# Tailings Storage Facility Disclosure Report

## Highland Valley Copper, Trojan Tailings Storage Facility

**December 2024**

Teck

# Contents



# 1. Tailings Facility Description

The Trojan Tailings Storage Facility (TSF) is located on the Highland Valley Copper (HVC) Mine, which is indirectly owned and operated by Teck Resources Limited (Teck). The HVC Mine is located approximately 45 km southwest of Kamloops, in the interior of British Columbia (BC), Canada.

The site is located within the highlands of the Thompson Plateau and is characterized by elevated regions of moderate relief with moderate to gentle slopes. The vegetation comprises bunchgrass steppes, sagebrush and open forest comprised of pine, fir, aspen and larch. The climate is characterized as semi-arid and is affected by the rain shadow of the Cascade Mountain Range to the west of the Thompson River Valley.

The Trojan TSF is located 4 km north of the operating Highland Mill, immediately west of the Bethlehem TSF. The Trojan TSF was built in 1973 and operated until 1989 as part of the now inactive Bethlehem Mine. The purpose of the Trojan TSF is to store tailings (a by-product of the mining process). Tailings are retained by the Trojan Dam. Local runoff and seepage from the Trojan Dam are collected in the R4 Seepage Pond and the Lower Trojan Pond, respectively. See Figure 1 for a plan view of the TSF.

The Trojan TSF stores approximately 26 million cubic metres ($Mm^3$) of tailings and generally between 1.6 and 2.1 $Mm^3$ of water.

A short description of the Trojan TSF and the structures comprising the Trojan TSF is provided in Table 1 and Table 2 below.

Table 1: Description of the Trojan TSF

| Design Summary | Description |
|---|---|
| Status | Inactive |
| Number of Containment Structures | 3 (Trojan Dam, R4 Seepage Pond Dam, and Lower Trojan Dam) |
| Type of Construction | Trojan Dam: Rockfill starter dam with upstream cycloned sand crest raises.<br>R4 Seepage Pond Dam: Initial single raise of compacted glacial till fill dam; small raise completed more recently.<br>Lower Trojan Dam: Single raise dam. |
| Most Recent Annual Facility Performance Review | 2023 www.teck.com/tailings |
| Independent Review Board | Yes |

Table 2: Structures Comprising the Trojan TSF

| Structure | Purpose |
|---|---|
| Trojan Dam | Tailings and water retaining structure. |
| R4 Seepage Pond Dam | Collects seepage from the Trojan Dam toe and surface runoff from the local catchment. |
| Lower Trojan Dam | Collects local runoff and flows from the R3 Seepage Pond (from Bethlehem Dam No. 1 ) and from R4 Seepage Pond. |

*Note: Further details regarding the TSF configuration can be found in our facility inventory at www.Teck.com/tailings.*

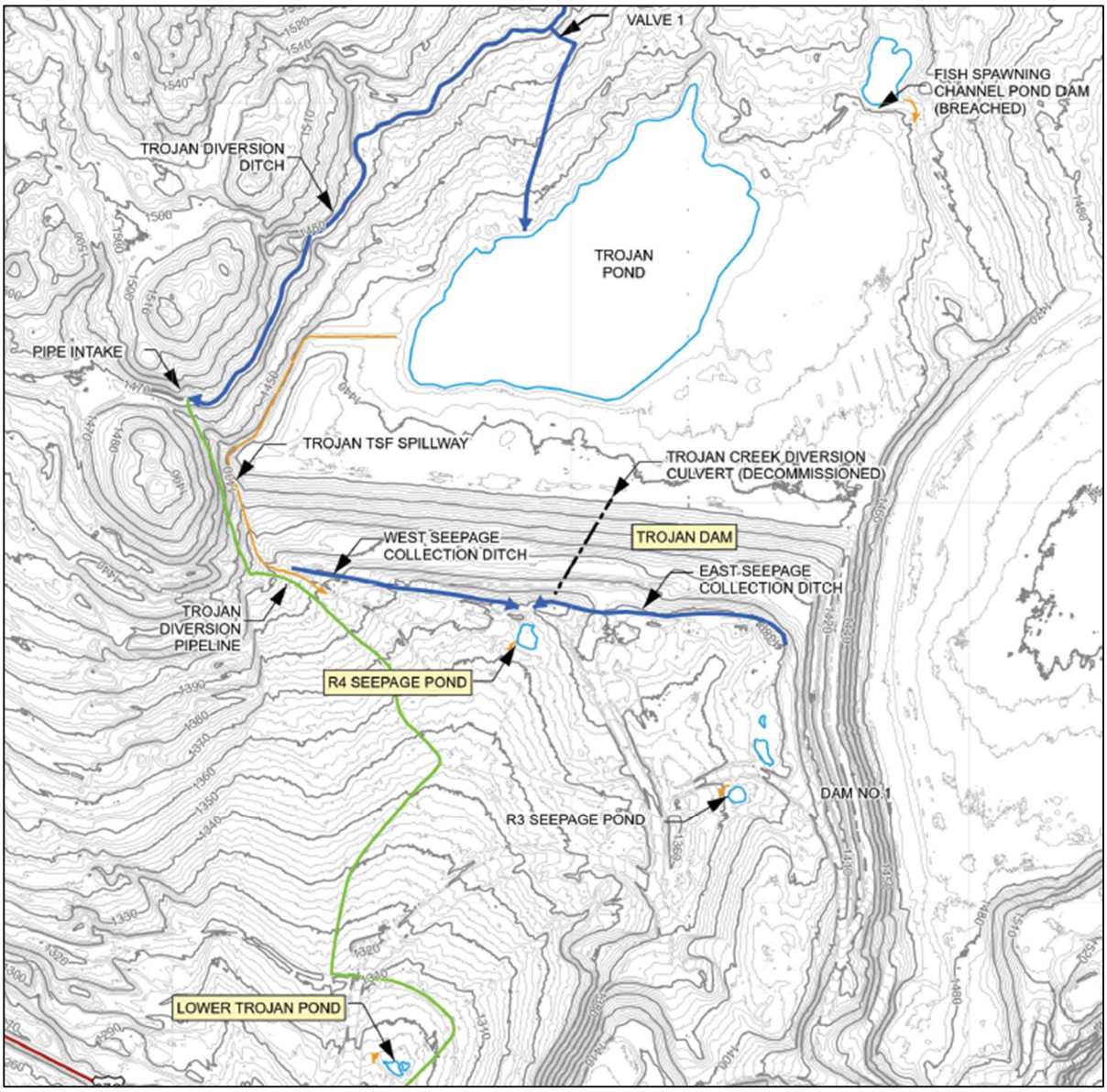

Figure 1: Trojan TSF Site Plan

## 2. Consequence Classification

All Teck tailings facilities are assessed for credible failure modes, and the impacts from these credible failure scenarios inform our risk management activities. For the purposes of assigning a facility classification, the downstream consequences of *potential* failure modes (not considering whether they are credible or not) are used, as per the Canadian Dam Association (CDA) guidelines and the requirements of the jurisdictions in which we operate. The Global Industry Standard on Tailings Management (GISTM) bases consequence classification on credible failure modes only, which may result in a lower stated classification.

Consequence classification should not be confused with risk, as risk also requires the consideration of the likelihood of the event occurring. To better understand the risk that a tailings facility presents, it is necessary to consider both the likelihood of a failure event, and the consequence of the event, which is performed through our risk assessment process described in the next section.

The Trojan Dam has a consequence classification of “Very High” under both the CDA guidelines and GISTM. Both the R4 Seepage Pond Dam and the Lower Trojan Dam have a consequence classification of “Low” under the CDA guidelines.

## 3. Summary of Risk Assessment Findings

Teck applies risk-based design approaches, whereby risk assessments are used to demonstrate the resilience of our facilities to extreme loading criteria, and to inform decisions to manage risks to as low as reasonably practicable (ALARP). This approach focuses our efforts on credible failure modes, reducing risks at our facilities by reducing the likelihood of occurrence and mitigating downstream impacts, regardless of the consequence classification from hypothetical dam failures.

The risk assessment for the Trojan TSF was updated in 2024, assessing potential failure modes for hazards up to and including extreme events (i.e., an event that occurs once in 10,000 years).

All failure modes are classified according to Teck’s risk matrix, with risk mitigation controls identified and tracked. These risk assessments are prepared with assistance from the Engineer of Record and are reviewed by the Independent Tailings Review Board. Teck regularly updates these detailed risk assessments, and the key findings from the most recent assessment are described below.

Based on this assessment, the Trojan Dam has several potentially credible failure modes that are of very low likelihood. A summary of material risks they pose (and how they are being managed, along with the existing controls that are in place for the Trojan TSF, is provided below.

Blockage of the Trojan Dam Spillway during a Very Large Flood:

*What could happen:*

- During a large storm event, a landslide into the spillway could block the outlet of water from the facility, which could lead to overtopping of the dam, and erosion of the slope leading to a dam breach.

*What are we doing to control the risk:*

- The facility's water levels are maintained at low levels to provide additional capacity to contain storm water flows.
- A surveillance and monitoring program is in place, including instrumentation and routine visual observations.

Internal Erosion Leading to a Dam Breach:

*What could happen:*

- If seepage through the dam was to somehow increase, and if there was an unknown construction defect in the dam, internal erosion could potentially occur, leading to instability and potentially a dam breach.

*What are we doing to control the risk:*

- The condition of the facility and the material characterization have been thoroughly investigated to the level of industry best practices, including recent research work and innovative geophysical techniques.
- Additional measures have been taken to reduce seepage through the dam, including maintaining the facility water levels low.
- The closure configuration of the facility also includes a wide tailings beach against the dam, which further reduces seepage through the dam.
- A surveillance and monitoring program is in place, including instrumentation and routine visual observations.

Slope Instability of the West Abutment during an Extreme Earthquake:

*What could happen:*

- If allowed to saturate, the cycloned sand below the downstream slope of the West Abutment could theoretically liquefy leading to instability or deformation of the dam during an extreme earthquake, resulting in water and tailings overtopping the dam, potentially leading to a dam breach.
- Drilling completed in 2023 confirmed that cycloned sand in this area remains unsaturated and a recent update of the slope stability model indicated that the dam would remain stable even during very large earthquake.

*What are we doing to control the risk:*

- Multiple controls are in place to manage this risk, including water management and site characterization that meet industry best practices, and a design to withstand very large loading events.
- A surveillance and monitoring program is in place, including geotechnical instrumentation and routine visual inspections.

- Multiple layers of review are in place, including an external Independent Tailings Review Board and regular Dam Safety Reviews.
- Additional site investigation work was completed in 2023 to further characterize the foundation soils at the West Abutment, and to provide input to an updated slope stability model. The facility was also recently included in a liquefaction research project, and was used as a location to test an innovative geophysical methods.

The above risks, and the results of the performance monitoring and surveillance program that monitors these risks, are described in more detail in the Annual Facility Performance Report at www.teck.com/tailings.

## 4. Summary of Impact Assessments and of Human Exposure and Vulnerability to Tailings Facility Credible Flow Failure Scenarios

Preliminary inundation studies have been conducted for the Trojan TSF to identify potentially impacted communities and waterbodies in the extremely unlikely event of a tailings dam breach. An assessment of human exposure (potential for a person to be located in the inundation area) and vulnerability (existing physical, social, economic and environmental conditions that make people and the environment more susceptible to the impacts) was undertaken for the Trojan TSF area of influence to understand the severity of the effects of a tailings dam breach. Results of the assessment are summarized below.

The potential effects in the highly unlikely scenario of a breach of the Trojan Dam would be primarily contained to the area of the HVC mining operation and associated work areas, and may include loss of life. The potential effects to communities and the environment include temporary disruption to highway traffic, impact to Indigenous Territory and Rights, critical infrastructure, and water resources. Vulnerability is primarily associated with the potential for moderate to high watershed impacts. The area of influence for the Trojan Dam includes the on-site work area downstream of Trojan Dam and the Valley Pit, a road crossing of Highway 97C, and Witches Brook.

The controls and mitigations that have been implemented to reduce the likelihood and consequences of credible tailings facility failure scenarios at the Trojan TSF are described in Section 3 above. Further, measures have been taken and are continuing to progress to protect potentially affected people, including sharing of information, assessing capacity of the communities to respond to emergencies, and co-developing emergency response measures with provincial agencies and project-affected people to improve preparedness.

## 5. Description of the Design for all Phases of the Tailings Facility Lifecycle

General information regarding the three structures associated with the Trojan TSF (Trojan Dam, R4 Seepage Pond Dam and Lower Trojan Dam) are summarized in Table 3 below.

Table 3: Trojan TSF Design Information Summary

| Structure | Trojan Dam | R4 Seepage Pond Dam | Lower Trojan Dam |
|---|---|---|---|
| Containment or Design Type | -Pervious rockfill starter dam underlain by a drainage layer. The upper slope of the starter dam has a sand and gravel filter zone. These zones are separated by a finer rockfill transition zone. Above the starter dam, the crest was raised in an upstream manner with cycloned sand.<br>-An operational spillway exists on the right abutment. It is 957 m long founded on tailings, natural ground and bedrock.<br>-Construction was completed in 1981. | -Constructed using a compacted glacial till fill, on a glacial till foundation, with a 300 mm thick layer of waste rock on the upstream slope.<br>-An open channel emergency spillway is located near the right abutment.<br>-Construction was completed in 1984. | -Constructed using compacted glacial till fill.<br>-An open channel emergency spillway located near the right abutment as well as a decant pipe buried through the dam at the right abutment.<br>-Construction was completed in 1989. |
| Estimated Crest El. (m) | 1440.0 | 1365.0 | 1296.5 |
| Current Dam Height (m) | 70.0 | 3.0 | 4.0 |
| Initial Operation | 1973 | 1984 | 1989 |
| Final Permitted Dam Height (m) | 70.0 | 3.0 | 4.0 |
| Current Tailings Volume ($m^3$) | 26,000,000 | n/a | n/a |
| Final Permitted Tailings Capacity ($m^3$) | n/a | n/a | n/a |
| Crest Length (m) | 1,500 | 100 | 100 |
| Overall Downstream Slope | 2.9H:1V (lower bench)<br>3.5H:1V (upper bench)<br>3.7H:1V (overall) | 2H:1V | 2H:1V |
| Design Storm Event | Probable Maximum Flood (PMF) 24-hour | 100-year, 24-hour | 100-year, 24-hour |
| Design Earthquake | ½ between 2,475 and 10,000-year return interval | 1,000-year return interval | 1,000-year return interval |

# 6. Summary of Material Findings of the Annual Facility Performance Report (AFPR) and Dam Safety Reviews (DSR)

Annual Facility Performance Reports (AFPRs) are compiled each year by a third-party Engineer of Record to summarize the past year's monitoring and surveillance information into a concise review. Dam Safety Reviews (DSRs) are performed every 5 years by an independent reviewer in order to provide an independent assessment of the design and performance of the tailings facility. These reports document the safe operation, maintenance, and surveillance of the facility and make any recommendations for continual improvement. Recommendations from these reports are tracked in the site tailings management system through to completion.

The recommendations from the AFPRs and DSRs are considered 'material[1] findings' when the observation relates to credible failure modes of the facility that could result in a very high or extreme consequence, regardless of the likelihood of such an occurrence. It is important to note that a 'material finding' does not mean a high probability of occurrence. The urgency with which recommendations are to be addressed are defined by the Engineer of Record or independent reviewer by assigning a priority rating, which then informs the timeline to complete the action.

The most recent AFPR for this facility was completed for the period of October 2022 through September 2023 and the most recent DSR was performed in 2023. There were no material findings in either the 2023 AFPR or 2023 DSR that would indicate any tailings facility safety issues.

# 7. Summary of Material Findings of the Environmental and Social Monitoring Program

HVC has implemented an Environmental Management System (EMS) that conforms to the requirements of ISO 14001:2015 and applicable Teck corporate standards for health, safety, environment and community (HSEC) management. The EMS applies to all activities that could impact the environment at HVC and outlines the processes and practices to reduce potential environmental impacts and improve environmental performance. Monitoring and review requirements are defined within a digital EMS application and used to track the overall effectiveness of the EMS in controlling environmental impacts, verifying conformance with operational controls, tracking regulatory compliance status, and progress toward achieving objectives and targets. Audits of the EMS are conducted annually by third parties. Key performance indicators of interest tracked within the EMS system include:

- Environmental performance
- Water and tailings performance
- Waste management
- On site and downstream water quality
- Compliance obligations
- Emergency preparedness and response
- Community affairs.

[1] Material: Important enough to merit attention or having an effective influence or bearing on the determination in question. For the Standard, the criteria for what is material will be defined by Operator, subject to the provisions of local regulations, and evaluated as part of any audit or external independent assessment that may be conducted on implementation. (GISTM, 2020)

There were no material findings from either the environmental or social monitoring programs associated with the Trojan TSF in 2023.

HVC recently completed an assessment of human exposure, vulnerability and human rights risks associated with credible failure scenarios. Further, the socio-economic profile of the communities of interest was updated in 2023 to ensure the mine has current knowledge of the area of influence of the HVC TSFs and future development related to the mine life extension application. A comprehensive Global Industry Standard on Tailings Management (GISTM) Engagement Plan was also created and is in the process of being implemented. This plan outlines the activities that will be undertaken to continue to expand the existing mechanisms already in place for meaningful engagement with project affected people and other stakeholders including local emergency response organizations. All community feedback is tracked and continually updated within the HVC Knowledge Base. Material findings from social monitoring across the site in general can be found in Teck's annual Sustainability Report.

# 8. Summary of the Tailings Facility Emergency Preparedness and Response Plan (EPRP)

The Trojan TSF has an Emergency Preparedness and Response Plan (EPRP) which is also included in the site-specific HVC Mine Emergency Response Plan (MERP). This plan identifies hazards associated with credible flow failure scenarios and describes actions to prepare for and respond to emergencies arising from those hazards. The plan describes roles and responsibilities of site personnel and of provincial emergency response organizations, alert and notification procedures including off-site contacts, an inventory of response equipment, and training requirements for site personnel. The plan is developed and continuously improved upon by working with outside agencies such as, but not limited to, Ministry of Emergency Management and Climate Readiness (EMCR) BC, local communities, Indigenous organizations and independent engineering consultants.

The EPRP program is linked to the tailings specific Trigger Action Response Plan (TARP), which is associated with the tailings surveillance and monitoring program mentioned in Section 3. The objectives of the EPRP are:

- Establish procedures for emergency preparation, including escalating levels of response;
- Respond to developing, imminent or actual dam failure scenarios in a way that reduces potential consequences; and
- Identify training and testing requirements for effective implementation of the EPRP.

In the highly unlikely event of an imminent tailings dam failure, response actions would be taken to save human lives and reduce the potential downstream consequences. The actions identified in the EPRP generally include:

- Immediate physical actions that could potentially be taken in response to an unexpected triggering event to prevent further deterioration of the situation or condition toward dam failure.
- Emergency call out procedures to establish internal and external communication lines. These contact lists are verified annually to confirm accurate contact information. The groups that would be contacted include, but are not limited to:
    - Emergency Management BC

    - Indigenous Government Organizations
    - Local Governments of potentially affected downstream communities
    - Teck Corporate Crisis Response Team
    - The Engineer of Record
- Procedures for coordination with Emergency Management BC in order to conduct an evacuation of downstream potentially affected areas. For this purpose, evacuation maps have been prepared.

In preparation for emergencies, emergency simulations and training exercises are conducted annually, and include participation by emergency preparedness agencies and representatives of the downstream project affected people. During these exercises, HVC requests input on the capability and capacity of emergency response services of downstream communities and project affected people to respond in an evacuation situation. As part of our commitment to continuous improvement, HVC's EPRPs will continue to develop over time in collaboration with project affected people to improve the state of preparedness for emergencies.

## 9. Independent Reviews

The last independent Dam Safety Review (DSR) was completed in 2023. The next DSR is scheduled for 2028.

## 10. Financial Capacity

Teck confirms that it has adequate financial capacity to cover estimated costs of planned closure, early closure, reclamation, and post-closure of the HVC TSFs and their appurtenant structures. These costs are disclosed annually in aggregate form in our annual financial statements contained within our Annual Report.

Further, Teck maintains insurance for our tailings facilities to the extent commercially available.

## 11. Conformance to the Global Industry Standard on Tailings Management

Teck has performed a self-assessment of conformance to the Global Industry Standard on Tailings Management (GISTM) for the Trojan TSF. This self-assessment has been performed in accordance with the ICMM Conformance Protocols issued in May 2021.

Categories of conformance for individual Requirements in the GISTM are set out in Table 4 below. These take into account guidance from ICMM. Where some requirements represent ongoing community engagement or other ongoing activities, and the systems and/or practices are substantively implemented such that the intended outcome is functionally achieved, and there is no physical risk to tailings facility safety, then these requirements can be considered in conformance with the GISTM.

Table 4: Categories of Conformance

| Conformance Level | Description |
|---|---|
| Meets | Systems and/or practices related to the Requirement have been implemented and there is sufficient evidence that the Requirement is being met. |
| Meets with plans in place | Where an Operator is required to undertake engineering work or other measures to conform to some Requirements (e.g., for Requirements 4.7 or 5.7, which might include remedial engineering measures for existing facilities), the expectation is that these shall be carried out as soon as reasonably practicable. It is not necessary for such measures to be complete by the implementation deadlines for an Operator to be in conformance, but both the measures and associated timelines should be clearly documented by an Accountable Executive. |
| Partially meets | Systems and/or practices related to meeting the Requirement have been only partially implemented. Gaps or weaknesses persist that may contribute to an inability to meet the Requirement, or insufficient verifiable evidence has been provided to demonstrate that the activity is aligned to the Requirement. |
| Does not meet | Systems and/or practices required to support implementation of the Requirement are not in place, are not being implemented or cannot be evidenced. |
| Not applicable | The specific Requirement is not applicable to the context of the asset. |

For Trojan TSF at HVC, all requirements have been met, or are met with a plan in place, for Principles 1 to 3 and 5 to 15. Ongoing work to meet all requirements in Principle 4 will continue beyond August 5, 2023, and this principle is considered partially met. Importantly, there are no immediate physical safety risks at the facility related to the work in progress. The ongoing work to address the outstanding recommendations is as follows:

- Principle 4: Work is ongoing to demonstrate that risks are as low as reasonably practicable (ALARP), including evaluation of performance against extreme loading criteria. The facility was designed to loading criteria that conforms to the GISTM requirements and has appropriate tailings management and governance systems in place, with established independent reviews and ongoing community engagement. Evaluations of long-term facility performance to inform long term planning is underway.