



REPORT

2022 Annual Facility Performance Review Summary Report

Tailings Management Facility, Quebrada Blanca 2

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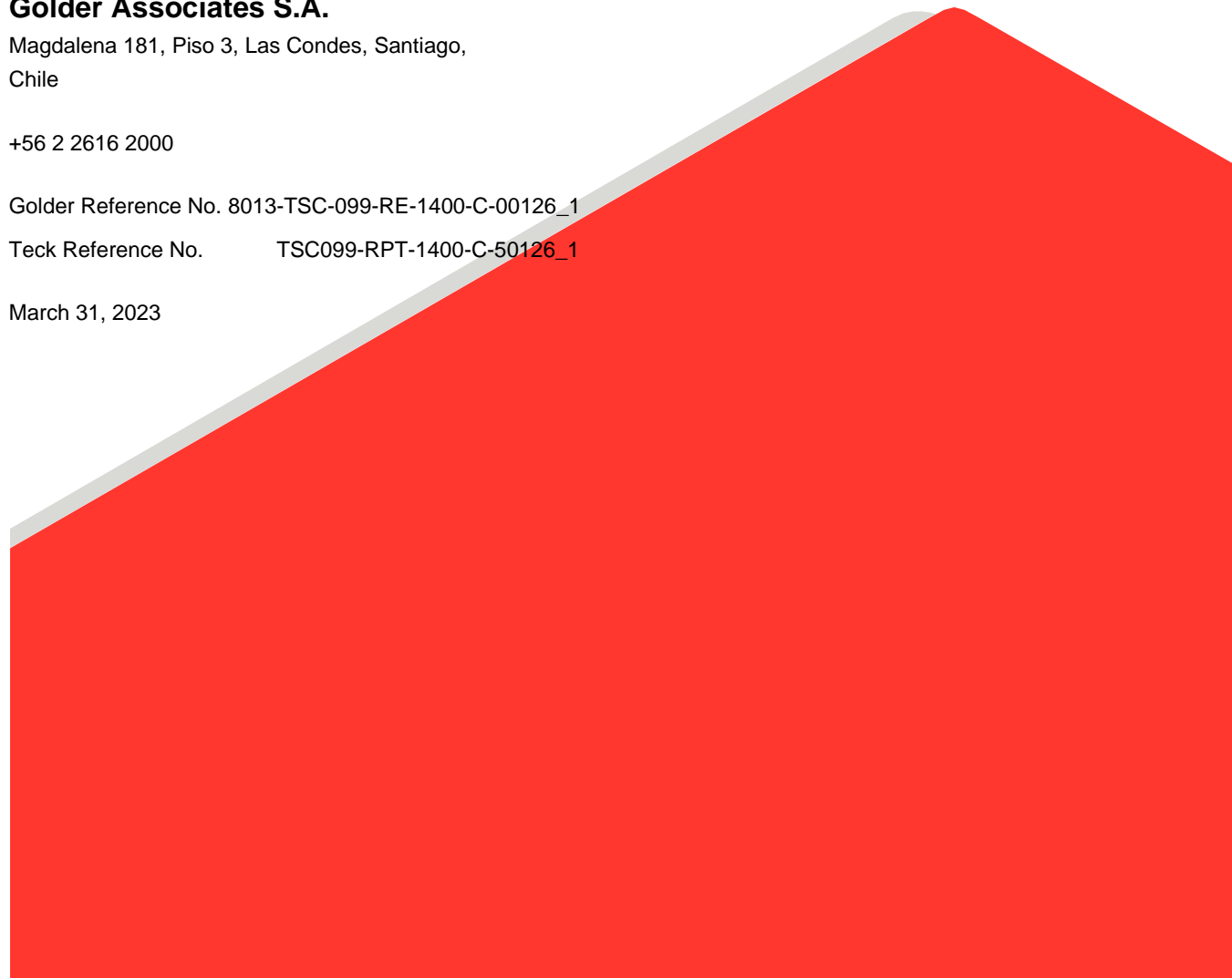
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Golder Reference No. 8013-TSC-099-RE-1400-C-00126_1

Teck Reference No. TSC099-RPT-1400-C-50126_1

March 31, 2023



Distribution List

1 Copy Teck

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Executive Summary

This report presents the summary of the 2022 annual facility performance review (AFPR) of the tailings management facility (TMF) at Quebrada Blanca 2 (QB2). The 2022 AFPR site visit was carried out between 05 December and 08 December 2022, inclusive of travel between Iquique and site, by Golder Associates S.A. (Golder) with personnel from Compañía Minera Teck Quebrada Blanca S.A. (CMTQB). The Engineer of Record (EoR) and the Deputy Engineer of Record (DEoR) for the TMF, both of Golder, carried out the 2022 AFPR.

Reference is made in this report to Teck Resources Limited (Teck). A critical component of the TMF governance structure is the connection between CMTQB, Teck, and the EoR.

The 2022 AFPR is the first such review of the TMF. The initial construction of the TMF started in 2019 and was still in-progress at the time of the 2022 AFPR site visit. CMTQB has the objective of starting operations in early 2023. The first phase of start-up is being planned and prepared for by Teck and CMTQB with support from Golder.

No facility safety deficiencies were identified that require immediate action; ongoing hazard management and mitigation plans are providing appropriate controls. Quality monitoring is continuing and is resulting in the confirmation that construction is satisfying the design intent of the TMF.

If a discrepancy is identified between the English and Spanish versions of this document, Golder is to be notified in writing. Golder will provide written clarification.

This report and its attachments are to be read in full along with the Study Limitations. The Study Limitations follow the text and form an important part of this report.

Review of Key Hazards

Rockfall and slope stability pose hazards to the safety of the workers and equipment; these risks will be present throughout the life of the tailings management facility development and continued assessments and mitigation will be required. Periods of high precipitation, such as *invierno bolivano*, may increase this risk. CMTQB has a rockfall hazard management plan to consider all the immediate-, short, and long-term perspectives in combination to develop the necessary risk management approaches. CMTQB has held training sessions for this plan with all stakeholders and contractors associated with the TMF during the initial construction period. CMTQB Operations is taking over the rockfill management plan and assuming its ownership for implementation and continued development the plan throughout operations.

Teck has a credible catastrophic failure mode (CCFM) assessment methodology that is based on the guidance provided by the Global Industry Standard on Tailings Management (GISTM). Catastrophic failure is defined as an uncontrolled loss of contents that has intolerable downstream impacts. Intolerable downstream impacts comprise: population-at-risk with life safety impacts, prioritizing human fatalities; significant and lasting environmental impacts; significant and lasting social impacts; and significant business interruption. To avoid catastrophic failure, it is required that CCFMs are either eliminated or properly managed. A potential CCFM that is determined to be credible is actioned to reduce its likelihood of occurrence to as low as reasonably practicable (ALARP) and to mitigate potential impacts to acceptable levels.

The three potential failure modes that could result in catastrophic failure are:

- 1) Instability: Of the dam or its foundation.
- 2) Overtopping: Of the dam.
- 3) Internal erosion: Within the dam fill materials.

Each potential CCFM is assessed independently. Various triggering hazards and mechanisms are evaluated for each potential CCFM. Failure processes are also described for each potential CCFM.

Teck and CMTQB carried out a CCFMs assessment for the development period from Year 0 to Year 5 for the TMF. The assessment was carried out in August and September 2022 involving key personnel from CMTQB and Golder, including the responsible tailings facility engineer (RTFE) for operations from CMTQB and the engineer of record (EoR) from Golder. The EoR agrees with the determination and endorses the outcome of the 2022 CCFM assessment that there are no CCFMs for the TMF in the period from Year 0 to Year 5 (Golder 2023c).

Key requirements for the TMF development during operations are the production and placement of quality sand to satisfy the mass balance and dam raising schedule while providing the minimum required freeboard and minimum required beach length. About 2.2 Mt of tailings may be deposited into the TMF before sand production is required to satisfy the mass balance; therefore, with the current start-up production schedule, quality sand production must be reliably achieved starting in Month 3 of operations. The production and placement of sand before this quantity of tailings is produced is an opportunity to develop practices and procedures before the absolute requirements must be met. CMTQB has a plan in-place for the initial start-up period that enables safe tailings deposition into the TMF before the completion of all of the infrastructure. Careful planning, tracking, and forecasting will be critical for sand production and sand raising throughout the lifetime of the TMF.

CMTQB and Golder continue with the definition and implementation of the scope of work for the detailed design of the Phase I sand dam. The design must be completed prior to the production of sand (expected in early 2023).

Consequence Classification

Teck aims to eliminate any CCFM using the ALARP principle rather than adopting a classification system that has levels of potential human life. This approach meets or exceeds regulatory requirements and aligns with Teck's goal to eliminate any risk for loss of life, which is consistent with recognized industry good practice (e.g., GISTM).

The consequence classifications that follow are provided solely for consistency with previous work and for satisfying regulatory requirements. The consequence classifications for the TMF are:

- Chilean dam classification (DGA 2015): Category C.
- Canadian Dam Association (CDA) dam consequence classification (CDA 2014): Extreme.

Refer to Golder (2023d) and Golder Associates Ltd. (2019) for more details regarding the dam consequence classifications.

Summary of Significant Changes

The initial construction of the TMF was in-progress during the 2022 AFPR site visit. This construction was started in 2019 and is expected to be completed in early 2023. Initial operations are scheduled to start in 2023.

The EoR carried out 14 site visits during the initial construction period before the 2022 AFPR site visit. The findings of these site visits and associated reviews of the construction quality assurance (CQA) reporting confirm that the TMF is being constructed in general accordance with the design requirements and is satisfying the design intent.

The EoR is currently preparing the deviance accountability report (DAR) and is contributing to the construction records report (CRR) for the initial construction period; these reports will be issued under separate covers in due course. The EoR will regularly review and update, as necessary, the DAR throughout the life cycle of the TMF. Subsequent CRRs will be prepared to document the development and construction of the TMF over its life cycle; these are expected to be prepared at specific sand dam configurations or key milestones for the TMF during its development.

The design basis report (DBR) for the TMF has been prepared by the EoR (Golder 2023d); this report will be regularly reviewed and updated, as necessary, by the EoR throughout the life cycle of the TMF.

Significant Changes in Instrumentation or Visual Monitoring Records

No significant changes were noted for either instrumentation or visual inspections during the 2022 AFPR. The geotechnical instrumentation installation was in-progress during the 2022 AFPR site visit; data baselines are being developed as instruments are being brought on-line. A trigger-action-response plan (TARP) is in-place for the geotechnical instrumentation (Golder 2022b) and all functioning instruments are within the “acceptable” level. All of the geotechnical instrumentation will be installed with data collected before any water or tailings is received at the TMF.

Quality inspections and assessments will continue throughout the initial construction period of the TMF. A series of 14 site visits by the EoR were carried out during the initial construction period before the 2022 AFPR site visit. The quality inspections and EoR site visits confirmed that the design requirements and design intent were satisfied for the period from 2019 to the date of the 2022 AFPR site visit.

Significant Changes to Stability or Surface Water Control

No significant changes were noted for either stability or surface water control during the 2022 AFPR site visit relative to the 14 previous EoR site visits carried out during the initial construction period.

Operation, Maintenance, and Surveillance Manual and Emergency Plans

CMQTB provided the operation, maintenance, and surveillance (OMS) manual for the TMF, Revision 0 dated 28 February 2022, to Golder for review as part of the 2022 AFPR. The emergency preparedness plan and the emergency response plan—the emergency plans—appear in the OMS manual. Golder provided review comments to CMQTB for consideration. In general, Golder considers the OMS manual appropriate for operations. The emergency plans require further explanation to the EoR, including linkages with the mine emergency response plan (MERP); CMQTB and Golder continue to exchange information for the emergency plans.

Schedule for Upcoming Facility Performance Reviews

Teck and CMQTB use the terms AFPR and periodic facility performance review (PFPR) in lieu of dam safety inspection (DSI) and dam safety review (DSR), respectively. The reason for the use of these terms is to clarify that the scope of the reviews is the TMF in totality rather than solely the dam.

The next AFPR for the TMF will occur in late 2023 and will be carried out by the EoR.

Teck and CMQTB are determining the date of the first PFPR. Per GISTM (2022), these are required every five years for facilities such as the TMF; therefore, it is expected that the first TMF facility safety review will occur in 2028 as this will be the expected fifth year of TMF operation. The EoR will participate in the PFPR but cannot lead it.

Comments and Recommendations

Comments and recommendations developed during the 2022 AFPR are presented in Section 8.0. A priority and recommended deadline/status are provide for each recommendation. Subsequent AFPR reports will include an assessment of recommendations from previous AFPRs as proper resolution of each recommendation is required.

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Tailings Management Facility Site Plan

(8013-TSA-016-DW-1400-C-101)

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Select Photographs from 2022 AFPR Site Visit

APPENDIX C

2022 AFPR Site Visit Checklist

APPENDIX D

Vibrating Wire Piezometer Monitoring Results

(based on data received from Excon)

1.0 INTRODUCTION

This report presents the summary of the 2022 annual facility performance review (AFPR) for the tailings management facility (TMF) at Quebrada Blanca 2. The 2022 AFPR is the first such review of the TMF. The initial construction of the TMF started in 2019 and was still in-progress at the time of the 2022 AFPR site visit. Compañía Minera Teck Quebrada Blanca S.A. (CMTQB) is planning to start operations at QB2 in 2023.

Reference is made in this report to Teck Resources Limited (Teck). A critical component of the TMF governance structure is the connection between CMTQB, Teck, and the Engineer of Record (EoR).

The 2022 AFPR site visit was carried out between 05 December and 08 December 2022, inclusive of travel days between site and Iquique, by the named EoR, Paul Bedell, and the named deputy engineer of record (DEoR), Manuel Troncoso, both of Golder Associates S.A. (Golder). Key personnel from CMTQB who participated in the 2022 AFPR site visit were John Pottie, Geotechnical Engineering Manager, and Sergio Valdebenito, Responsible Tailings Facility Engineer (RTFE) during operations. The RTFE during the construction period, Giancarlo Zuccone of CMTQB, was unable to participate in the 2022 AFPR.

This report includes:

- A summary of site conditions observed during the 2022 AFPR and background information, including the site plan of the TMF (APPENDIX A).
- Select photographs from the 2022 AFPR site visit (APPENDIX B).
- The summary checklist from the 2022 AFPR site visit (APPENDIX C).
- A review of:
 - Key hazards and credible catastrophic failure modes.
 - Facility consequence classification.
 - Available geotechnical instrumentation monitoring data.
 - Precipitation data.
 - Seismic data.
 - Operational and emergency plans documents.
- Comments and prioritized recommendations.

A review of the water balance was not possible as the only water reporting to the TMF up to, and including, the 2022 AFPR site visit was precipitation. The water level remains below the lined limit of the initial reclaim pond; therefore, the only notable losses are due to evaporation.

Reference to the facility codes of the project is made in this report. The facility codes are listed in Table 1.

This report was prepared using the guidance provided in the documents listed in Table 2.

This report and its attachments are to be read in full along with the Study Limitations. The Study Limitations follow the text and form an important part of this report.

2.0 APPROACH AND METHODOLOGY

Golder interacted with CMTQB and Teck in its role as EoR from July 2020 to the end of 2022 through the following major activities:

- Site visits (14 plus the 2022 AFPR; refer to Table 3 for the complete listing).
- Regularly scheduled monthly meetings (monthly EoR services and TMF development meetings).
- Participation in Geotechnical Review Board (GRB) meetings.
- Participation in as-requested meetings with Teck and CMTQB.
- Review of quality assurance activities during TMF construction (these are being provided by Ausenco Chile Limitada [Ausenco] for water reclaim infrastructure and Golder for the rest of the TMF infrastructure).
- Participation in development, and review, of CMTQB's rockfall hazard mitigation program.
- Participation in Teck's 2022 credible catastrophic failure modes assessment workshop.
- Preparing the design basis report (DBR) for the TMF (Golder 2023d).
- Maintaining the information to be used to develop the deviance accountability report (DAR); this report is in preparation by Golder.
- Supporting CMTQB and Teck during the planning for start-up; notably, the deposition of tailings and receipt of water in the TMF to provide for a safe facility with long-term operation objectives.
- Preparing, alongside CMTQB, the construction records report (CRR) for the initial construction period of the TMF. This report is in development.
- Provision of engineering services, as required by CMTQB and Teck.

2.1 Governance

The following governance roles are filled for the TMF:

- Accountable Executive: Red Conger of Teck.
- Responsible Tailings Facility Engineer—Construction (RTFE-Construction): Giancarlo Zuccone of CMTQB.
- Responsible Tailings Facility Engineer—Operations (RTFE-Operations): Sergio Valdebenito of CMTQB.
- Engineer of Record: Paul Bedell of Golder.
- Deputy Engineer of Record: Manuel Troncoso of Golder.

2.2 Information Provided to Golder

The following information was provided to Golder as part of the 2022 AFPR from the parties noted:

- Precipitation data, current revisions of operation, maintenance, and surveillance (OMS) manual and emergency preparedness and response plans: CMTQB.

- Piezometer data and water elevations of the initial reclaim pond: Constructora Excon S.A. (Excon). Excon is the general earthworks contractor for the initial construction of the TMF.

3.0 BACKGROUND

This section presents an overview of the activities during the initial construction period from 2019 to December 2022 and the status of other activities in relation to the development of the TMF.

3.1 Initial Construction of Tailings Management Facility

The initial construction of the TMF started in 2019 and was continuing at the time of the 2022 AFPR site visit. Refer to Appendix A for a plan view of the TMF.

The majority of the civil earthworks were complete by the time of the 2022 AFPR site visit; the majority of the ongoing construction works were piping and cabling activities. Per the construction quality assurance services and EoR services provided by Golder and the construction quality services provided by Ausenco since the start of initial construction through to the end of 2022, the construction is satisfying the requirements and intent of design.

3.2 Global Industry Standard on Tailings Management Documentation

Key documentation continues to be maintained and developed for the TMF per the requirements of the Global Industry Standard on Tailings Management (GISTM 2020). Three major reports were in development and preparation by the EoR at the time of the 2022 AFPR:

- 1) Design basis report (DBR). The EoR will regularly review and update, as necessary, this report during the development of the TMF. The DBR is identified as Golder (2023d).
- 2) Deviance accountability report (DAR). The EoR maintains the list of items and technical documentation, as required, for input to this report. The EoR will regularly review and update, as necessary, this report during the development of the TMF. The DAR will be issued in early 2023.
- 3) Construction records report (CRR). The CRR for the initial construction of the TMF will be the first in a series of such reports during the development of the TMF. This report will be co-authored by the RTFE—Construction and the EoR. The CRR is expected to be issued in mid-2023 following the completion of construction.

These reports assist Teck and CMTQB with their requirements to demonstrate conformance with GISTM by August 2023.

3.3 Key Hazards of Tailings Management Facility

Rockfall and slope stability pose hazards to the safety of the workers and equipment; these hazards will be present throughout the life of the development and continued assessments and mitigation will be required. Periods of high precipitation, such as *invierno boliviano*, may increase the risks associated with the rockfall and slope stability hazards. CMTQB has a rockfall hazard management plan to consider all the immediate-, short, and long-term perspectives in combination to develop the necessary risk management approaches. CMTQB has held training sessions for this plan with all stakeholders and contractors associated with the TMF during the initial construction period. CMTQB Operations is taking over the rockfill management plan and assuming its ownership for implementation and continued development the plan throughout operations.

Teck has a credible catastrophic failure mode (CCFM) assessment methodology that is based on the guidance provided by the Global Industry Standard on Tailings Management (GISTM). Catastrophic failure is defined as an uncontrolled loss of contents that has intolerable downstream impacts. Intolerable downstream impacts comprise: population-at-risk with life safety impacts, prioritizing human fatalities; significant and lasting environmental impacts; significant and lasting social impacts; and significant business interruption. To avoid catastrophic failure, it is required that CCFMs are either eliminated or properly managed. A potential CCFM that is determined to be credible is actioned to reduce its likelihood of occurrence to as low as reasonably practicable (ALARP) and to mitigate potential impacts to acceptable levels.

The three potential failure modes that could result in catastrophic failure are:

- 1) Instability: Of the dam or its foundation.
- 2) Overtopping: Of the dam.
- 3) Internal Erosion: Within the dam fill materials.

Each potential CCFM is assessed independently. Various triggering hazards and mechanisms are evaluated for each potential CCFM. Failure processes are also described for each potential CCFM.

CMTQB and Teck carried out a CCFMs assessment for the development period from Year 0 to Year 5 for the TMF. The assessment was carried out in August and September 2022 involving key personnel from CMTQB, Teck, and Golder, including the RTFE-Operations the EoR. The EoR agrees with the determination and endorses the outcome of the 2022 CCFM assessment that there are no CCFMs for the TMF in the period from Year 0 to Year 5 (Golder 2023c).

3.4 Start-Up and Operation of Tailings Management Facility

CMTQB continues to develop plans for water and tailings to be safely received at the TMF before all infrastructure construction is complete. The EoR continues to support CMTQB and Teck for this work. Critical to the initial start-up is the completion of construction to enable the ramp-up of production and for the remainder of operations. CMTQB and Teck continue to identify sequences, key milestones, and operational considerations as part of the planning work.

Key requirements for the TMF development during operations are the production and placement of quality sand to satisfy the mass balance and dam raising schedule while providing the minimum required freeboard and minimum required beach length. About 2.2 Mt of tailings may be deposited into the TMF before sand production is required to satisfy the mass balance; therefore, with the current start-up production schedule, quality sand production must be reliably achieved starting in Month 3 of operations. The production and placement of sand before this quantity of tailings is produced is an opportunity to develop practices and procedures before the absolute requirements must be met. CMTQB has a plan in-place for the initial start-up period that enables safe tailings deposition into the TMF before the completion of all of the infrastructure with the opportunity to produce sand early and to transition into sand production when required. Careful planning, tracking, and forecasting will be critical for sand production and sand raising throughout the lifetime of the TMF.

3.5 Consequence Classification

Teck and CMTQB aim to eliminate any CCFM using the ALARP principle rather than adopting a classification system that has levels of potential human life. This approach meets or exceeds regulatory requirements and aligns

with Teck’s goal to eliminate any risk for loss of life, which is consistent with recognized industry good practice (e.g., GISTM 2020).

The consequence classifications that follow are provided solely for consistency with previous work and for satisfying regulatory requirements. The consequence classifications for the TMF are:

- Chilean dam classification (DGA 2015): Category C.
- Canadian Dam Association (CDA) dam consequence classification (CDA 2014): Extreme.

Refer to Golder (2023d) and Golder Associates Ltd. (2019) for more details regarding the dam consequence classifications.

3.6 Precipitation

The monthly precipitation data collected by CMTQB on-site for the 2019 to 2022 period are shown in Figure 1 along with the average monthly values from Golder (2023d). No data for June to December 2022 was provided by CMTQB. The actual monthly precipitation values correspond to the average values.

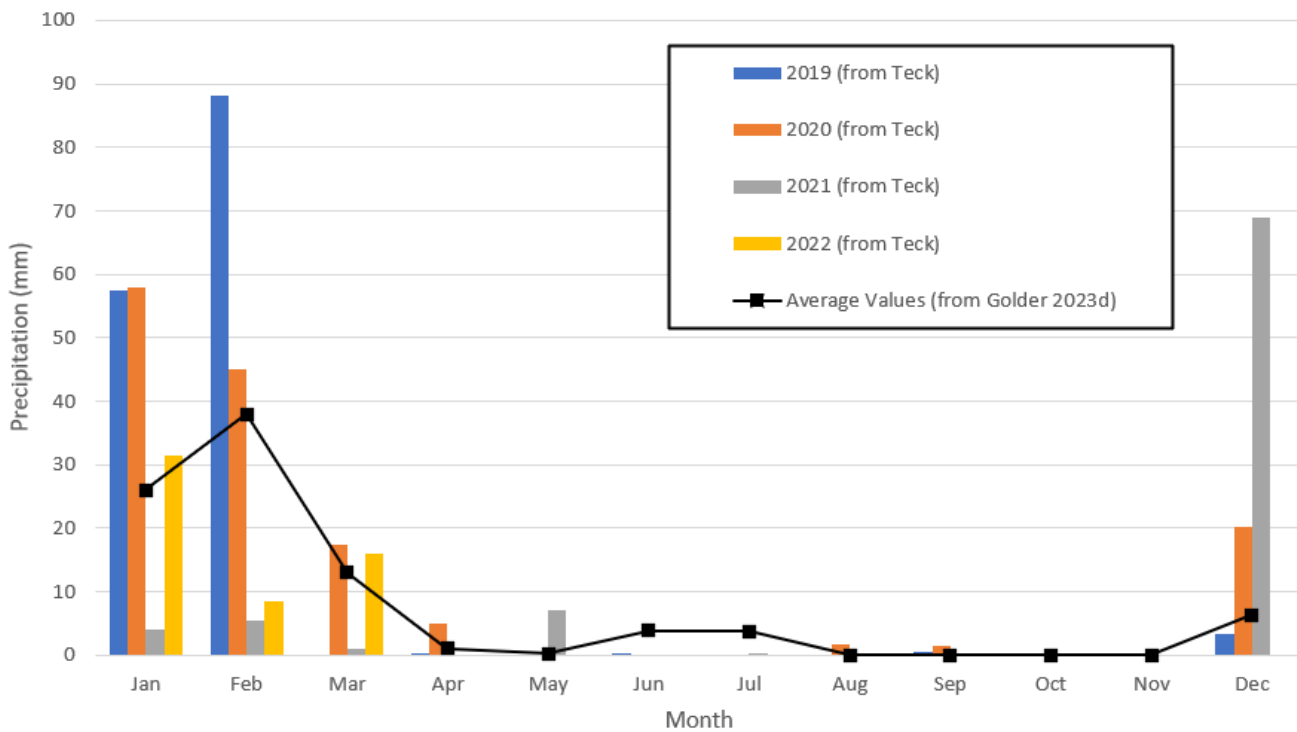


Figure 1: Precipitation for Period 2019 to 2022.

3.7 Seismicity

There was no seismograph on-site at QB2 during the period from 2019 to December 2022; therefore, seismic events in the area were sourced online at *evtdb.csn.uchile.cl*. Seismic events of Magnitude 6.0 ($M \leq 6.0$) were assessed to determine ground accelerations in consideration of the operational basis earthquake (OBE) ground acceleration of 0.34 g and the maximum credible earthquake (MCE) ground acceleration of 0.56 g used for the TMF design. Figure 2 shows the ground accelerations for these events, and their horizontal distances from the starter dam, along with the OBE and MCE ground accelerations. The two higher ground accelerations reported in late 2020 are questioned as no effects were reported at site; the depth to the epicentres likely impacted the effects experienced at site.

A seismograph was installed above the west abutment of the starter dam in early 2023 and an on-crest seismograph will be installed as part of the initial construction. These instruments will be part of the geotechnical monitoring program of the TMF and will provide more meaningful seismic data in the future.

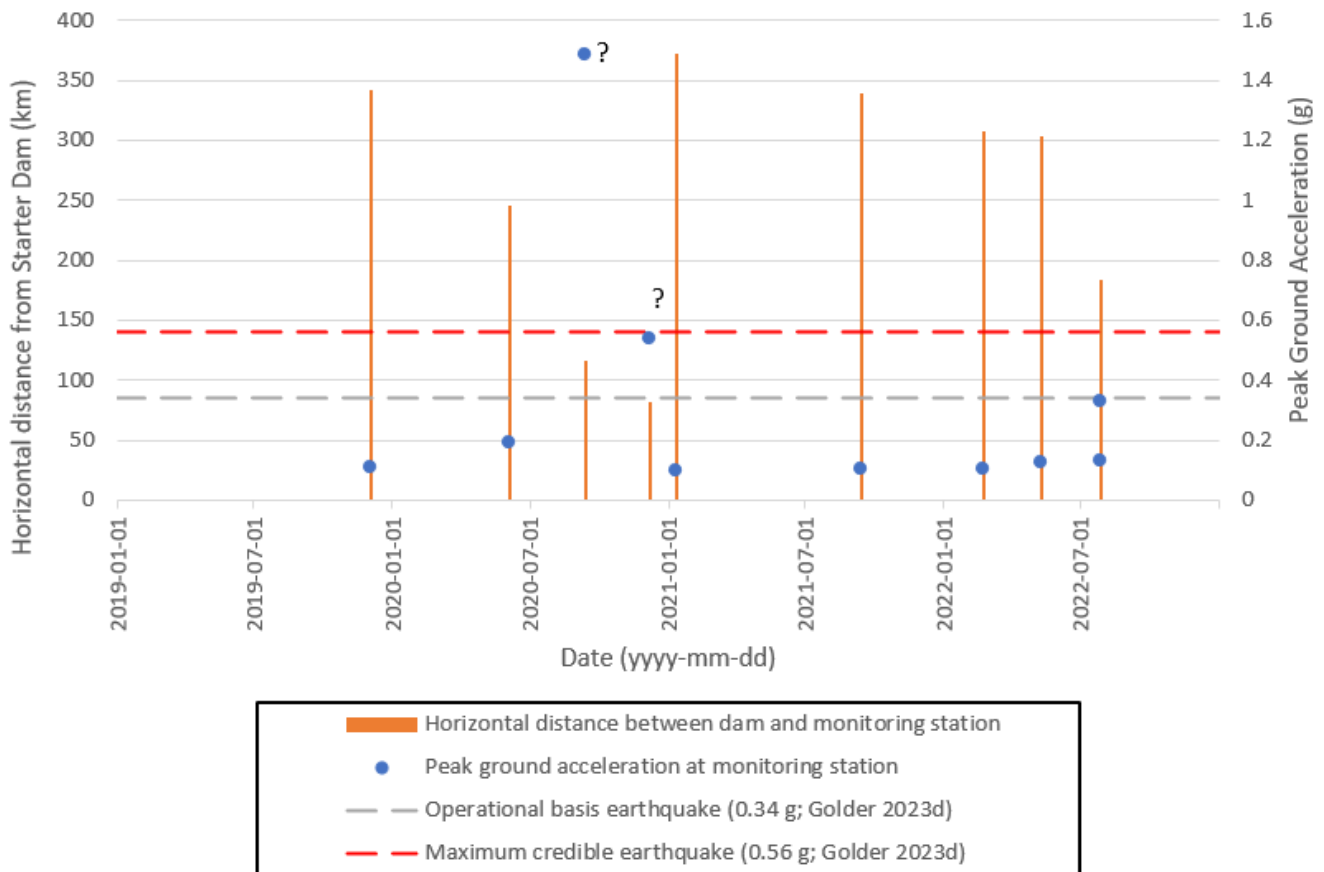


Figure 2: Ground Accelerations near Starter Dam for Period 2019 to 2022.

4.0 ANNUAL FACILITY PERFORMANCE REVIEW SITE VISIT SUMMARY

This section provides a summary of the conditions observed during the 2022 AFPR site visit at each facility. Select photographs are included in APPENDIX B; references to specific plates in Appendix B are made. The review checklist used during the inspection is included in APPENDIX C.

4.1 Starter Dam (1452)

- Earthworks, upstream lining system, and upstream downcomers completed. Connection between on-slope lining system and plinths being completed.
- No evidence of deformation, instability, cracking, or slumping was observed.
- Cofferdam crest lining system installation nearing completion.
- Installation of downstream downcomers pending.
- On-crest piping installation about to start.
- Geotechnical instrumentation, less the survey monuments on downstream slope and the on-crest seismograph, are completed and baseline data being collected. Installation of survey monuments will be carried out following installation of downstream downcomers. The on-crest seismograph will be installed following completion of piping installation.

4.2 Tailings and Sand Deposition and Transport System (1442)

- Pipe support foundations and pipe supports in construction. Installations on west and east abutments complete on flatter ground; steeper slope sections are now the focus.
- An opportunity was identified for future backfilling of the pipe supports on the east abutment. Rather than placing and compacting sand in the confined space of a pipe support (see Plate 12), the use of lean concrete is to be considered. Use of the bedrock excavation may be made in combination with simple formwork on the outside face. Golder will consider this during the Phase I sand dam detailed design when it begins.
- Tailings distribution line from upper east abutment into Valley 3 is complete.
- The drape mesh to be installed above the west abutment was about 50% complete at the time of the 2022 AFPR site visit and was fully completed in March 2023.

4.3 Dam Drainage System (1453)

- Entire system is complete.
- An opportunity was identified to improve the liner-to-bedrock connection at the Year 2 sump (see Plate 25) to reduce seepage losses. Any seepage bypassing the Year 2 sump will, per the design, report to the seepage collection ponds (1461). In discussions with CMTQB subsequent to the 2022 AFPR inspection, it was decided that any contemplated improvement will be carried out by CMTQB Operations. Golder would be pleased to assist CMTQB Operations should such an improvement be requested.
- Sloughing of soil above the eastern perimeter of the Year 2 sump was observed (see Plate 25). The sloughing is the result of concentrated runoff along the slope. This area is to be monitored and repaired, if warranted, to limit further sloughing.

4.4 Seepage Collection Ponds (1461) and Surrounds

- Civil earthworks are complete except for emergency spillway from Seepage Collection Pond 2; work on the emergency spillway is in-progress.
- No evidence of deformation, instability, cracking, or slumping was observed.
- Work continues on the non-contact water ditch on the east side of the seepage collection ponds.
- Material graded into Seepage Collection Pond 1 is to be removed and the lining system inspected for damage. This material was graded off of the access road by the contractor following rain events in December 2022 (see Plates 26, 27, and 28).
- Piping and associated infrastructure construction on the berm between Seepage Collection Ponds 1 and 2 continues.
- Work related to the e-rooms on the elevated platform continues.
- The ramp portion of the e-room retaining wall is pending.
- The perimeter fencing and installation of life rings around Seepage Collection Ponds 1 and 2 are pending.

4.5 Tailings Management Facility Contour Channel (1422)

- The construction of the TMF contour channel is complete less some geomembrane liner to be placed at its inlet. This work was in-progress at the time of the 2022 AFPR site visit.

4.6 Mine East Channel (0181)

- The construction of the mine east channel is complete.

4.7 Cyclone Station (1441)

- Piping and associated infrastructure construction in-progress.
- Rock slopes continue to perform well with no visible signs of ravelling or instability. The installation of drape mesh, per the design, may be required should this performance not continue.
- The fill slope to the east of the cyclone platform is performing well as no evidence of deformation, instability, cracking, or slumping was observed. Following the completion of the construction, survey points will be installed to enable movement monitoring of infrastructure on the eastern side of the platform. This program will be defined by the EoR in due course.

4.8 Reclaim Pond (1424)

- The remainder of the sandbags are to be installed atop the lining system. The sandbags, required by the design, will serve to anchor the lining system against flotation potential. The sandbags are to be installed before any water or tailings are received in the TMF. In discussion with CMTQB subsequent to the 2022 AFPR site visit, CMTQB has decided to forego completing the installation of the sandbags as construction needs are prioritized elsewhere in the TMF. This decision introduces the risk of liner flotation. While this will not adversely affect the performance or safety of the TMF, it could result in a perception issue should the liner float.

- The water level in the reclaim pond at the time of the AFPR site visit was about El. 3,756.6 m; this corresponds to a quantity of water of about 56,500 m³.

4.9 Booster Station No. 1 (1480)

- Mechanical and piping construction in-progress.
- Cut slopes are performing well with no ravelling or instabilities observed.

4.10 Booster Station No. 2 (1480)

- Mechanical and piping construction in-progress.
- Cut slopes are performing well with no ravelling or instabilities observed. Geotechnical instrumentation was installed per the design requirements in early 2023. Per the slope design, significant bolting, drainage measures, and shotcrete are in-place for slope reinforcement. Drape mesh installation, per the design requirements, was completed following the site visit.

4.11 Permanent Pump Station (1480)

- Mechanical and piping construction in-progress.
- Cut slopes are performing well with no ravelling or instabilities observed.

4.12 Reclaim and Dilution Water Systems Corridor (1480)

- Platform excavation, slope reinforcement, and drape mesh installation in-progress.

4.13 Dilution Water Terminal Station (1644)

- Mechanical and piping construction in-progress.
- A hanging block was observed and identified as a potential rockfall hazard. Following from this observation and in agreement with CMTQB, Golder is assessing this area and will provide comments and recommendations to CMTQB.

4.14 Roads and Platforms

- The cut and fill slopes of the various roads and platforms of the TMF are performing well with no visible signs of ravelling or instabilities. Continued monitoring of these, per CMTQB's rockfall hazard management plan, will be carried out throughout the life of the TMF. Period maintenance (e.g., removal of accumulated material behind Jersey barriers) will be required.

4.15 Seepage Pumpback Platform (1463)

- Piping construction continues. Pipe support construction on the high slope portion in-progress.

5.0 REVIEW OF GEOTECHNICAL MONITORING DATA

As discussed in Section 4.1, the following geotechnical instrumentation is installed and is collecting baseline data:

- Vibrating wire piezometers.
- Inclinometers.
- Casagrande-style piezometers.

The following geotechnical instrumentation has yet to be installed:

- The on-crest seismograph (to be installed following all construction on the starter dam crest).
- Slope monitoring points on the starter dam downstream shell (to be installed following the installation of the downstream downcomers).

The earthworks contractor, Excon, is collecting the geotechnical instrumentation data and providing it to Golder's on-site construction quality assurance team for review and comment. All of the installed instrumentation is performing as expected and no concerning data has been collected to-date.

Given the current stage of construction and flow of information, the only presentable monitoring results at present are those from the vibrating wire piezometers (see APPENDIX D). These instruments continue to equilibrate to the current conditions; no readings are of concern.

Following the handover of the geotechnical instrumentation to CMTQB Operations, the data collection and presentation will be routinely carried out and presented in proper formats. This information will be provided regularly to the EoR for review and comment.

6.0 REVIEW OF OPERATION, MAINTENANCE, AND SURVEILLANCE MANUAL AND EMERGENCY PLANS

CMTQB provided the operation, maintenance, and surveillance (OMS) manual for the TMF, Revision 0 dated 28 February 2022, to Golder for review as part of the 2022 AFPR. The emergency preparedness plan and the emergency response plan—the emergency plans—appear in the OMS manual. Golder provided review comments to CMTQB for consideration. In general, Golder considers the OMS manual appropriate for operations. The emergency plans require further explanation to the EoR, including linkages with the mine emergency response plan (MERP); CMTQB and Golder continue to exchange information for the emergency plans.

7.0 SCHEDULE FOR UPCOMING FACILITY PERFORMANCE REVIEWS

Teck and CMTQB use the terms AFPR and periodic facility performance review (PFPR) in lieu of dam safety inspection (DSI) and dam safety review (DSR). The reason for the use of these terms is to clarify that the scope of the reviews is the TMF in totality rather than solely the dam.

The next AFPR for the TMF will occur in late 2023 and will be carried out by the EoR.

CMTQB and Teck is determining the date of the first PFPR. Per GISTM (2020), these are required every five years for facilities such as the TMF; therefore, it is expected that the first PFPR will occur in 2028 as this will be the expected fifth year of TMF operation. The EoR will participate in the PFPR but cannot lead it.

8.0 COMMENTS AND RECOMMENDATIONS

This section provides the summary of comments and recommendations discussed in the above sections.

8.1 Comments

- No facility safety deficiencies were identified that require immediate action; ongoing hazard management and mitigation plans are providing appropriate controls. Quality monitoring is continuing and is resulting in the confirmation that construction is satisfying the design intent of the TMF.
- The initial construction of the TMF was in-progress at the time of the 2022 AFPR site inspection. The construction quality assurance being carried out by Golder and the regular EoR visits to-date confirm that the construction is satisfying the requirements and intent of the design.
- Teck and CMTQB continue to develop the plan for start-up with support from Golder. This work will continue and will include consideration to long-term and sustained operation of the TMF. It is critical that quality sand be produced and placed no later than after 2.2 Mt of tailings have been deposited into the TMF. Sand production and placement infrastructure must be in-place and functioning prior to sand production operations.
- In discussion with CMTQB subsequent to the 2022 AFPR site visit, CMTQB has decided to forego completing the installation of the sandbags as construction needs are prioritized elsewhere in the TMF. This decision introduces the risk of liner flotation. While this will not adversely affect the performance or safety of the TMF, it could result in a perception issue should the liner float.
- Teck and CMTQB continue to work towards conformance with GISTM to satisfy the August 2023 deadline. The EoR is participating in this work to support Teck and CMTQB. The DBR has been issued (Golder 2023c). The EoR is preparing the DAR for issue in early 2023. The EoR and the RTFE-Construction are preparing the CRR for the initial construction; this will be issued following the completion of construction in 2023.
- The results of the CCFM assessment for the first five years of operation show that the TMF does not have any credible catastrophic failure modes. The evaluation methodology used was developed by Teck. The EoR participated in the assessment and endorses the methodology and outcome (Golder 2023a).
- CMTQB has an OMS manual in-place, including emergency preparedness and response plans. Having this document in-place before the start of operations is leading industry practice. Golder reviewed the OMS manual as part of the AFPR. Golder provided review comments to CMTQB for consideration. In general, Golder considers the OMS manual appropriate for operations. The emergency plans require further explanation to the EoR, including linkages with the mine emergency response plan (MERP); CMTQB and Golder continue to exchange information for the emergency plans.
- Teck and CMTQB are determining the date of the first PFPR. Per GISTM (2022), these are required every five years for facilities such as the TMF; therefore, it is expected that the first TMF facility safety review will occur in 2028 as this will be the expected fifth year of TMF operation. The EoR will participate in the PFPR but cannot lead it.

- Teck and CMTQB have a governance setup in-place for the TMF, including and RFTE-Construction and RTFE-Operations. The structure and performance of the governance team are considered to be appropriate for the TMF.
- An opportunity was identified for future backfilling of the pipe supports on the east abutment. Rather than placing and compacting sand in the confined space of a pipe support (see Plate 12), the use of lean concrete is to be considered. Use of the bedrock excavation may be made in combination with simple formwork on the outside face. Golder will consider this during the Phase I sand dam detailed design when it begins.
- An opportunity was identified to improve the liner-to-bedrock connection at the Year 2 sump (see Plate 25) to reduce seepage losses. Any seepage bypassing the Year 2 sump will, per the design, report to the seepage collection ponds (1461). In discussions with CMTQB subsequent to the 2022 AFPR inspection, it was decided that any contemplated improvement will be carried out by CMTQB during operations.
- A hanging block was observed and identified as a potential rockfall hazard at the dilution water terminal station. Following from this observation and in agreement with CMTQB, Golder is assessing this area and will provide comments and recommendations to CMTQB.
- The installed geotechnical instrumentation (vibrating wire piezometers, Casagrande-style piezometers, inclinometers) is performing as expected and no concerning data has been collected to-date. The on-crest seismograph and the survey monitoring points on the downstream shell of the starter dam will be installed in due course. Following the handover of the geotechnical instrumentation to CMTQB Operations, the data collection and presentation will be routinely carried out and presented in proper formats. This information will be provided regularly to the EoR for review and comment.

8.2 Recommendations

The summary of recommendations from the 2022 AFPR is presented in Table 4. The priority and recommended deadline/status are provided for each recommendation. The priorities descriptions are described in Table 5. Subsequent AFPR reports will include an assessment of recommendations from previous AFPRs as proper resolution of each recommendation is required.

9.0 CLOSING

We trust that this report satisfies your current requirements. Please contact the undersigned should you have any questions.

Signature Page

Golder Associates S.A.



Paul M. Bedell, M.E.Sc., P.Eng.
Engineer of Record



Manuel Troncoso
Deputy Engineer of Record

PMB/MT/fg

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REFERENCES:

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- Golder Associates Ltd. 2019. Tailings Management Facility Dam Detail Design, Quebrada Blanca Phase 2. Report No. 8013-TSA-016-RE-1450-G-505 Rev. 0 submitted to Golder Associates S.A., dated 02 October 2019.
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- Golder. 2021a. October 2020 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00104 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 16 March 2021.
- Golder. 2021b. December 2020 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00105 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 25 March 2021.
- Golder. 2021c. January-February 2021 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-RE-1400-C-00107 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 12 May 2021.
- Golder. 2021d. March-April 2021 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00111 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 4 August 2021.
- Golder. 2021e. April and May 2021 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00113 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 06 October 2021.
- Golder. 2021f. September 2021 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00114 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 06 December 2021.
- Golder. 2022a. October and November 2021 Engineer of Record (EoR) Site Visit Summary, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00115 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 13 January 2022.
- Golder. 2022b. Dam Trigger Action Response Plan, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-RE-1456-C-00101 Rev. 0 06Apr2022 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 06 April 2022.
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- Golder. 2022d. January 2022 Engineer of Record Site Visit, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-1400-C-00117 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 06 June 2022.

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Golder. 2023a. July 2022 Engineer of Record Site Visit, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-1400-C-00121 Rev. 0 to Compañía Minera Teck Quebrada Blanca S.A., dated 11 January 2023.

Golder. 2023b. September 2022 Engineer of Record Site Visit, Tailings Management Facility, Quebrada Blanca 2. Technical Memorandum No. 8013-TSC-099-1400-C-00123 Rev. B submitted in draft to Compañía Minera Teck Quebrada Blanca S.A., dated 11 January 2023.

Golder. 2023c. Engineer of Record Comments and Endorsement: 2022 Credible Catastrophic Failure Modes Assessment for Years 0 to 5, Tailings Management Facility. Technical Memorandum No. 8013-TSC-099-RE-1400-C-00122 Rev. 0 submitted to Compañía Minera Teck Quebrada Blanca S.A., dated 12 January 2023.

Golder. 2023d. Design Basis Report, Tailings Management Facility, Quebrada Blanca 2. Report No. 8013-TSC-099-RE-1400-C-00124 Rev. B submitted in draft to Compañía Minera Teck Quebrada Blanca S.A., dated 02 March 2023.

Table 1: Facility Codes

Facility Code Number	Facility Description
0181	Mine East Ditch
1420	TMF Site Development
1421	Roads - internal TMF
1422	Diversion channel
1423	Roads - external TMF
1424	Cofferdam
1425	Construction water pond
1426	TMF borrow sources
1430	TMF Ancillary Facilities
1431	General
1432	Offices and buildings
1433	Utilities
1435	Mobile equipment
1440	Tailings Management
1441	Cyclone station
1442	Tailing distribution pipelines and corridors (sand and slimes)
1450	Tailings Impoundment
1451	Foundation excavation
1452	Starter dam
1453	Drainage system to seepage pond
1455	Geotechnical instrumentation
1456	Sand dam
1457	Wing wall - east
1459	Closure works
1460	TMF Seepage Control
1461	Seepage pond
1462	Seepage pond water recovery pumping station
1463	Seepage pond water recovery pipeline and corridor
1465	Seepage cut-off system
1466	Seepage cut-off water recovery pumping station
1467	Seepage cut-off water recovery pipeline and corridor
1468	East non-contact water ditch
1474	Recovered water distribution tank
1480	TMF Quebrada 2 Water Recovery
1481	Quebrada 2, water recovery system pond
1482	Quebrada 2, water recovery system pumping station
1483	Quebrada 2, water recovery system pipelines and corridor
1490	TMF Power Supply
1491	TMF Main Substation
1496	TMF HV transmission system 23 kV
1630	Tailings Transport System
1632	Tailings Transport System—Launder
1644	Dilution Water System Terminal Station

Table 2: Guidelines Use in This Report

Guidelines
Global Industry Standard on Tailings Management (GISTM, August 2020).
Decreto Supremo No. 248 Reglamento Para la Aprobación de Proyectos de Diseño, Construcción, Operación y Cierre de Los Depósitos de Relaves (Ministerio de Minería, 2006).
Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams (Canadian Dam Association (CDA), 2014).
Tailings Management Good Practice Guide (International Council on Mining & Metals (ICMM), May 2021).
Conformance Protocols for the Global Industry Standard on Tailings Management (ICMM, May 2021).
Guideline for Tailings and Water Retaining Structures (Teck Resources Ltd., January 2019).
Tailings Governance at Teck (Teck Resources Ltd., March 2019).
A Guide to the Management of Tailings Facilities, Version 3.2 (Mining Association of Canada (MAC) March 2021).
Health, Safety and Reclamation Code for Mines in British Columbia (Ministry of Energy, Mines and Low Carbon Innovation, November 2022).
Guidance Document: Health, Safety and Reclamation Code for Mines in British Columbia, Version 1.0 (Ministry of Energy and Mines, July 2016).

Table 3: List of 2020 to 2022 Engineer Site Visits by Golder

Site Visits		Site Visit Dates (inclusive of travel between site & Iquique)	Carried Out By (role fulfilled)	Reference
No.	Title			
1	September 2020	01Sep and 02Sep2020	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00101
2	October 2020	20Oct to 23Oct2020	Adam Darby (DEoR)	8013-TSC-099- RE-1400-C-00104
3	December 2020	21Dec to 23Dec2020	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00105
4	January-February 2021	16Jan to 18Jan and 21Jan to 01Feb2021	Paul Bedell (EoR)	8013-TSC-099- RE-1400-C-00107
5	March-April 2021	23Mar to 02Apr2021	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00111
6 & 7	April and May 2021	20Apr to 22Apr and 24May to 25May2021	Adam Darby (DEoR)	8013-TSC-099- RE-1400-C-00113
8	September 2021	01Sep to 03Sep2021	Adam Darby (DEoR)	8013-TSC-099-RE-1400-C-00114
9	October-November 2021	26Oct to 05Nov2021	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00115
10	January 2022	11Jan to 23Jan2022	Paul Bedell (EoR) Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00117
11	February-March 2022	28Feb to 04Mar2022	Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00118
12	May 2022	04May to 11May2022	Paul Bedell (EoR) Pablo Galdeano (DEoR) Mark Rizzuto	8013-TSC-099-RE-1400-C-00120
13	July 2022	05Jul to 08Jul2022	Pablo Galdeano (DEoR)	8013-TSC-099-RE-1400-C-00121
14	September 2022	14Sep to 23Sep2022	Paul Bedell (EoR)	8013-TSC-099-RE-1400-C-00123
15	2022 AFPR	05Dec to 08Dec2022	Paul Bedell (EoR) Manuel Troncoso (DEoR)	This document.

Table 4: List of 2022 AFPR Recommendations

Recommendation No.	Recommended Action	Priority (refer to Table 5)	Recommended Deadline / Status
2022-AFPR-01	Complete the detailed design of the Phase I sand dam. CMTQB and Golder continue to develop the scope of work; however, this design is required before the production of sand.	2	31Mar2023 for design work to start.
2022-AFPR-02	Develop monitoring and repair plans for sloughed area on east side of Year 2 sump. Repairs to be carried out based on results of monitoring.	3	End of Q2-2023.
2022-AFPR-03	Develop fill slope and nearby infrastructure monitoring program for cyclone station. Survey prisms to be installed and monitoring carried out. EoR to develop plan.	3	Following completion of cyclone station construction (target end of Q2-2023).
2022-AFPR-04	Procure drape mesh required for cyclone station slopes. Installation of drape mesh to be carried out should performance of slopes warrant (to-date, no need for installation).	3	End of Q2-2023.
2022-AFPR-05	Develop the date for the first PFPR. GISTM (2020) requires a PFPR every 5 years; 2028 is suggested as this corresponds to the fifth year of operation.	4	End of 2023.
2022-AFPR-06	EoR to carry-out the 2023 AFPR.	4	End of 2023.

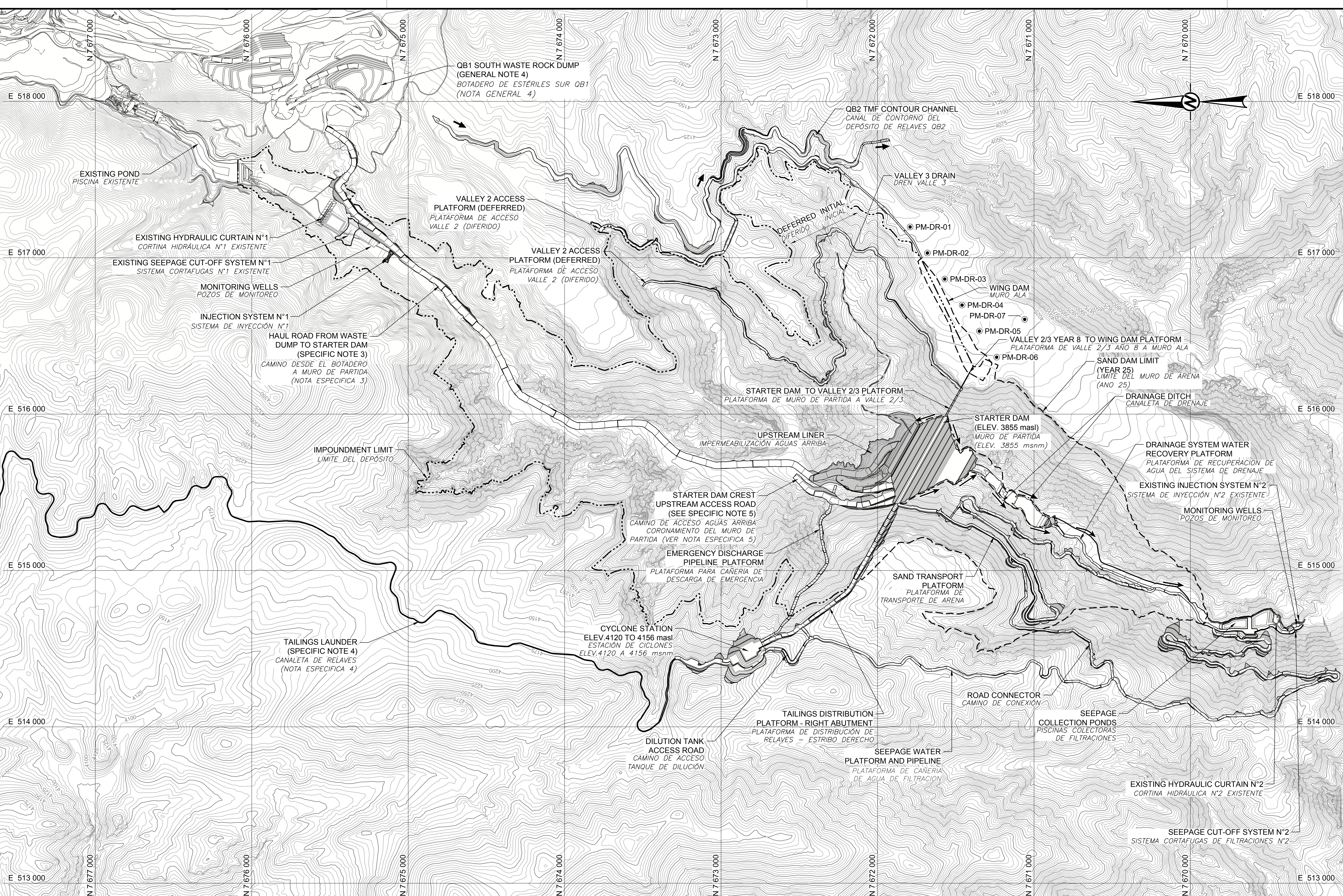
Table 5: Priority Descriptions for Recommendations

Priority	Description
1	A high probability of actual dam safety issues considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.
2	If not corrected, could likely result in dam safety issues leading to injury, environmental impact, or significant regulatory enforcement; or a repetitive deficiency that demonstrates a systematic breakdown of procedures.
3	Single occurrence of deficiencies or non-conformances that alone would not be expected to result in dam safety issues.
4	Best Management Practice--further improvements are necessary to meet industry best practices or reduce potential risks.

APPENDIX A

**Tailings Management Facility Site
Plan
(8013-TSA-016-DW-1400-C-101)**

SIZE FORMAT: ANSI D
 PLOT DATE: Friday, September 13, 2019 - TIME: 11:31:05 AM
 PATH: C:\Users\GAS\OneDrive\Documents\Banco99_PROJECTS\1658356\02_PRODUCTION\Phase 2019\330\DWG - FILE NAME: 8013-TSA-016-DW-1400-C-101.dwg



LEGEND / LEYENDA

	UPSTREAM LINER IMPERMEABILIZACIÓN AGUAS ARRIBA
	BASE TOPOGRAPHY TOPOGRAFIA BASE
	DESIGN TOPOGRAPHY TOPOGRAFIA DISEÑO
	IMPOUNDMENT LIMIT LIMITE DEPÓSITO DE RELAVES
	FLOW DIRECTION DIRECCIÓN DE FLUJO
	SAND DAM LIMIT LIMITE DEL MURO DE ARENA

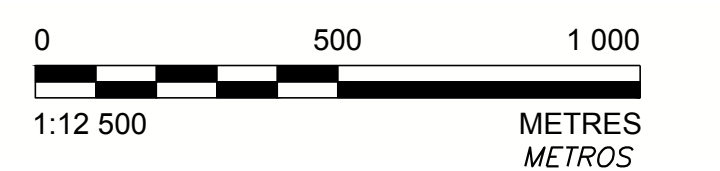
- GENERAL NOTES**
1. WGS84 ZONE 19 SOUTH COORDINATE SYSTEM.
 2. ELEVATIONS ARE PRESENTED AS METRES ABOVE MEAN SEA LEVEL (m.a.s.l.).
 3. BASE TOPOGRAPHY SUPPLIED BY MINERA QUEBRADA BLANCA, ABRIL 2012 AND JUNIO 2017.
 4. WASTE DUMP PROVIDED BY TECK, OCTOBER 2017.
 5. IT IS THE RESPONSIBILITY OF THE USER OF THIS DRAWING TO ENSURE THE USE OF THE MOST CURRENT VERSION.
 6. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 7. SHOULD A DISCREPANCY BETWEEN THE ENGLISH AND SPANISH VERSIONS BE IDENTIFIED THE ENGLISH VERSION SHALL PREVAIL.
 8. MAJOR TOPOGRAPHY CONTOUR INTERVAL 25 m MINOR TOPOGRAPHY CONTOUR INTERVAL 5 m.

- NOTAS GENERALES**
1. SISTEMA DE COORDENADAS WGS84, ZONA 19 SUR.
 2. ELEVACIONES PRESENTADAS EN METROS SOBRE EL NIVEL DEL MAR (m.s.n.m.).
 3. TOPOGRAFIA BASE PROPORCIONADA POR MINERA QUEBRADA BLANCA, ABRIL 2012 Y JUNIO 2017.
 4. SE MUESTRA EL BOTADERO, PROVISIONADO POR TECK EN OCTUBRE, 2017.
 5. ES RESPONSABILIDAD DEL USUARIO DE ESTE PLANO GARANTIZAR EL USO DE LA VERSION MAS RECIENTE.
 6. TODAS LAS DIMENSIONES ESTAN EN METROS A MENOS QUE SE INDIQUE DE OTRA MANERA.
 7. EN CASO DE ALGUNA DISCREPANCIA ENTRE LAS VERSIONES EN INGLES Y ESPAÑOL PREVALECE LA VERSION EN INGLES.
 8. CURVAS DE NIVEL PRIMARIAS CADA 25 m CURVAS DE NIVEL SECUNDARIAS CADA 5 m.

- SPECIFIC NOTES**
1. PIPELINES AND BARGES NOT SHOWN.
 2. DESIGNS BY OTHERS INCLUDING MINE AREA WORKS AND WATER RECLAIM PLATFORMS ARE NOT SHOWN.
 3. DUMP TO DAM HAUL ROAD BY TECK. FILENAME: camino_tailing_wgs-84.dwg, DATED OCTOBER 2017.
 4. TAILINGS LAUNDER FROM TECK, DATE RECEIVED NOVEMBER 2017. FILENAME: 5642-1630-SK-PL-0001_4.dwg
 5. UPSTREAM STARTER DAM CONSTRUCTION HAUL ROAD RECEIVED FROM TECK (MARCH 2019).

- NOTAS ESPECIFICAS**
1. NO SE MUESTRAN TUBERIAS NI BALSAS.
 2. NO SE MUESTRAN DISEÑOS DE OTROS, INCLUYENDO TRABAJOS EN EL AREA DE LA MINA Y PLATAFORMAS DE RECUPERACION DE AGUA.
 3. CAMINO DESDE EL BOTADERO HASTA EL MURO DE PARTIDA POR TECK, ARCHIVO: camino_tailing_wgs-84.dwg, FECHA OCTUBRE 2017.
 4. CANALETA DE RELAVES POR TECK, FECHA NOVIEMBRE 2017, ARCHIVO: 5642-1630-SK-0001_4.dwg.
 5. CAMINO DE CONSTRUCCION AGUAS ARRIBA DEL MURO DE PARTIDA POR TECK (MARZO, 2019).

**NOT FOR CONSTRUCTION
 NO APTO PARA CONSTRUCCION**



<p>THIS DRAWING AND THE INFORMATION CONTAINED IN IT ARE THE PROPERTY OF TECK. USE OF THE CONTENTS IS AUTHORIZED ONLY FOR THE PROJECT FOR WHICH IT WAS ISSUED AND UNDER THE PROVISIONS AGREED BY GOLDER AND TECK IN THE RESPECTIVE AGREEMENT.</p> <p>ESTE PLANO Y LA INFORMACION CONTENIDA EN EL MISMO SON PROPIEDAD DE TECK. EL USO DE LOS CONTENIDOS SOLO ESTA AUTORIZADO PARA EL PROYECTO EL CUAL FUE EMITIDO Y BAJO LAS DISPOSICIONES ACORDADAS POR GOLDER Y TECK EN SU ACUERDO RESPECTIVO.</p>		<p>COMPANIA MINERA TECK QUEBRADA BLANCA</p>		<p>GOLDER ASSOCIATES</p>		<p>PROJECT TITLE / TITULO PROYECTO: QUEBRADA BLANCA PHASE 2 TAILINGS MANAGEMENT FACILITY INITIAL ARRANGEMENT / CONFIGURACION INICIAL: START OF PRODUCTION / INICIO DE PRODUCCION</p>																																																																															
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Teck COMPANIA MINERA TECK QUEBRADA BLANCA



(*) ORIGINAL SIGNED ORIGINAL FIRMADO

APPENDIX B

Select Photographs from 2022
AFPR Site Visit

Plate 1: Tailings Management Facility (1400)

View from west abutment looking upstream



Plate 2: Tailings Management Facility (1400)

Looking south from north end of tailings management facility



Plate 3: Starter Dam (1452)

Looking south towards upstream face



Plate 4: Starter Dam (1452)

Looking east from west abutment



Plate 5: Starter Dam (1452)

Looking west from east abutment



Plate 6: Starter Dam (1452)

Upstream face



Plate 7: Starter Dam (1452)

Looking east along upstream crest limit



Plate 8: Starter Dam (1452) & Cofferdam (1424)

Looking upstream from starter dam crest



Plate 9: Tailings Management Facility (1400)

Looking up Valley 1 from starter dam crest



Plate 10: Starter Dam (1452)

Looking downstream from starter dam crest



Plate 11: Starter Dam (1452)

Looking east towards cyclone station from starter dam crest



Plate 12: Tailings Distribution System (1442)

East abutment viewed from starter dam crest



Plate 13: Tailings Distribution System (1442)

East abutment above starter dam crest



Plate 14: Tailings distribution system

West abutment viewed from starter dam crest



Plate 15: Initial Reclaim Pond (1400)

View from west abutment of starter dam crest



Plate 16: Tailing Distribution System (1442)

Above starter dam crest



Plate 17: Initial Reclaim Pond (1424)

Initial pump barge installation



Plate 18: Starter Dam (1452)

Starter dam upstream lining system and abutment tie-ins



Plate 19: Cyclone Station (1441)

Emergency discharge pipeline



Plate 20: Cyclone Station (1441) & Initial Reclaim Pond (1424)

Outlet of emergency discharge pipeline



Plate 21: Starter Dam & Downstream Paddock Platforms (1452)

Looking upstream towards starter dam along dam drain



Plate 22: Year 2 Sump & Shear Key (1453)



Plate 23: Year 2 Sump & Shear Key (1453)



Plate 24: Dam Drainage System (1453)

View downstream from Year 2 sump downstream limit



Plate 25: Year 2 Sump

Details



Plate 26: Seepage Collection Ponds (1461)



Plate 27: Seepage Collection Ponds (1461)

Seepage Collection Pond 1



Plate 28: Seepage Collection Ponds (1461)

Seepage Collection Pond 2



Plate 29: Seepage Collection Ponds (1461)

Retaining wall & electrical rooms



Plate 30: Seepage Collection Ponds (1461)

Central berm & pumping infrastructure



Plate 31: Seepage Cut-Off System (1465)



Plate 32: Cyclone Station (1441)



Plate 33: Cyclone Station (1441)



Plate 34: Booster Station No. 1 (1480)



Plate 35: Booster Station No. 2 (1480)



Plate 36: Booster Station No. 2 (1480)

Slope reinforcement measures



Plate 37: Permanent Pump Station (1480)



Plate 38: Reclaim & Dilution Water Systems Corridor (1480)



Plate 39: Reclaim & Dilution Water Systems Corridor (1480)

Slope reinforcement measures



Plate 40: Dilution Water Terminal Station (1644)

Dilution water system



Plate 41: Reclaim & Dilution Water Systems Corridor (1480)

Pump barge setups



Plate 42: TMF Contour Channel (1422)



APPENDIX C

2022 AFPR Site Visit Checklist

2022 Annual Facility Performance Review Checklist

Site: Quebrada Blanca 2
Facility Name: Tailings Management Facility
Inspection Carried Out By: Paul Bedell and Manuel Troncoso
Dates of Inspection: 06Dec and 07Dec2022
Walkover Inspection Conducted: Yes
Weather Conditions: -2°C to 9°C; sun to overcast with periods of rain and snow.

ID	Observed Features	Yes	No	Plate (Appendix B)	Comments
1.0	<i>Upstream Dam Slope</i>				
1.1	Concern with Current or Previous Water Level		x		
1.2	Evidence of Wave or Other Erosion		x		
1.3	Damage to lining system		x	6	Construction in-progress.
1.4	Unusual Accumulation of Debris		x		
1.5	Evidence of Sloughing/Sliding		x		
1.6	Evidence of Cracks		x		
1.7	Any Other Deformation		x		
1.8	Damage to plinths		x	18	Connection to dam lining system in-progress.
1.9	Damage to cofferdam		x	6	Lining of crest in-progress.
1.1	Concerns with deposition infrastructure		x	7	Construction in-progress.
1.1	Other Unusual Conditions		x		
2.0	<i>Dam Crest</i>				
2.1	Evidence of Shoulder Erosion		x		
2.2	Evidence of Cracking		x		
2.3	Other Deformation/Settlement/Sinkholes		x		
2.4	Concerns with Low Areas on the Crest		x		
2.5	Concerns with deposition / tailings distribution / sand distribution infrastructure		x		Construction in-progress.
2.6	Other Unusual Conditions		x		
3.0	<i>Downstream Dam Slope</i>				
3.1	Evidence of Erosion		x		
3.2	Evidence of Sloughing/Sliding		x		
3.3	Evidence of Cracking		x		
3.4	Any Other Deformation		x		
3.5	Signs of Phreatic Surface/Seepage		x		
3.6	Seepages Observed		x		
3.7	Is Seepage (if any) Turbid		x		
3.8	Non-Uniform Slope		x		
3.9	Concerns with sand distribution infrastructure		x		Installation of downstream downcomers pending.
3.1	Other Unusual Conditions		x		
4.0	<i>Downstream Buttresses & Paddock Platforms</i>				
4.1	Evidence of Erosion		x		
4.2	Evidence of Sloughing/Sliding		x		
4.3	Evidence of Cracking		x		
4.4	Any Other Deformation		x		
4.5	Signs of Phreatic Surface/Seepage		x		
4.6	Seepages Observed		x		
4.7	Is Seepage (if any) Turbid		x		
4.8	Non-Uniform Slope		x		
4.9	Concerns with sand distribution infrastructure		x		Construction in-progress.
4.1	Other Unusual Conditions		x		
5.0	<i>Dam Abutments & Valley Walls</i>				
5.1	Seepages Observed		x		
5.2	Is Seepage (if any) Turbid		x		
5.3	Evidence of Erosion		x		
5.4	Evidence of Cracks		x		
5.5	Other Deformation/Settlement		x		
5.6	Concerns with surface water management		x		
5.7	Concerns with deposition / tailings distribution / sand distribution infrastructure		x	12, 13, 14	Construction in-progress.
5.8	Concerns with rockfall hazard		x		
5.9	Other Unusual Conditions		x		
6.0	<i>Downstream Toe</i>				
6.1	Seepages Observed		x		
6.2	Is Seepage (if any) Turbid		x		
6.3	Evidence of Soft Toe Condition		x		
6.4	Evidence of Boils		x		
6.5	Other Unusual Conditions		x		

2022 Annual Facility Performance Review Checklist

Site: Quebrada Blanca 2
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Weather Conditions: -2°C to 9°C; sun to overcast with periods of rain and snow.

ID	Observed Features	Yes	No	Plate (Appendix B)	Comments
7.0 Seepage Collection Ponds & Surrounds					
7.1	Concern with Current or Previous Water Level		x	31	Ponds empty. Spillway from Seepage Collection Pond 2 under construction.
7.2	Evidence of Wave or Other Erosion		x		
7.3	Damage to lining system		x		
7.4	Unusual Accumulation of Debris	x		26, 27	Material in Seepage Collection Pond 1 to be removed. Material graded into pond by Contractor during road maintenance works.
7.5	Evidence of Sloughing/Sliding		x		
7.6	Evidence of Cracks		x		
7.7	Evidence of Sedimentation	x		26, 27, 28	Some sedimentation due to inflows from precipitation events during construction. Operations to assess conditions prior to use of ponds.
7.8	Other Deformation/Settlement		x		
7.9	Concern with pumping infrastructure		x	29, 30	Construction in-progress--pumping infrastructure.
7.1	Other Unusual Conditions		x	30, 31	Construction of e-room retaining wall (road access ramp portion), non-contact water ditches & Seepage Collection Pond 2 emergency spillway in-progress.
8.0 TMF Contour Channel					
8.1	Evidence of Erosion or Obstructions.		x		
8.2	Unusual Intensity of Flow in Channel		x		
8.3	Evidence of Damage to Channel Armouring/Lining		x	42	Liner installation in-progress; near completion.
8.4	Evidence of Sloughing/Sliding/Sedimentation		x		
8.5	Other Deformation/Settlement		x		
8.6	Other Unusual Conditions		x		
9.0 Mine East Channel					
9.1	Evidence of Erosion or Obstructions.		x		
9.2	Unusual Intensity of Flow in Channel		x		
9.3	Evidence of Damage to Channel Armouring/Lining		x		
9.4	Evidence of Sloughing/Sliding/Sedimentation		x		
9.5	Other Deformation/Settlement		x		
9.6	Other Unusual Conditions		x		
10.0 Cyclone Station					
10.1	Concern with cut slopes		x	32	Performing well to-date. Installation of drape mesh to be carried out based on performance per design.
10.2	Concern with fills and fill slopes		x		Performing well to-date. Movement monuments to be installed following completion of construction per EoR's recommendations (under development).
10.3	Concern with infrastructure		x		Construction in-progress.
10.4	Evidence of fill settlement or deformation		x		
10.5	Evidence of ponded water on platform		x		
10.6	Other Unusual Conditions		x		
11.0 Reclaim Pond					
11.1	Evidence of debris		x		
11.2	Concern with rockfall hazard		x		
11.3	Evidence of sloughing/slide of slopes		x		
11.4	Concern with Current or Previous Water Level		x		Pond at El. 3,756.6 m ±.
11.5	Concern with pumping system		x		
11.6	Other Unusual Conditions	x		4, 8, 9, 15, 17, 20	Installation of sandbags in-progress. Placement of sandbags required by design to be in-place before pond receives water or tailings.
12.0 Booster Station No. 1					
12.1	Concern with cut slopes		x		
12.2	Concern with fills and fill slopes		x		
12.3	Concern with infrastructure		x		
12.4	Evidence of ponded water on platform		x		
12.5	Other Unusual Conditions		x		
13.0 Booster Station No. 2					
13.1	Concern with cut slopes		x	36	Geotechnical instrumentation installation in-progress per design.
13.2	Concern with fills and fill slopes		x		
13.3	Concern with infrastructure		x		Construction in-progress.
13.4	Evidence of ponded water on platform		x		
13.5	Other Unusual Conditions		x		
14.0 Permanent Pump Station					
14.1	Concern with cut slopes		x		Drape mesh installation pending.
14.2	Concern with fills and fill slopes		x		
14.3	Concern with infrastructure		x		Construction in-progress.
14.4	Evidence of ponded water on platform		x		
14.5	Other Unusual Conditions		x		
15.0 TMF Roads & Platforms					

2022 Annual Facility Performance Review Checklist

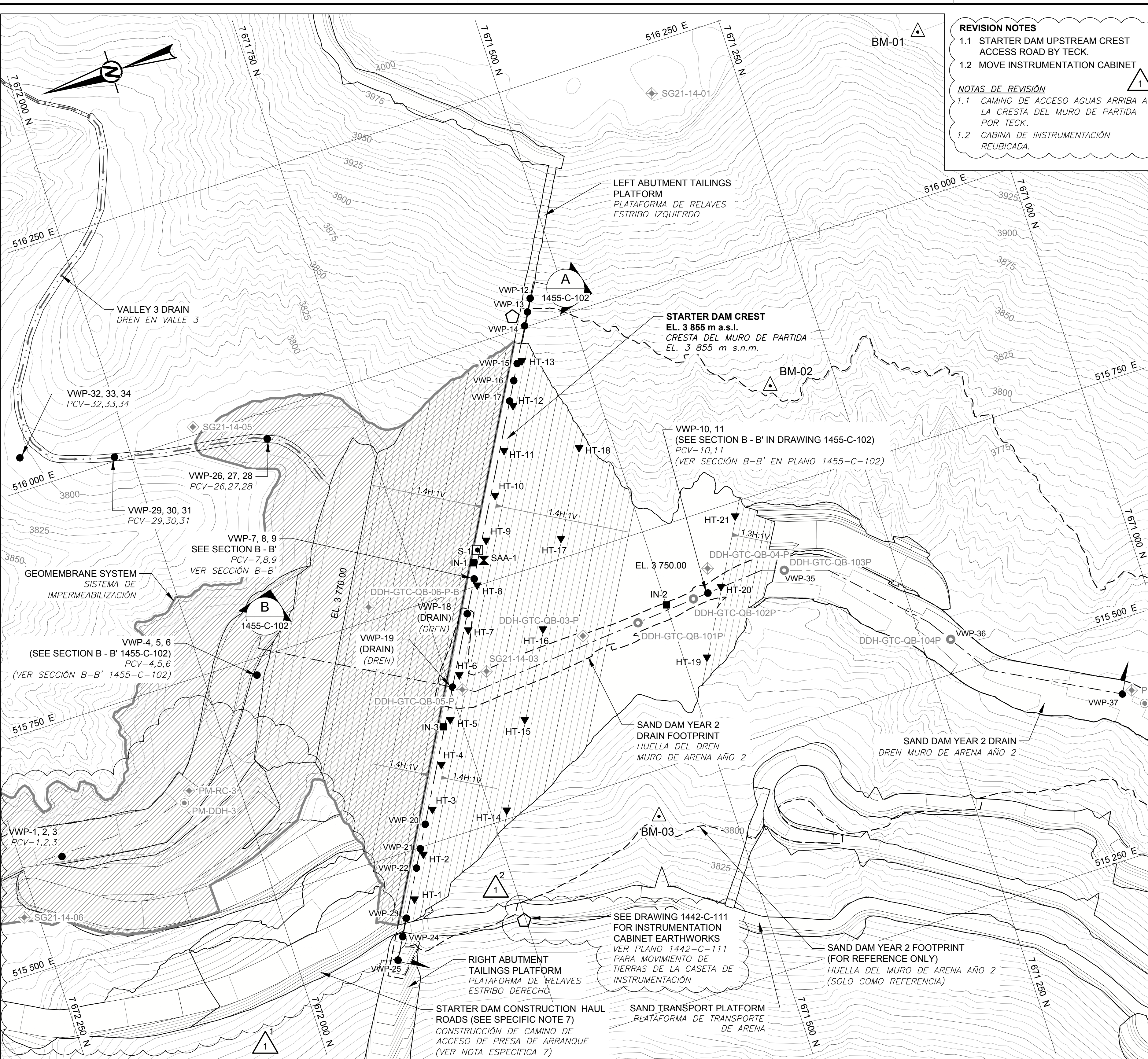
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Dates of Inspection: 06Dec and 07Dec2022
Walkover Inspection Conducted: Yes
Weather Conditions: -2°C to 9°C; sun to overcast with periods of rain and snow.

ID	Observed Features	Yes	No	Plate (Appendix B)	Comments
15.1	Concern with cut slopes		x		
15.2	Concern with fills and fill slopes		x		
15.3	Concern with traffic surfaces		x		
15.4	Evidence of ponded water on platform		x		
15.5	Concern with rockfall hazard		x	16	Drape mesh installation on Papajoy slope cut above west abutment about 50% complete.
15.6	Other Unusual Conditions		x		
16.0 Tailings distribution/deposition, Sand distribution, and Seepage pumpback infrasture (other than above)					
16.1	Concern with discharge locations		x		Construction in-progress.
16.2	Concern with infrastrcuture		x		Construction in-progress.
17.0 Sump & Shear Key					
17.1	Concern with Current or Previous Water Level		x		
17.2	Evidence of Wave or Other Erosion		x		
17.3	Damage to lining system		x	25	Opportunity to improve tie-in between bedrock and lining system.
17.4	Unusual Accumulation of Debris		x		
17.5	Evidence of Sloughing/Sliding		x	25	Sloughing on slope above eastern perimeter of sump to be monitored.
17.6	Evidence of Cracks		x		
17.7	Evidence of Sedimentation		x		
17.8	Other Deformation/Settlement		x		
17.9	Concern with infrastructure		x		
17.1	Other Unusual Conditions		x		
18.0 Reclaim and Dilution Water Systems--Corridors					
18.1	Concern with cut slopes	x		40	Rock slope at terminal station to be inspected regarding potential rockfall of blocks. Slope support installation in-progress as part of construction of RWS/DWS platform to west of permanent pump station.
18.2	Concern with fills and fill slopes		x		
18.3	Concern with traffic surfaces		x		
18.4	Evidence of ponded water on platform		x		
18.5	Concern with infrastructure		x		Construction in-progress.
18.6	Concern with rockfall hazard		x		
18.7	Other Unusual Conditions		x		
19.0 Tailings Transport System					
19.1	Concern with cut slopes		x		
19.2	Concern with fills and fill slopes		x		
19.3	Concern with traffic surfaces		x		
19.4	Concern with infrastructure		x		Construction in-progress.
19.5	Evidence of ponded water on platform		x		
19.6	Concern with rockfall hazard		x		
19.7	Other Unusual Conditions		x		

APPENDIX D

**Vibrating Wire Piezometer
Monitoring Results
(based on data received from
Excon)**

SIZE: FORMAT: ANSI D
 PLOT DATE: martes, 10 de septiembre de 2019 - TIME: 07:10:25 p. m.
 PATH: W:\02 Proyectos\2016\B-BusinessSupport\109-115-1009_082_TMF\Client\Teck_Resources\109-115-1009_082_TMF\02\DWG\DWG-1455-C-101.dwg



REVISION NOTES
 1.1 STARTER DAM UPSTREAM CREST ACCESS ROAD BY TECK.
 1.2 MOVE INSTRUMENTATION CABINET

NOTAS DE REVISIÓN
 1.1 CAMINO DE ACCESO AGUAS ARRIBA A LA CRESTA DEL MURO DE PARTIDA POR TECK.
 1.2 CABINA DE INSTRUMENTACIÓN REUBICADA.

●	UTM COORDINATES COORDENADAS UTM		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
VWP-1	7 672 205.8	515 610.9	3 766.0
VWP-2	7 672 205.8	515 610.9	3 741.0
VWP-3	7 672 205.8	515 610.9	3 716.0
VWP-4	7 671 944.3	515 732.2	3 743.3
VWP-5	7 671 944.3	515 732.2	3 718.3
VWP-6	7 671 944.3	515 732.2	3 693.3
VWP-7	7 671 688.7	515 758.2	3 743.0
VWP-8	7 671 688.7	515 758.2	3 718.0
VWP-9	7 671 688.7	515 758.2	3 693.0
VWP-10	7 671 453.1	515 665.2	3 713.6
VWP-11	7 671 453.1	515 665.2	3 694.5
VWP-12	7 671 536.9	516 028.0	3 719.0
VWP-13	7 671 544.3	516 014.9	3 766.5
VWP-14	7 671 551.8	516 001.5	3 806.4
VWP-15	7 671 572.2	515 965.2	3 806.4
VWP-16	7 671 581.4	515 948.8	3 766.5
VWP-17	7 671 592.4	515 929.2	3 719.0
VWP-18	7 671 707.6	515 724.6	3 738.4
VWP-19	7 671 747.3	515 654.1	3 727.5
VWP-20	7 671 821.5	515 522.3	3 714.8
VWP-21	7 671 834.7	515 498.7	3 764.3
VWP-22	7 671 845.2	515 480.1	3 803.3
VWP-23	7 671 872.3	515 431.9	3 803.3
VWP-24	7 671 882.3	515 414.1	3 764.3
VWP-25	7 671 895.0	515 391.6	3 714.8
VWP-26	7 671 854.4	515 971.8	3 770.0
VWP-27	7 671 854.4	515 971.8	3 745.0
VWP-28	7 671 854.4	515 971.8	3 720.0
VWP-29	7 672 017.8	516 004.1	3 789.3
VWP-30	7 672 017.8	516 004.1	3 764.3
VWP-31	7 672 017.8	516 004.1	3 739.3
VWP-32	7 672 115.2	516 035.2	3 802.1
VWP-33	7 672 115.2	516 035.2	3 777.1
VWP-34	7 672 115.2	516 035.2	3 752.1
VWP-35	7 671 366.9	515 663.1	3 707.9
VWP-36	7 671 219.3	515 536.0	3 696.8
VWP-37	7 671 060.7	515 422.1	3 785.7

▼	SURVEY MONUMENT HITO DE CONTROL TOPOGRÁFICO		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
HT-1	7 671 859.2	515 444.0	3 855.0
HT-2	7 671 834.9	515 487.1	3 855.0
HT-3	7 671 810.6	515 530.3	3 855.0
HT-4	7 671 786.3	515 573.4	3 855.0
HT-5	7 671 762.1	515 616.6	3 855.0
HT-6	7 671 737.5	515 659.7	3 855.0
HT-7	7 671 713.8	515 702.8	3 855.0
HT-8	7 671 689.3	515 746.0	3 855.0
HT-9	7 671 665.0	515 789.1	3 855.0
HT-10	7 671 640.7	515 832.3	3 855.0
HT-11	7 671 616.4	515 875.4	3 855.0
HT-12	7 671 592.2	515 918.5	3 855.0
HT-13	7 671 567.9	515 961.7	3 855.0
HT-14	7 671 734.5	515 504.5	3 800.0
HT-15	7 671 685.5	515 591.6	3 800.0
HT-16	7 671 636.4	515 678.8	3 800.0
HT-17	7 671 587.4	515 765.9	3 800.0
HT-18	7 671 538.3	515 853.1	3 800.0
HT-19	7 671 477.2	515 594.7	3 750.0
HT-20	7 671 439.0	515 662.6	3 750.0
HT-21	7 671 400.8	515 730.5	3 750.0

■	INCLINOMETER AND CASAGRANDE PIEZOMETER INCLINÓMETRO Y PIEZÓMETRO CASAGRANDE		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
IN-1	7671684.2	515775.1	3855.0
IN-2	7671499.7	515666.9	3750.0
IN-3	7671769.7	515616.2	3855.0

✕	SHAPE ACCELERATION ARRAY ACELERÓMETRO MEDIDOR DE DEFORMACIONES		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
SAA-1	7 671 672.6	515 774.1	3 855.0

□	SEISMOGRAPH ACELERÓGRAFO		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
S-1	7 671 675.6	515 786.8	3 855.0

△	BENCHMARK PUNTO DE REFERENCIA		
	NORTHING NORTE	EASTING ESTE	ELEVATION ELEVACIÓN
BM-01	7 671 048.9	516 171.8	4 009.3
BM-02	7 671 319.4	515 857.5	3 811.5
BM-03	7 671 578.4	515 451.9	3 808.9

SYMBOLOY / SIMBOLOGÍA	DESCRIPTION / DESCRIPCIÓN	QUANTITY / CANTIDAD
SAA-1 ✕	SHAPE ACCELERATION ARRAY (SAA) / ACELERÓMETRO MEDIDOR DE DEFORMACIONES	1
IN-1 ■	INCLINOMETER AND CASAGRANDE PIEZOMETER / INCLINÓMETRO Y PIEZÓMETRO CASAGRANDE	3
VWP-1 ●	VIBRATING WIRE PIEZOMETER (VWP) / PIEZÓMETRO DE CUERDA VIBRANTE (PCV)	37
S-1 □	SEISMOGRAPH / ACELERÓGRAFO	1
HT-1 ▼	SURVEY MONUMENT / HITO DE CONTROL TOPOGRÁFICO	21
△	BENCHMARK / PUNTO DE REFERENCIA	3
⬠	INSTRUMENT CABIN / CABINA DE INSTRUMENTACIÓN	2

LEGEND / LEYENDA

	BASE TOPOGRAPHY / TOPOGRAFÍA BASE		EXISTING VIBRATING WIRE PIEZOMETER / PIEZÓMETRO DE CUERDA VIBRANTE EXISTENTE
	DESIGN TOPOGRAPHY / TOPOGRAFÍA DE DISEÑO		EXISTING MONITORING WELLS / POZO DE MONITOREO EXISTENTE
	EXISTING CASAGRANDE PIEZOMETER / PIEZÓMETRO CASAGRANDE EXISTENTE		

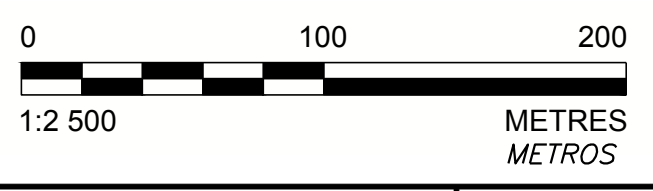
- GENERAL NOTES**
- WGS84 ZONE 19 SOUTH COORDINATE SYSTEM.
 - ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
 - ELEVATIONS ARE PRESENTED AS METRES ABOVE MEAN SEA LEVEL (m a.s.l.).
 - MAJOR CONTOUR INTERVAL 25 m. MINOR CONTOUR INTERVAL 5 m.
 - BASE TOPOGRAPHY SUPPLIED BY TECK, APRIL 2012.
 - SHOULD A DISCREPANCY BETWEEN THE ENGLISH AND SPANISH VERSIONS BE IDENTIFIED THE ENGLISH VERSION SHALL PREVAIL.
 - IT IS THE RESPONSIBILITY OF THE USER OF THIS DRAWING TO ENSURE THE USE OF THE MOST CURRENT REVISION.
 - SEE REPORT 8013-TSA-016-RE-1450-G-404 TAILINGS MANAGEMENT FACILITY DAM DETAIL DESIGN FOR LIST OF TECHNICAL SPECIFICATIONS.

- SPECIFIC NOTES**
- INCLINOMETER CASING MUST EXTEND 5 m INTO COMPETENT BEDROCK.
 - SEISMOGRAPHS 2 AND 3 NOT SHOWN.
 - RESIDENT ENGINEER TO CONFIRM PLACEMENT BASED ON FIELD CONDITIONS.
 - CABLE ROUTING TO PROPOSED INSTRUMENTATION CABIN TO BE PROPOSED BY CONTRACTOR. CABLES SHALL NOT PASS THROUGH THE LINER OF THE DAM.
 - CONTRACTOR MUST REPLACE ALL INSTRUMENTATION THAT HE DAMAGES.
 - LOCATIONS OF SURVEY BENCHMARKS AND INSTRUMENTATION CABINS MAY BE LOCATED IN THE FIELD TO SUIT FIELD CONDITIONS.
 - UPSTREAM STARTER DAM CONSTRUCTION HAUL ROADS RECEIVED FROM TECK (MARCH, 2019). DAMMING OF FILLS TO ALLOW LINER INSTALLATION NOT SHOWN.

- NOTAS GENERALES**
- SISTEMA DE COORDENADAS WGS84, ZONA 19 SUR.
 - TODAS LAS DIMENSIONES ESTÁN EN METROS A MENOS QUE SE INDIQUE DE OTRA MANERA.
 - ELEVACIONES PRESENTADAS EN METROS SOBRE EL NIVEL DEL MAR (m s.n.m.).
 - CURVAS DE NIVEL PRIMARIAS 25 m. CURVAS DE NIVEL SECUNDARIAS 5 m.
 - TOPOGRAFÍA BASE PROPORCIONADA POR TECK, ABRIL 2012.
 - EN CASO DE ALGUNA DISCREPANCIA ENTRE LAS VERSIONES EN INGLÉS Y ESPAÑOL PREVALECE LA VERSIÓN EN INGLÉS.
 - ES RESPONSABILIDAD DEL USUARIO DE ESTE PLANO GARANTIZAR EL USO DE LA REVISIÓN MAS RECIENTE.
 - PARA MAYOR INFORMACIÓN VER ESPECIFICACIONES TÉCNICAS. REFERIRSE AL REPORTE 8013-TSA-016-RE-1450-G-404 TAILINGS MANAGEMENT FACILITY DAM DETAIL DESIGN PARA LA LISTA DE ESPECIFICACIONES TÉCNICAS.

- NOTAS ESPECÍFICAS**
- EL REVESTIMIENTO DEL INCLINÓMETRO DEBERÁ EXTENDERSE 5 m EN LA ROCA COMPETENTE.
 - ACELERÓGRAFS 2 Y 3 NO MOSTRADOS.
 - LA LOCALIZACIÓN FINAL SERÁ DEFINIDA EN EL SITIO POR EL INGENIERO RESIDENTE BASADO EN LAS CONDICIONES DEL SITIO.
 - LA RUTA DE LOS CABLES PARA LA INSTRUMENTACIÓN PROPUESTA HASTA LA CABINA DE INSTRUMENTACIÓN SERÁ PROPUESTA POR EL CONTRATISTA. LOS CABLES NO PASARÁN A TRAVÉS DEL SISTEMA DE IMPERMEABILIZACIÓN DEL MURO.
 - EL CONTRATISTA DEBERÁ REEMPLAZAR A SU COSTO LA INSTRUMENTACIÓN QUE DARE.
 - LA UBICACIÓN DE LOS PUNTOS DE REFERENCIA Y DE LAS CABINAS DE INSTRUMENTACIÓN SERÁ DEFINIDA SEGÚN LAS CONDICIONES ENCONTRADAS EN TERRENO.
 - CAMINO DE CONSTRUCCIÓN AGUAS ARRIBA DEL MURO DE PARTIDA RECIBIDO POR PARTE DE TECK (MARZO, 2019). NO SE MUESTRA EL REPERFILADO DE LOS RELLENOS PARA PERMITIR LA INSTALACIÓN DE LA GEOMEMBRANA.

PLAN VIEW
PLANTA
 SCALE 1: 2 500
 ESCALA 1:2 500



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ESTE PLANO Y LA INFORMACIÓN CONTENIDA EN EL MISMO SON PROPIEDAD DE TECK. EL USO DE LOS CONTENIDOS SOLO ESTÁ AUTORIZADO PARA EL PROYECTO EL CUAL FUE EMITIDO Y BAJO LAS DISPOSICIONES ACORDADAS POR GOLDER Y TECK EN SU ACUERDO RESPECTIVO.										DESIGN ENGINEER / INGENIERO DE DISEÑO: C.Q.										NAME / NOMBRE: W.Y.V.						DRAWING N° / PLANO N°: 8013-TSA-016-DW-1455-C-101			
REV. 1 11-09-2019 C.Q. W.Y.V. B.E.W. F.G. J.D. P.M.B. SEE REVISION NOTES / VER NOTAS DE REVISIÓN										DISCIPLINE SUPERVISOR / SUPERVISOR DE DISCIPLINA: W.Y.V.										PROJECT NUMBER / NÚMERO PROYECTO: 1523140						SCALE / ESCALA: INDICATED			
REV. 0 05-11-2018 C.Q. W.Y.V. B.E.W. T.L.E. J.D. P.M.B. ISSUED FOR CONSTRUCTION / EMITIDO PARA CONSTRUCCIÓN										ENGINEERING MANAGER / JEFE DE PROYECTO: B.E.W.										INDICATED				REV.: 1					
REV. B 17-10-2017 C.Q. W.Y.V. B.E.W. T.L.E. J.D. P.M.B. ISSUED FOR CLIENT REVIEW / EMITIDO PARA REVISIÓN CLIENTE										INTERNAL REVIEW / REVISIÓN INTERNA: J.D.																			
REV. A 04-10-2017 C.Q. W.Y.V. B.E.W. T.L.E. J.D. P.M.B. REVISION INTERNA																													
DRAWING / PLANO										DESCRIPTION / DESCRIPCIÓN																			

Teck COMPANÍA MINERA TECK QUEBRADA BLANCA

Golder Associates

PROJECT TITLE / TÍTULO PROYECTO: QUEBRADA BLANCA PHASE 2 - TAILINGS MANAGEMENT FACILITY INSTRUMENTATION - PLAN / INSTRUMENTACIÓN - PLANTA

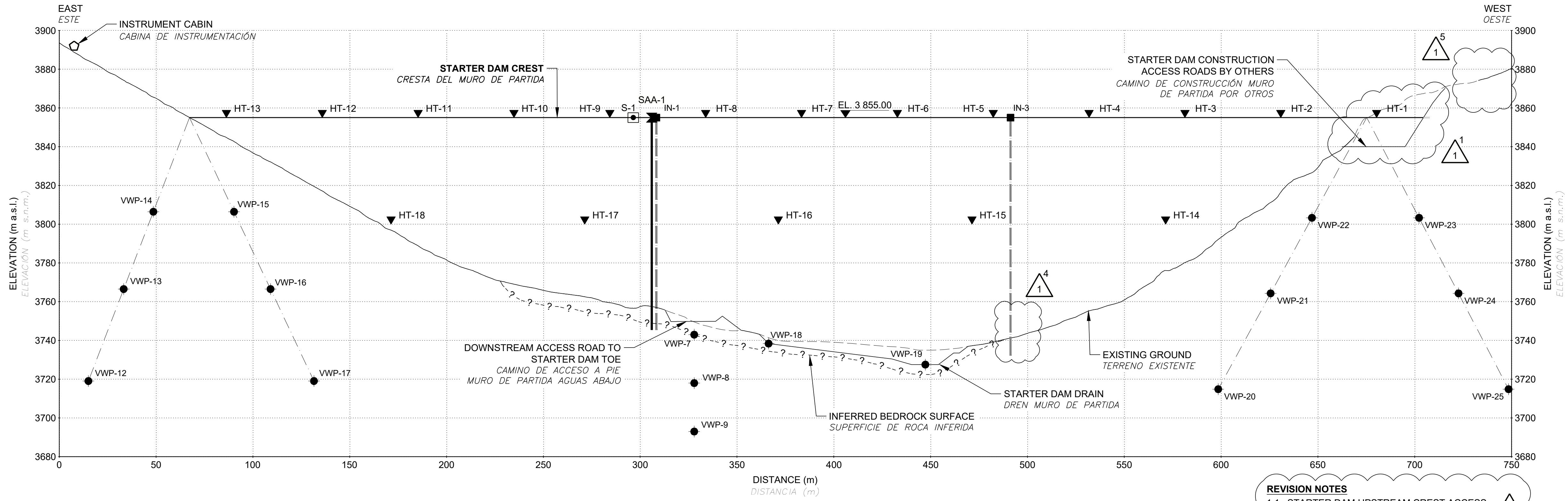
DRAWING N° / PLANO N°: 8013-TSA-016-DW-1455-C-101

FILE NAME / NOMBRE ARCHIVO: 8013-TSA-016-DW-1455-C-101.dwg

PROJECT NUMBER / NÚMERO PROYECTO: 1523140

SCALE / ESCALA: INDICATED

REV.: 1



SECTION A - A'
SECCIÓN A-A'
SCALE 1:1 250
ESCALA 1:1 250
1455-C-101

SYMBOLOLOGY / SIMBOLOGÍA	DESCRIPTION / DESCRIPCIÓN
SAA-1	SHAPE ACCELERATION ARRAY (SAA) / ACELERÓMETRO MEDIDOR DE DEFORMACIONES
IN-1	INCLINOMETER AND CASAGRANDE PIEZOMETER / INCLINÓMETRO Y PIEZÓMETRO CASAGRANDE
VWP-1	VIBRATING WIRE PIEZOMETER (VWP) / PIEZÓMETRO DE CUERDA VIBRANTE (PCV)
S-1	SEISMOGRAPH / ACELERÓGRAFO
▼	SURVEY MONUMENT / HITO DE CONTROL TOPOGRÁFICO
◻	INSTRUMENT CABIN / CABINA DE INSTRUMENTACIÓN

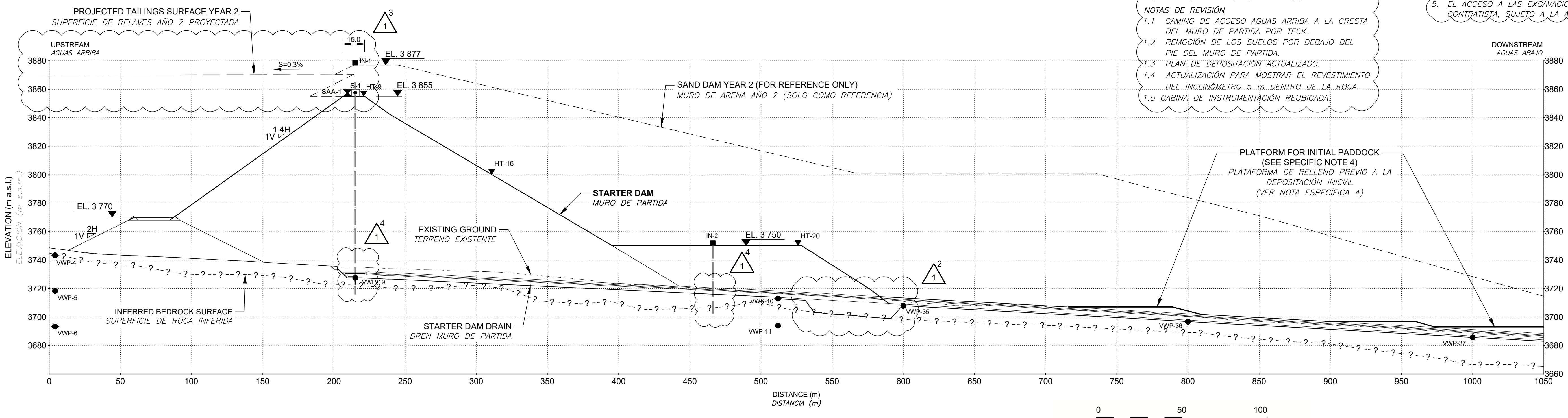
GENERAL NOTES
1. SEE GENERAL NOTES IN DRAWING 8013-TSA-016-DW-1455-C-101.

NOTAS GENERALES
1. VER NOTAS GENERALES EN PLANO 8013-TSA-016-DW-1455-C-101.

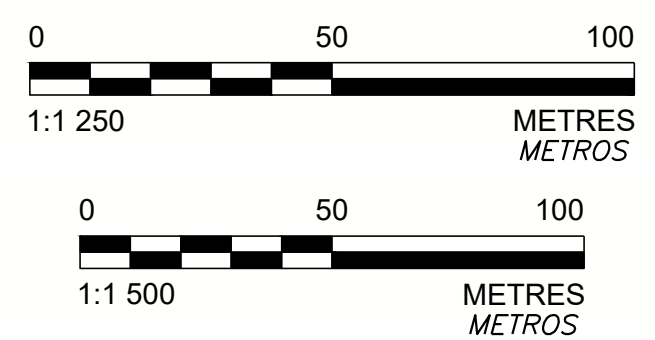
SPECIFIC NOTES
1. RESIDENT ENGINEER TO CONFIRM PLACEMENT BASED ON FIELD CONDITIONS.
2. INCLINOMETER CASING FOR SAA MUST EXTEND 5 m INTO BEDROCK.
3. SEISMOGRAPHS 2 AND 3 NOT SHOWN.
4. DRAWINGS SHOW MINIMUM EXTENT OF CONSTRUCTION. LARGER PLATFORMS CAN BE CONSTRUCTED.
5. ACCESS TO EXCAVATIONS CAN BE REVISED BY CONTRACTOR, SUBJECT TO APPROVAL BY RESIDENT ENGINEER.

NOTAS ESPECIFICAS
1. LA LOCALIZACIÓN FINAL SERÁ DEFINIDA EN EL SITIO POR EL INGENIERO RESIDENTE BASADO EN LAS CONDICIONES DEL SITIO.
2. EL REVESTIMIENTO DEL INCLINÓMETRO PARA SAA DEBERÁ EXTENDERSE 5 m EN LA ROCA COMPETENTE.
3. ACELERÓGRAFOS 2 Y 3 NO MOSTRADOS.
4. LOS PLANOS MUESTRAN LA EXTENSION MÍNIMA DE CONSTRUCCIÓN. PLATAFORMAS DE MAYORES DIMENSIONES PUEDEN SER CONSTRUÍDAS.
5. EL ACCESO A LAS EXCAVACIONES PUEDE SER REVISADO POR EL CONTRATISTA, SUJETO A LA APROBACIÓN DEL INGENIERO RESIDENTE.

REVISION NOTES
1.1 STARTER DAM UPSTREAM CREST ACCESS ROAD BY TECK.
1.2 SOILS BELOW STARTER DAM DOWNSTREAM TOE REPLACED WITH 3C ROCKFILL.
1.3 DEPOSITION PLAN UPDATED.
1.4 UPDATE TO SHOW INCLINOMETER CASING 5 m INTO BEDROCK.
1.5 INSTRUMENTATION CABIN RELOCATED.
NOTAS DE REVISIÓN
1.1 CAMINO DE ACCESO AGUAS ARRIBA A LA CRESTA DEL MURO DE PARTIDA POR TECK.
1.2 REMOCIÓN DE LOS SUELOS POR DEBAJO DEL PIE DEL MURO DE PARTIDA.
1.3 PLAN DE DEPOSITACIÓN ACTUALIZADO.
1.4 ACTUALIZACIÓN PARA MOSTRAR EL REVESTIMIENTO DEL INCLINÓMETRO 5 m DENTRO DE LA ROCA.
1.5 CABINA DE INSTRUMENTACIÓN REUBICADA.



SECTION B - B'
SECCIÓN B-B'
SCALE 1:1 500
ESCALA 1:1 500
1455-C-101



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REV	DATE / FECHA	DESIGN / DISEÑO	DRAWN / DIBUJO	LD.	Q.C.	P.M.	E.M.	DESCRIPTION / DESCRIPCIÓN
1	11-09-2019	C.Q.	W.Y.V.	B.E.W.	F.G.	J.D.	P.M.B.	SEE REVISION NOTES / VER NOTAS DE REVISIÓN
0	05-11-2018	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	ISSUED FOR CONSTRUCTION / EMITIDO PARA CONSTRUCCIÓN
B	17-10-2017	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	ISSUED FOR CLIENT REVIEW / EMITIDO PARA REVISIÓN CLIENTE
A	04-10-2017	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	INTERNAL REVIEW / REVISIÓN INTERNA

REV	DATE / FECHA	DESIGN / DISEÑO	DRAWN / DIBUJO	LD.	Q.C.	P.M.	E.M.	DESCRIPTION / DESCRIPCIÓN
1	11-09-2019	C.Q.	W.Y.V.	B.E.W.	F.G.	J.D.	P.M.B.	SEE REVISION NOTES / VER NOTAS DE REVISIÓN
0	05-11-2018	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	ISSUED FOR CONSTRUCTION / EMITIDO PARA CONSTRUCCIÓN
B	17-10-2017	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	ISSUED FOR CLIENT REVIEW / EMITIDO PARA REVISIÓN CLIENTE
A	04-10-2017	C.Q.	W.Y.V.	B.E.W.	T.L.E.	J.D.	P.M.B.	INTERNAL REVIEW / REVISIÓN INTERNA

COMPANÍA MINERA TECK QUEBRADA BLANCA				GOLDER ASSOCIATES			
NAME / NOMBRE	SIGN / FIRMA	DATE / FECHA	DISCIPLINE / ESPECIALIDAD	NAME / NOMBRE	SIGN(*) / FIRMA	DATE / FECHA	DISCIPLINE / ESPECIALIDAD
DESIGN ENGINEER / INGENIERO DE DISEÑO				DESIGN / DISEÑO	C.Q.	11-09-2019	
DISCIPLINE SUPERVISOR / SUPERVISOR DE DISCIPLINA				DRAWN / DIBUJO	W.Y.V.	11-09-2019	
ENGINEERING MANAGER / JEFE DE PROYECTO				DISCIPLINE LEAD / JEFE DE DISCIPLINA	B.E.W.	11-09-2019	
				PROJECT MANAGER / GERENTE DE PROYECTO	J.D.	11-09-2019	
				ENGINEERING MANAGER / GERENTE DE INGENIERÍA	P.M.B.	11-09-2019	

Teck COMPANÍA MINERA TECK QUEBRADA BLANCA

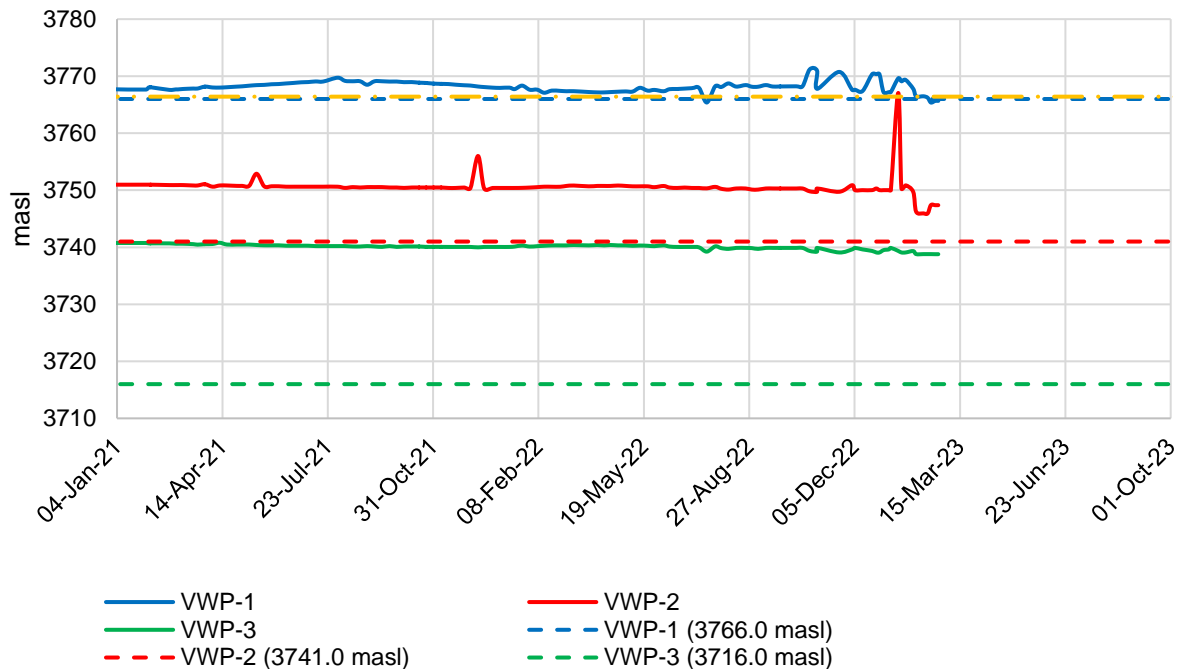
PROJECT TITLE / TÍTULO PROYECTO: QUEBRADA BLANCA PHASE 2 - TAILINGS MANAGEMENT FACILITY
STARTER DAM / MURO DE PARTIDA
INSTRUMENTATION - SECTIONS / INSTRUMENTACIÓN - SECCIONES

DRAWING N°: 8013-TSA-016-DW-1455-C-102
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PROJECT NUMBER: 1523140
SCALE: INDICATED
REV.: 1

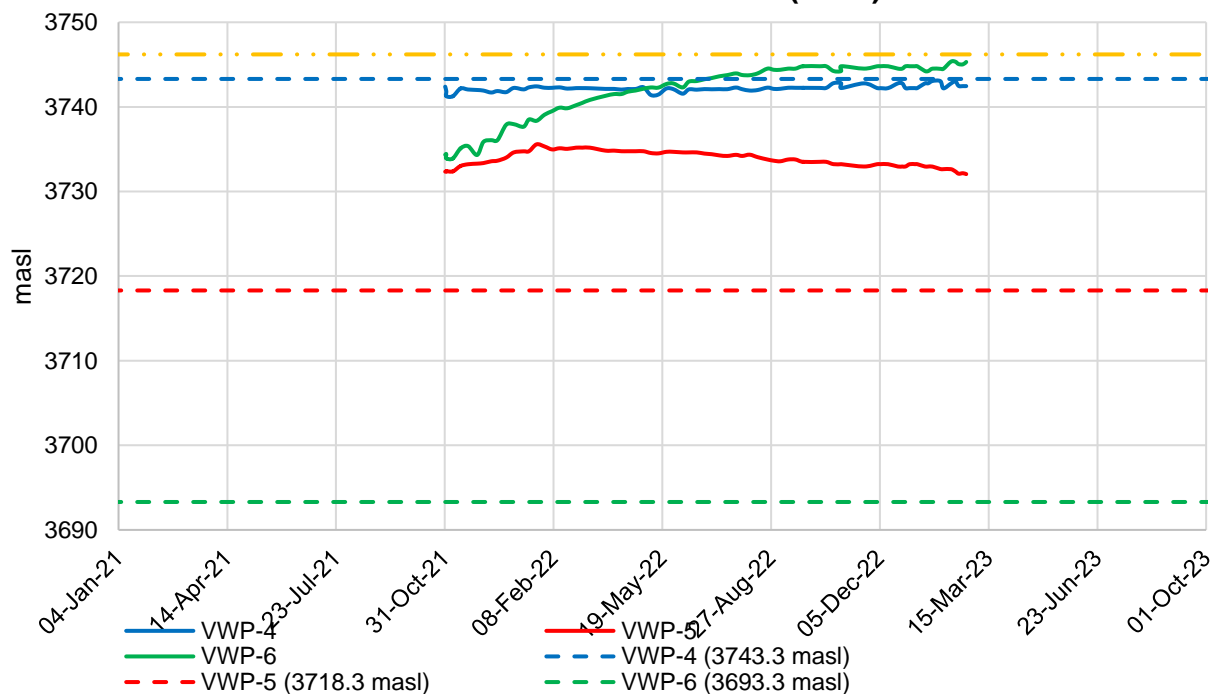
Golder Associates

(*) ORIGINAL SIGNED ORIGINAL FIRMADO

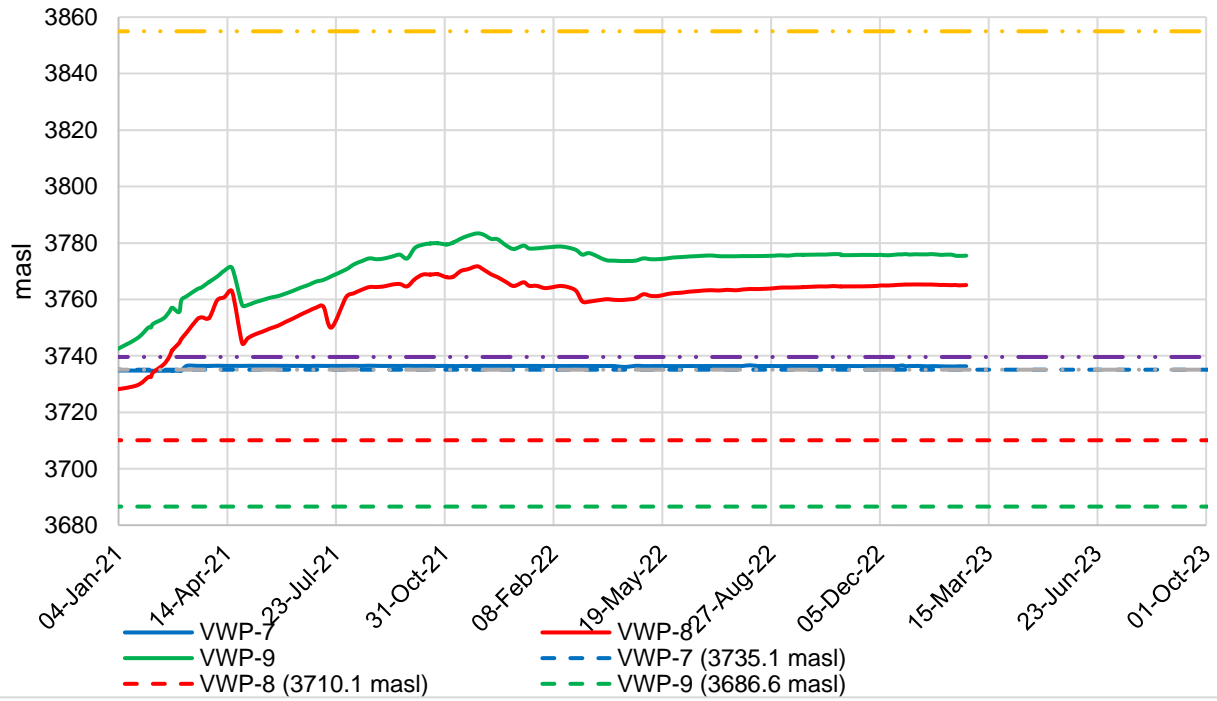
VWP-1@3 - Water Elevation (masl)



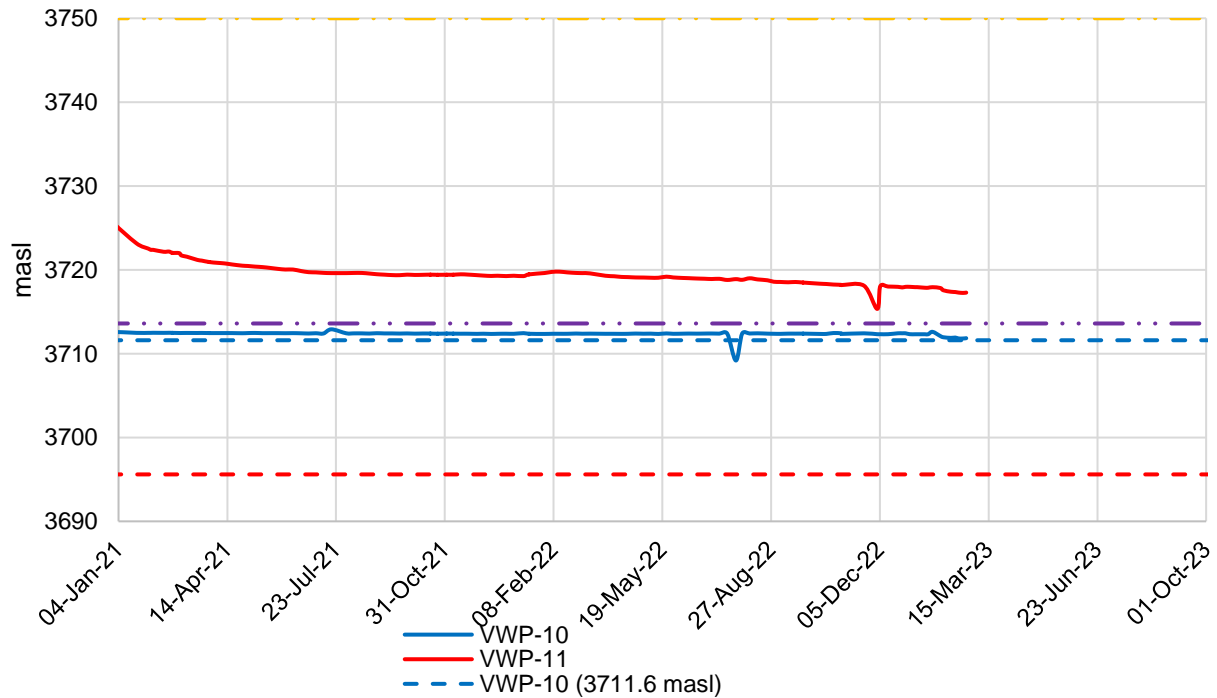
VWP-4@6 - Water Elevation (masl)



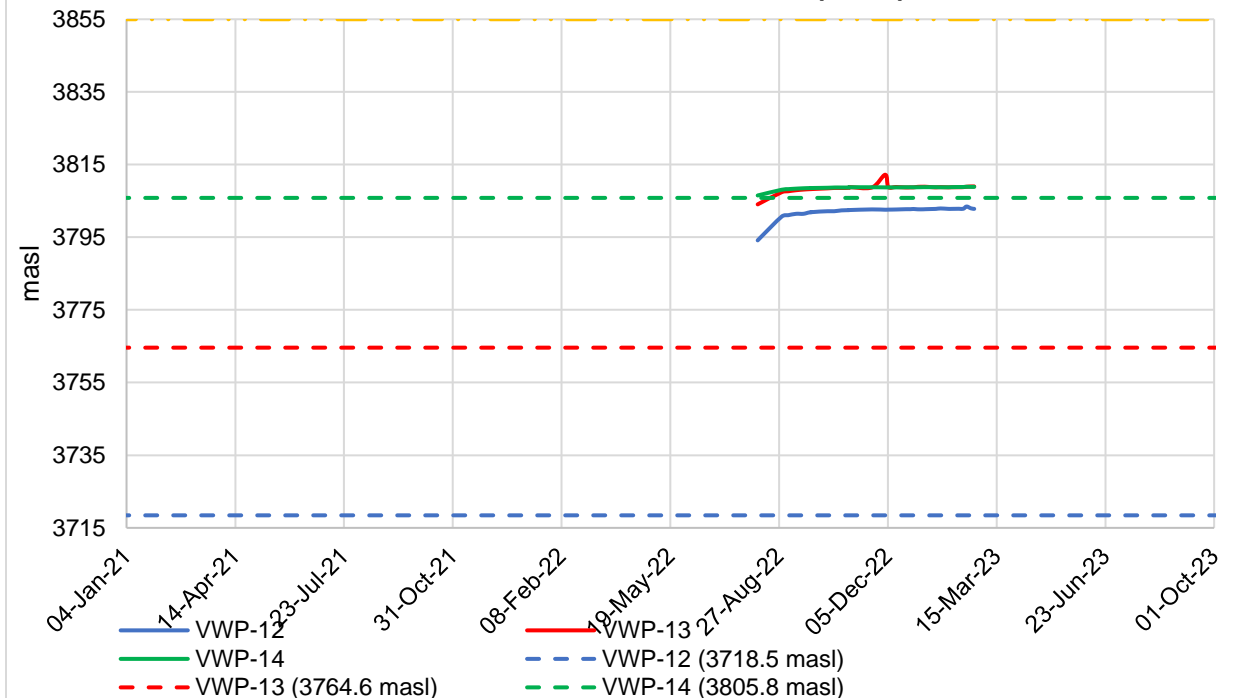
VWP-7@9 - Water Elevation (masl)



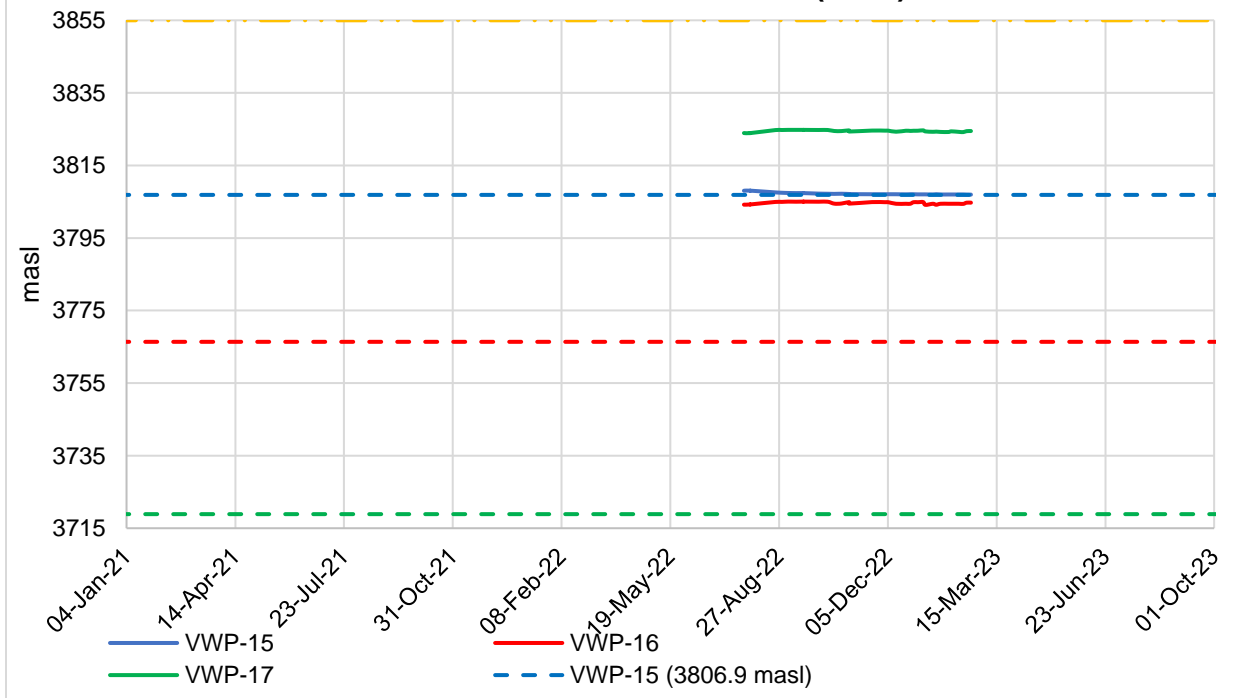
VWP-10@11 - Water Elevation (masl)

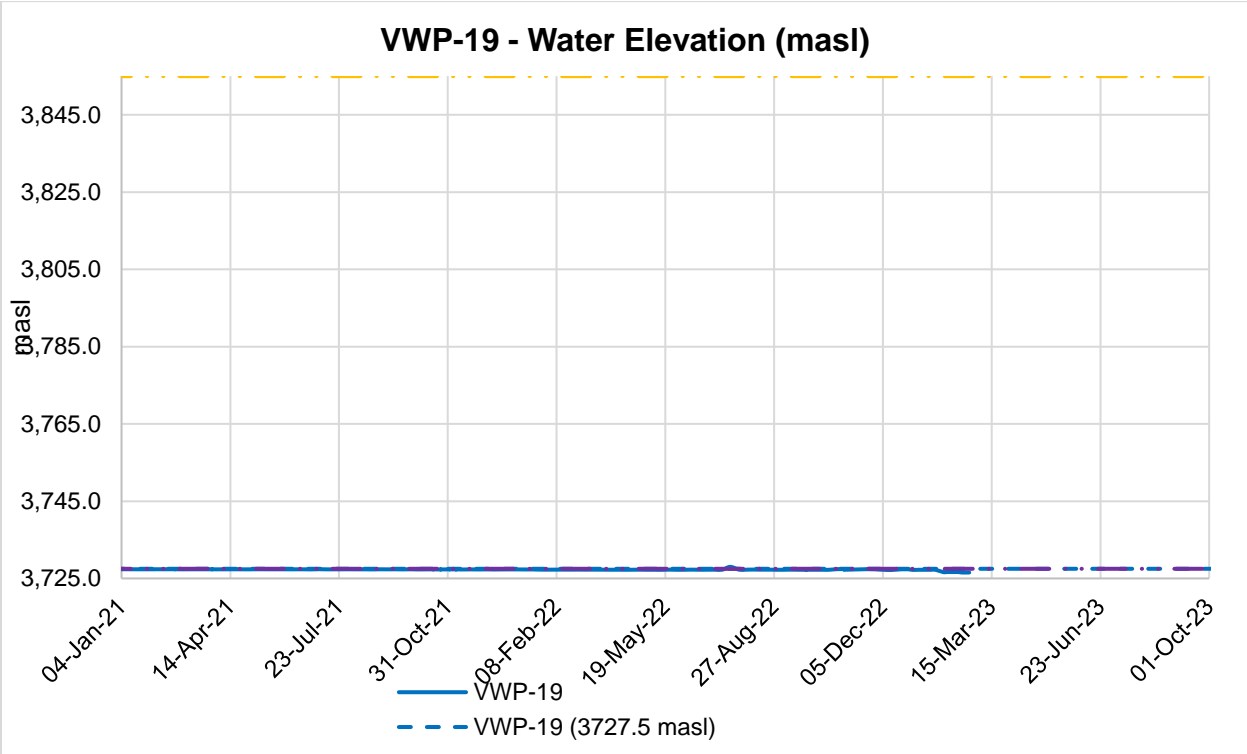
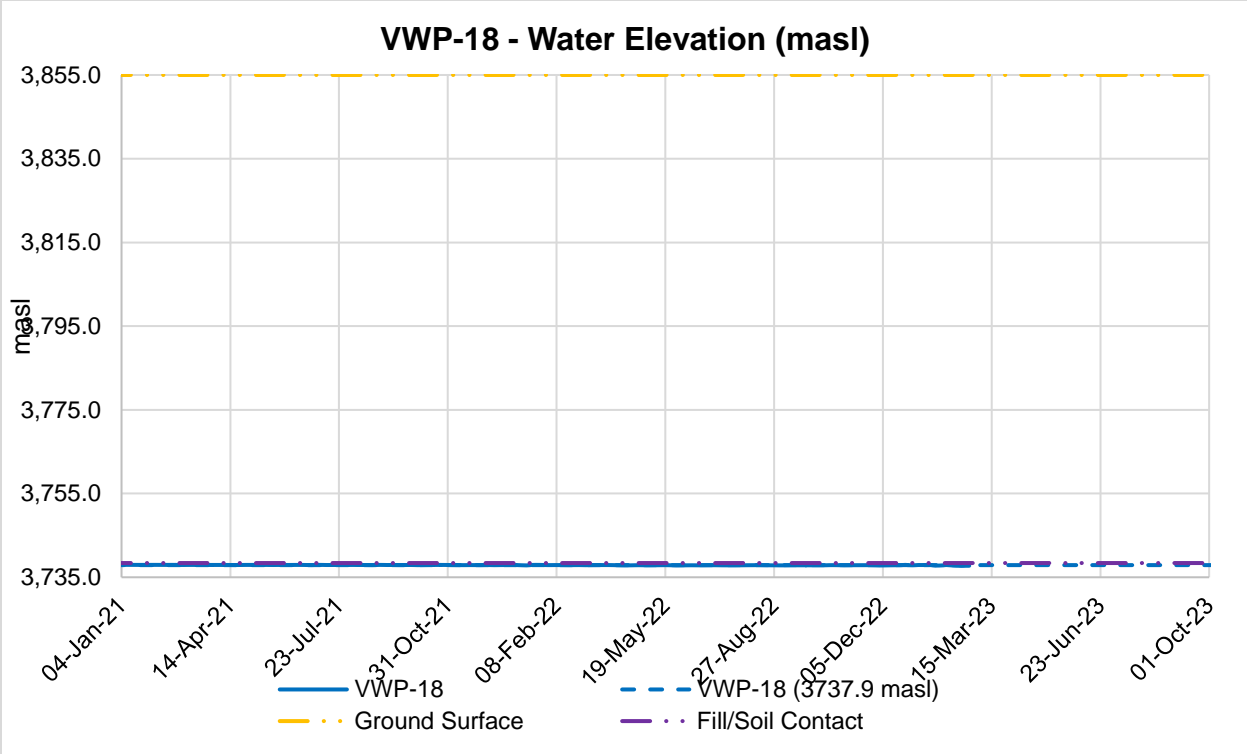


VWP-12@14 - Water Elevation (masl)

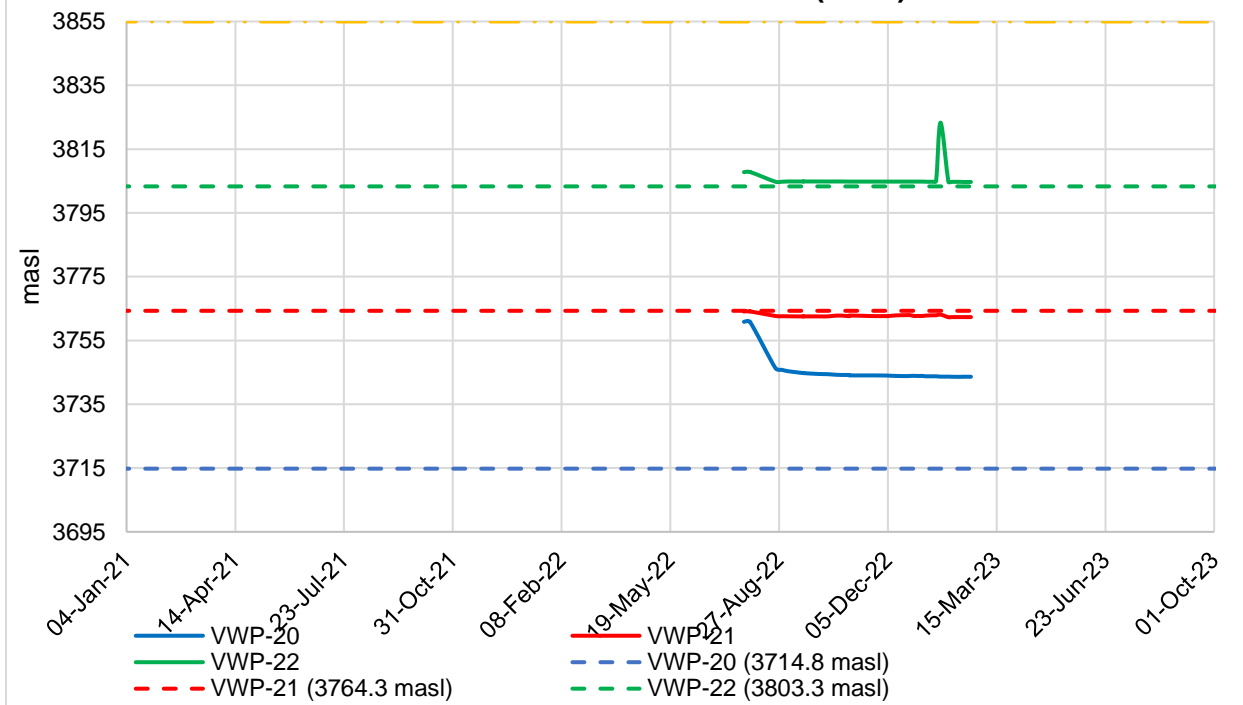


VWP-15@17 - Water Elevation (masl)

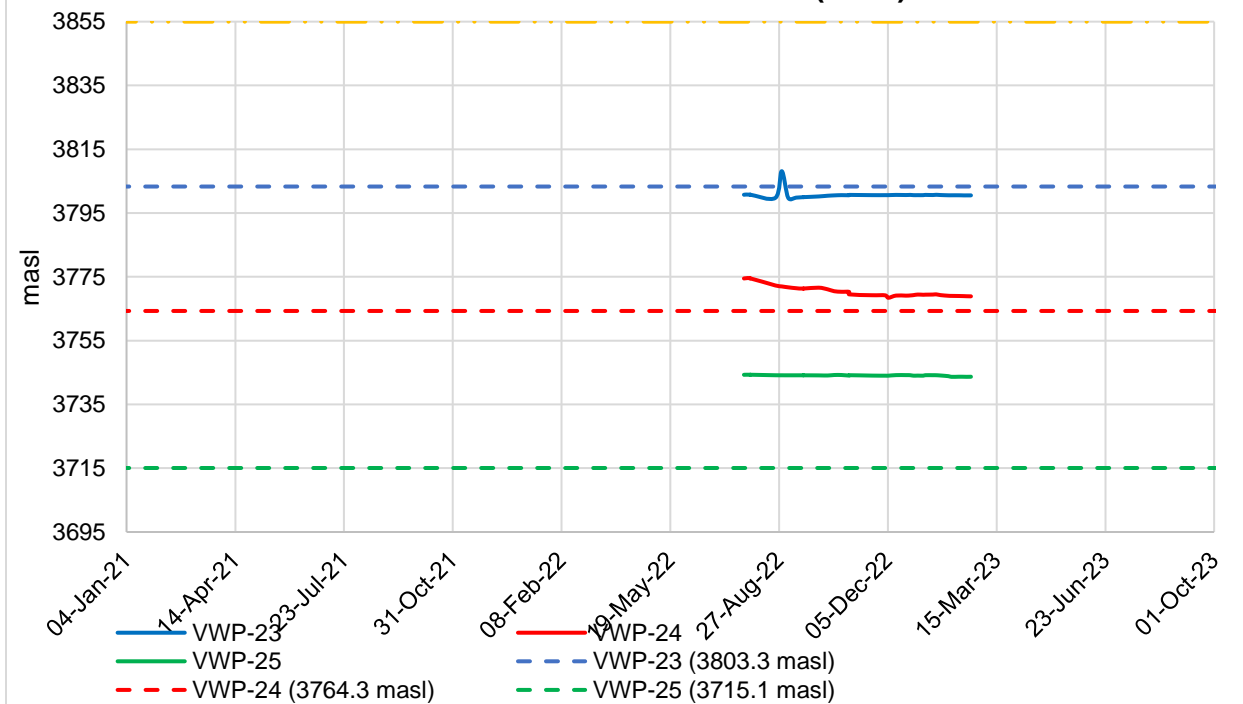




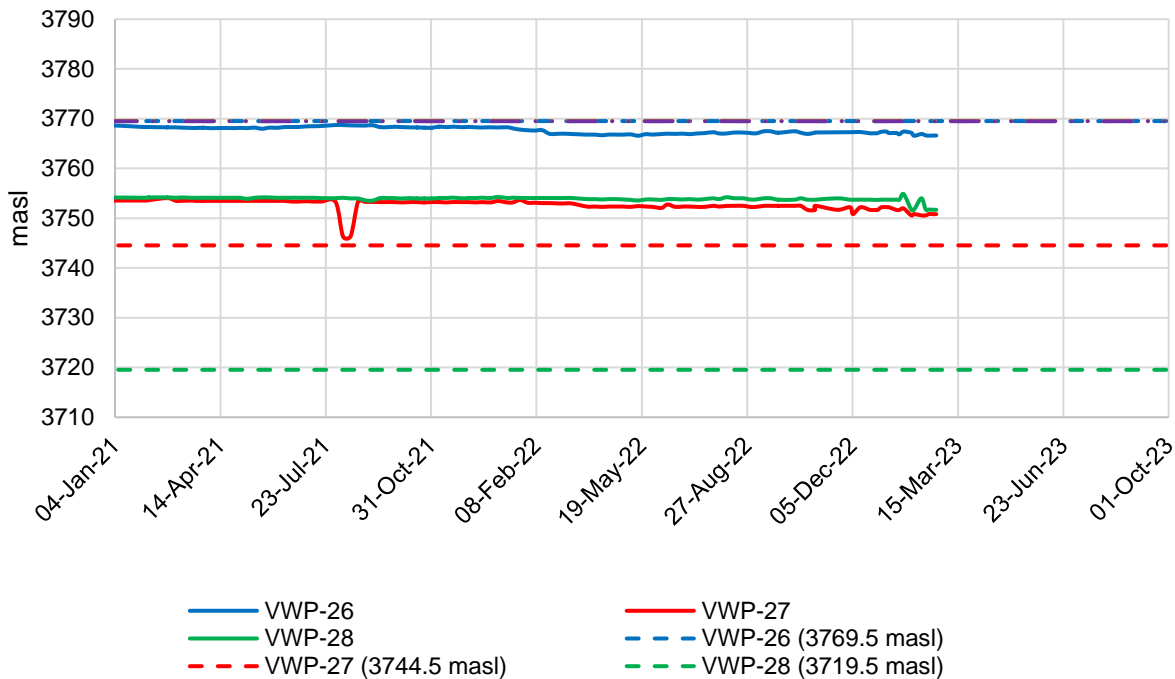
VWP-20@22 - Water Elevation (masl)



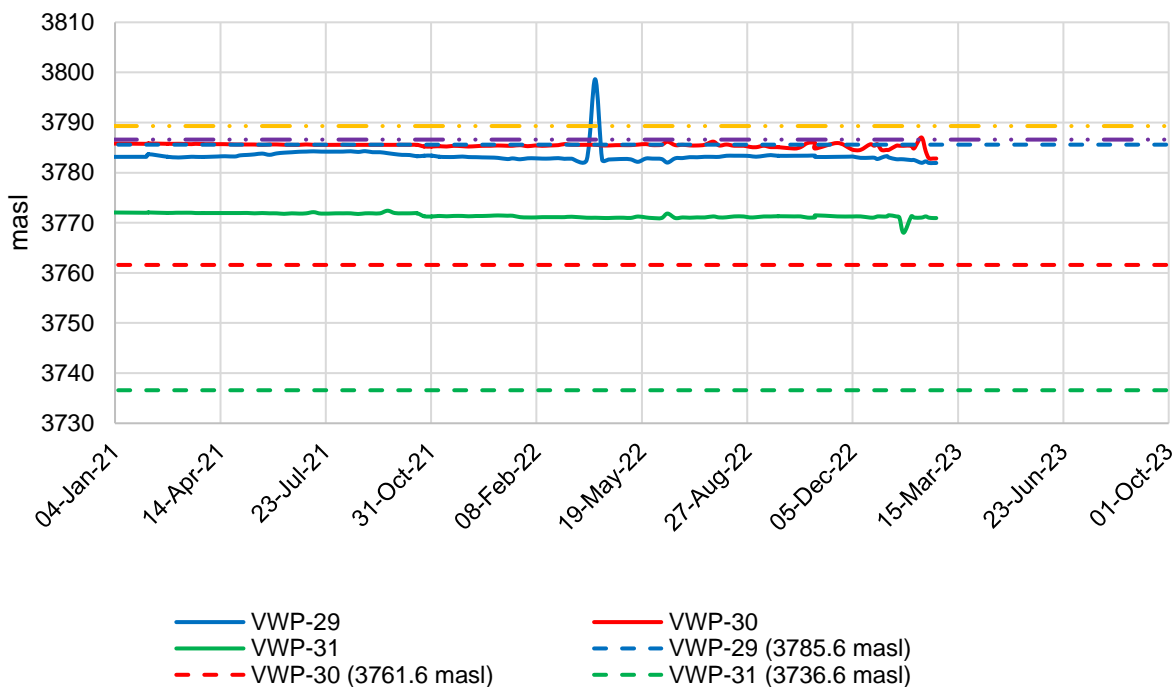
VWP-23@25 - Water Elevation (masl)



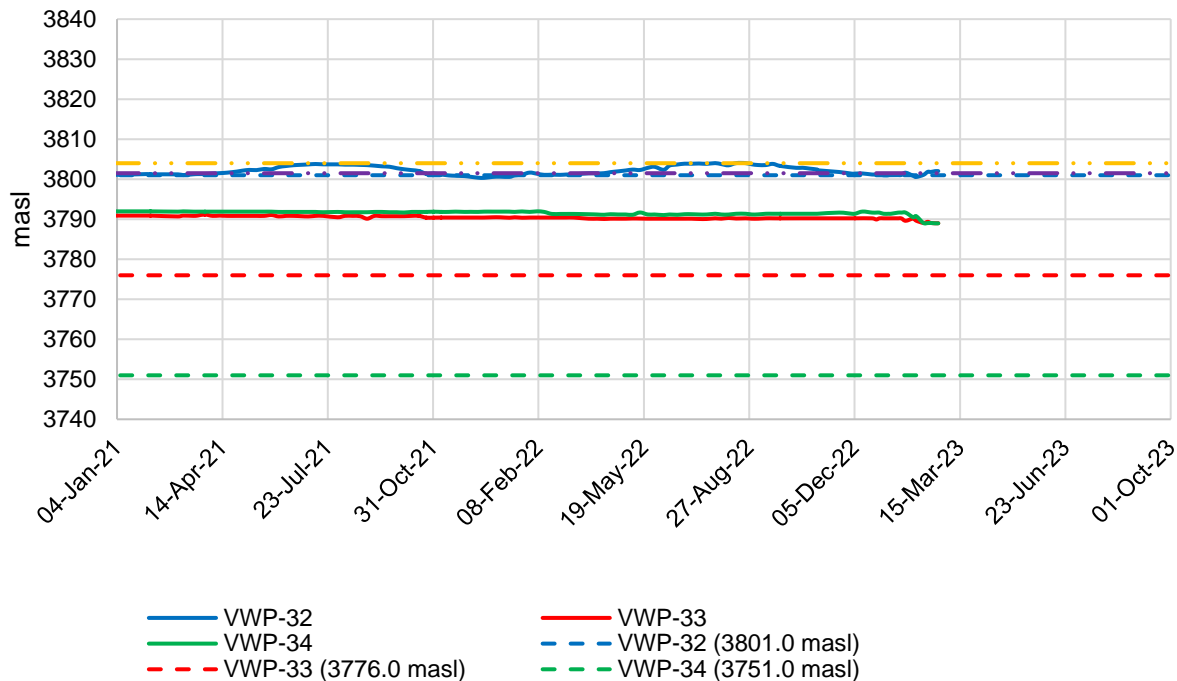
VWP-26@28 - Water Elevation (masl)



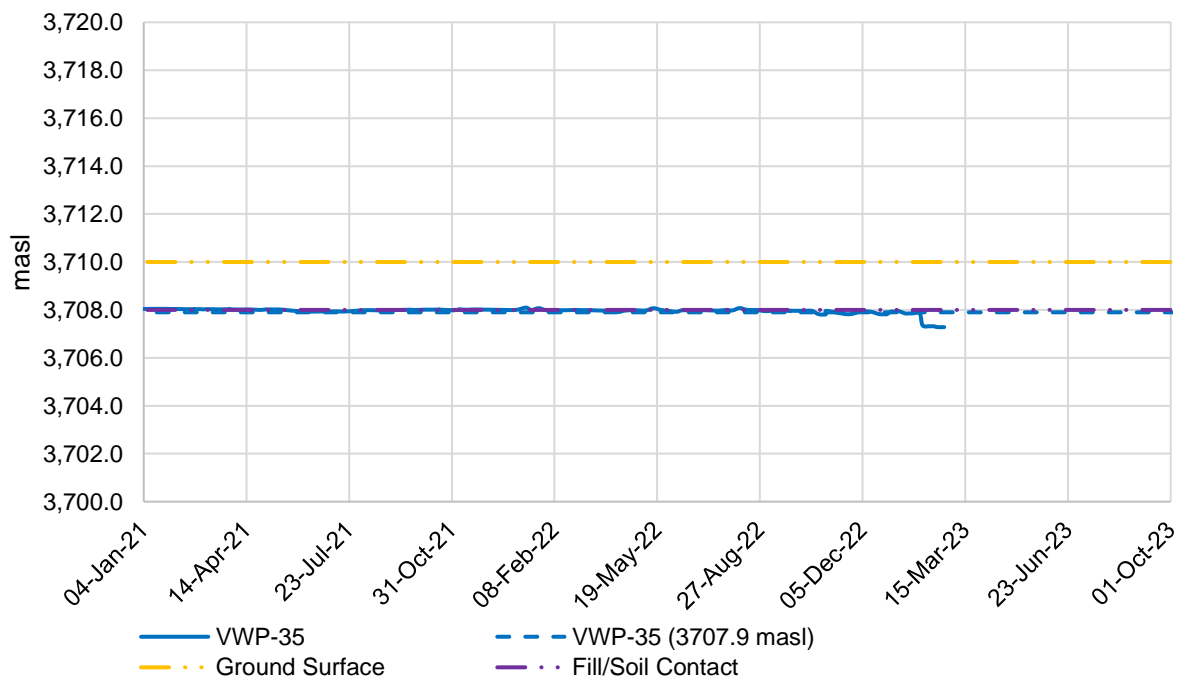
VWP-29@31 - Water Elevation (masl)



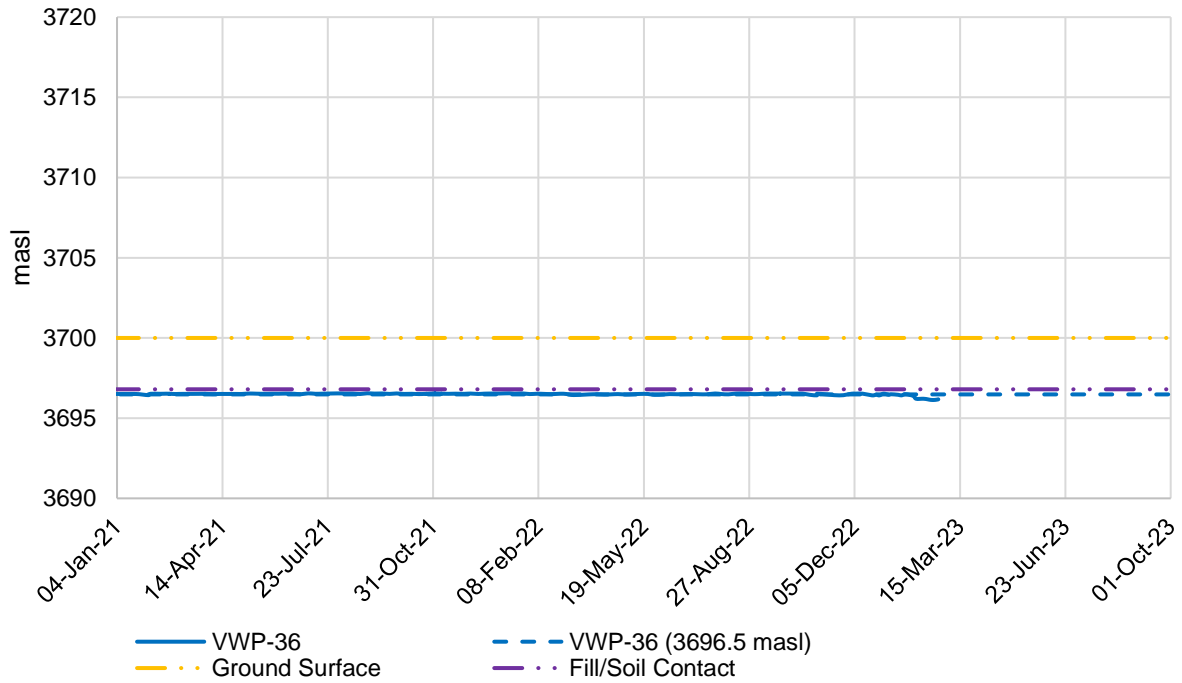
VWP-32@34 - Water Elevation (masl)



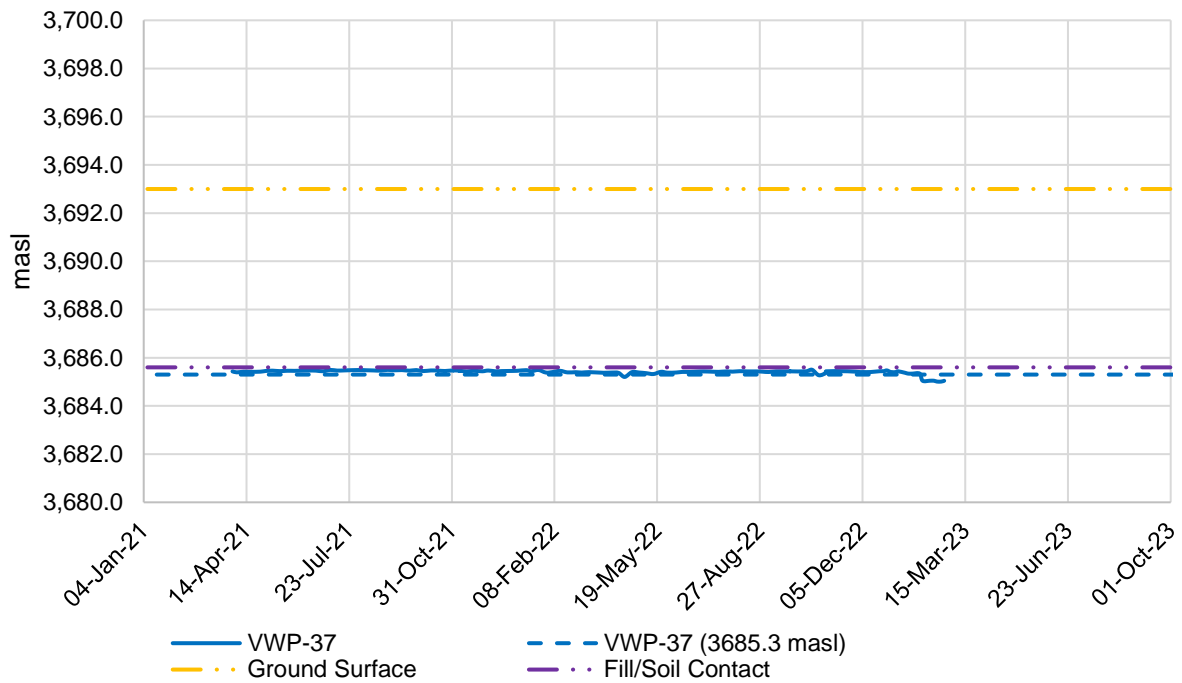
VWP-35 - Water Elevation (masl)



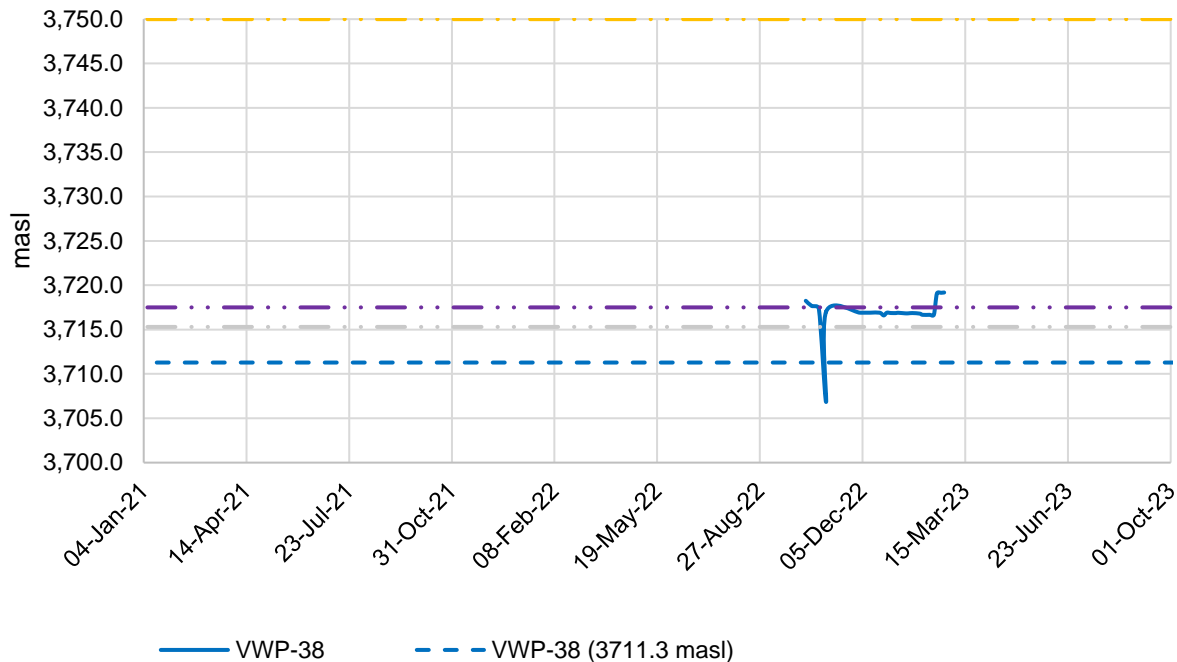
VWP-36 - Water Elevation (masl)



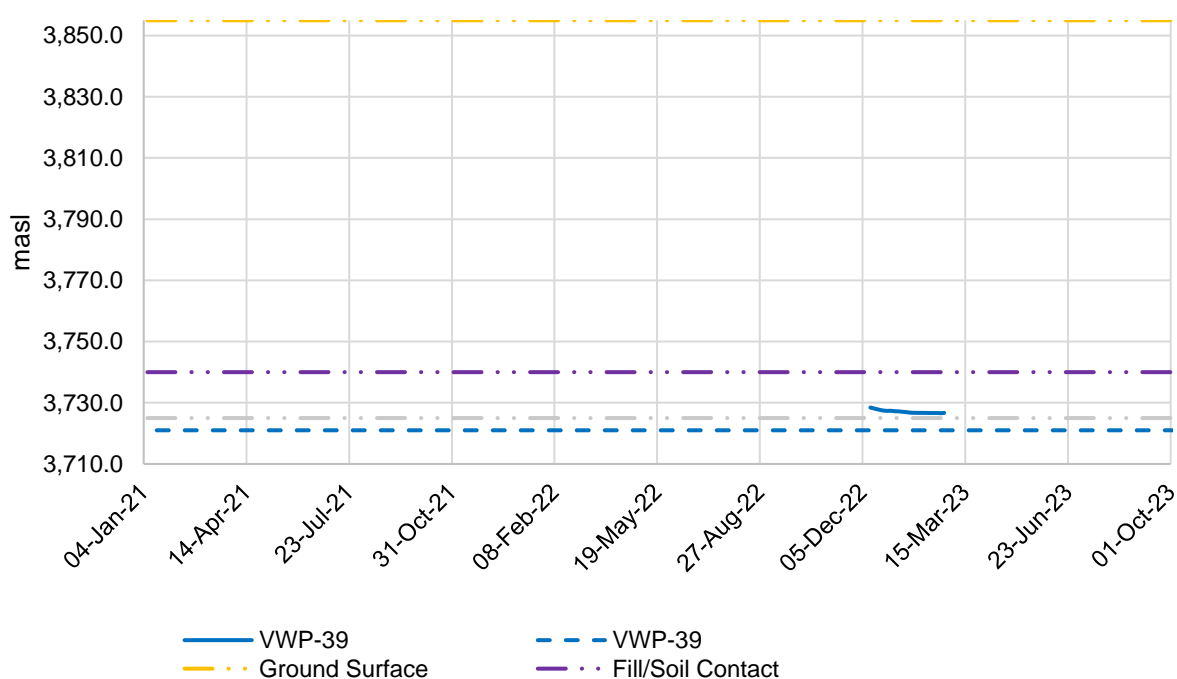
VWP-37 - Water Elevation (masl)



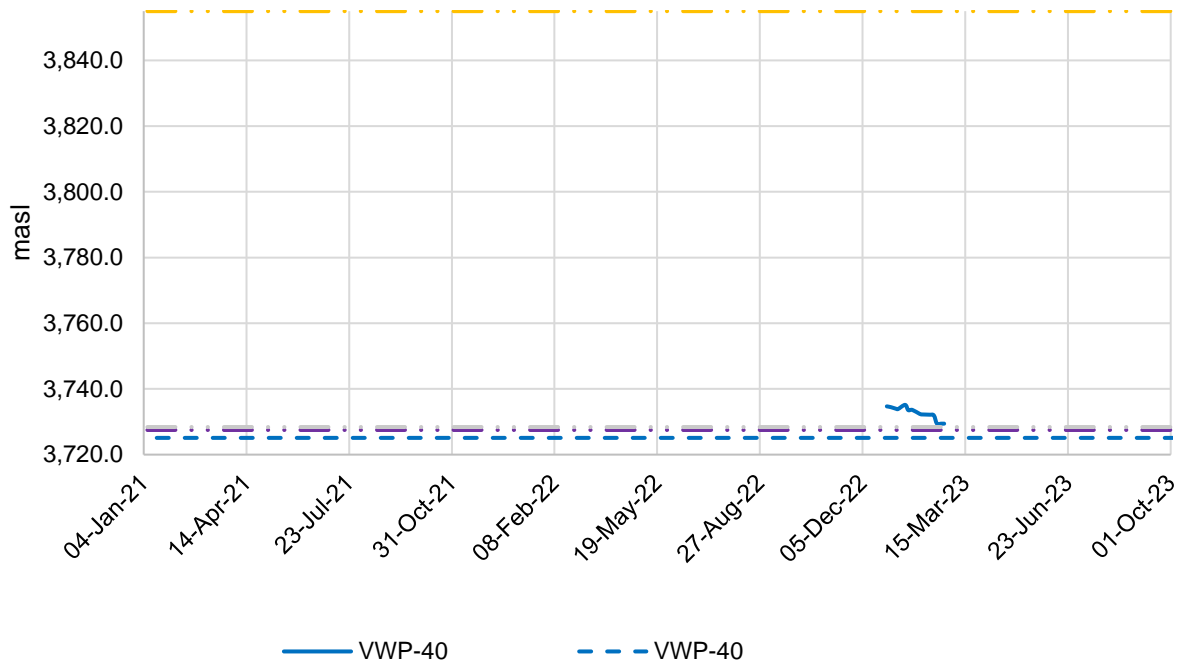
VWP-38 - Water Elevation (masl)



VWP-39 - Water Elevation (masl)



VWP-40 - Water Elevation (masl)



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