

Tailings Storage Facility Disclosure Report

**Highland Valley Copper, Highland Tailings Storage
Facility**

July 2023

The Teck logo is positioned in the bottom right corner of the page. It consists of the word "Teck" in a bold, dark blue, sans-serif font. The background of the page features a large, dark blue geometric shape on the left side, which is a right-angled triangle with its hypotenuse facing right, extending from the top left towards the bottom right.

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1. Tailings Facility Description

The Highland Tailings Storage Facility (TSF) is the primary active storage facility for Highland Valley Copper Operations (HVC), which is 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.

The site is located within the highlands of the Thompson Plateau Physiographical Region and is characterized by elevated regions of moderate relief with moderate to gentle slopes, a rounded outline and a large area at or near the summit elevation. 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.

Tailings are retained in the Highland TSF by the L-L Dam and the H-H Dam, which were built across the Highland Valley. There are several seepage and sediment collection ponds associated with the Highland TSF, including the 24 Mile TSF adjacent to the H-H Dam.

The Highland TSF is located approximately 6.5 km northwest of the operating mill and is approximately 10 km long. Construction of the Highland TSF began in 1971. The Highland TSF began operation in 1971 with the H-H Dam and J-J Starter Dam. The L-L Dam was constructed between 1976 and 1979 and replaced the J-J Dam, which was buried by tailings by 1991. The current production rate of the mine is approximately 140,000 tpd, with the majority of the tailings transported and deposited as a slurry from the west abutment of the H-H Dam. The tailings beach slopes away from the H-H Dam towards the L-L Dam, where a water pond forms near the L-L Dam. Tailings are also transported to the L-L Dam where they are processed and used to construct the L-L Dam, and deposited to maintain a beach between the dam and the pond.

A description of the Highland TSF, and the structures comprising the Highland TSF are summarized in the tables below.

Table 1: Description of Highland TSF

TSF Design Summary	Description
Status	Active
Number of tailings embankment structures	2 (LL Dam, HH Dam)
Type of Construction	L-L Dam: Centerline Sand Dam with a till core H-H Dam: Centerline rock and earth fill dam with a till core up until the 2022 construction season
Most recent Annual Facility Performance Review	2022 www.teck.com/tailings
Independent Review Board	Yes

Table 2: Structures Comprising Highland TSF

Structure	Purpose
L-L Dam	Tailings and water retaining structure
H-H Dam	Tailings retaining structure
24 Mile TSF	Receives seepage from the H-H Dam and acts as storage for tailings overflow from the H-H Pumphouse.
Seepage Water Reclaim Pond	Primary collection pond downstream of L-L Dam, which collects and pumps water back to the TSF. Receives water from surface runoff, sediment ponds, and seepage collections ponds.
Seepage Pond 2	Collects seepage primarily from finger drains under the northern portions of the L-L Dam.
Sediment Pond 1	Partially decommissioned sediment cell. To be used until new sediment pond (Sediment Pond 3) is commissioned.
Sediment Pond 2	Collects construction water and sediment from hydraulic sand placement on the downstream side of L-L Dam.
Sediment Pond 4	Collects construction water and sediment from hydraulic sand placement on the downstream side of L-L Dam.

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

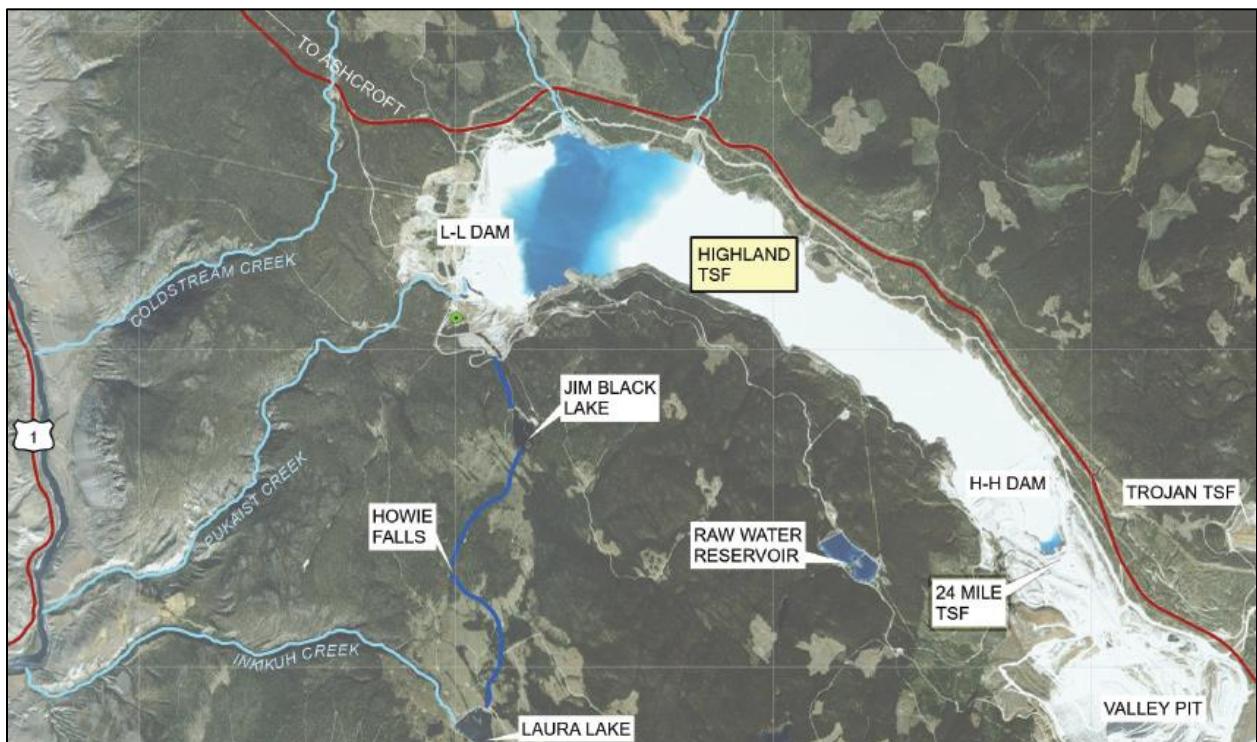


Figure 1: Highland TSF Site Plan

2. Consequences of Failure

All Teck tailings facilities are assessed for credible failure modes, and the outcomes from these credible failure scenario assessments inform our risk management activities. For the purposes of assigning a facility consequence 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 Highland TSF is classified as an 'Extreme' consequence facility under both the CDA guidelines and GISTM, and the H-H Dam is classified as 'Very High' under both systems. The seepage, sediment ponds, and 24 Mile TSF are classified as 'Low' to 'Significant'.

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 most recent risk assessment for the Highland TSF was conducted in 2023, assessing potential failure modes for hazards up to and including extreme events (i.e., an event that occurs once in 10,000 years). As part of this assessment, failure modes are deemed as credible or non-credible, considering the greatest combination of events or operational errors, and then the risk of such events are evaluated.

All failure modes are sorted according to Teck's risk matrix, with risk mitigation controls identified and tracked. These failure modes are also described in the publicly available Annual Facility Performance Reports. These risk assessments are prepared with assistance from the Engineer or 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.

The Highland TSF has potentially credible failure modes that are of very low likelihood. A summary of material risks (high or extreme consequences, regardless of likelihood) that are being managed, the existing controls that are in place, and additional risk mitigation measures that are planned are summarized below.

L-L Dam:

The only credible failure mode assumes that there could be a weak soil or rock unit beneath the dam that has escaped detection despite the extensive and ongoing site characterization programs and performance monitoring that have occurred throughout the 40+ years of operation.

What could happen:

- If present, such a unit could theoretically lead to dam instability and deformation during construction loading, a very large earthquake, or through piping/internal erosion. Instability or deformation of the dam could result in water and tailings overtopping the dam, potentially leading to a dam breach.

It is important to note that there are no indications that such a unit is present, and the likelihood that such a layer has escaped detection is considered extremely low.

What are we doing to control the risk:

- Controls are in place to manage this risk, including site characterization to meet industry best practices, a design to withstand extreme loading events, a stress-deformation model that is frequently calibrated against a performance monitoring, and a surveillance program that incorporates a real-time instrumentation monitoring system. All of these controls are subject to an external Independent Review Board.
- Additionally, the dam is built with surplus freeboard (>10 m) and a wide tailings beach to further tolerate any unforeseen deformations.

H-H Dam:

The only credible failure mode assumes that the waste rock and earth fill that forms the downstream area of the dam could weaken during a large earthquake ($\geq M6$).

What could happen:

- In the event of a very large earthquake, weakening of the downstream fill could theoretically lead to dam instability and deformation, which in turn could allow the downstream slope fill and some tailings to be released on to the mine site. The tailings would not mobilize (i.e. move/flow) far from the H-H Dam since there is no water pond near the H-H Dam. Such an event is considered to be of extremely low likelihood due to the very large earthquake that would be required to potentially trigger weakening of the downstream fill.

What are we doing to control the risk:

- In order to completely eliminate this risk, the waste dumps built downstream of the dam have been raised using waste rock from mining activities near the H-H Dam. This waste rock acts as a buttress and is relied upon for stability. This buttressing will be complete by 2024 with additional buttressing for waste rock storage ongoing through life of mine. This additional risk reduction is above and beyond the design criteria specified in the GISTM or the Canadian Dam Association Guidelines.

24 Mile TSF and Ancillary Structures

There are no credible failure modes for the 24 Mile TSF that could lead to a release of tailings or water off site. The facility is constructed below natural ground and does not have any dams. The other seepage and sediment ponds are relatively small water dams that have low potential consequences.

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

Formal inundation studies have been conducted at the Highland TSF for both L-L and H-H dams to identify potentially impacted communities and waterbodies in the extremely unlikely event of a tailings facility 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 Highland TSF area of influence to understand the severity of the effects of a tailings dam breach. Results of the assessment are summarized below.

L-L Dam

The potential effects to people and the environment in the highly unlikely scenario of a breach of the L-L Dam may include loss of life, impacts to water supply, public health and safety, community infrastructure, and Indigenous territory. It was identified that severe impacts would occur where a number of vulnerability factors are present, including the location of critical infrastructure, Indigenous Peoples use of land and resources, and livelihoods, resulting in potentially severe disruption to people in the area of influence. The area of influence for the L-L Dam includes the on-site work area downstream of L-L Dam, and communities along the Thompson, Nicola and Fraser River, with effects decreasing along the length of the river.

H-H Dam

The potential effects in the highly unlikely scenario of a breach of the H-H Dam would be primarily contained to the area of the HVC mining operation and associated work areas, and may include loss of life, and disruption of livelihoods. The area of influence for the H-H Dam includes the mining operation work areas directly downstream of the dam, as well as the Valley pit.

What are we doing to control the risk:

- The controls and mitigations that have been implemented to reduce the likelihood and consequences of a potential tailings incident at Highland TSF are described in Section 3 above. Further, measures have been taken 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 design information regarding the three retaining structures (L-L Dam, H-H Dam and 24 Mile TSF) and those that manage water and sediment downstream of the L-L Dam are summarized in the table below.

A design for closure and mine reclamation has been developed considering Indigenous input and input from communities on land use objectives, alternatives and overall closure design. The closure design for the Highland TSF includes a smaller pond located farther from the L-L Dam, construction of a spillway through the south abutment to route the PMF event, shaping the tailings surface to promote drainage and develop varying landforms for biodiversity, and placement of a reclamation cover and vegetation ranging from grasslands to forest. The seepage and sediment ponds will be removed, and eventually the system will operate passively.

Table 3: Highland TSF Design Information Summary

Structure	Containment or Design Type	Estimated Crest El. (m)	Current Dam Height (m)	Initial Operation	Final Permitted Dam Height (m)	Current Tailings Volume (m ³)	Final Permitted Tailings Capacity (m ³)	Crest Length (m)	Overall Downstream Slope	Design Storm Event	Design Earthquake
L-L Dam	-Centerline cycloned sand dam with a glacial till core. -Construction started in 1976 and has been raised generally annually.	1272.0	167.0	1976	1279	1.7 Bm ³ (approximate)	2.0 Bm ³ (approximate)	2,980	2.5V:1H (max) 6.5H:1V (shallowest)	Probable Maximum Flood (PMF) 120 hour	Earthquake Design Ground Motion (EDGM) 10,000-year return interval
H-H Dam	-Centerline rock and earth fill dam with glacial till core or granular filter. -Construction started in 1972 and generally raised annually.	1281.0 to 1287.0	57.0	1972	1292.7			1,800	2H:1V	Probable Maximum Flood (PMF) 120 hour	EDGM 1:5,000-year return interval
24 Mile TSF	-Natural depression with tailings below existing ground surface.	Min. 1225.0	n/a	1972 (approximate)	n/a	<13 Mm ³ (approximate)	<13 Mm ³ (approximate)	n/a	n/a	1/3 between 1,000-year and PMF 72 hour	n/a
Seepage Water Reclaim Pond	-Excavation into natural ground with containment partially provided by an embankment constructed of glacial till with a downstream sand and gravel filter.	1103.2	5.0	1980's	5.0	n/a	n/a	95	3H:1V	100-year, 72 hour	1,000-year return interval
Seepage Pond 2	-Excavated into natural ground with containment partially provided by an embankment constructed of glacial till. Pond is lined with geomembrane.	1116.6	1.8	2012	1.8	n/a	n/a	80	2.5H: 1V	100-year, 24 hour	1,000-year return interval
Sediment Pond 1	-Excavated into natural ground. Containment is provided by a natural ground consisting of glacial till, with internal berms constructed of glacial till. Partially decommissioned and backfilled. -Flood water flows into the Seepage Water Reclaim Pond.	1104.2	2.5	Early 1990's	2.5	< 140,000	n/a	700 (North) 600 (South)	n/a	n/a	n/a
Sediment Pond 2	-Excavated into natural ground on three sides, with an embankment constructed of glacial till. Pond is lined with geomembrane.	1126.9	10.0	2014	10.0	< 50,000	n/a	100	2.5H:1V	100-year, 24 hour	1,000-year return interval
Sediment Pond 4	-Contained by natural ground with containment partially provided by embankments constructed of glacial till. - Flood water flows into the Seepage Water Reclaim Pond.	1104.0	<2.0	2014	<2.0	0	n/a	n/a	n/a	n/a	n/a

6. Summary of Material Findings of Annual Facility Performance Reports (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 identify 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 January through December 2022 and the most recent DSR was performed in 2022. There were no high priority recommendations identified in either the 2022 AFPR or 2022 DSR that would indicate any tailings facility safety issues. For Teck's tailings facilities, material findings' from the reports are described in the AFPR. There were no material findings in either the 2022 AFPR or 2022 DSR.

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. Key process indicators of interest tracked within the EMS system include:

- Environmental performance
- Water and tailings performance
- Waste management

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)

- On site and downstream water quality
- Compliance obligations
- Emergency preparedness and response
- Community affairs

An external audit was conducted by SGS Canada Inc. in 2022 of HVC's EMS to determine the effectiveness of the system. There were no material findings from the environment monitoring program associated with the Highland TSF. As part of ongoing effort to continuously improve our environmental management, HVC is undertaking work to improve understanding of hydrogeology, groundwater flows, chemistry and surface water interactions. HVC also continues to work towards a collaborative resolution with Indigenous Governments and Organizations on the execution of the sulphate adaptive management plan (SAMP) program and concurrent broader water management initiatives. Community incident status is reviewed quarterly by HVC.

There were no material findings associated with the HVC TSF from the 2022 social monitoring program. As part of ongoing efforts to continuously improve our social performance, HVC recently completed an assessment of human exposure, vulnerability and human rights risks associated with credible failure scenarios. Further, a socio-economic profile was updated in 2023 to ensure the mine has updated knowledge for the area of influence of the HVC TSF and future development related to the HVC 2040 mine extension application. An updated Global Industry Standard on Tailings Management (GISTM) Engagement Plan was created and is in the process of being implemented. This Plan outlines the activities that will be undertaken to inform and gather feedback from identified PAP and local emergency response organizations. As of July 2023, there is one open community grievance with respect to dust in relation to the LL dam.

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 the Teck Sustainability Report.

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

The Highland TSF is included in the site-specific HVC Mine Emergency Preparedness and Response Plan. 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 by working with outside agencies such as, but not limited to, Emergency Management BC, local communities, Indigenous organizations and independent engineering consultants.

The EPRP program is linked to the tailings specific trigger action response plans (TARP), which are associated with the tailings surveillance and monitoring program described 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 EPRP will continue to develop over time in collaboration with project affected people to improve the state of preparedness for emergencies.

9. Independent Reviews

The Independent Tailings Board Review meets 2 to 3 times a year. The most recent meeting was in April 2023, and the next one is scheduled for August 2023.

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 Highland TSF and its appurtenant structures. These costs are disclosed annually in aggregate form in our annual financial statements contained within our [Annual Report](#). These cost estimates are based on the tailings facility closure designs described in Section 5.

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 Highland TSF at HVC. 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 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 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 Highland TSF at HVC, all requirements have been met, or are met with a plan in place, for Principles 1 through 15. The facility was designed and built to meet extreme loading criteria, and as such has a robust design, and appropriate tailings management and governance systems are in place, with established independent reviews and ongoing community engagement.