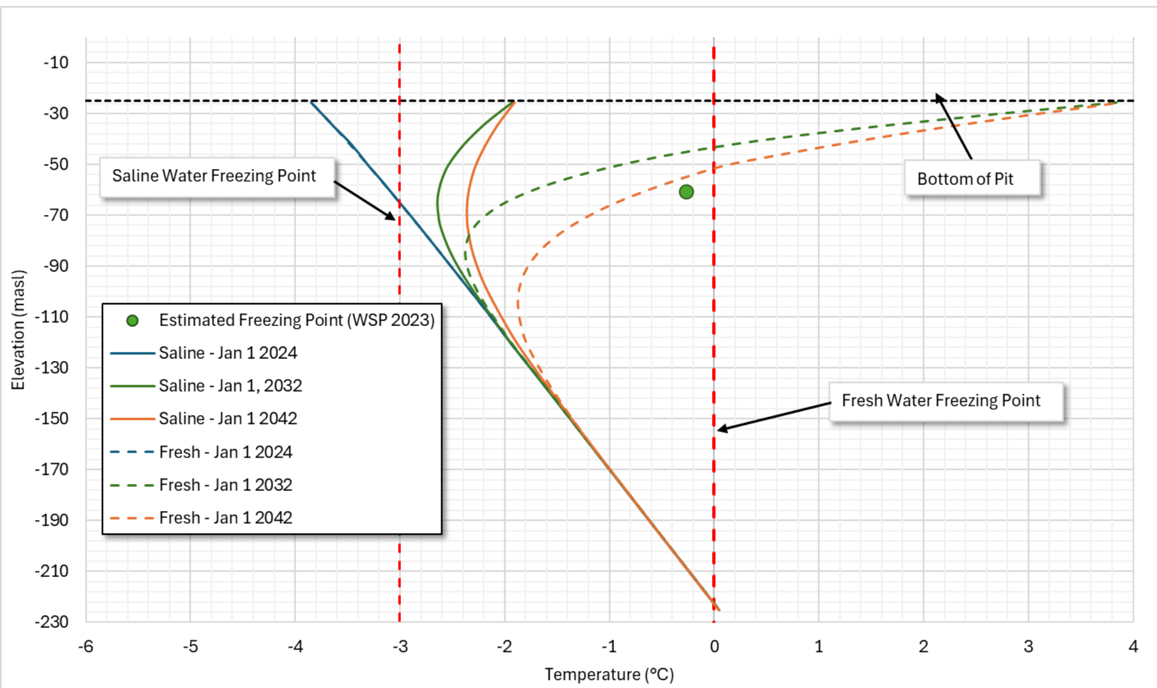

Figure 10: WES04 Alignment – WES04 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

By Q1 2032, temperatures along the entire profile exceed -3°C. Directly beneath the pit, no thaw is predicted as a result of storing saline water during operations. Temperatures are not expected to exceed 0°C until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

Thaw occurs to a depth of 25 m directly beneath WES04. Temperatures predicted underneath the thawing front in WES04 remain above -2.4°C in the first 9 years of water storage. By the end of Q4 2041, temperatures beneath the thawing front remain above -2°C.

5.3.2 Tiri02

Figure 11 provides the resulting thermal regime beneath Tiri02, along the WES04 alignment, assuming either fresh or saline water was stored during operations. Figures A-28 to A-30, and A-33 to A-35 in Attachment A present the thermal contours at Q1 2024, Q4 2031, and Q4 2041 for the saline and fresh water scenarios respectfully. Figures A-32 and A-37 in Attachment A contain temperature profiles predicted for the saline and fresh water scenarios respectively.

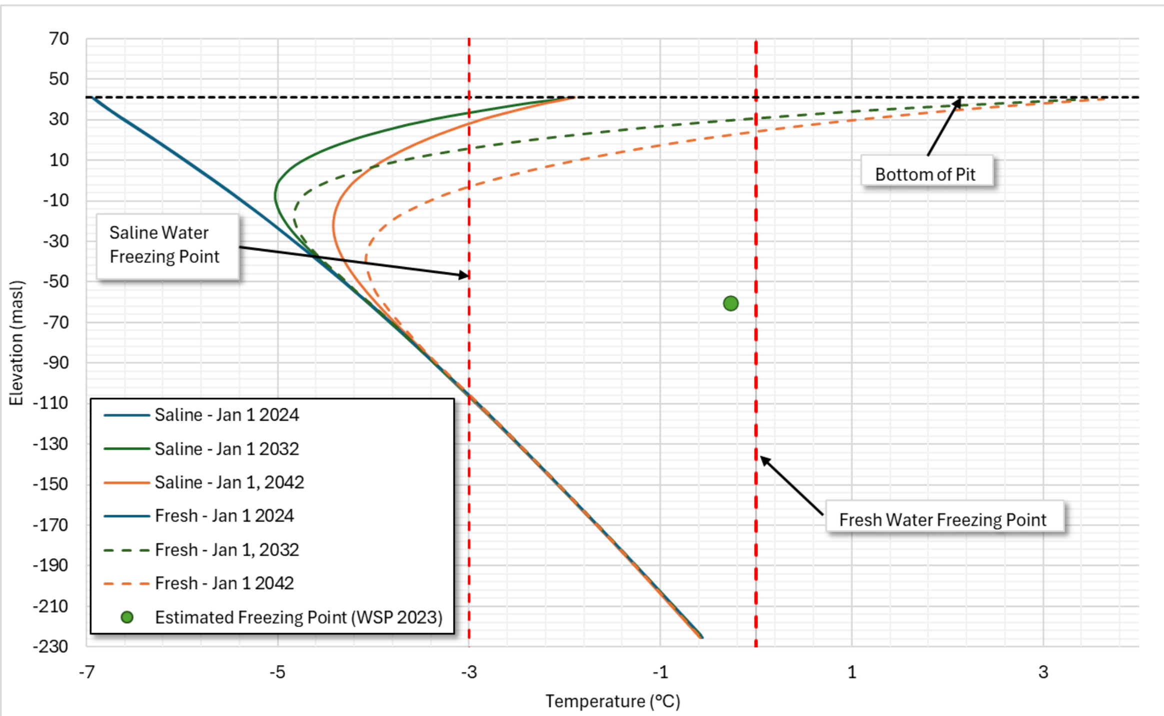

Figure 11: WES04 Alignment – Tiri02 Temperature Profiles for Saline and Fresh Water Storage

Saline Water Storage

Temperatures beneath Tiri02 were predicted to exceed -3°C a depth of 14 m below the pit bottom by the end of Q4 2041. A zone of bedrock beneath the cryopeg zone (from 28 masl to -106 masl) is predicted that will maintain temperatures less than -3°C.

Directly beneath the pit, no thaw is predicted as a result of storing saline water during operations. Temperatures beneath the pit remain below 0°C until such depth where the natural boundary of permafrost exists.

Fresh Water Storage

Thawing beneath Tiri02 is predicted to occur to a depth of 29 m below the pit bottom. A zone of bedrock beneath the thawing front (from -2 masl to -106 masl) exists at the end of operations where temperatures are below -3°C.

5.4 Summary

Predicted depths of thaw (i.e., temperature > 0°C) beneath each pit at the end of operations (Q4 2041) along each temperature profile, are summarized in Table 7.

Cryopeg is defined in this study as regions where bedrock maintains temperatures greater than -3°C, which correlates with the estimated freezing point of hypersaline groundwater. Thaw is further defined as zones where temperatures exceed 0°C, which correlates with the freezing point of fresh groundwater.

Table 7: Summary of Depth of Thaw Beneath Pits Along Temperature Profiles

Pit	Cross-section	Depth of Thaw for Saline Water Storage[(a)] (m)	Depth of Thaw for Fresh Water Storage[(a)] (m)
WES02	East Alignment	0	24
	West Alignment	0	20
WES03	East Alignment	0	22
	West Alignment	0	42
WES04	WES04 Alignment	0	25
Tiri02	East Alignment	0	22
	WES04 Alignment	0	29
PUMP02	West Alignment	0	15

(a) Depth of thaw is measured directly beneath and in reference to the bottom elevation of each pit at the end of operations (Q4 2041) for the indicated water storage scenario.

A summary of general model results is presented below:

- Storing fresh water increases the extent of thaw (when groundwater is fresh) and cryopeg (when groundwater is hypersaline) beneath each pit.
- Storage of fresh water during operations resulted in thaw beneath each pit, where the depth of bedrock exceeding 0°C ranged between 15 and 42 m.
- Storage of saline water increases the extent of the cryopeg (when groundwater is hypersaline) and maintains zones of frozen groundwater in underlying bedrock (when groundwater is fresh).
- Underground workings beneath PUMP02 and Tiri02 contribute to the majority of permafrost degradation in both saline and fresh water storage scenarios.

Overall, salinity of the groundwater controls the possibility of seepage at the base of the pits during operations. If groundwater is fresh, storage of saline water with a depressed freezing point maintains frozen groundwater, creating a barrier to flow beneath the pit. If groundwater is hypersaline, storage of saline water with a depressed freezing point could lead to seepage through the cryopeg zone.

6.0 CONCLUSIONS

The effect of storing saline and fresh water in future pits at the Meliadine Mine Site was assessed during proposed operations to understand the potential depth of thaw and cryopeg that could occur underneath each pit. Underground workings were included 100 m below WES02, PUMP02, and Tiri02, and were incrementally added to the model geometry as per the proposed construction schedule. Pits and underground workings remained operational until the proposed end of operations (Q4 2041).

Three cross-sections were used to determine the worst-case scenarios, particularly for pits nearest Lake A8, which include WES03, PUMP02, and WES02, as well as through the deepest portions of each pit. The West Alignment section considers the portion of Lake A8 which is to be constructed inside the current footprint of Lake A8, deepest portion of PUMP02 and the eastern portion of WES02. The East Alignment section considers the average conditions across WES03, and the deepest portions of WES02 and Tiri02. WES04 Alignment captures the deepest portion of WES04, where the north portion of the pit is constructed within the footprint of Pond J6, and also captures the eastern portion of Tiri02.

Overall, the model results indicate that the storage of hypersaline water in pits will result in the development of cryopeg (when groundwater is saline) but would not cause the bedrock to thaw above 0^{o}C. Storing fresh water resulted in thaw beneath each pit and contributed to extend or develop cryopeg zones (where groundwater is hypersaline). The models also indicate that underground workings 100 m beneath Tiri02 and PUMP02 would have significant impact on permafrost during operations.

7.0 CLOSURE

The reader is referred to the Study Limitations section, which follows the text and forms and integral part of this memorandum.

We trust that this report provides the information that you require at this time. Please do not hesitate to contact the undersigned if you have any questions or require any clarification.

WSP Canada Inc.

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GW/FJ/ar/anr

Attachment A: Figures

https://wsponlinecan.sharepoint.com/sites/ca-ca0048562.4439/shared documents/06. deliverables/issued/ca0048562.4439-001-tm-rev0- mel ext 2024 -21feb_25/ca0048562.4439-001-tm-rev0-mel2024 21feb_25.docx

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STUDY LIMITATIONS

WSP Canada Inc.(“WSP”) prepared this report solely for the use of the intended recipient, Agnico Eagle Mines Limited, in accordance with the professional services agreement between the parties. In the event a contract has not been executed, the parties agree that the WSP General Terms for Consultant shall govern their business relationship which was provided to you prior to the preparation of this report.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment.

The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the present report are based on the observations and/or information available to WSP at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by WSP and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

WSP disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, WSP reserves the right to amend or supplement this report based on additional information, documentation or evidence.

WSP makes no other representations whatsoever concerning the legal significance of its findings.

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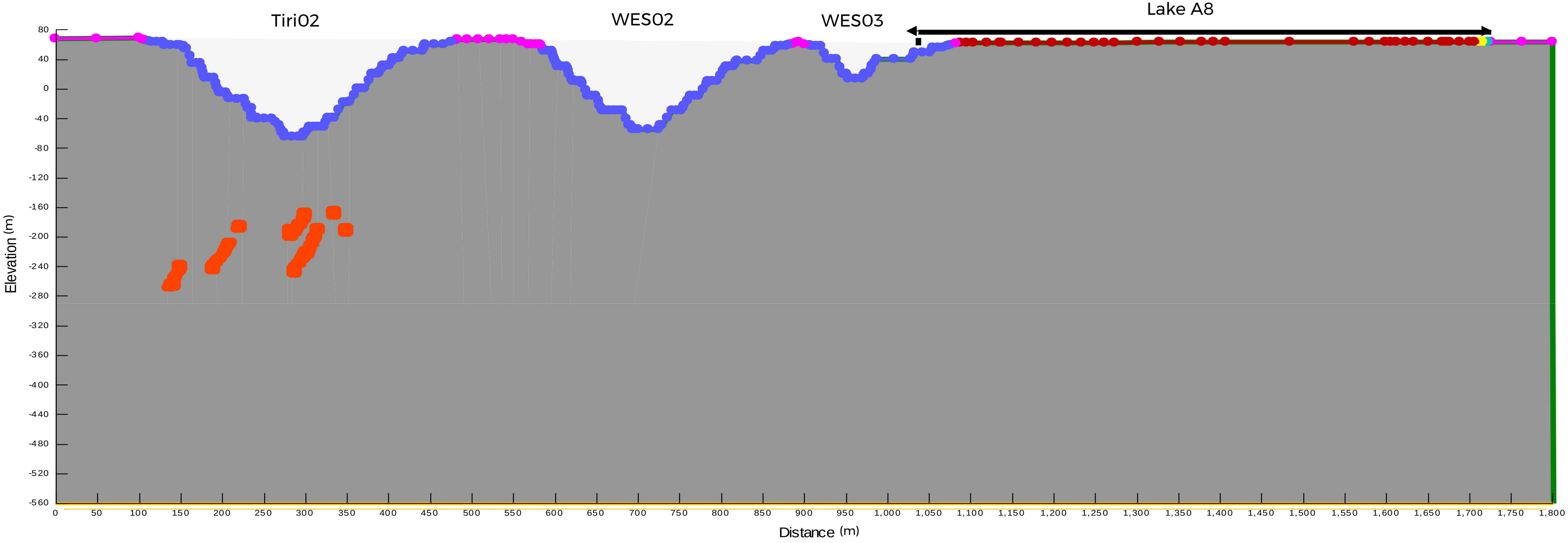
WSP has provided services to the intended recipient in accordance with the professional services agreement between the parties and in a manner consistent with that degree of care, skill and diligence normally provided by members of the same profession performing the same or comparable services in respect of projects of a similar nature in similar circumstances. It is understood and agreed by WSP and the recipient of this report that WSP provides no warranty, express or implied, of any kind. Without limiting the generality of the foregoing, it is agreed and understood by WSP and the recipient of this report that WSP makes no representation or warranty whatsoever as to the sufficiency of its scope of work for the purpose sought by the recipient of this report.

In preparing this report, WSP has relied in good faith on information provided by others, as noted in the report. WSP has reasonably assumed that the information provided is correct and WSP is not responsible for the accuracy or completeness of such information.

Benchmark and elevations used in this report are primarily to establish relative elevation differences between the specific testing and/or sampling locations and should not be used for other purposes, such as grading, excavating, construction, planning, development, etc.

ATTACHMENT A

Figures



- Underground Temperature Function
- Saline or Fresh Water Function
- Average Ground Temperature Function
- Deep Lake Temperature (2˚C)
- Intermediate Lake Temperature (0˚C)
- Shallow Lake Temperature (-2˚C)
- Geothermal Gradient

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

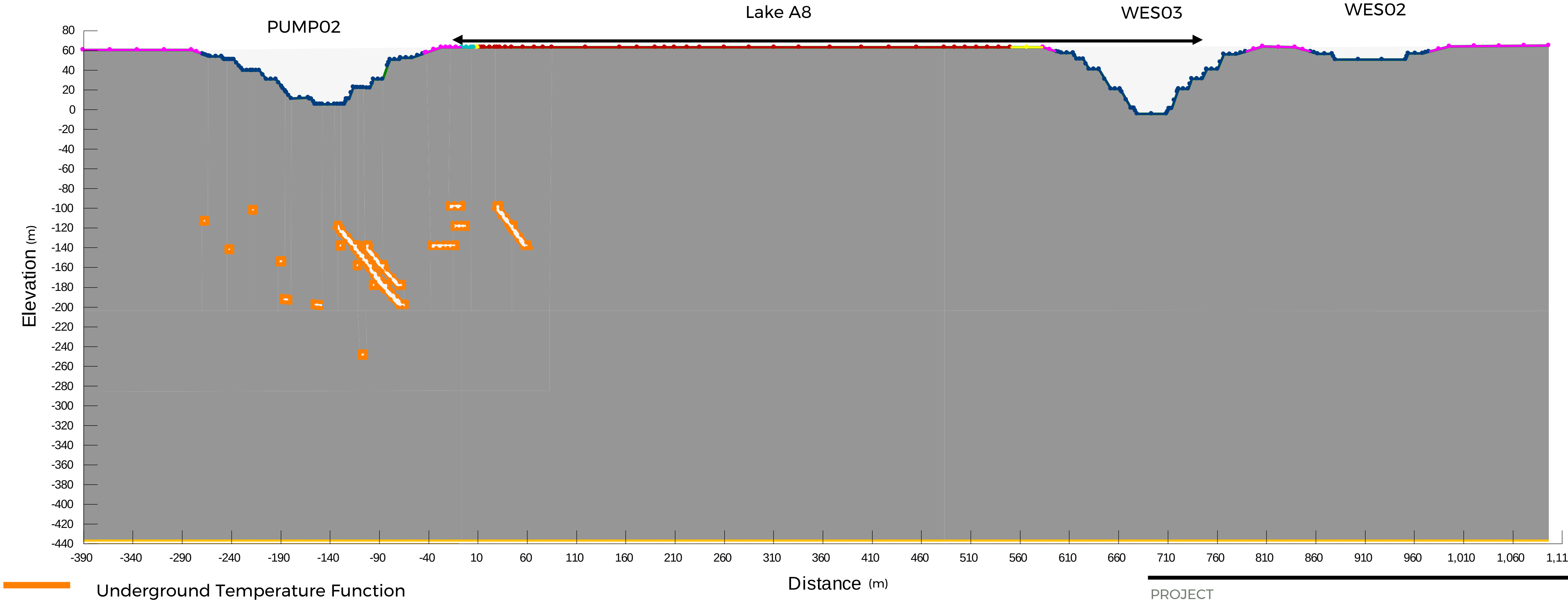
PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

East Alignment Model Section and Boundary Conditions

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-1**



Underground Temperature Function

Saline or Fresh Water Function

Average Ground Temperature Function

Deep Lake Temperature (2˚C)

Intermediate Lake Temperature (0˚C)

Shallow Lake Temperature (-2˚C)

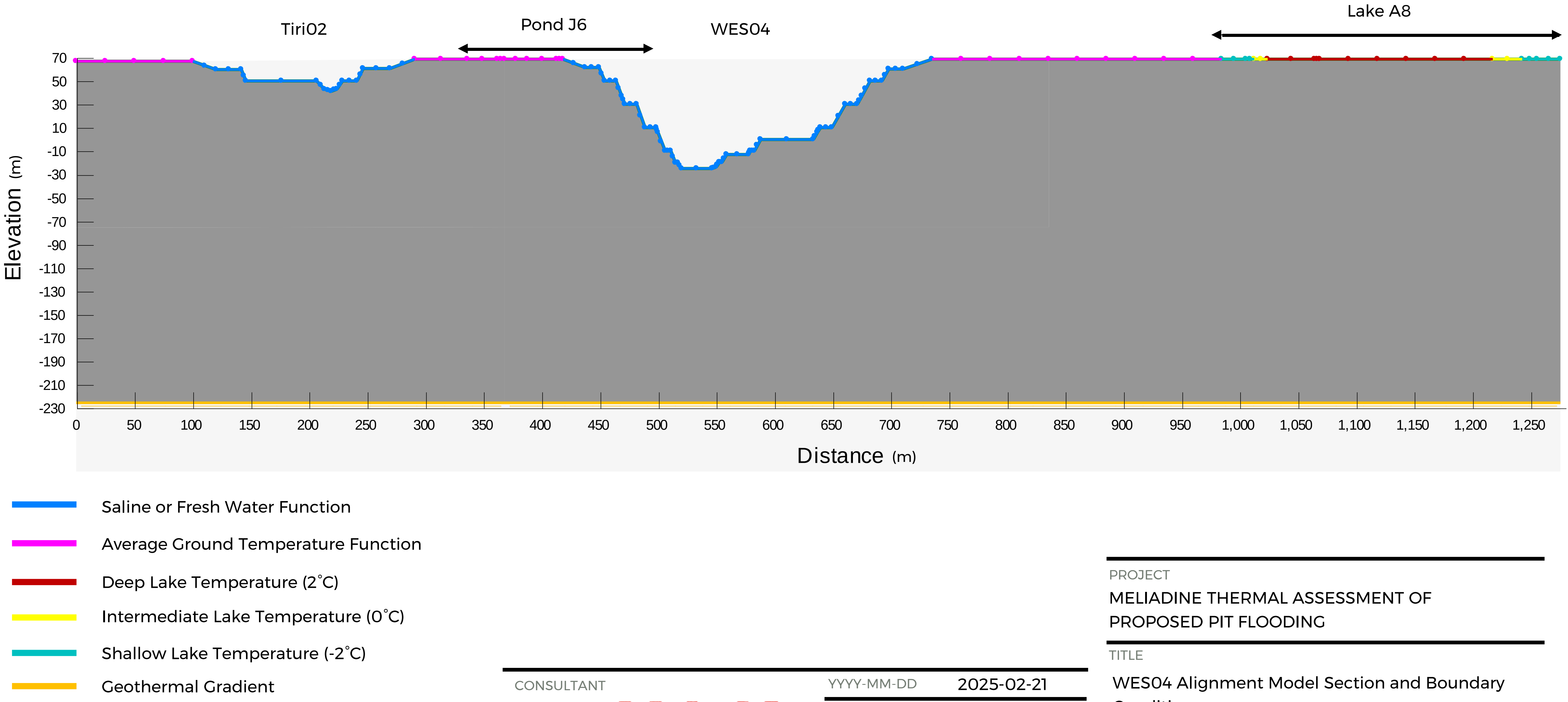
Geothermal Gradient

PROJECT	MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING
TITLE	West Alignment Model Section and Boundary Conditions

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-2**

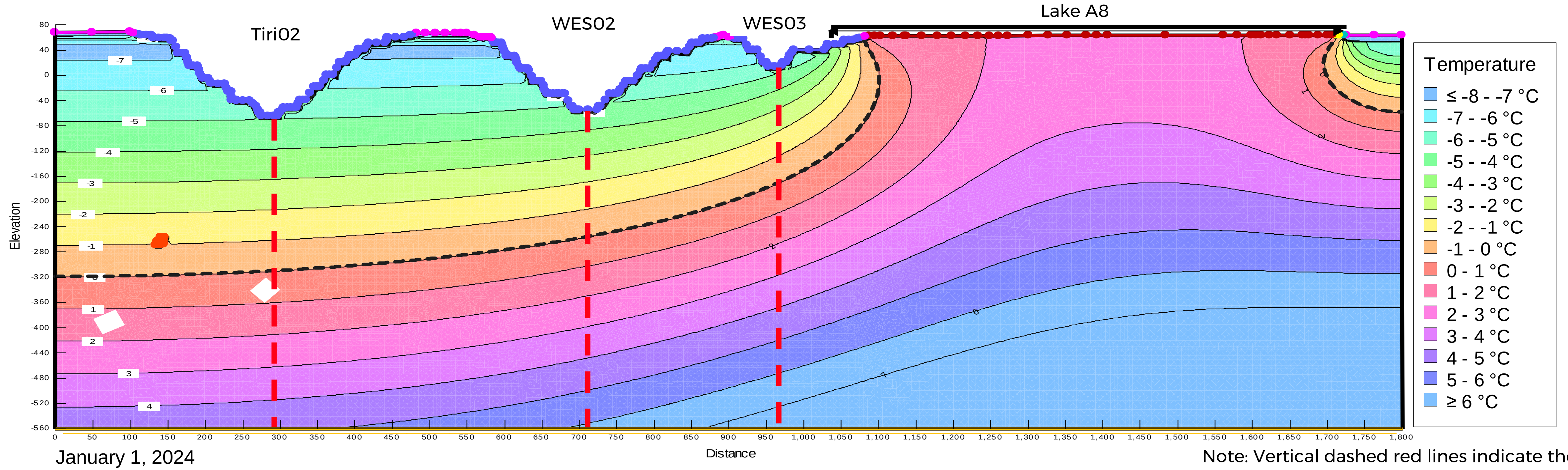


CONSULTANT	YYYY-MM-DD	2025-02-21	
	PREPARED	GW	
	REVIEWED	FJ	
	APPROVED	FJ	

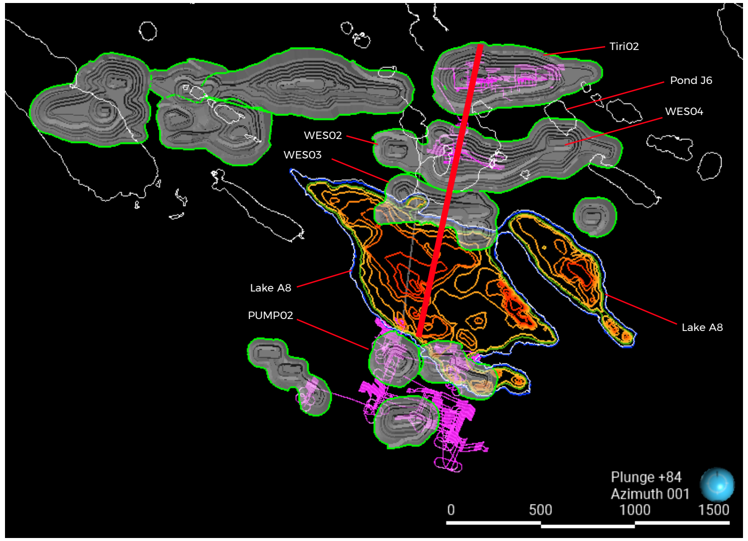
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
WES04 Alignment Model Section and Boundary Conditions

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-3**



January 1, 2024



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

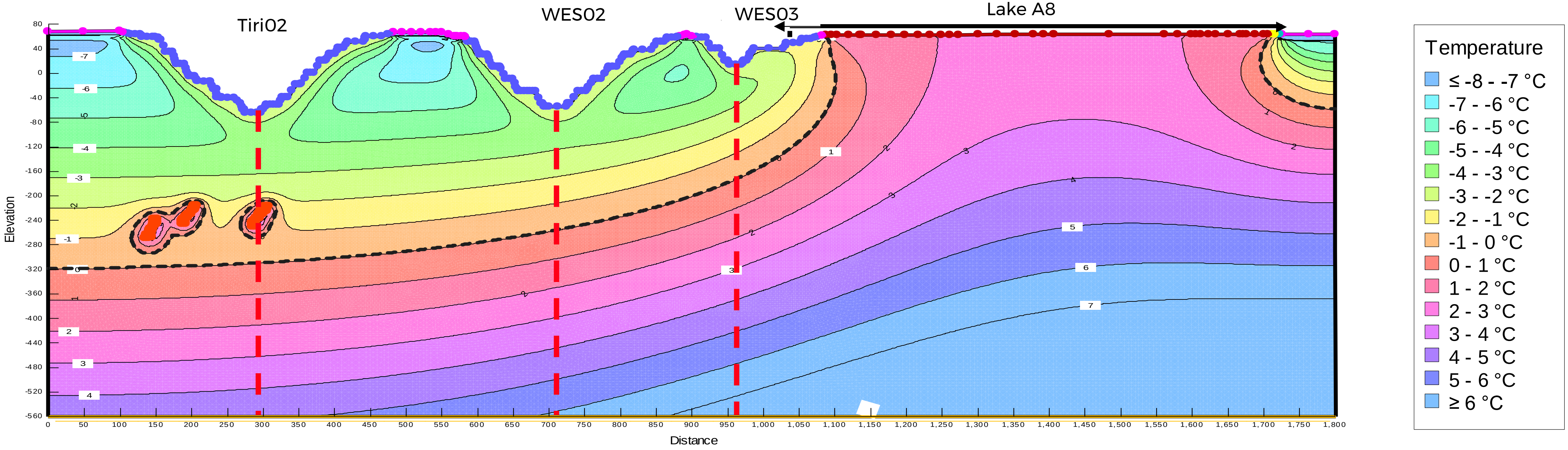
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	YYYY-MM-DD	2025-02-21
wsp	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

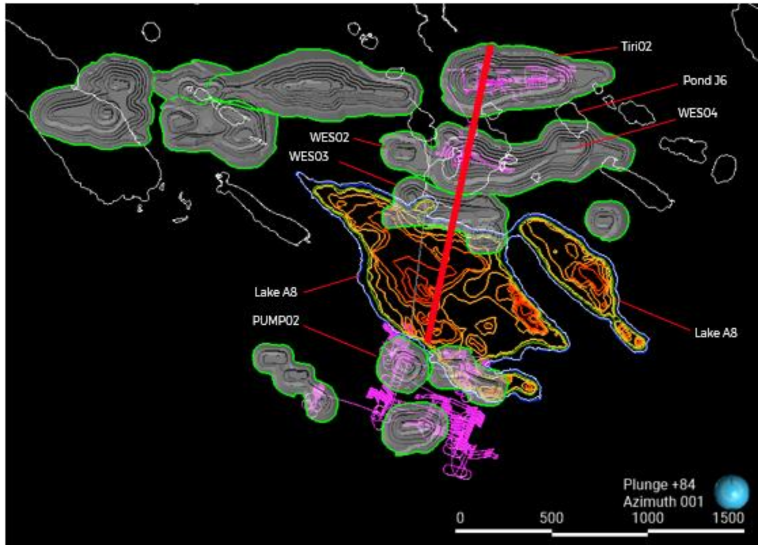
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q1 2024 – East Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-4**



December 31, 2031



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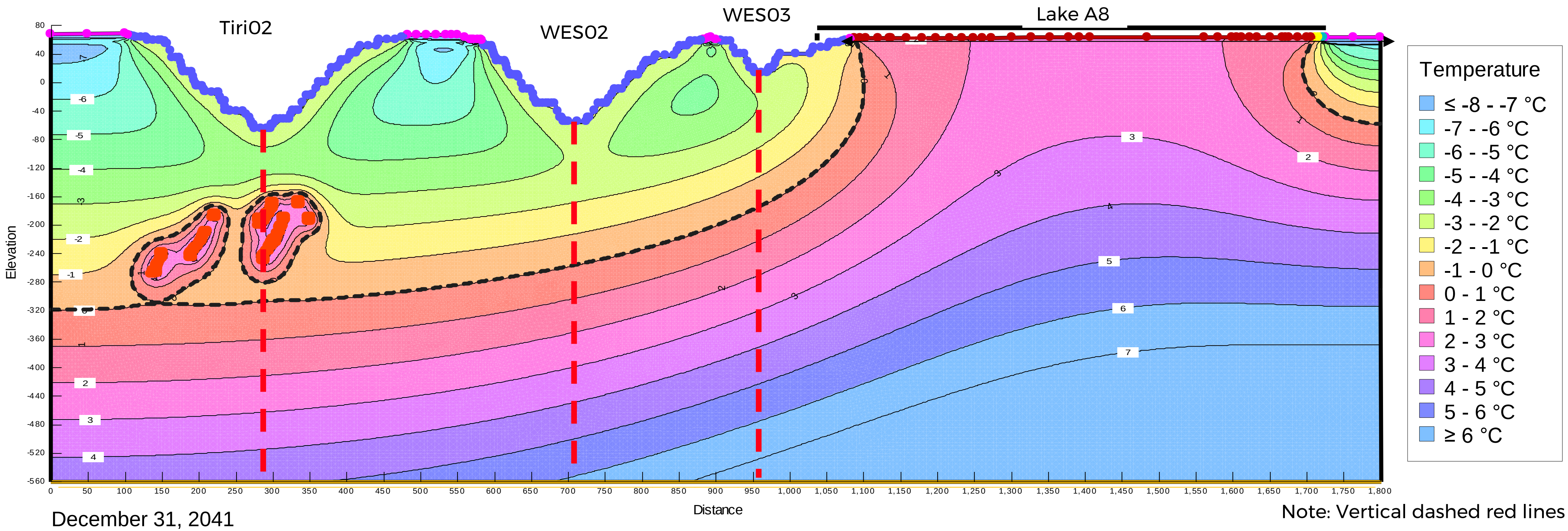
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

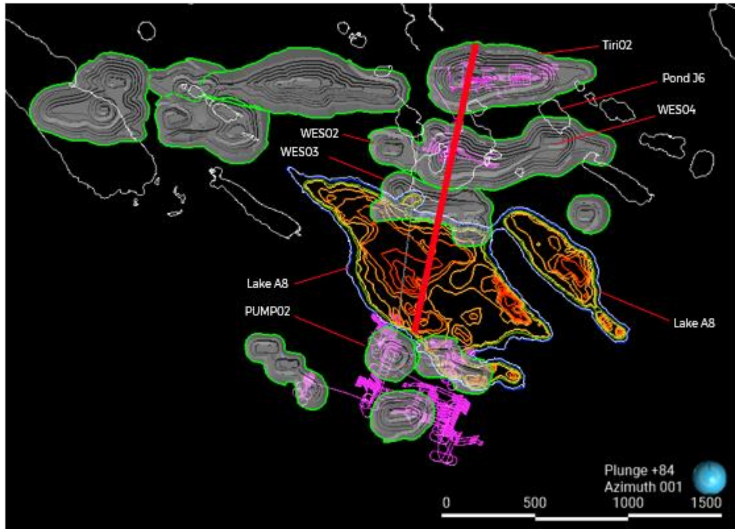
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2031 – East Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-5**



December 31, 2041



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

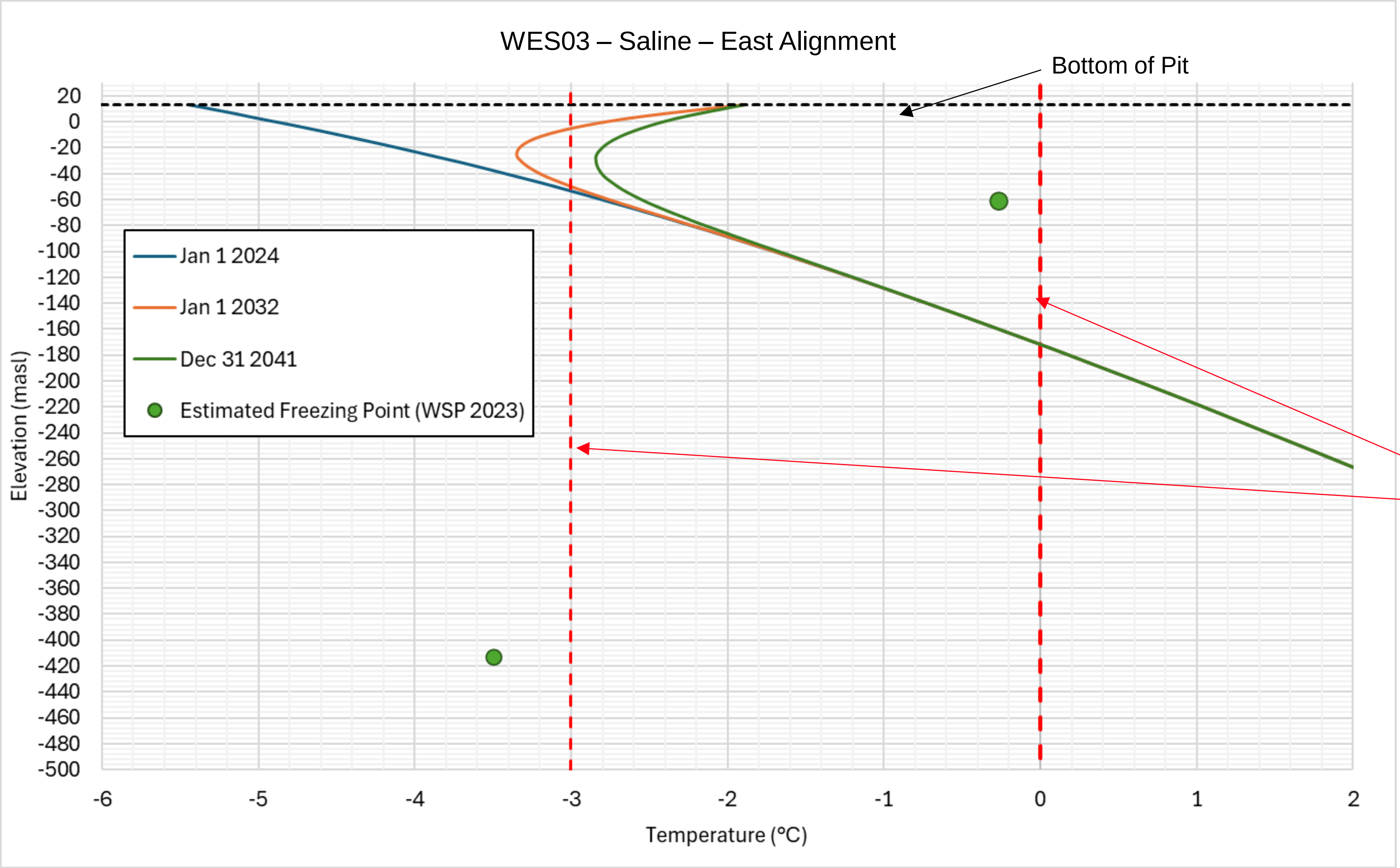
PROJECT

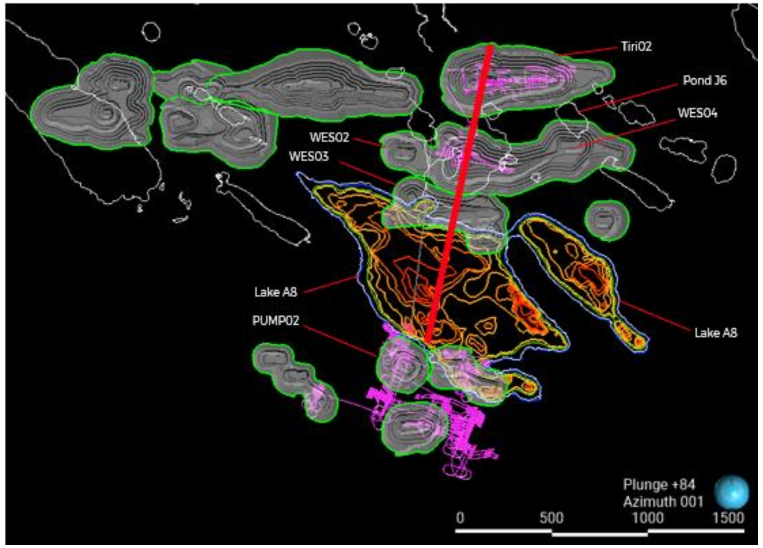
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Thermal Regime at Q4 2041 – East Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-6**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

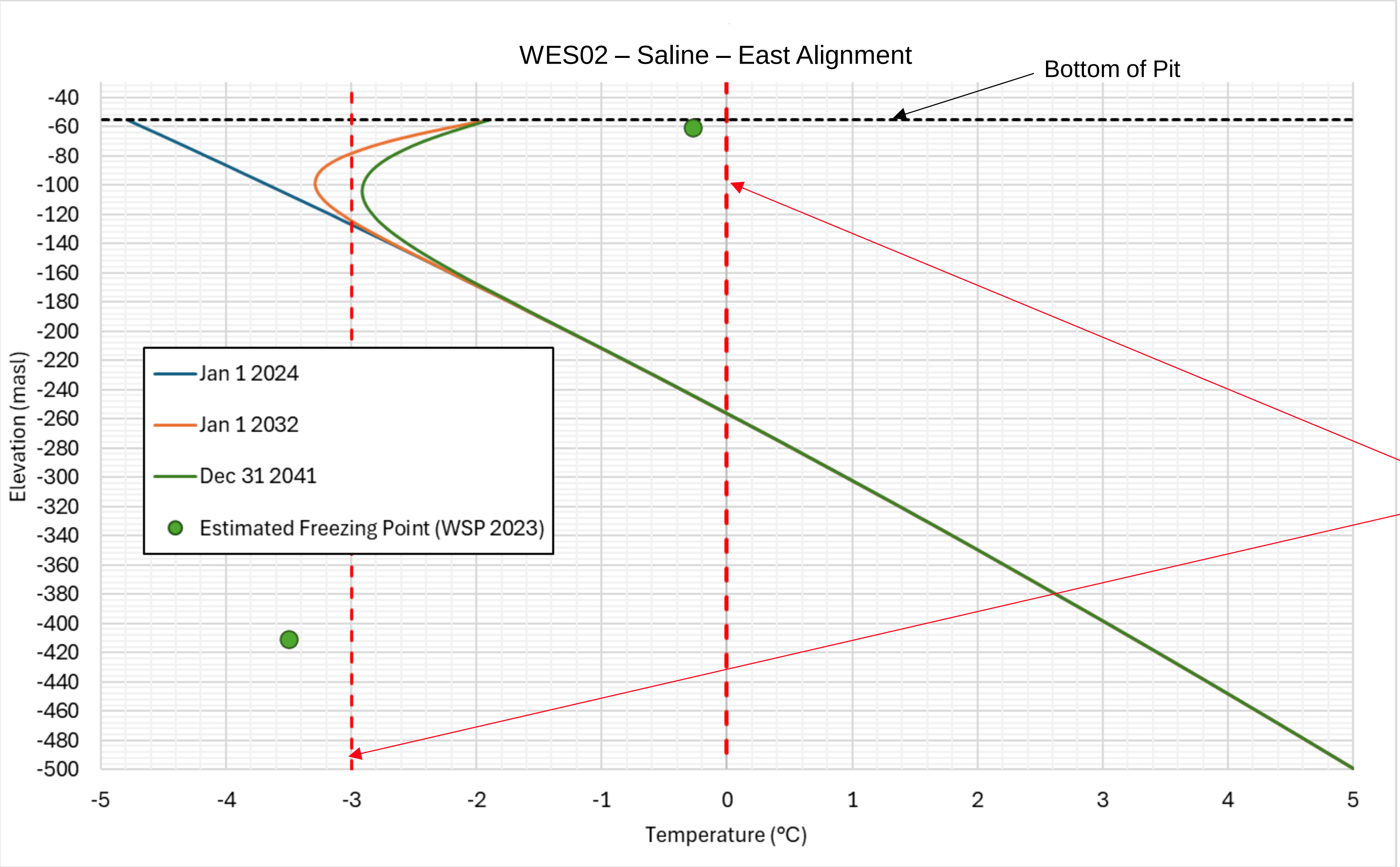
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

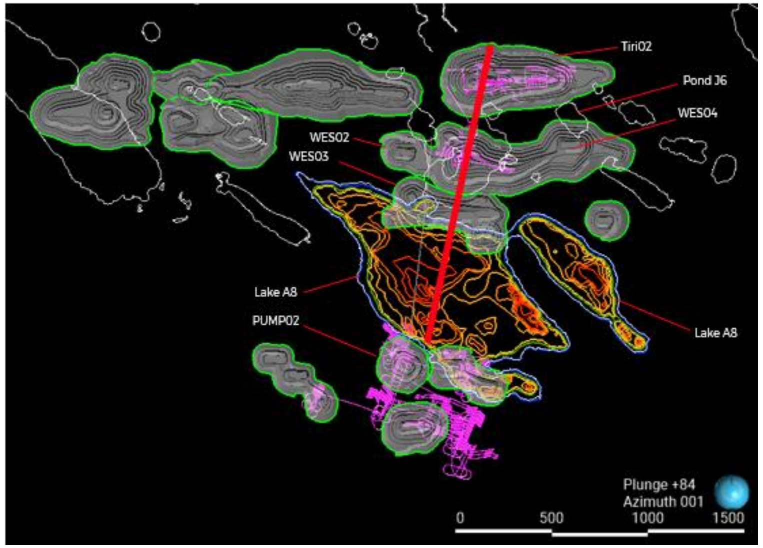
TITLE

Temperature Profile for WES03 – East Alignment Using Saline Water

CONSULTANT		
	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-7**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

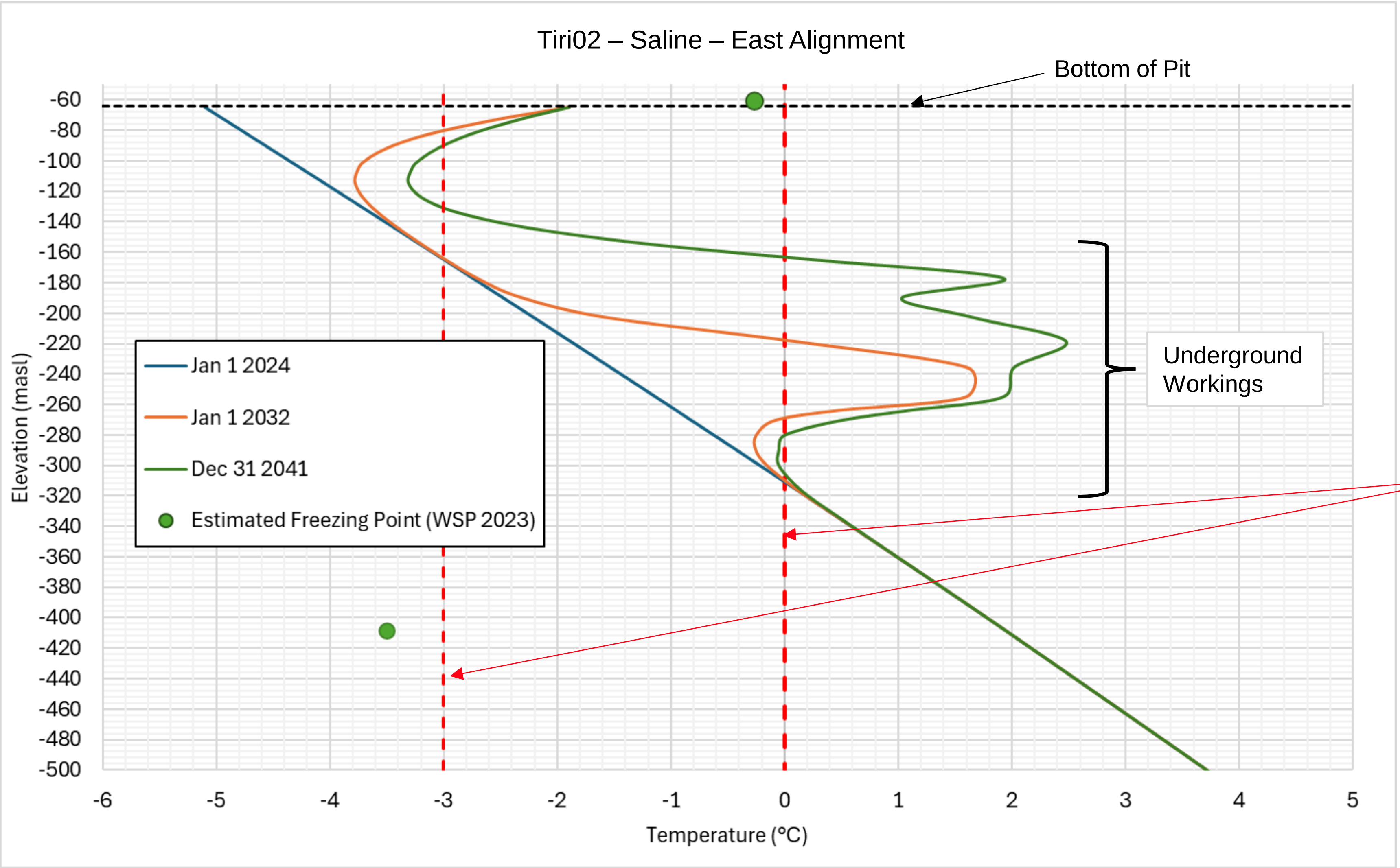
TITLE

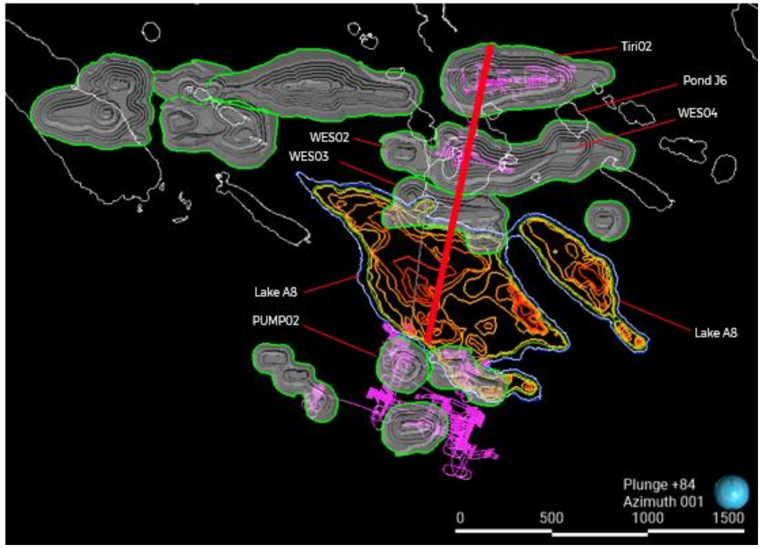
Temperature Profile for WES02 – East Alignment Using Saline Water

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-8**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

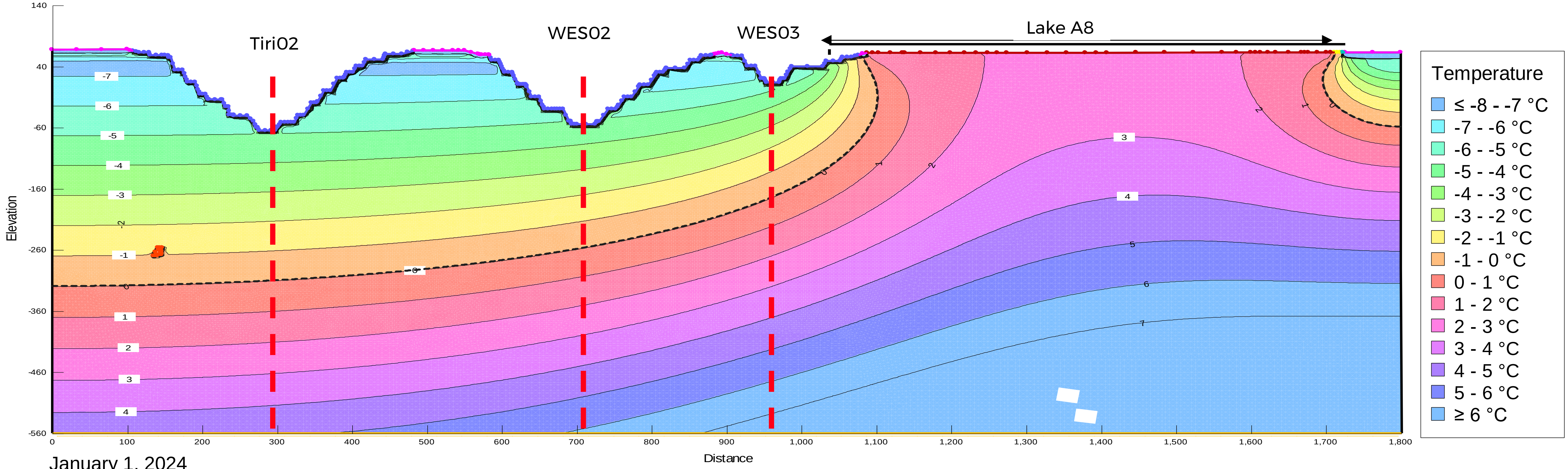
PROJECT	MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING
TITLE	Temperature Profile for Tiri02 – East Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-9**

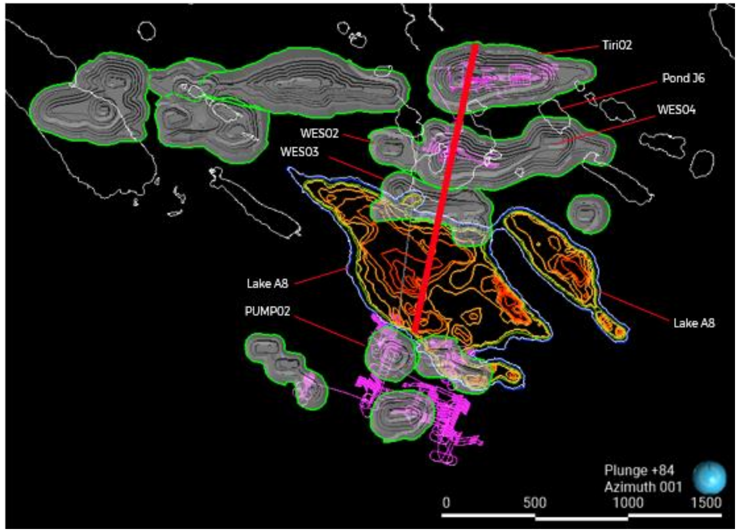
CONSULTANT

wsp

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ



January 1, 2024



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

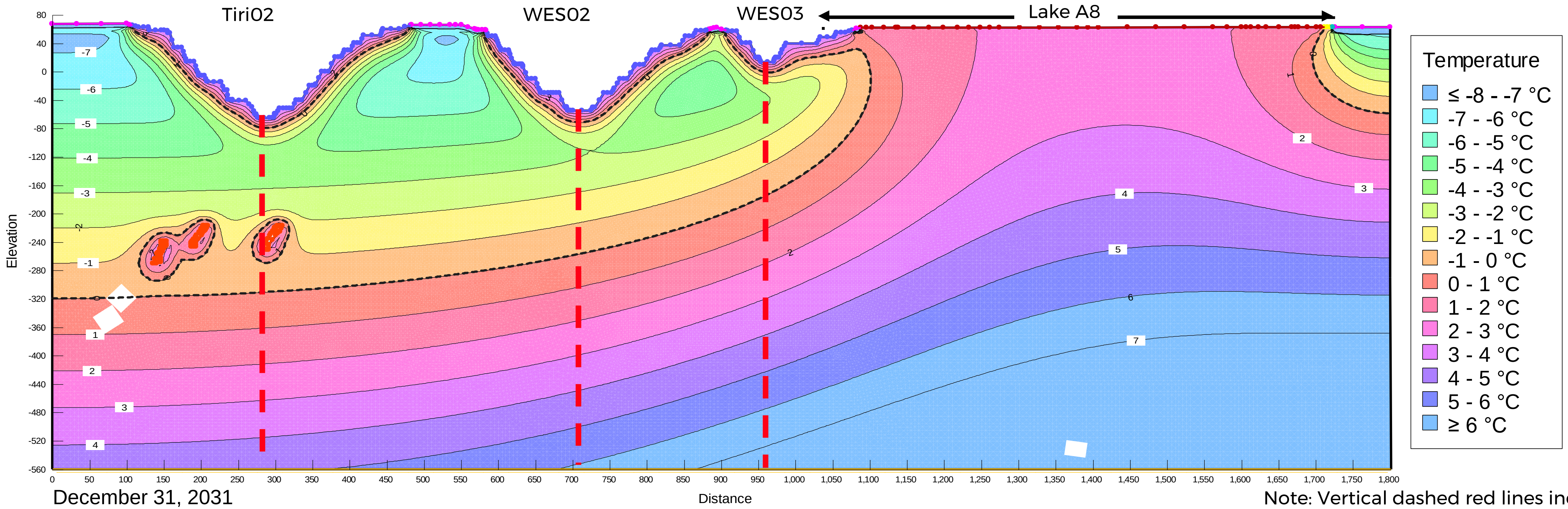
PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

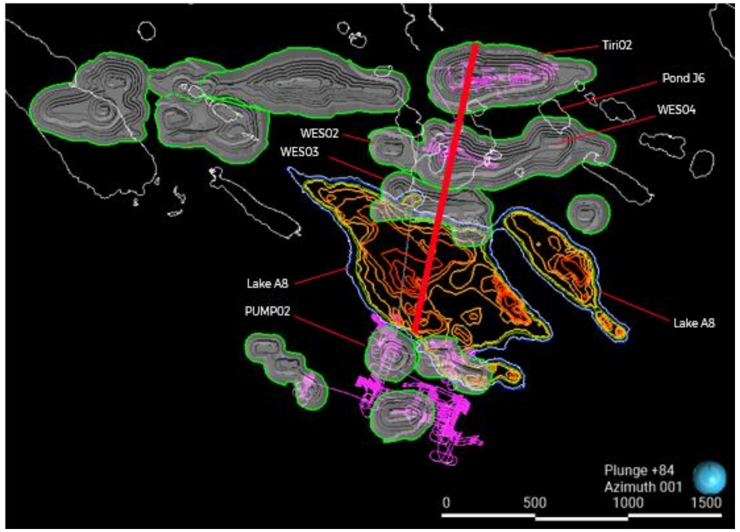
TITLE

Thermal Regime at Q1 2024 – East Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-10**



December 31, 2031



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

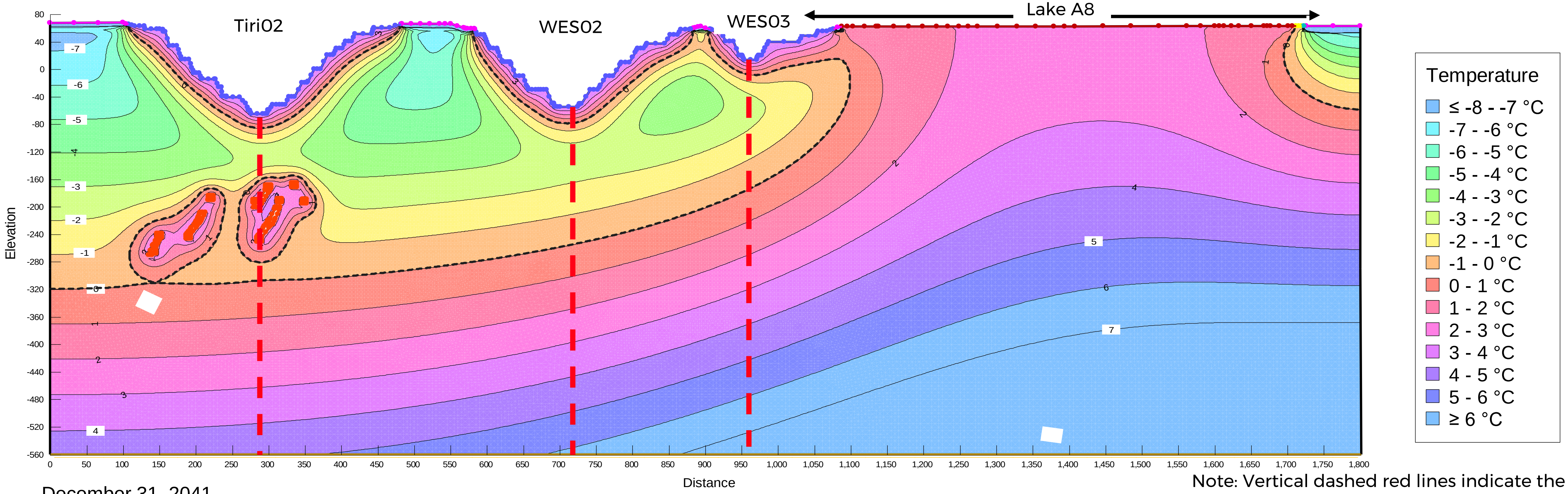
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	wsp
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

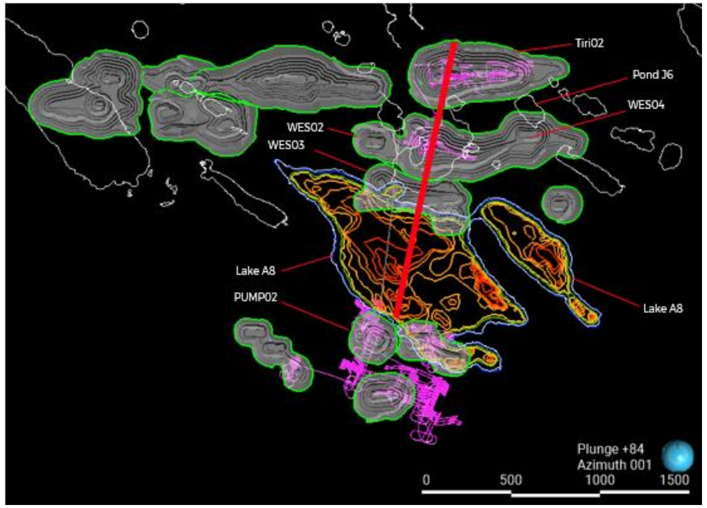
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2031 – East Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-11**



December 31, 2041



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

PROJECT

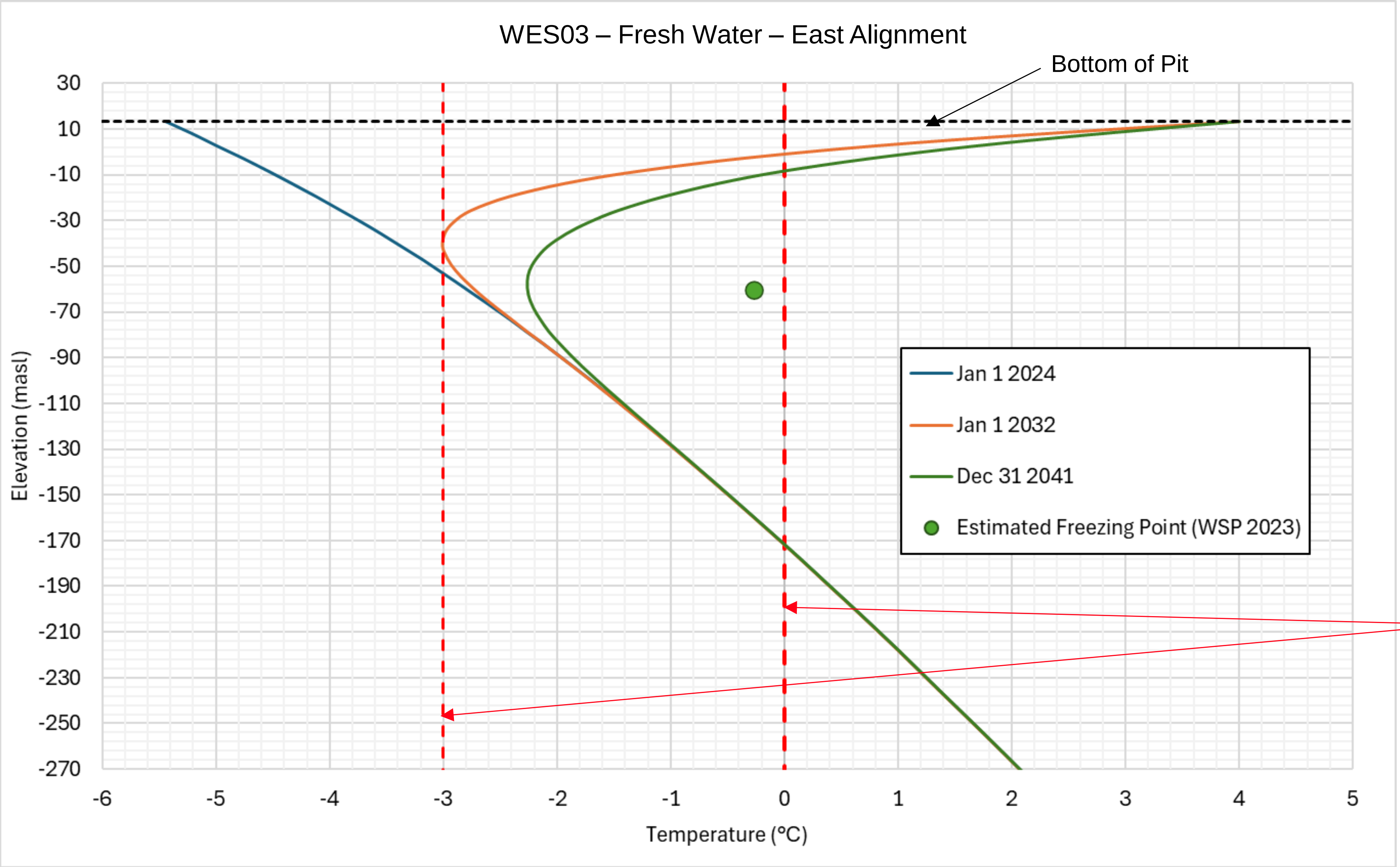
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

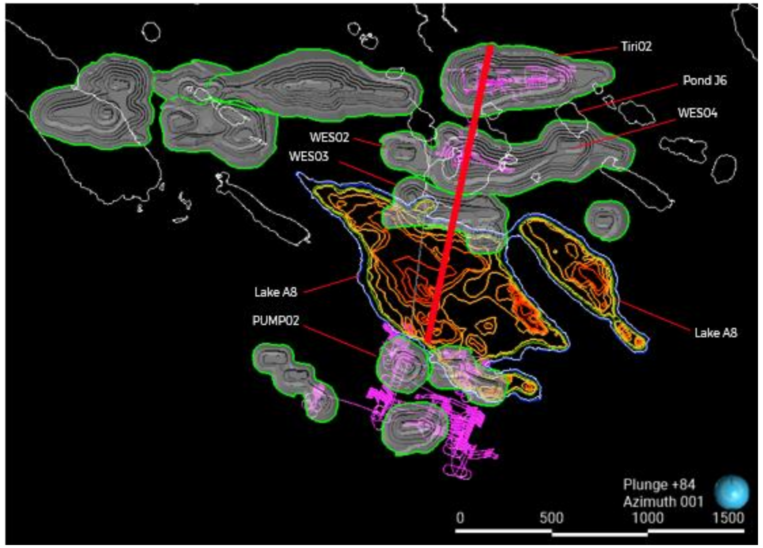
TITLE

Thermal Regime at Q4 2041 – East Alignment Using Fresh Water

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-12**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

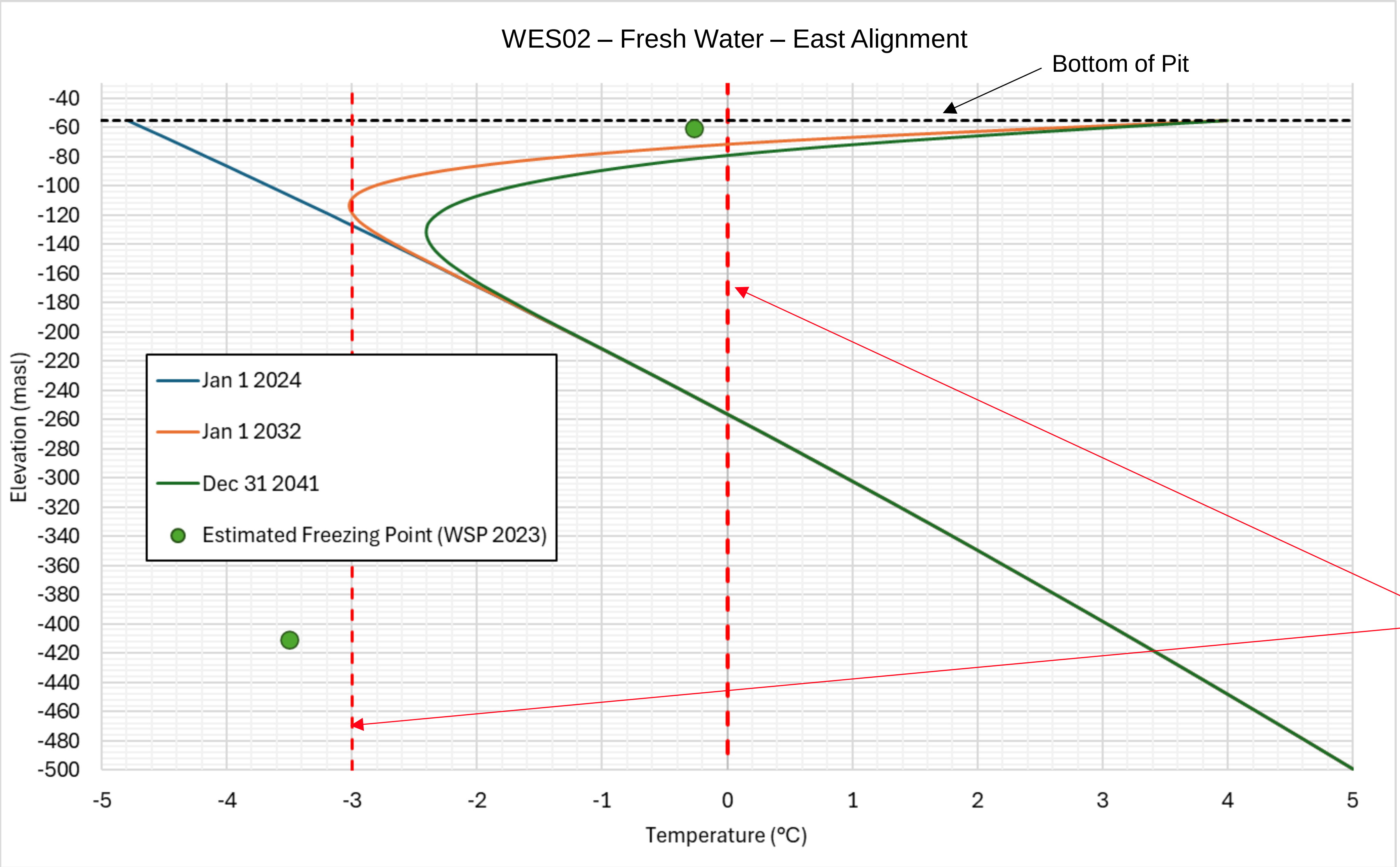
PROJECT

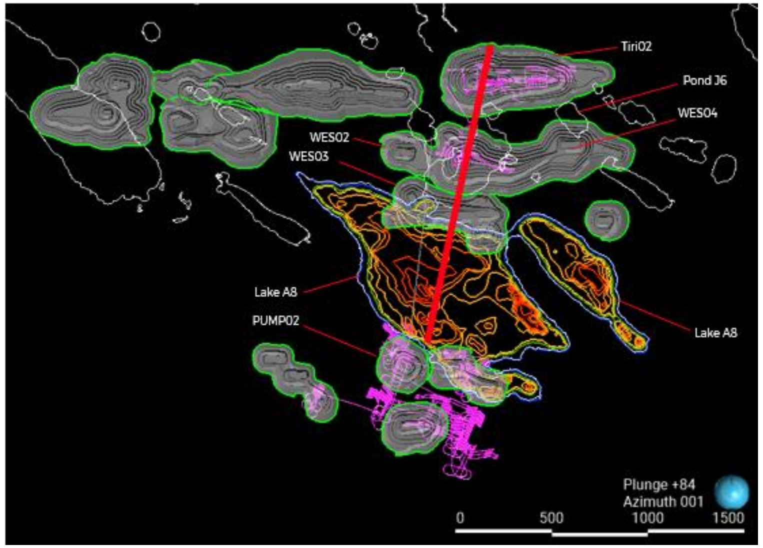
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Temperature Profile for WES03 – East Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-13**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

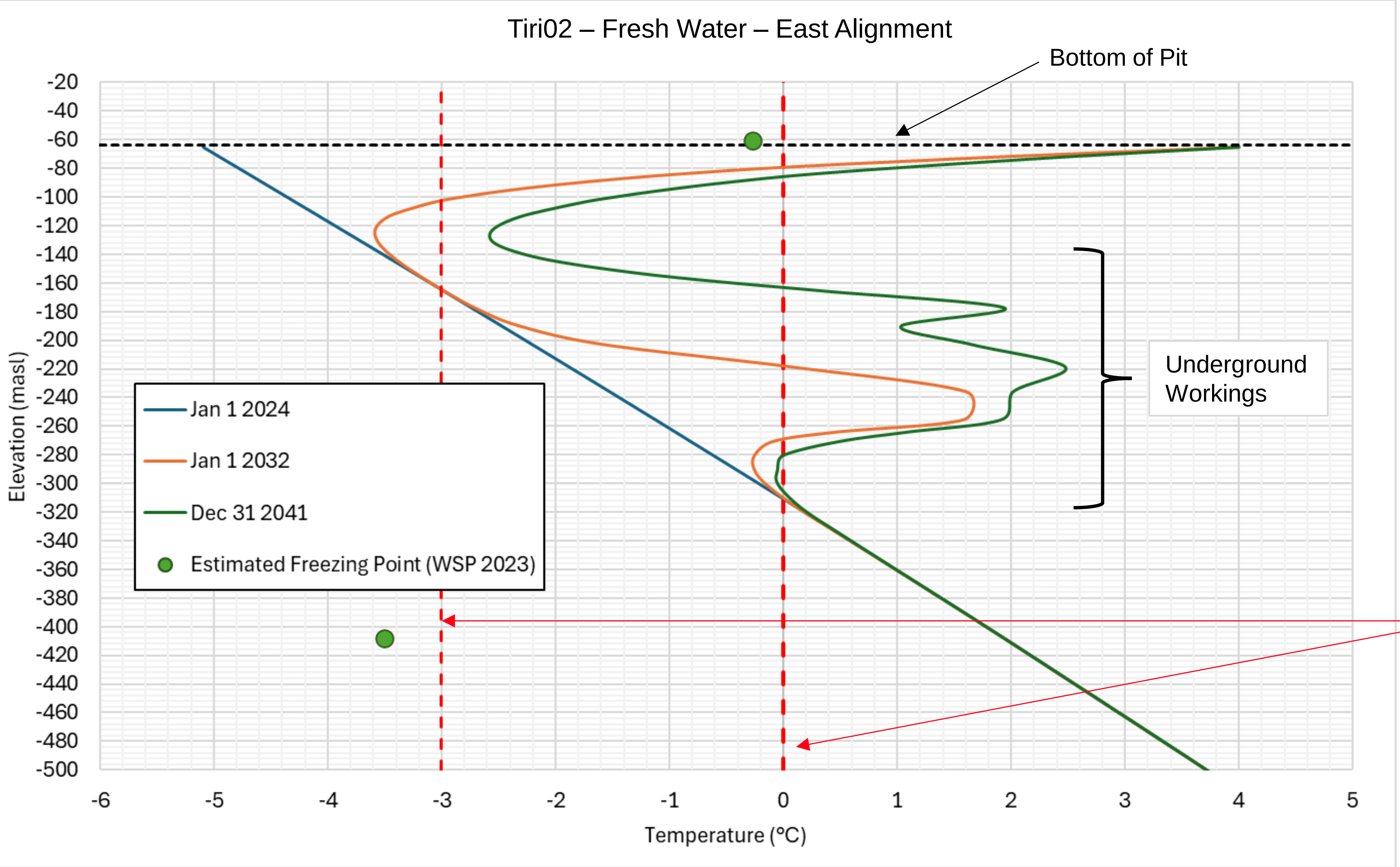
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

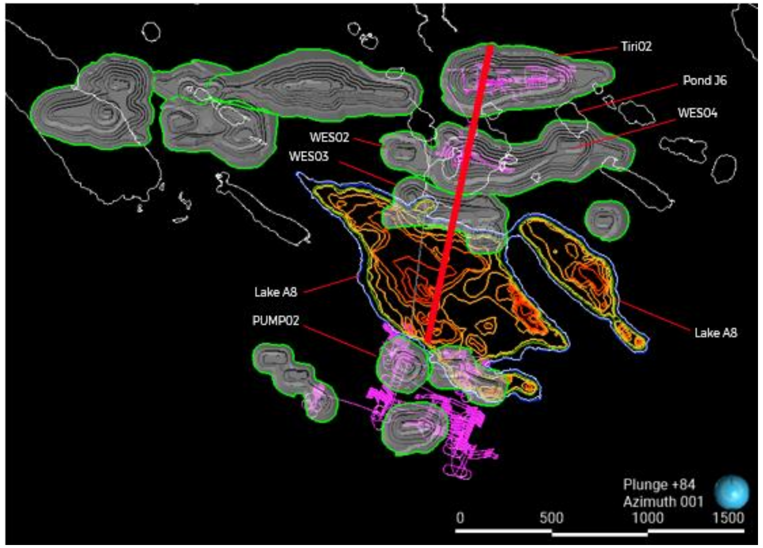
TITLE

Temperature Profile for WES02 – East Alignment Using Fresh Water

CONSULTANT		
	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-14**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

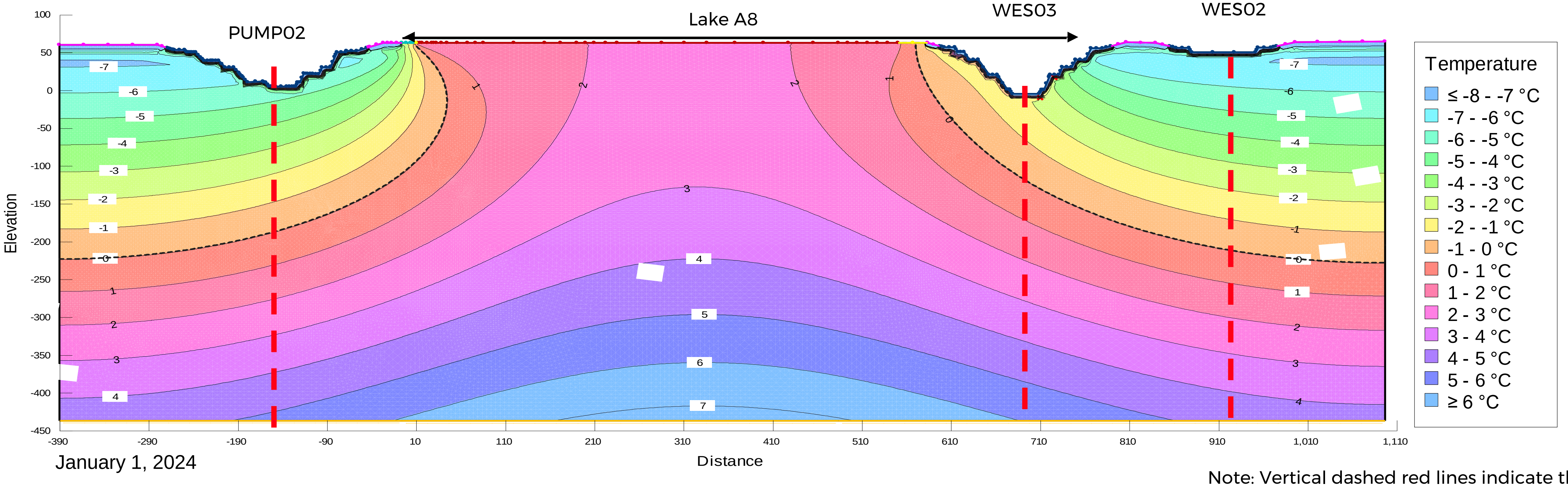
PROJECT

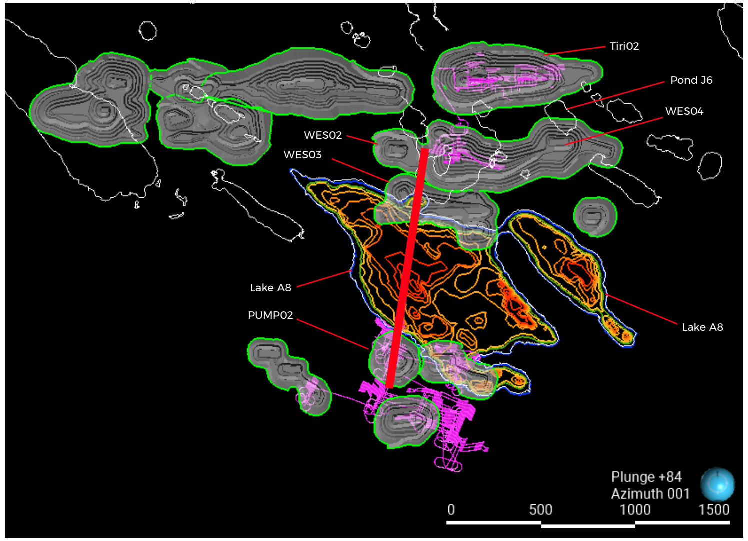
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Temperature Profile for Tiri02 – East Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-15**





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

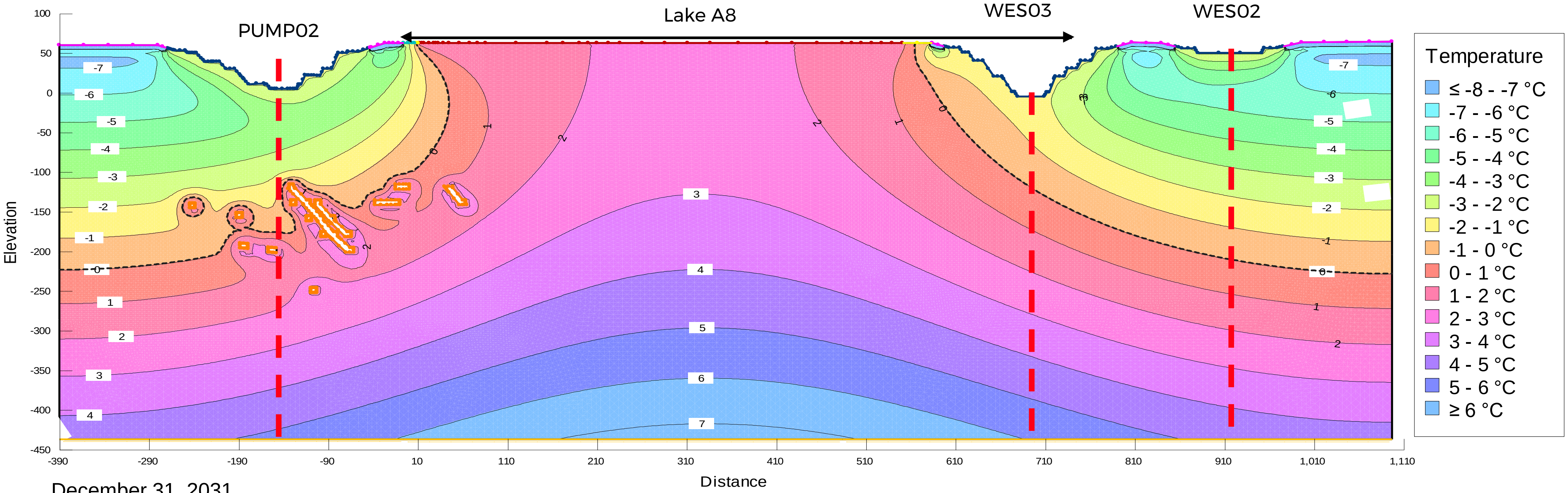
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

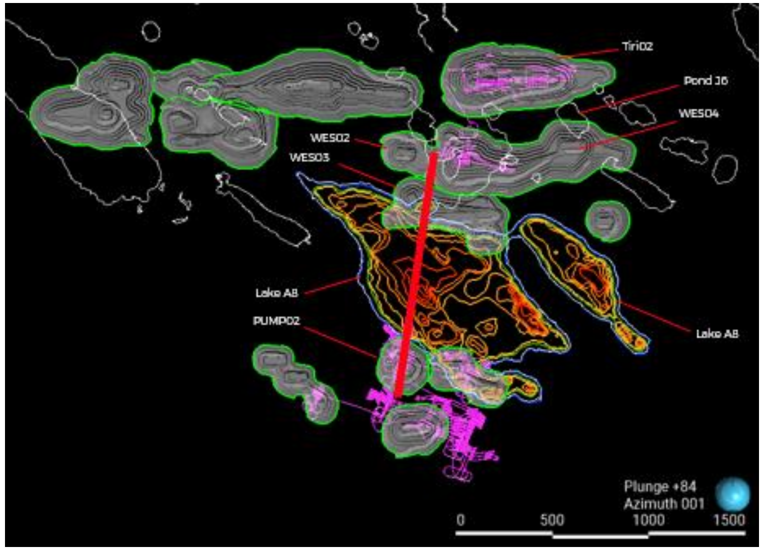
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q1 2024 – West Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-16**



December 31, 2031



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

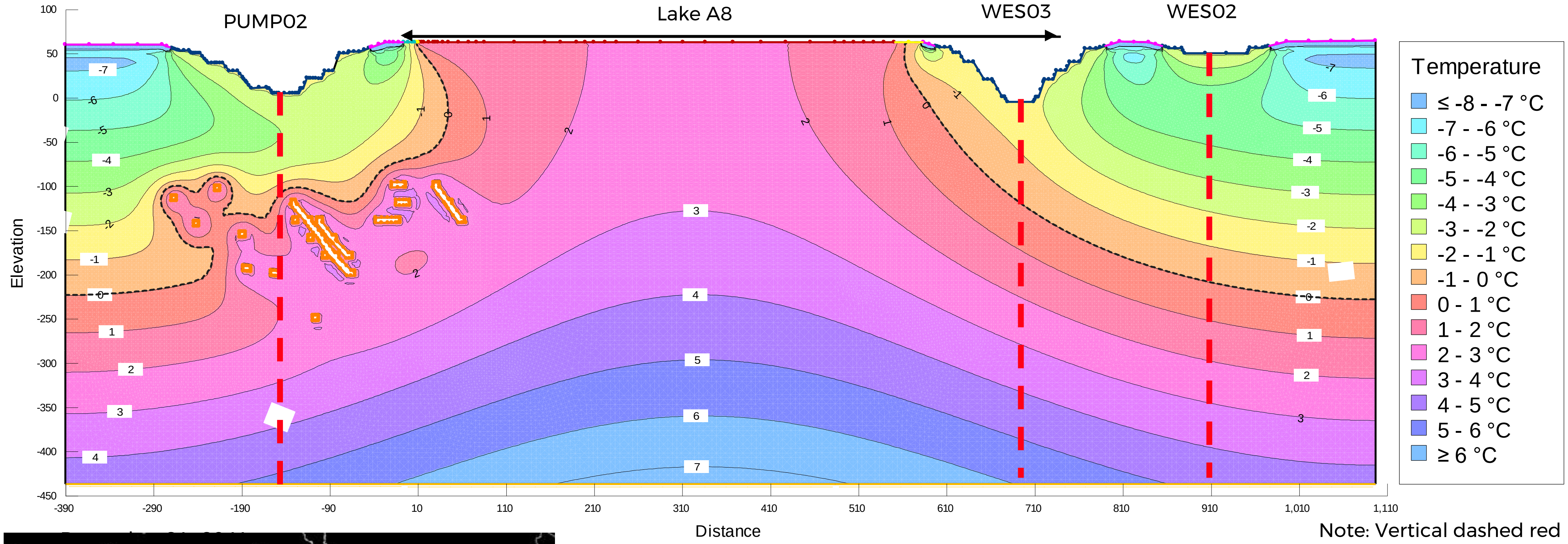
PROJECT

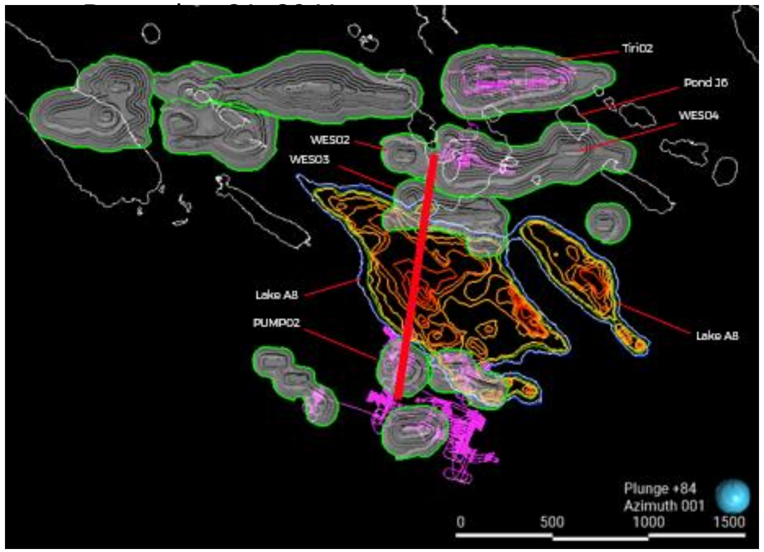
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Thermal Regime at Q4 2031 – West Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-17**





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

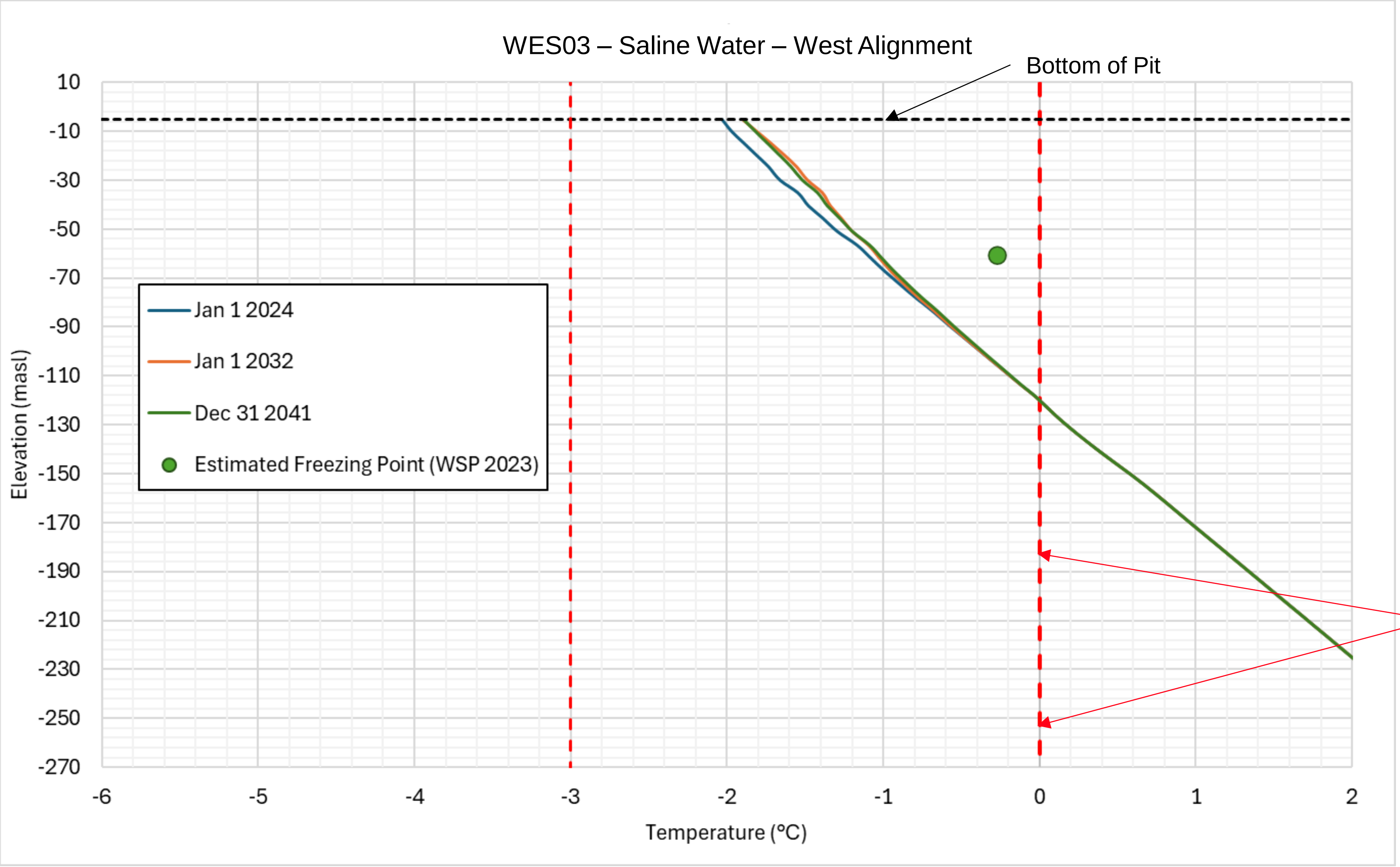
TITLE

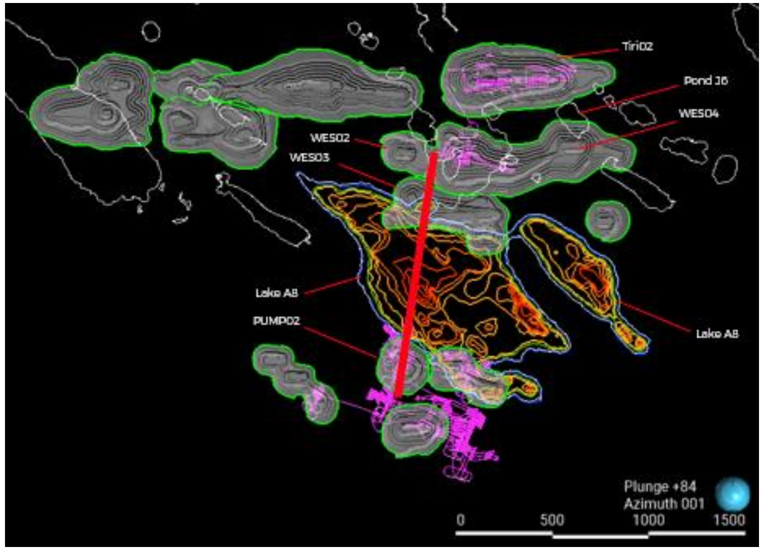
Thermal Regime at Q4 2041 – West Alignment Using Saline Water

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-18**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

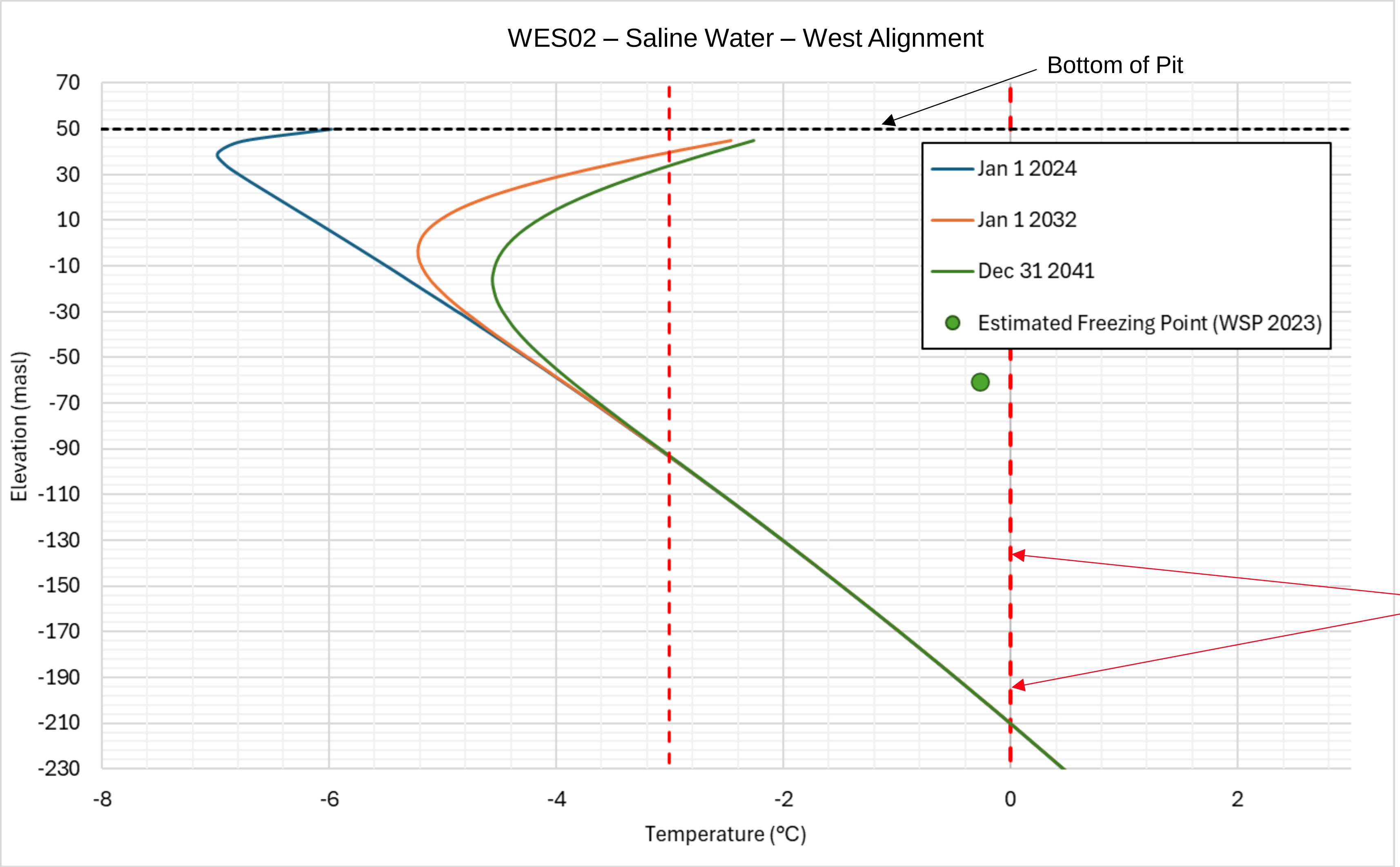
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

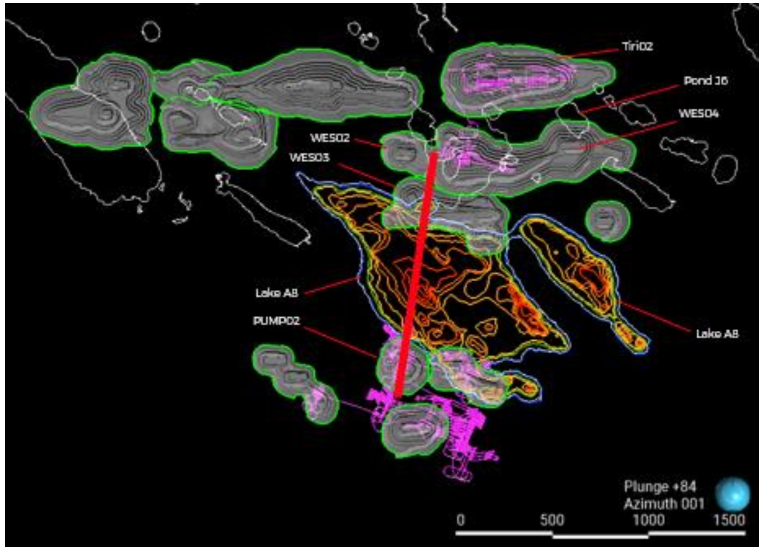
TITLE

Temperature Profile for WES03 – West Alignment Using Saline Water

CONSULTANT	wsp
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-19**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

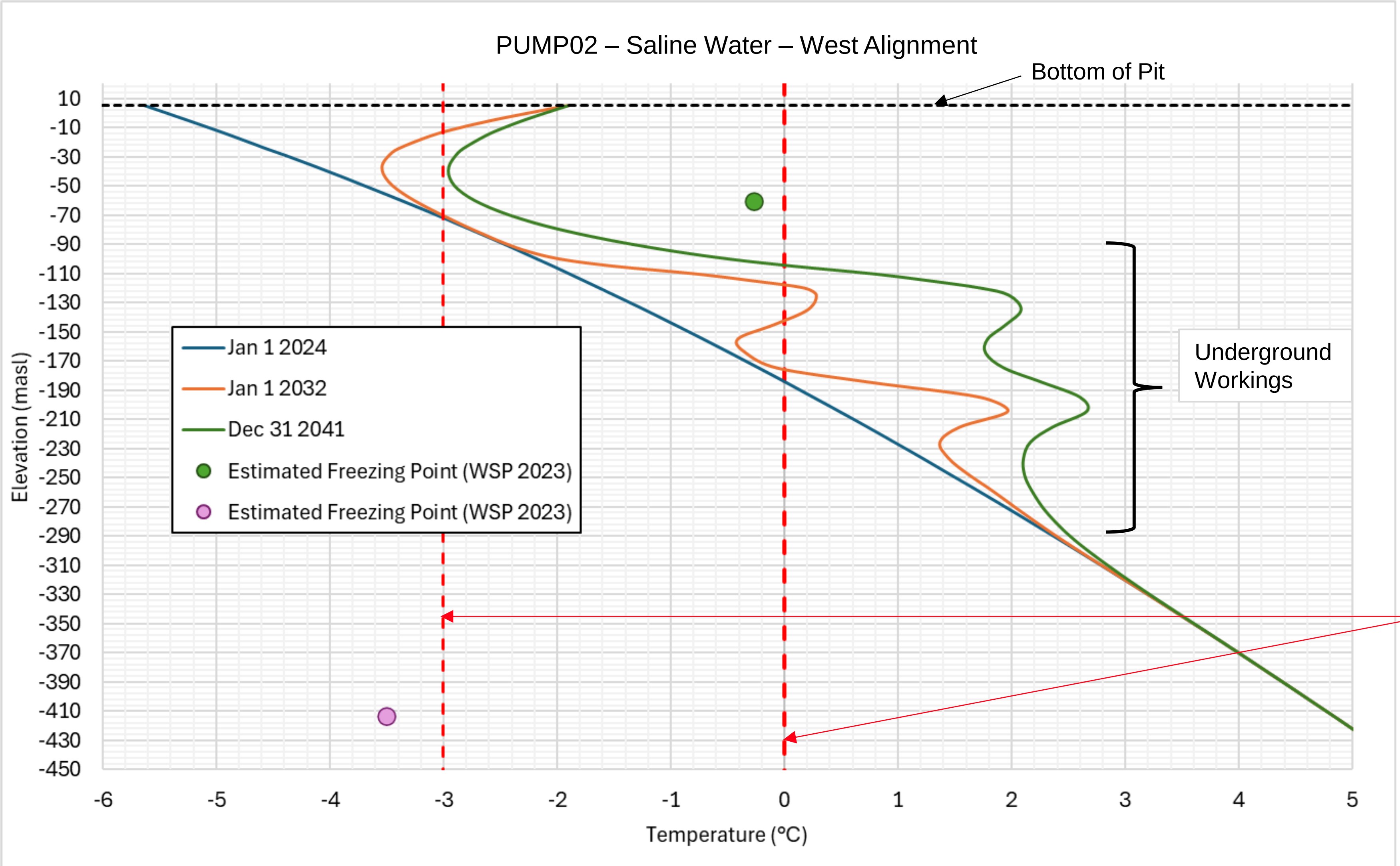
TITLE

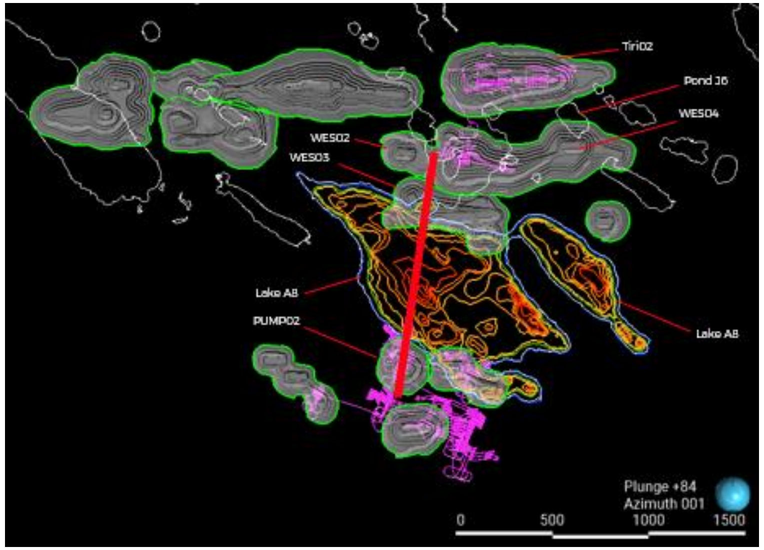
Temperature Profile for WES02 – West Alignment Using Saline Water

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-20**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

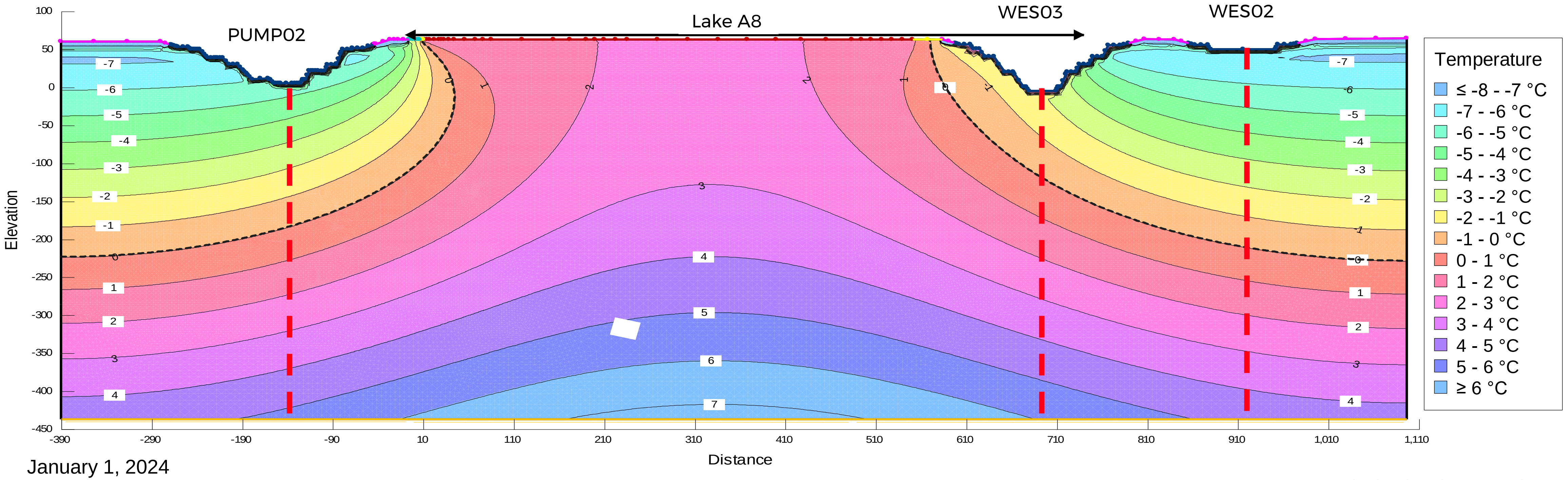
Temperature Profile for PUMP02 – West Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-21**

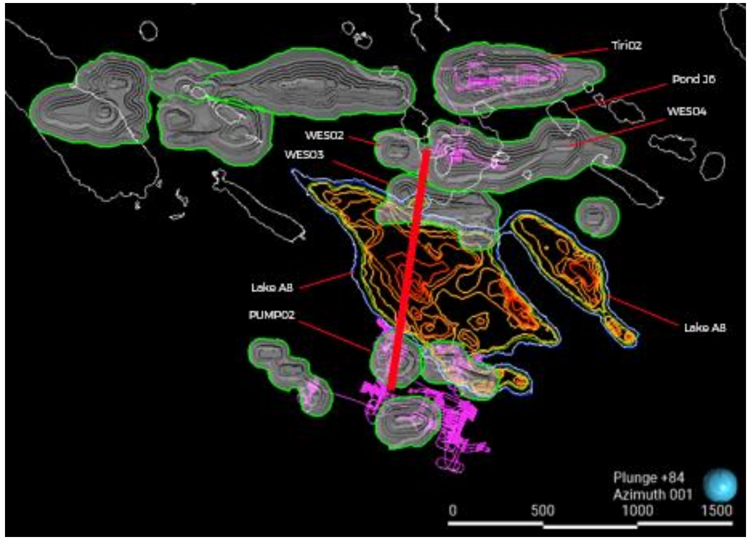
CONSULTANT

wsp

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ



January 1, 2024



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

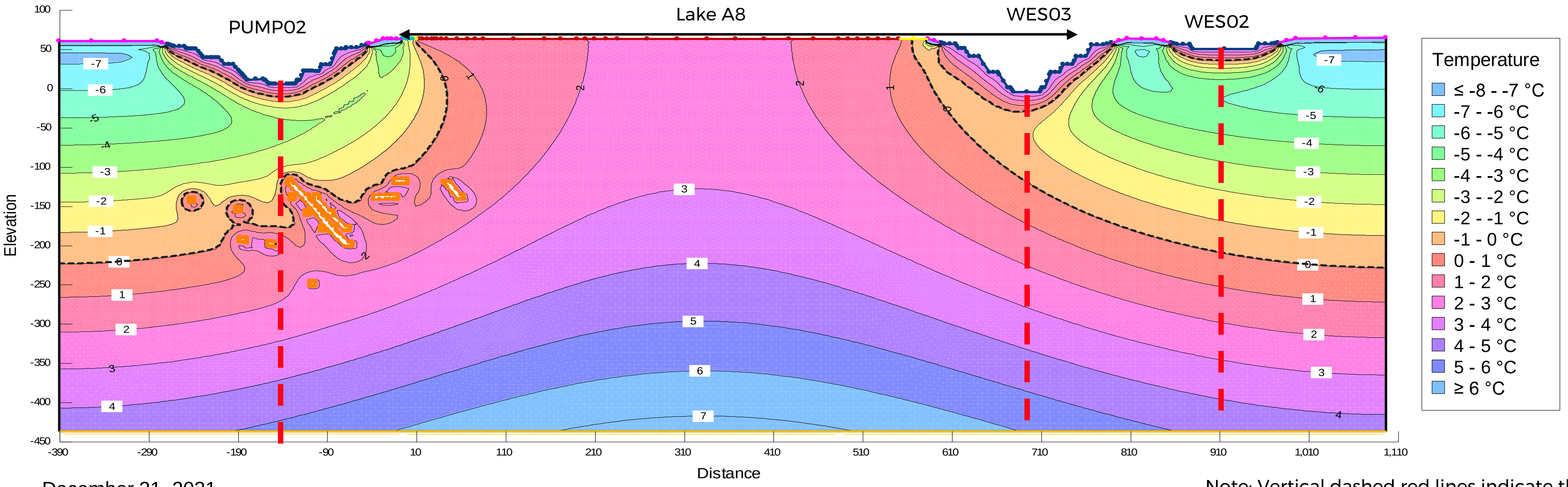
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	wsp	YYYY-MM-DD	2025-02-21
		PREPARED	GW
		REVIEWED	FJ
		APPROVED	FJ

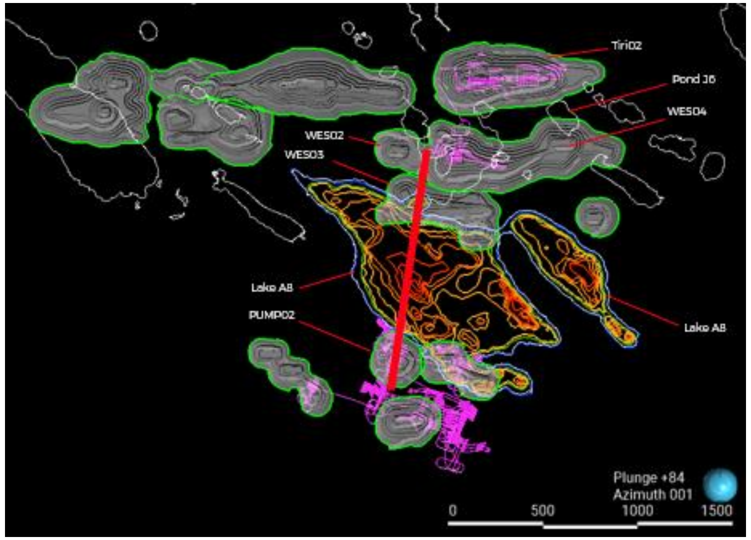
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q1 2024 – West Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-22**



December 31, 2031



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

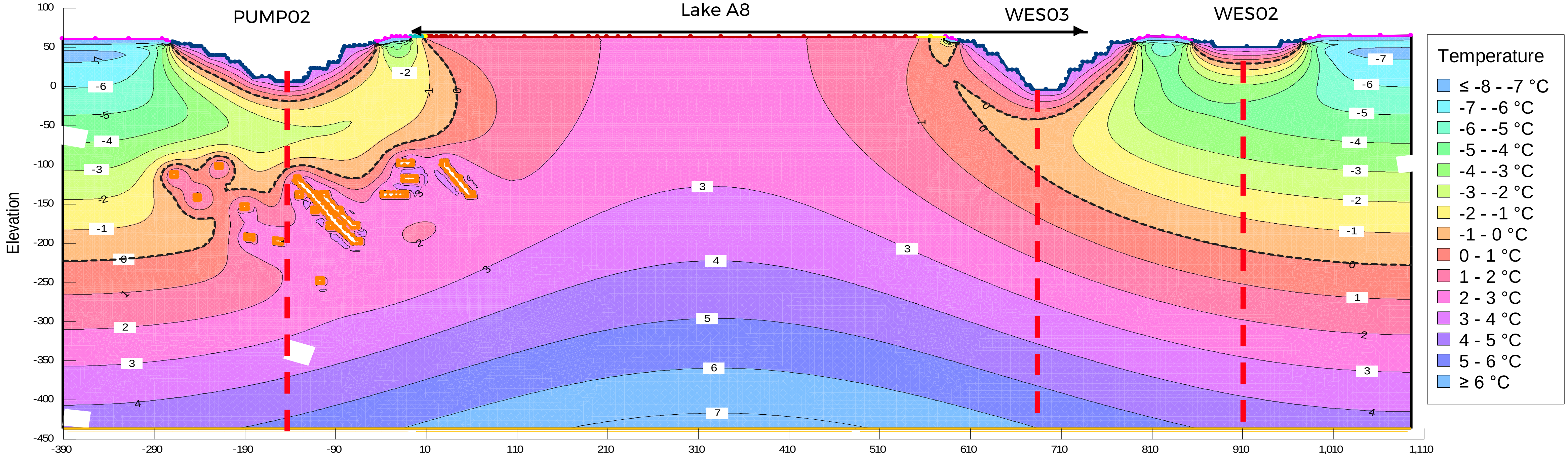
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

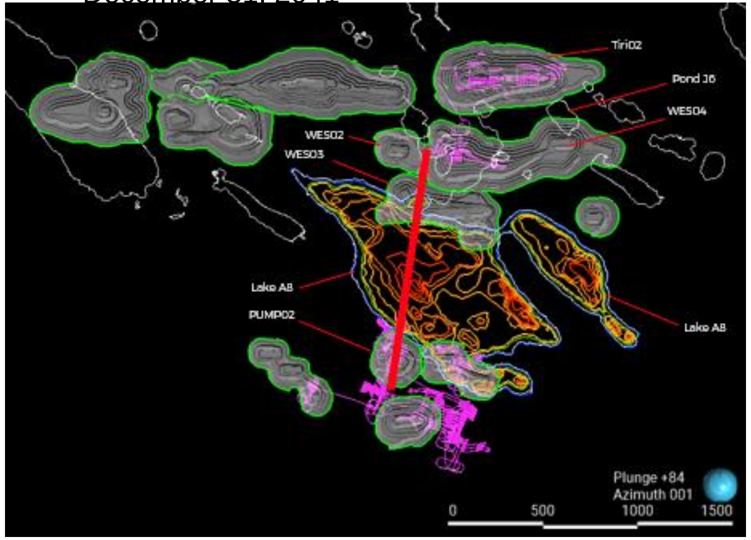
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2031 – West Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-23**



December 31, 2041



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

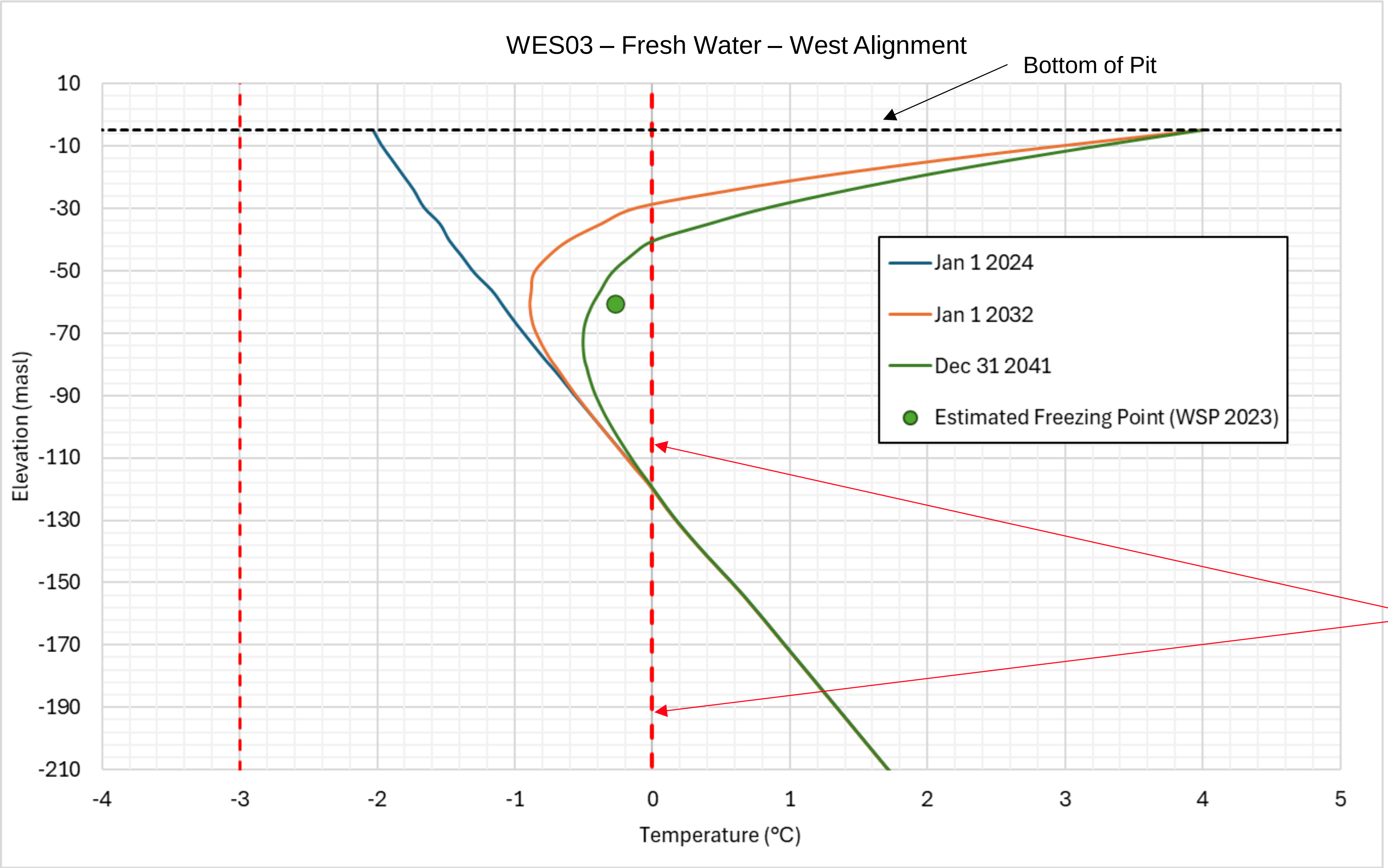
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

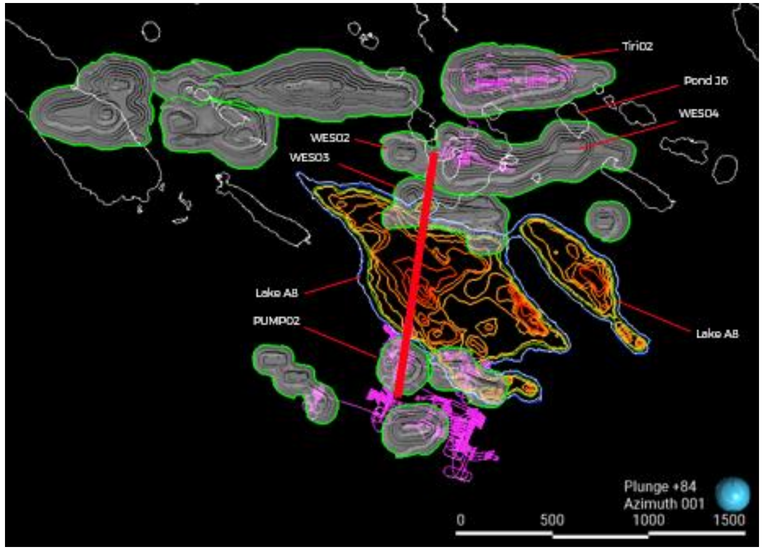
CONSULTANT		YYYY-MM-DD	2025-02-21
		PREPARED	GW
		REVIEWED	FJ
		APPROVED	FJ

PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2041 – West Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-24**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

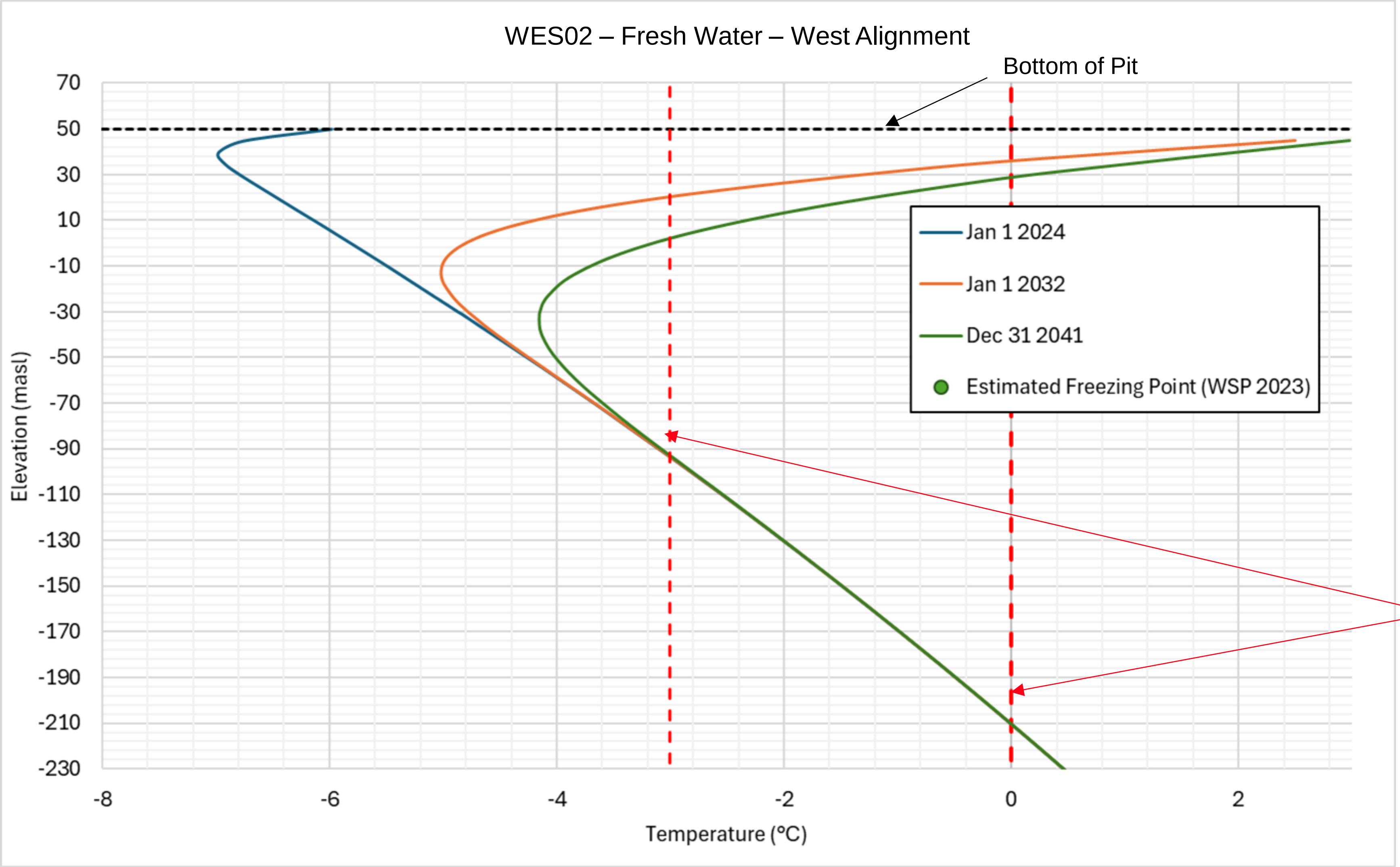
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

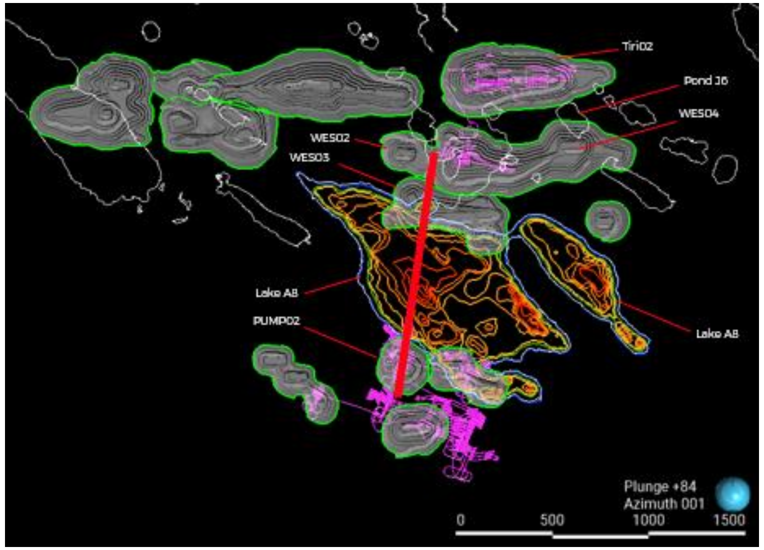
TITLE

Temperature Profile for WES03 – West Alignment Using Fresh Water

CONSULTANT		
	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-25**





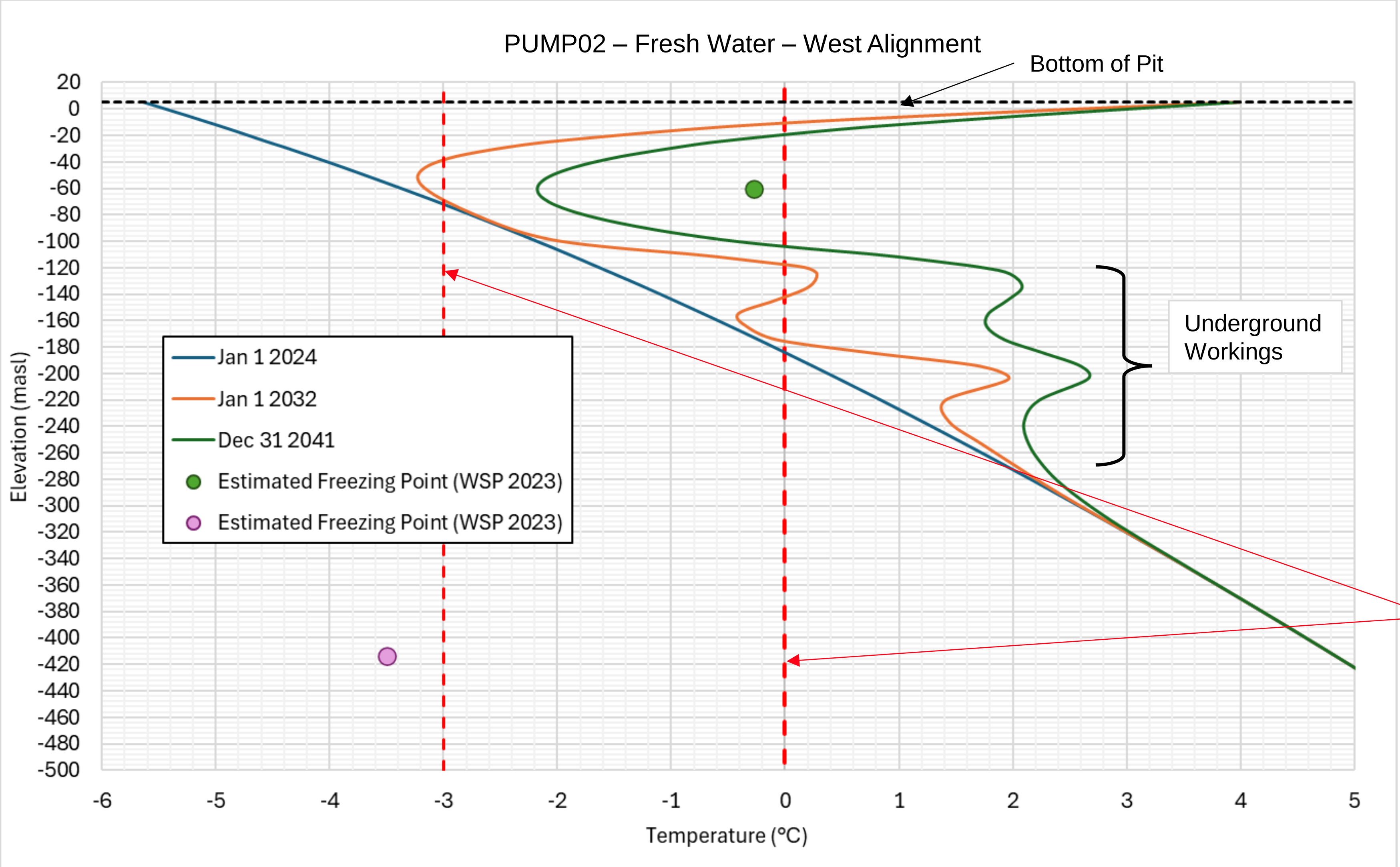
Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

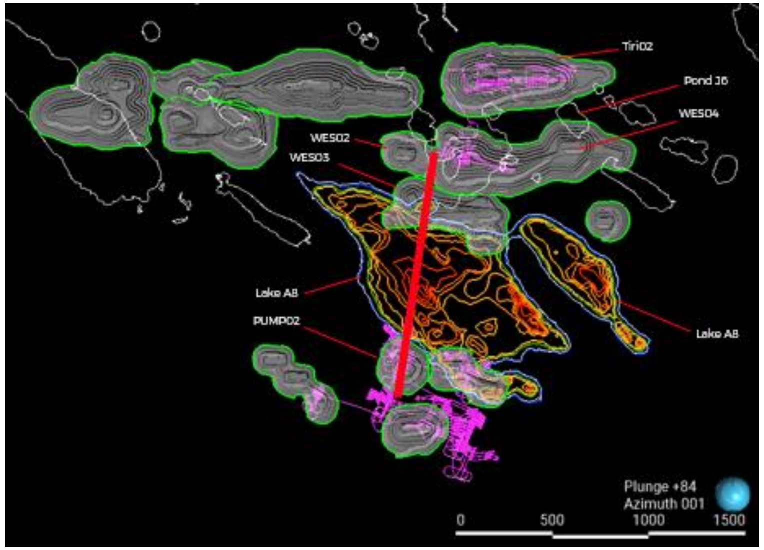
PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Temperature Profile for WES02 – West Alignment Using Fresh Water

CONSULTANT		
	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-26**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

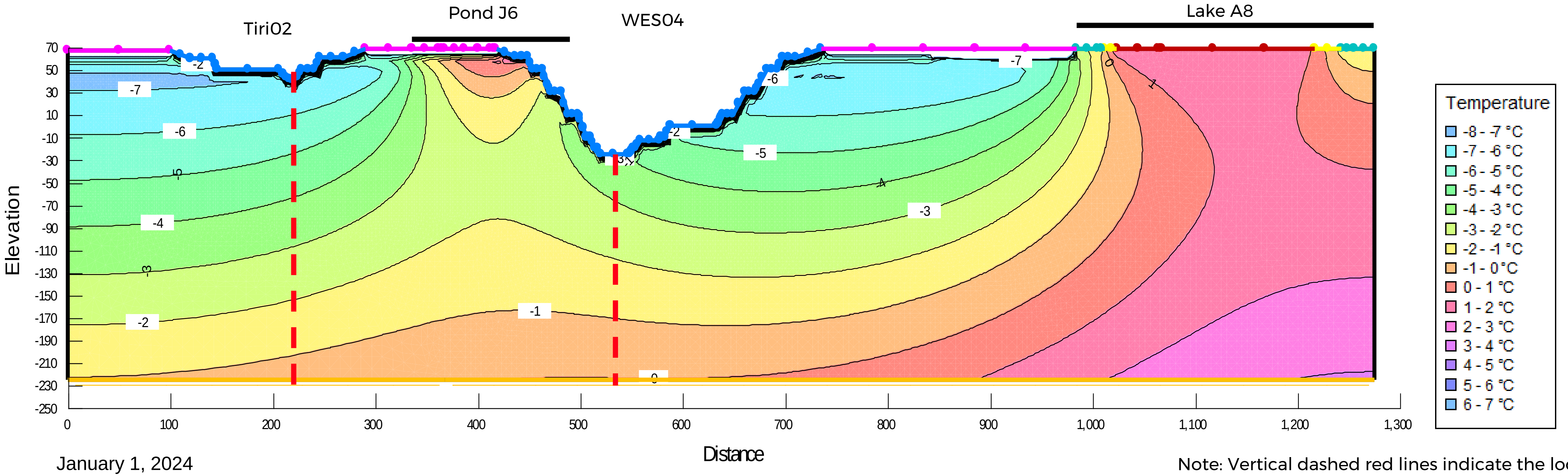
TITLE

Temperature Profile for PUMP02 – West Alignment Using Fresh Water

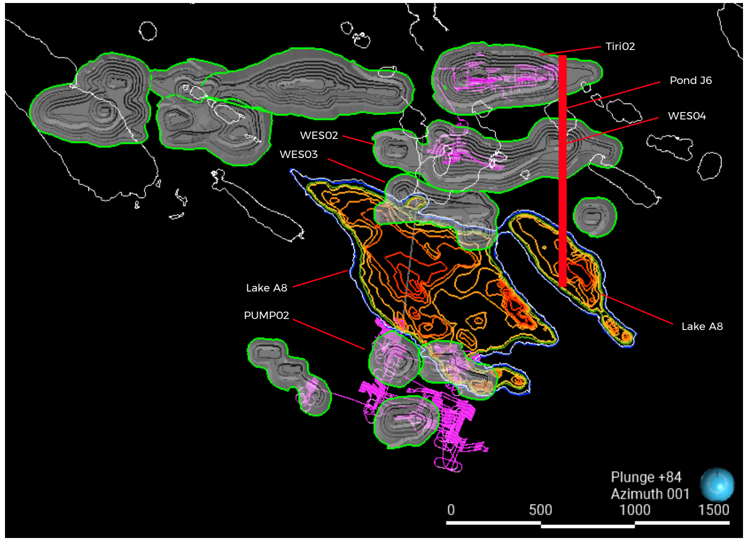
CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-27**



January 1, 2024



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

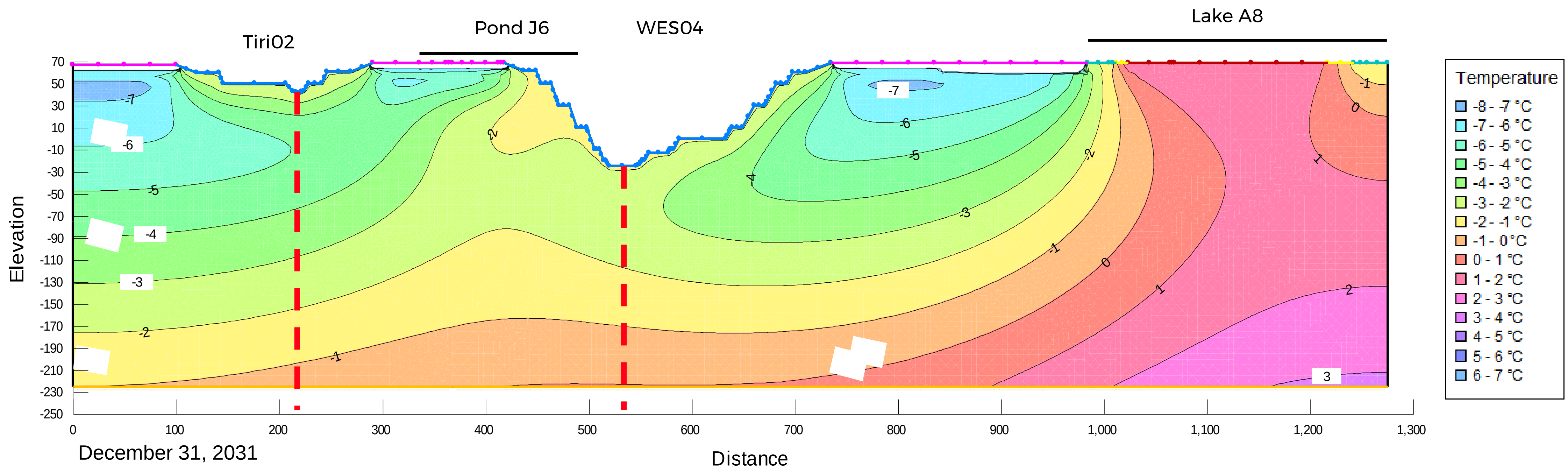
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

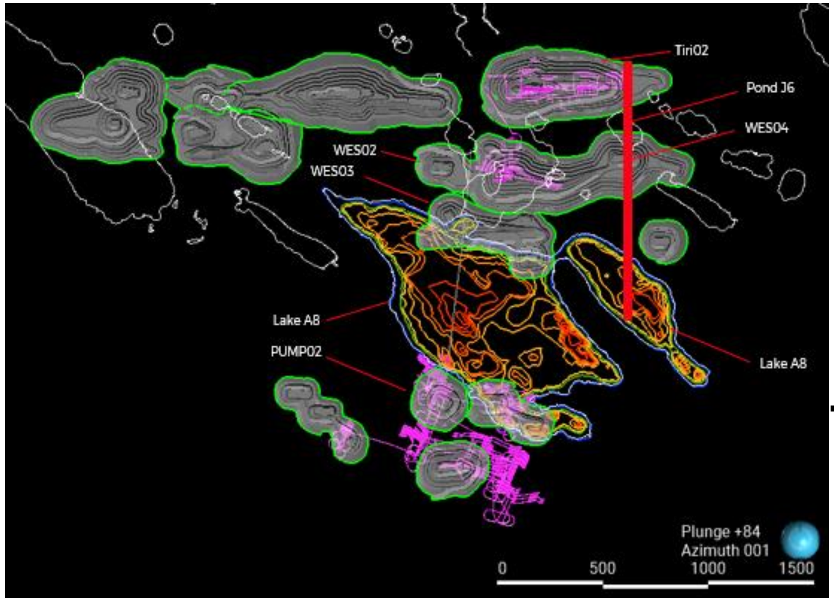
CONSULTANT		YYYY-MM-DD	2025-02-21
		PREPARED	GW
		REVIEWED	FJ
		APPROVED	FJ

PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q1 2024 – PLOM WES04 Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-28**





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

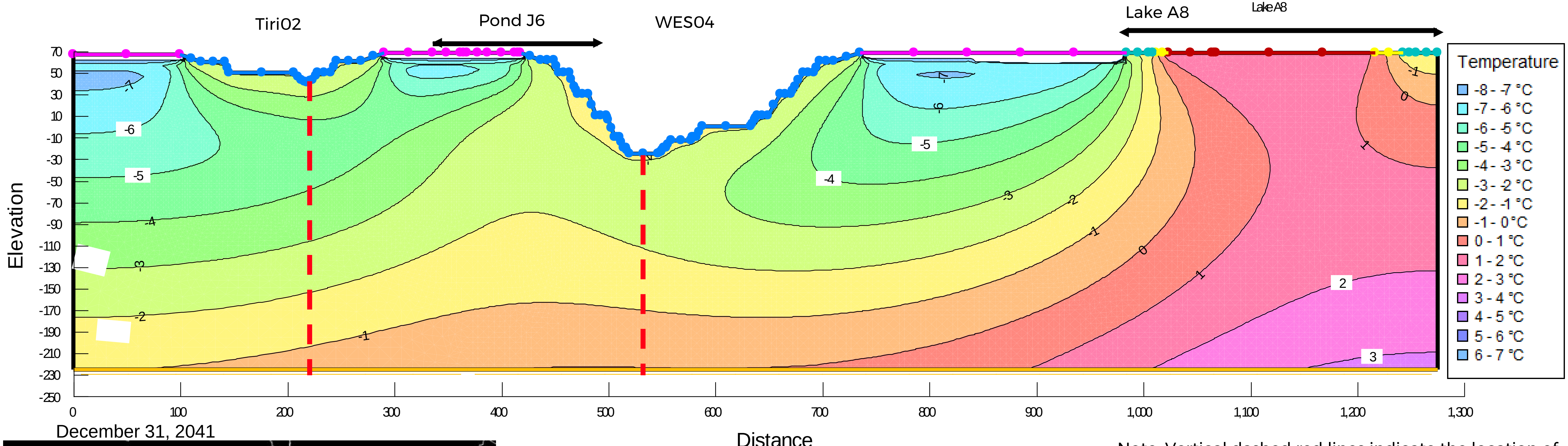
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

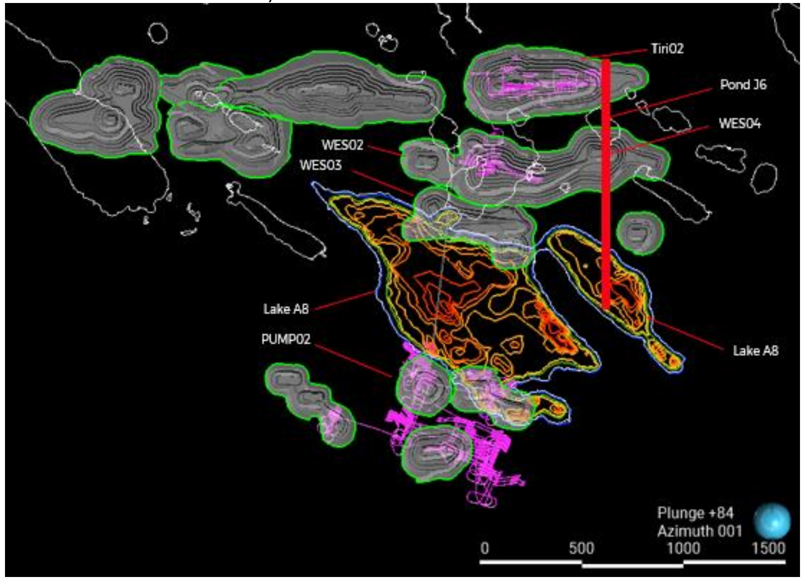
CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2031 – PLOM WES04 Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-29**





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT		
	YYYY-MM-DD	2025-02-21
	PREPARED	GW
	REVIEWED	FJ
	APPROVED	FJ

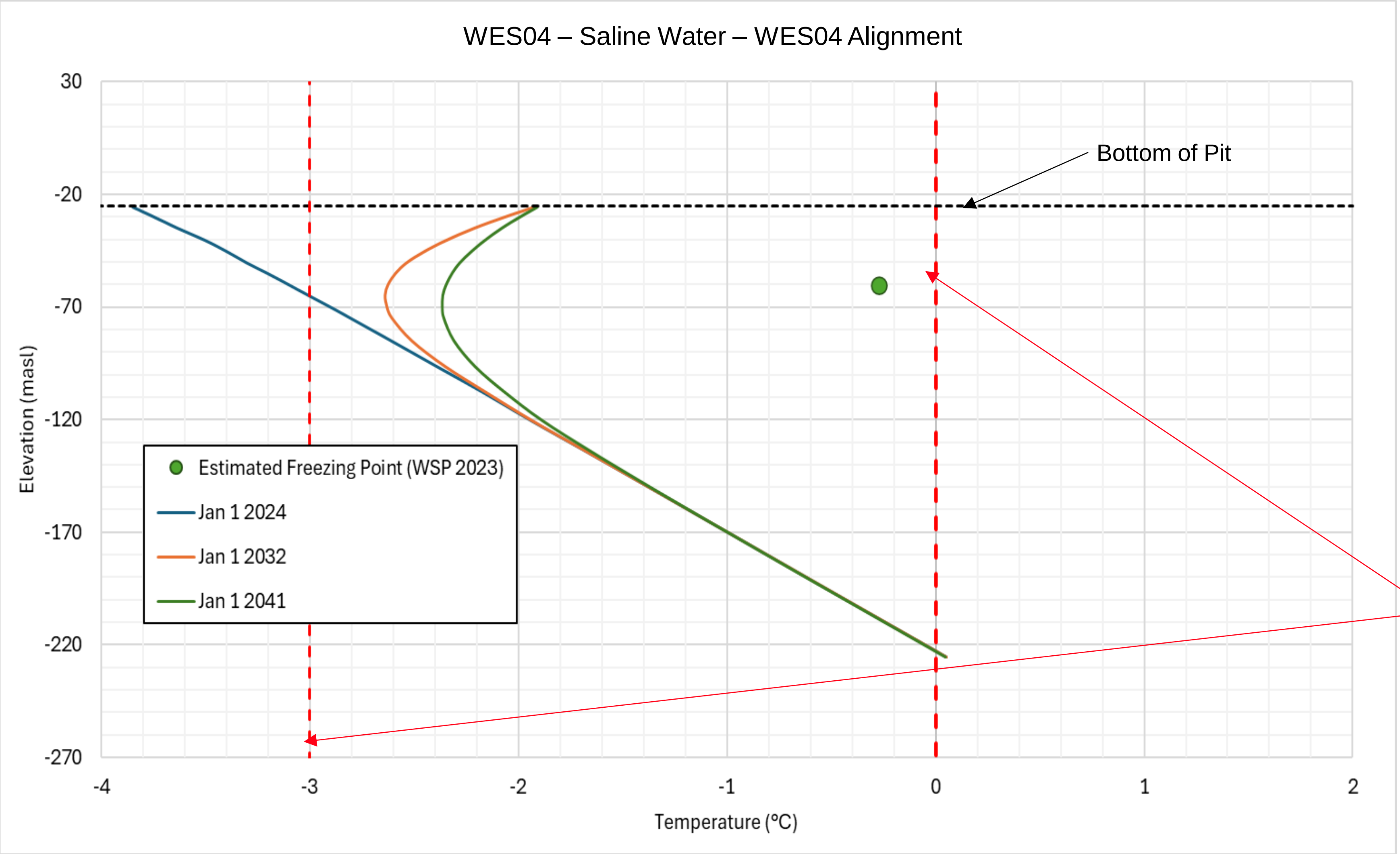
PROJECT

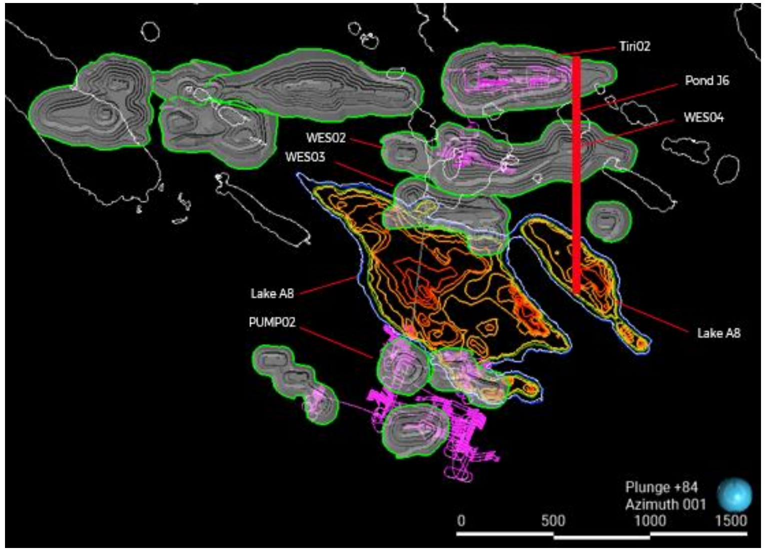
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Thermal Regime at Q4 2041 – PLOM WES04 Alignment Using Saline Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-30**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

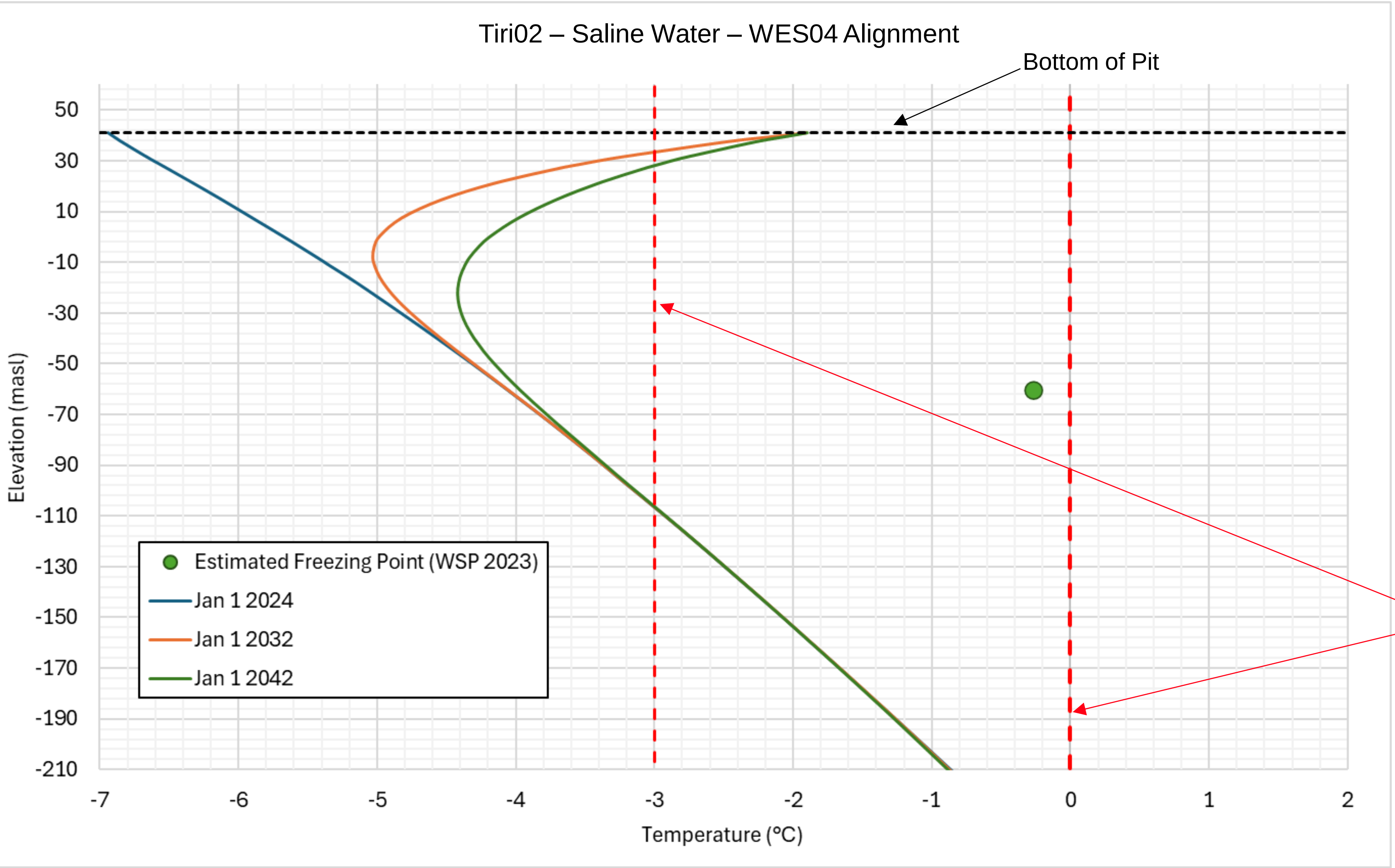
TITLE

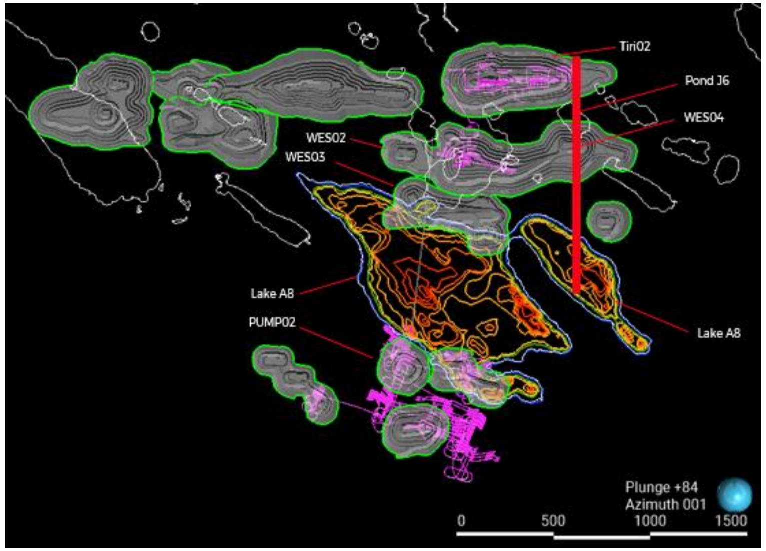
Temperature Profile for WES04 – PLOM WES04 Alignment Using Saline Water

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-31**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

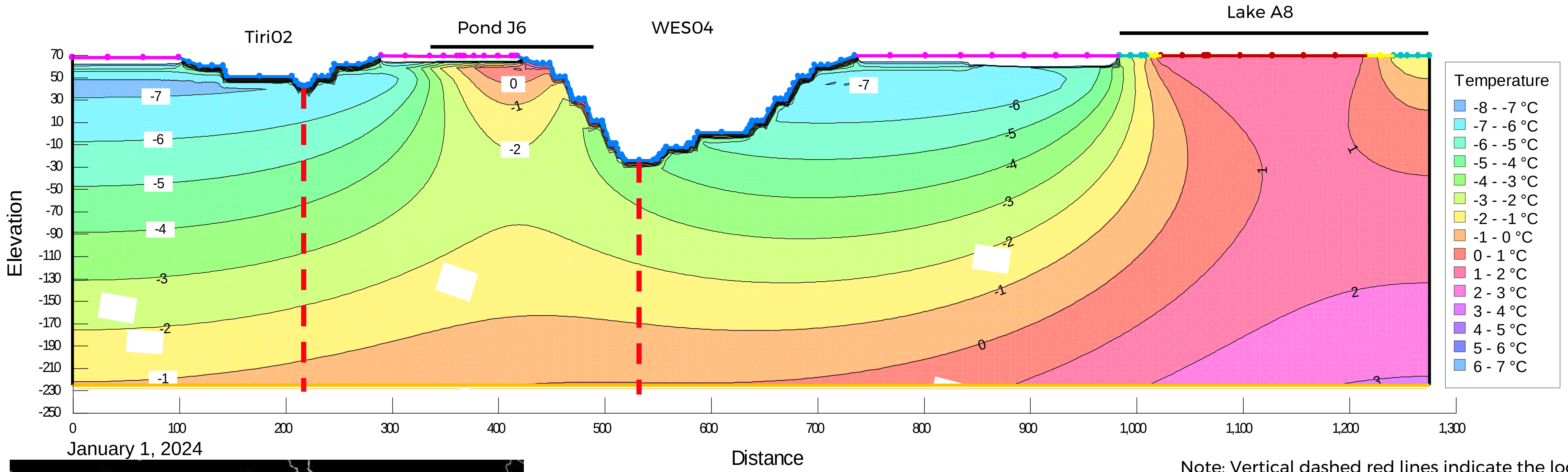
PROJECT	MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING
TITLE	Temperature Profile for Tiri02 – PLOM WES04 Alignment Using Saline Water

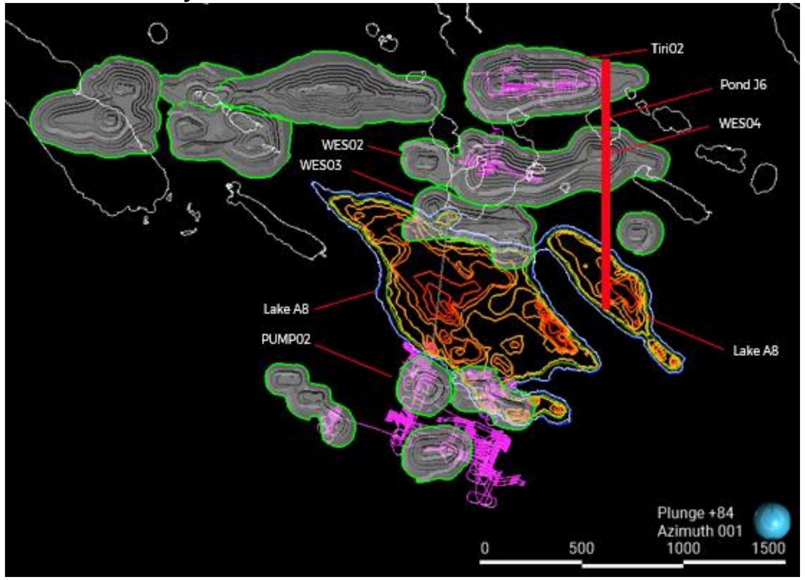
PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-32**

CONSULTANT

wsp

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

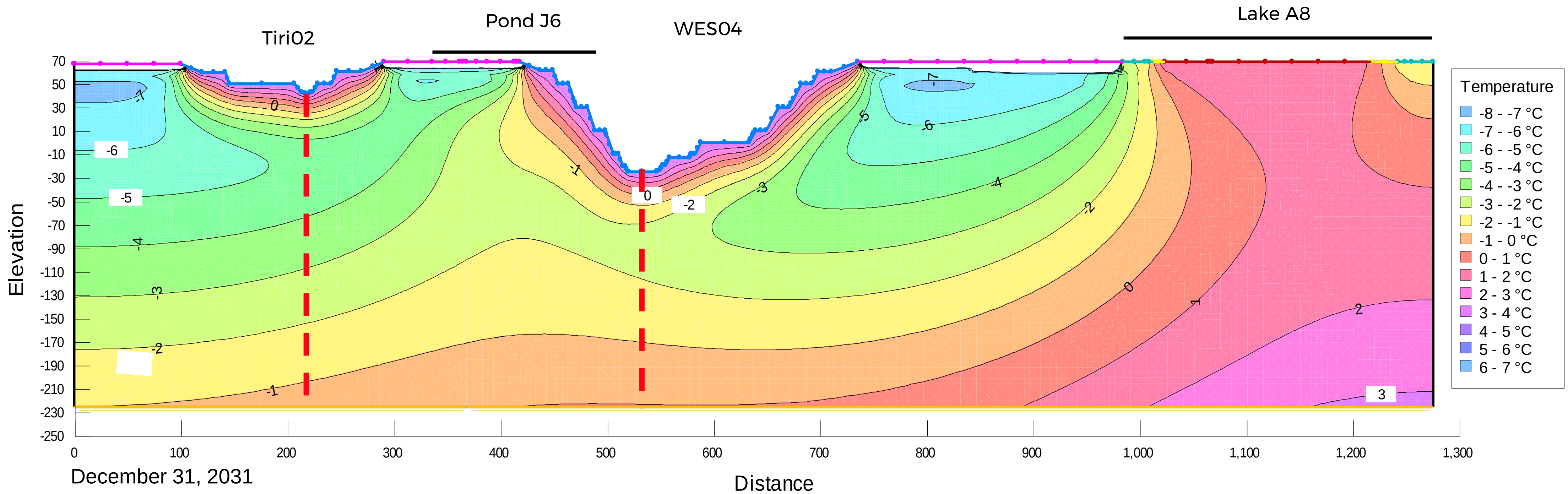
PROJECT

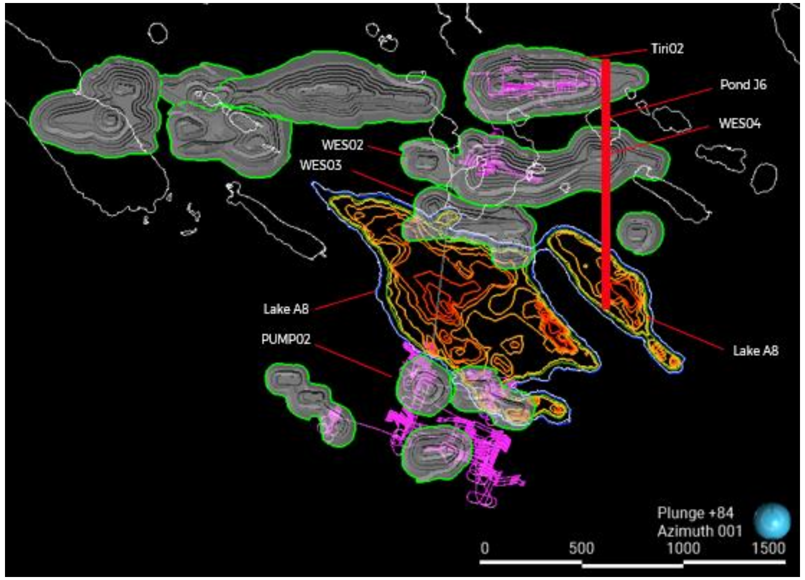
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Thermal Regime at Q1 2024 – PLOM WES04 Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-33**





Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

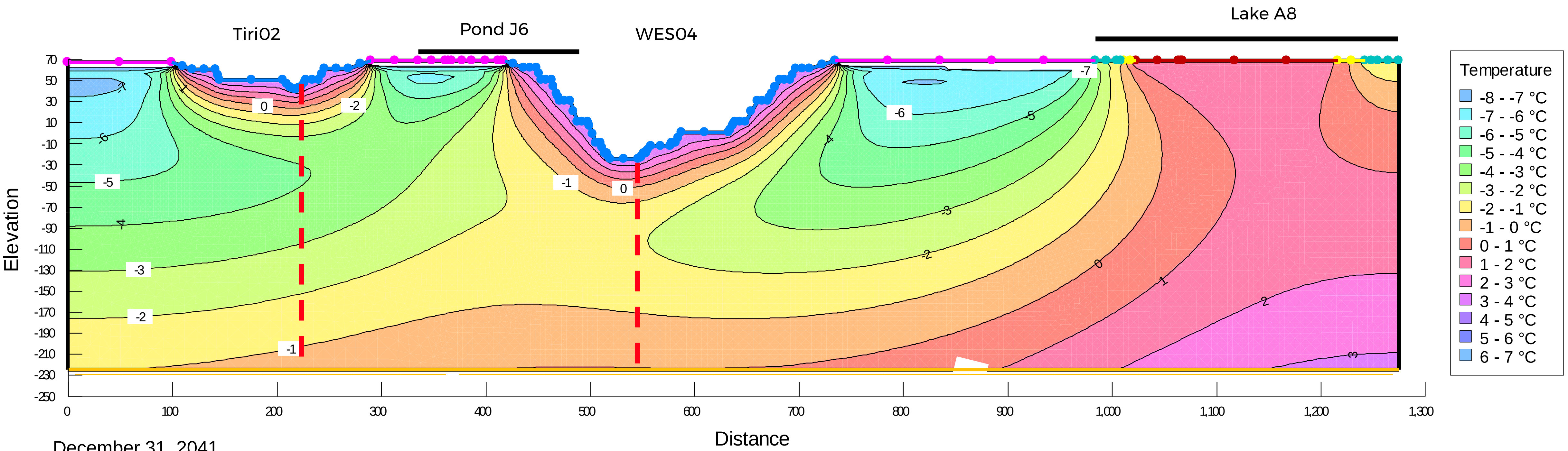
PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

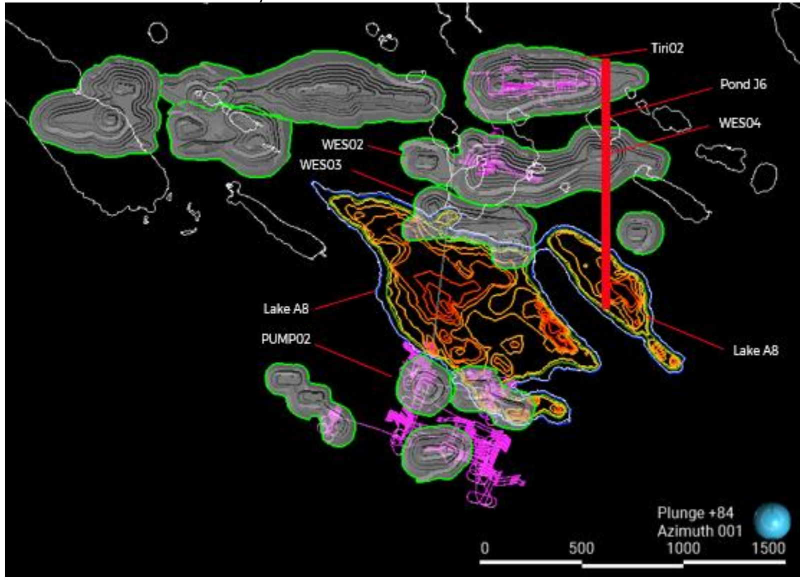
TITLE

Thermal Regime at Q4 2031 – PLOM WES04 Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-34**



December 31, 2041



Note: Vertical dashed red lines indicate the location of temperature profiles featured in subsequent figures.

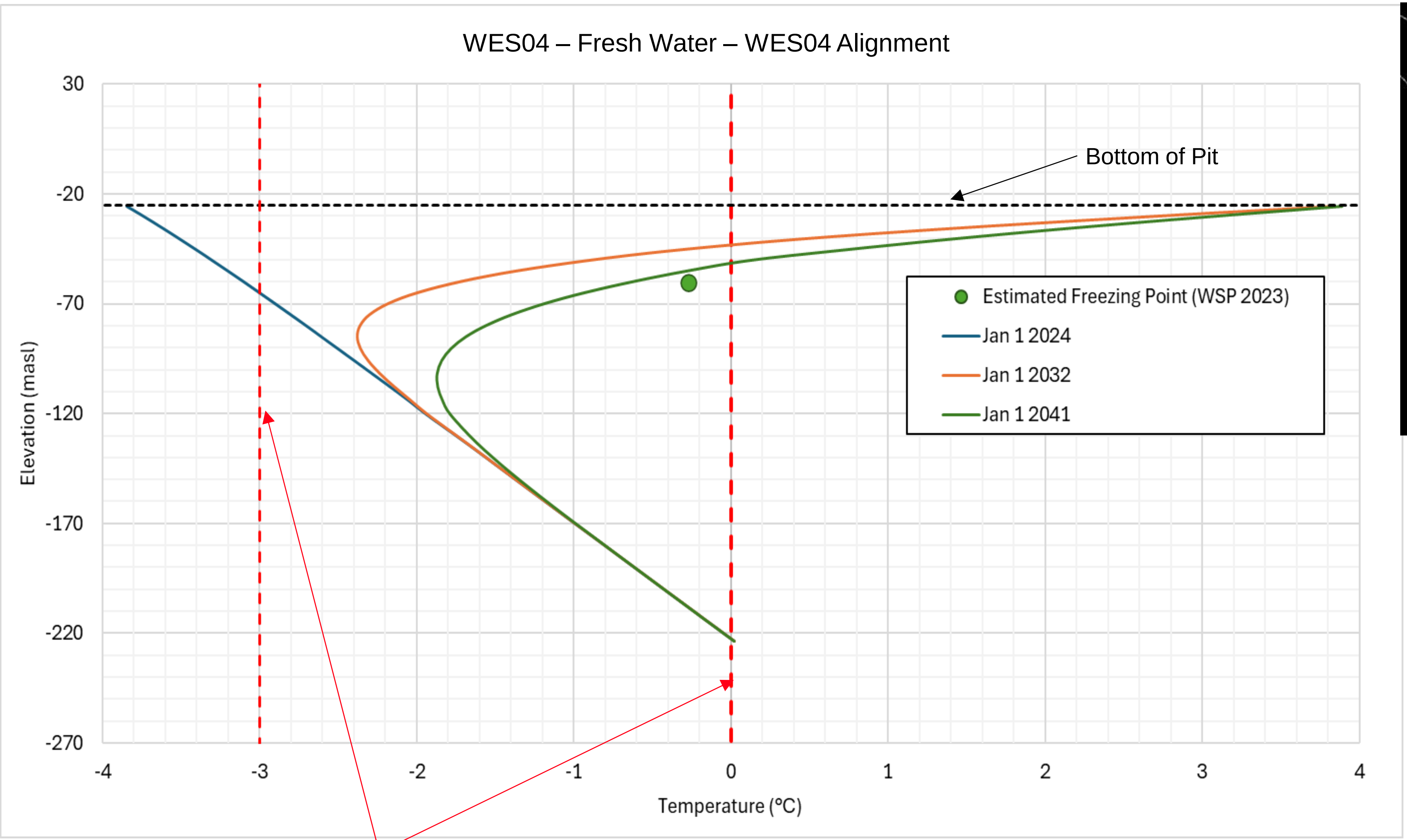
Elevation and distance are provided in units of meters above sea level (masl) and meters respectively.

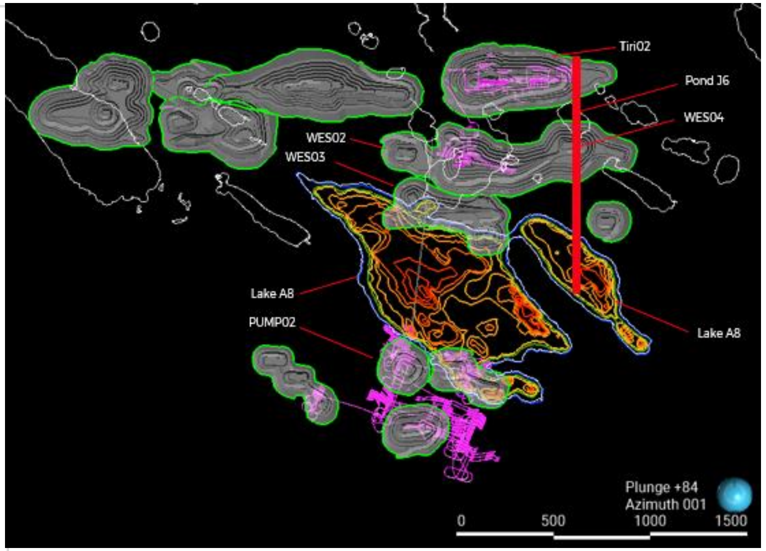
CONSULTANT	
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Thermal Regime at Q4 2041 – PLOM WES04 Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-35**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

CONSULTANT

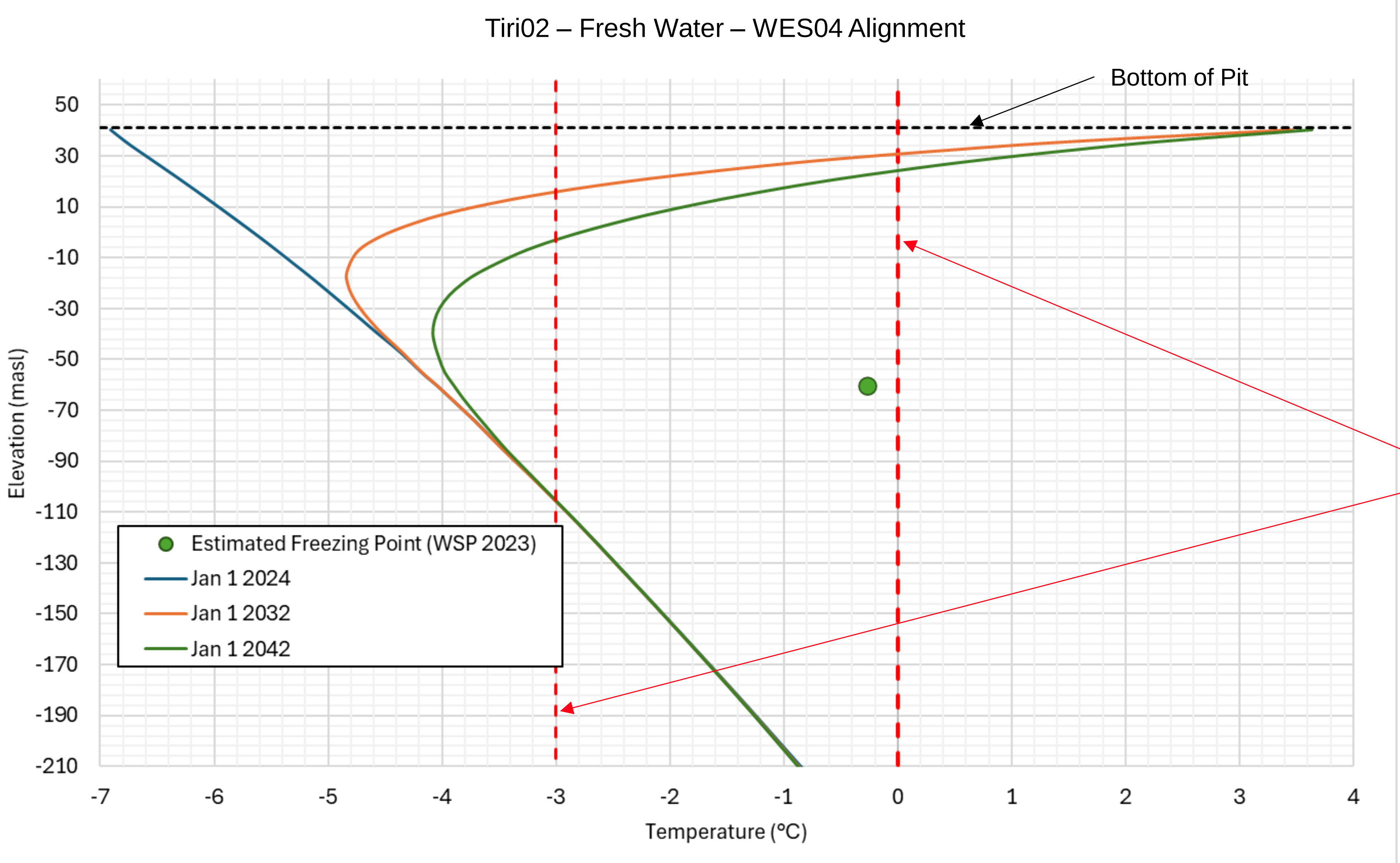
wsp

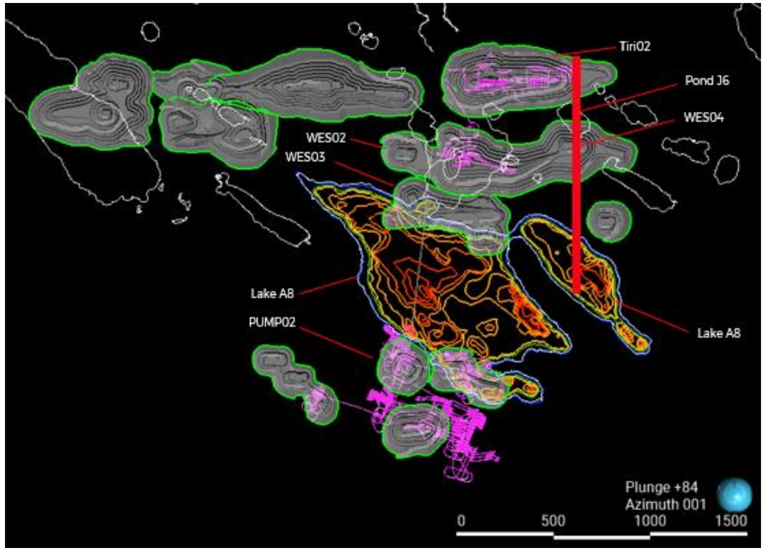
YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT
MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE
Temperature Profile for WES04 – PLOM WES04 Alignment Using Fresh Water

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-36**





Note: Temperatures of 0˚C and -3˚C represent the freezing point assuming the groundwater underneath each pit is fresh and saline, respectively.

PROJECT

MELIADINE THERMAL ASSESSMENT OF PROPOSED PIT FLOODING

TITLE

Temperature Profile for Tiri02 – PLOM WES04 Alignment Using Fresh Water

CONSULTANT

YYYY-MM-DD	2025-02-21
PREPARED	GW
REVIEWED	FJ
APPROVED	FJ

PROJECT NO.	TASK	REV	FIGURE
CA0048562.4439	1000 – 5A	0	**A-37**

APPENDIX B: Predicted Open Pit and Underground Mine Groundwater Flow

TECHNICAL MEMORANDUM

DATE May 20, 2025 **Reference No.** CA0042236.1659-MEL2025-018-TM-Rev0

TO Cecilia Zafiris
Agnico Eagles Mines Limited

FROM Jennifer Levenick and Don Chorley **EMAIL** jennifer.levenick@wsp.com; don.chorley@wsp.com

MELIADINE MINE – PREDICTED OPEN PIT AND UNDERGROUND MINE GROUNDWATER FLOW INTERACTIONS

1 INTRODUCTION

This technical memorandum presents an assessment of pit lake and groundwater interaction near the Pump and Tiriganiaq undergrounds at the Meliadine Gold Mine (herein referred to as the Mine). The objective of the study was to evaluate the potential seepage of pit lake water to the undergrounds with saline water storage at WES02/WES04, WES03 and Pump02. Saline water storage has the potential to degrade the permafrost below these pits and enhance migration of water from these pits to the underground.

2 BACKGROUND

2.1 Permafrost and Cryopeg Depth

Permafrost is defined as soil or rock where temperatures remain at or below 0°C for at least two consecutive years. The freezing temperature of water decreases when pressure and salinity increase. Consequently, within the permafrost unfrozen ground can be encountered at temperatures less than 0°C and in isolated pockets. These areas of unfrozen groundwater above the base of the permafrost (0°C isotherm) are referred to as cryopeg.

Groundwater inflows to the mine are expected to be negligible until mining extends below the depth of the permanently frozen portion of the permafrost into the cryopeg. The depth at which these inflows may occur will depend on the thickness of the cryopeg, and the freezing point depression caused by the groundwater salinity.

Deep groundwater samples collected near Tiriganiaq have a relative uniform TDS concentration of 55,000 mg/L. Considering the effect of salinity, the freezing point depression is estimated to be approximately -3 degrees, and cryopeg conditions are assumed between the 0-degree and -3-degree isotherm (WSP 2024b). This is expected to be too low of a temperature range near fresh-water lakes where groundwater salinity may be reduced (and the lower bound of the range raised); however, it is a conservative assumption for the assessment of groundwater inflows to underground developments (i.e., overpredicts inflows due to the assumption of less fully frozen ground). Near the Tiriganiaq underground away from the lakes, the top of the cryopeg (base of the frozen permafrost) would be approximately 225 metres below ground surface (mbgs).

2.2 Thermal Assessment of Proposed Pit Flooding

WSP conducted thermal assessments of the future Wes02, Wes03, Wes04, Tir02, and Pump02 to evaluate the potential effect of temporary saline water storage on the underlying permafrost conditions beneath each pit during operations until the end of mining in 2041 (WSP 2025).

The storage of saline water in the pits was modelled in two dimensions (2D) to assess the potential evolution of permafrost thawing that could develop underneath each pit during operations. Each simulated 2D cross-section was evaluated assuming each pit stored saline water from now until the end of operations (Q4 2041) with a constant pond elevation. Underground workings were added to the simulations progressively and assuming a minimum crown pillar of 100 m below the pits (no underground workings within 100 m of the base of each pit).

Table 1: Summary of Construction and Flooding Schedule for Meliadine Pits and Underground Workings

Pit	Ultimate Flooding Elevation[a] (masl)
TIR02	65.4
WES02	58.1
WES03	58.1
WES04	63.0
PUMP02	55.9

(a) Spill point elevation was used based on values provided by Agnico Eagle in “SPILL POINTS AND VOLUMES_ALL PITS_PLOM.xlsx”.
masl = meters above sea level; N/A = not applicable.

Three model cross-sections were developed for the thermal analysis, the alignment of which are shown on Figure 1.

- East Alignment: captures the deepest portions of Tiri02, WES02, and portions of WES03 outside of Lake A8.
- West Alignment: captures the deepest portion of WES03, which is constructed in Lake A8, deepest portion of PUMP02, and the western portion of WES02.
- WES04 Alignment: captures the deepest portion of WES04 aligned with Lake A8 and Lake J6, as well as the eastern portion of Tiri02.

Based on the thermal modelling, the following observations are noted:

- Tiri02, Wes02 and Pump02 are presently located within permafrost. Wes03 has cryopeg and/or unfrozen rock below the west wall where it intersects with Lake A8 footprint. Wes04 has cryopeg and/or unfrozen rock under a small portion of the north wall where it intersects with Pond J6.
- Tiri02 is predicted to remain within permafrost at the end of mining with saline water storage. Although some local permafrost thawing occurs below the pit, it does not extend sufficiently deep to connect to the underground and underlying deeper flow system.

- Cryopeg will develop below the base of Wes02 and Pump 02 and will expand below Wes03 and Wes04 with development of the underground and placement of saline water in the pits. The expanded cryopeg development may allow for the seepage of pit lake water to the underground that will need to be managed during operations. Seepage from pit lakes at closure has previously been assessed assuming full permafrost degradation below the pits (WSP 2024c).

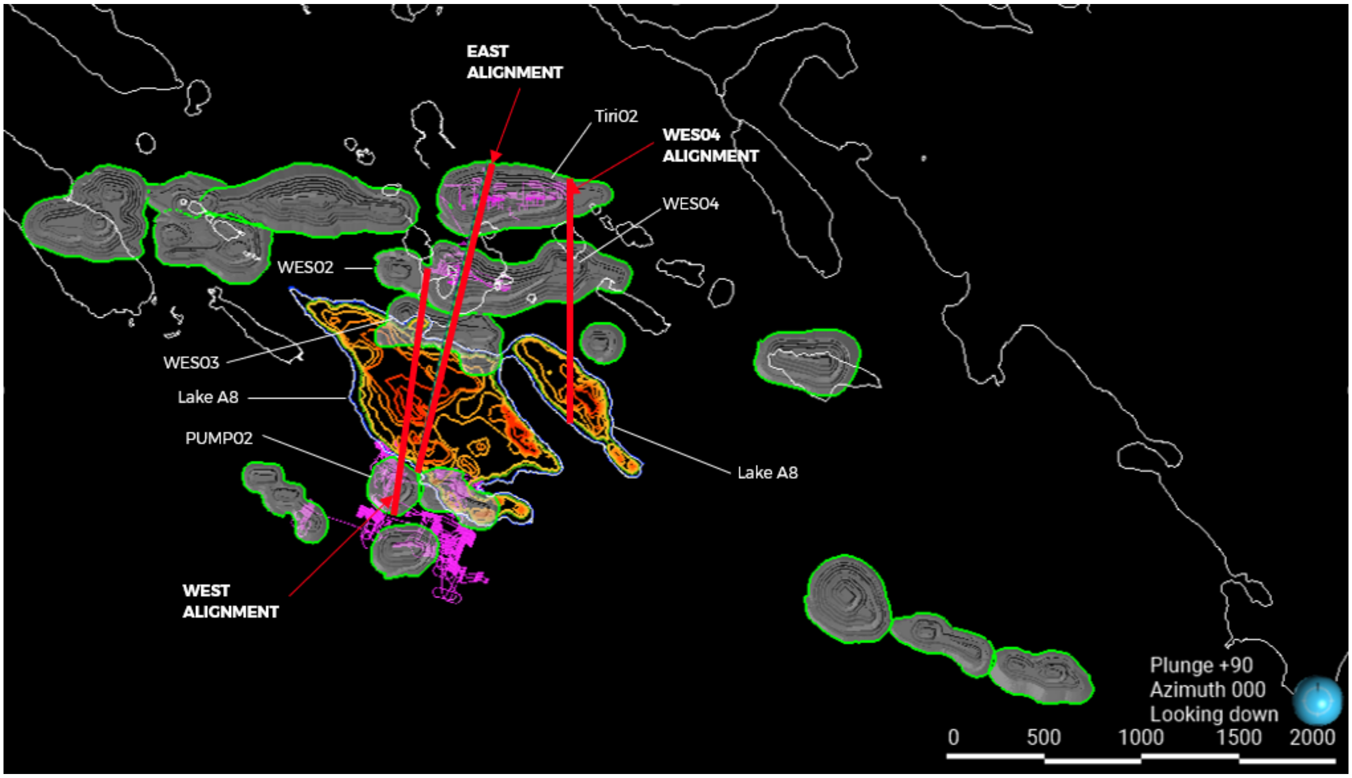


Figure 1: Pan View of Thermal Model Sections

2.3 Previous Groundwater Modelling – Operations

A three-dimensional (3D) groundwater model exists for the project, which was developed to estimate the potential groundwater inflow quantity and groundwater quality (total dissolved solids) associated with the development of the open pits and undergrounds. The groundwater model was developed in Feflow, and its development, calibration and prediction results are summarized in a separate report (WSP 2024b).

In the 3D groundwater model, the open pits are assumed to be fully dewatered; therefore, no seepage loss from the open pits to the underground was predicted to occur during operations. For closure predictions (2024c), full permafrost degradation below the open pits was assumed, and seepage loss from the pits to adjacent surface water bodies was predicted. The closure predictions were not altered based on the assumption of saline water storage. Supplemental modelling is required during operations only, to predict the potential seepage loss of groundwater to the underground during operations, which may affect water management planning. Previous inflow predictions to the underground without the pit lake seepage is summarized in Table 2 and Table 3.

Table 2: Predicted Base Case Groundwater Inflow

Year	Predicted Groundwater Inflow (m^3/day)		Predicted TDS (mg/L)	
	Tiriganiaq	Pump	Tiriganiaq	Pump
2022	400	-	58,000	-
2023	575	-	58,000	-
2024	700	-	56,500	-
2025	975	-	53,500	-
2026	1,450	<25	50,500	58,000
2027	1,625	50	50,500	58,500
2028	1,375	100	54,000	53,000
2029	1,350	125	55,000	49,500
2030	1,425	125	55,000	49,000
2031	1,425	125	55,000	49,000

Table 3: Predicted Upper Bound Groundwater Inflow

Year	Predicted Groundwater Inflow (m^3/day)		Predicted TDS (mg/L)	
	Tiriganiaq	Pump	Tiriganiaq	Pump
2022	550	-	58,000	-
2023	750	-	57,500	-
2024	925	-	56,000	-
2025	1,425	-	53,000	-
2026	2,200	<25	51,500	58,500
2027	2,500	75	52,500	58,000
2028	2,225	125	56,000	55,000
2029	2,100	150	58,000	53,000
2030	2,050	200	60,000	50,500
2031	2,150	175	60,000	50,500

3 GROUNDWATER MODELLING

3.1 Model Approach

To estimate the potential seepage from the pits with saline water storage, 2D cross-section models were developed in FEFLOW based on the thermal modelling results (Section 2.2) and using the interpreted hydrostratigraphy and groundwater flow conditions in the previously developed 3D model. Predictions were made for conditions at the end of mining (Year 2041), which would be an estimate of the maximum seepage to the underground (i.e., earlier years would have less permafrost degradation, which would reduce seepage loss to the underground).

In consideration of element size in the 3D model, and the vertical flow direction of the seepage loss to the underlying underground development, 2D cross-sectional models were developed to predict seepage loss from the pits to undergrounds (Pump and Tiriganiaq). The predicted flow was then upscaled or multiplied by the full width of the pit perpendicular to the section line to estimate the total seepage loss. This is considered to be conservative as the pit depth will shallow out towards the crests of the pits, reducing the seepage loss to the underlying bedrock relative to what is predicted by the 2D models that intersect the deeper portion of the pits.

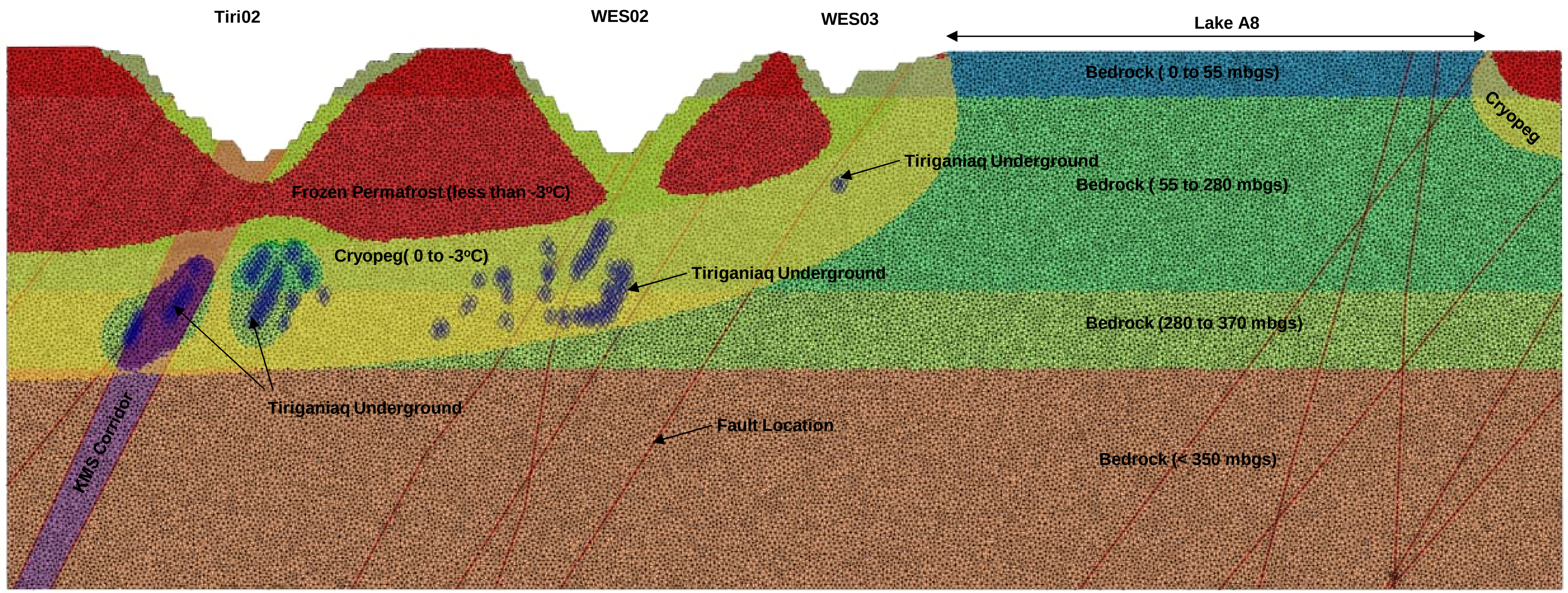
Two cross-sectional models were developed, as presented on Figures 1 and 2:

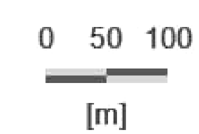
- East Alignment: Aligns with East Alignment in Thermal Model. Captures the deepest portions of Tiri02 and WES02, and portions of WES03 outside of Lake A8. This section was used to predict the seepage loss from Tiri02, Wes02 and Wes04, which is immediately adjacent to Wes02. Wes02 is the deeper of the two adjacent pits and therefore flow from Wes02 to the underlying underground was used to predict the combined flow from Wes02 and Wes04 (i.e., the 2D seepage loss was multiplied by the combined width of Wes02 and Wes04 perpendicular to the section line).
- West Alignment: Aligns with West Alignment in Thermal Model. Captures the deepest portion of WES03, which is constructed in Lake A8, deepest portion of PUMP02, and the western portion of WES02. This section was used to predict the seepage loss from WES03 and PUMP02.

3.2 Model Domain and Discretization

The extent of the 2D groundwater models was selected to be identical to the thermal model sections, which is reasonable for the prediction of vertical seepage from the pit lakes to the underlying undergrounds. The model domains include approximately 80,000 elements each, with an approximate element size of 5 m. The model domains are shown on Figure 2 and Figure 3.

East Alignment –Year 2041 Expected Permafrost Conditions with Saline Water Storage





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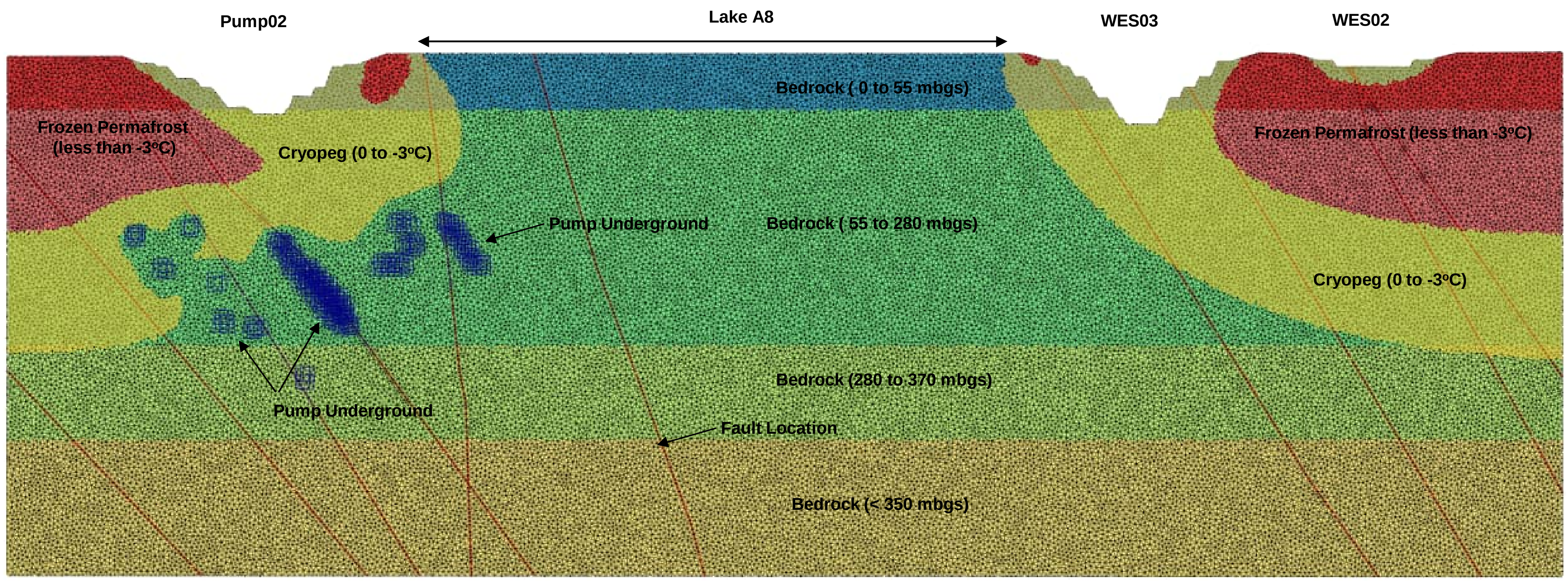
TITLE **EAST ALIGNMENT** **MODEL DOMAIN AND PERMAFROST ASSUMPTIONS** **YEAR 2041**			
PROJECT NO. CA0042236.1659	PHASE	REV. 0	FIGURE **2**

West Alignment – Year 2041 Expected Permafrost Conditions with Saline Water Storage



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MODEL DOMAIN AND PERMAFROST ASSUMPTIONS
YEAR 2041

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3.3 Hydrostratigraphy and Model Parameters

The hydraulic conductivity of the hydrostratigraphic units present along the cross-sections is unchanged from the previously calibrated 3D model, which are summarized on Table 4 and Table 5. Faults within the Project area generally range from 2 to 6 m thick. An exception is the Pyke Fault and KMS corridor that have larger interpreted widths (15 to 100 m). With the exception of the Pyke Fault and KMS corridor which have larger widths that can be represented using model elements, faults were represented in the model using discrete feature elements with their transmissivity set to match the fault properties in the 2D model.

To mitigate groundwater inflows, Agnico Eagle actively grouts faults, joints and other structures within the rock that contribute to inflow to the underground. To simulate this grouting, elements representative of the faults within 30 m of the underground were assigned an effective hydraulic conductivity of 1×10^{-8} m/s.

Table 4: Calibrated Hydraulic Properties – Competent Bedrock

Hydrostratigraphic Unit	Depth Interval (mbgs)	Hydraulic Conductivity[a] (m/s)
Shallow Sedimentary Rock Formations	0 to 55	3×10^{-6}
Sedimentary Rock Formations	55 to 280	7×10^{-9}
	280 to 370	3×10^{-9}
	370 to 1500	3×10^{-9}
Shallow Sedimentary Rock Formations	0 to 55	3×10^{-6}
Mafic Volcanic Rock Formations	55 to 280	7×10^{-9}
	280 to 370	2×10^{-9}
	370 to 1500	3×10^{-10}

(a) Linearly decreasing hydraulic conductivity with temperature is assumed within the cryopeg zone with a full order of magnitude decrease assumed at the top of the basal cryopeg, and hydraulic conductivity equivalent to unfrozen rock at the bottom of the basal cryopeg.

Table 5: Calibrated Hydraulic Properties – Enhanced Permeability Zones

Hydrostratigraphic Unit	Primary Deposit Area	Depth Interval (m)[b]	Thickness (m)	Hydraulic Conductivity (m^2/s)[a]
Lower Fault Zone (Outside of KMS Corridor)	Tiriganiaq	0 to 1000	20	1×10^{-7}
Lower Fault Zone (in KMS Corridor)	Tiriganiaq	0 to 1000	5	2×10^{-7}
RM-175	Tiriganiaq	0 to 1000	5	5×10^{-8}
KMS Fault Corridor	Tiriganiaq	0 to 1000	100 (variable)	5×10^{-7}
North Fault	Tiriganiaq	0 to 1000	5	5×10^{-7}
A	Wesmeg	0 to 1000	6	5×10^{-7}
B	Wesmeg	0 to 1000	5	5×10^{-7}
C	Wesmeg	0 to 1000	3	1×10^{-6}
D	Wesmeg	0 to 1000	5	5×10^{-7}
Pyke Fault	Pump	0 to 1000	15	2×10^{-7}
AP0	Pump	0 to 1000	3	1×10^{-6}
ENE2	Pump	0 to 1000	5	5×10^{-7}
ENE3	Pump	0 to 1000	3	1×10^{-6}
UM2	Pump	0 to 1000	6	5×10^{-7}
NW1	Pump	0 to 1000	5	5×10^{-7}
WNW1	F Zone	0 to 1000	3	1×10^{-6}
WNW2	F Zone	0 to 1000	3	1×10^{-6}
UAU2	F Zone	0 to 1000	2	2×10^{-6}
Fault 1	Discovery	0 to 1000	5	1×10^{-6}
Fault 2	Discovery	0 to 1000	5	1×10^{-6}
Fault 3	Discovery	0 to 1000	5	1×10^{-6}

(a) Hydraulic conductivity within the unfrozen permafrost zone is assumed to be lower than in the deeper unfrozen rock. Linearly decreasing hydraulic conductivity with temperature is assumed within this zone with a full order of magnitude decrease assumed at the top of the basal cryopeg, and hydraulic conductivity equivalent to unfrozen rock at the bottom of the basal cryopeg.

(b) Where fault hydraulic conductivity is less than shallow rock, the fault was excluded from 0 to 60 m depth interval. Where fault hydraulic conductivity is greater than shallow rock, fault was be included within 0 to 60 m depth interval.

3.4 Model Boundary Conditions

Model boundary conditions provide a link between the model domain and the surrounding hydrologic and hydrogeologic systems. Two types of flow boundary conditions were used in the model: specified head and no-flow (zero-flux) boundaries. These boundaries are summarized below.

Specified head boundaries were assigned to the left and right boundaries of the model domain to represent inflow and outflow out of the sides of the model domain. The assigned hydraulic head was set based on the predicted hydraulic heads in the three-dimension model at the end of mining at the location of cross-section end points. Overall, this boundary condition will not significantly affect the seepage predictions, as the primary control is the pit lake elevation, the depth of the underlying underground, and the transmissivity of the bedrock between the pit lake and the underground with permafrost degradation.

Specified head boundaries were used to represent the pit lakes. Each of the pit lakes was set according to the pit lake elevation provided by Agnico Eagle (Table 1).

Mine workings in unfrozen bedrock (open pits and TM) were simulated in the model using specified head boundaries constrained to only allow the outflow of water from the surrounding bedrock into the mine (i.e., these boundaries act as seepage faces). Cryopeg was represented using elements with slightly reduced hydraulic conductivity relative fully unfrozen bedrock. Linearly decreasing hydraulic conductivity with temperature is assumed within the cryopeg zone with a full order of magnitude decrease assumed at the top of the basal cryopeg, and hydraulic conductivity equivalent to unfrozen rock at the bottom of the basal cryopeg. A reasonable calibration of the 3D model to measured inflows in Tiriganiaq underground was achieved with this assumption, with the underground extending through the cryopeg into the underlying unfrozen bedrock (WSP 2024b).

A no-flow boundary applied along the bottom of the model. Flow at greater depth is expected to be negligible and is not a component being assessed in this work (was previously predicted by the 3D model). The objective is to reasonably predict the incremental increase in flow from pit lake seepage.

Mesh elements representing permafrost (excluding the cryopeg) were deactivated in each model simulation. The permafrost zones were assigned to the model based on the 2D thermal modelling results (WSP 2025).

4 SEEPAGE PREDICTIONS

Table 6 presents a summary of the predicted seepage loss from the pit lakes to the underlying underground based on the groundwater modelling. As indicated in Section 2.2, Tiri02 is predicted to remain within the fully frozen permafrost; therefore’ seepage from the pit lake to the underlying underground is not expected.

For the base case (calibrated model values from the 3D model), the predicted seepage loss at the end of mining (Year 2041) ranges from <10 m^3/day at Pump02 to approximately 35 m^3/day from combined Wes02/04 pits.

In consideration that less hydraulic testing has been conducted in the shallow bedrock presently located in permafrost, an alternative sensitivity scenario was run where the hydraulic conductivity of the shallow bedrock was assumed to be an order of magnitude (factor of 10x) higher than the calibrated model values in the 3D groundwater model. For this sensitivity scenario, predicted seepage loss ranged from approximately 20 m^3/day from Pump02 to 280 m^3/day from the combined Wes02/04 Pits.

Table 6: Predicted Inflow to Tiriganiaq Underground and Pump Underground in 2041 with Saline Water Storage in Tiri0204, Wes02, Wes03 and Pump02

Scenario	Tiriganiaq Underground (m^3/day)					Pump Underground (m^3/day)		
	Tiri02 Seepage	Wes02/04 Seepage	Wes03 Seepage	Groundwater Inflow [a]	Total Flow to Underground	Pump02 Seepage	Groundwater Inflow [a]	Total Flow to Underground
Base Case	-	35	20	1,425	1,480	<10	125	135
Sensitivity	-	280	200	2,150	2,630	20	175	195

Note:

(a) Groundwater inflow rates to underground (not from pit seepage) are from the 3D groundwater model (Base Case and Upper Bound scenarios) (see Section 2.3; WSP 2024b).

5 SUMMARY

Thermal modelling (WSP 2025) indicates Tiri02, Wes02 and Pump02 are presently located within permafrost. Wes03 has cryopeg and/or unfrozen rock below the west wall where it intersects with Lake A8 footprint. Wes04 has cryopeg and/or unfrozen rock under a small portion of the north wall where it intersects with Pond J6.

Thermal modelling predicts Tiri02 will remain within permafrost at the end of mining with saline water storage. Although some local permafrost thawing occurs below the pit, it does not extend sufficiently deep to connect to the underground and underlying deeper flow system. Cryopeg is predicted to develop below the base of Wes02 and Pump 02 with saline water storage in the pits and is predicted to expand below Wes03 and Wes04.

For the base case (calibrated model values from the 3D model), the predicted seepage loss from the pits with the permafrost degradation ranges from <10 m^3/day at Pump02 to approximately 35 m^3/day from combined Wes02/04 pits. These predictions were made for conditions at the end of mining (Year 2041), which would be an estimate of the maximum seepage to the underground (i.e., earlier years would have less permafrost degradation, which would reduce seepage loss to the underground).

In consideration that less hydraulic testing has been conducted in the shallow bedrock presently located in permafrost, an alternative sensitivity scenario was run where the hydraulic conductivity was assumed to be an order of magnitude (factor of 10x) higher than the calibrated model values in the 3D groundwater model. For this sensitivity scenario, predicted seepage loss at the end of mining ranged from approximately 20 m^3/day from Pump02 to 280 m^3/day from the combined Wes02/04 Pits.

6 CLOSURE

The reader is referred to the Study Limitations section, which follows the text and forms an integral part of this memorandum.

We trust that this report provides the information that you require at this time. Please do not hesitate to contact the undersigned if you have any questions or require clarification.

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STUDY LIMITATIONS

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