

# Tailings dam safety & independent review services



Tailings storage facilities (TSFs) are designed and managed to contain tailings and process-affected water produced from ore beneficiation. TSF design and operations are complex because the facilities are typically large, designed in phases, and constructed on a near-ongoing basis that can often span several years, if not decades. Over the past several years, the risk associated with tailings management has received increasing attention, particularly following a series of high-profile tailings dam failures that resulted in loss of life, significant damage to the environment and local communities, and interruption to production. This has led to increasing scrutiny from the public, regulators, investors, insurers, and other third parties.

## Independent review

One method for assessing TSF safety and managing risk is an independent review. The most common independent review format is the dam safety review (DSR), which is often driven by regulatory requirements or corporate policies. DSR is an independent review that assesses the safety of a TSF from a design, operational,

and governance perspective. DSR is performed by an independent technical specialist team in accordance with local and regulatory or corporate guidelines, in addition to established industry standards. The review is typically performed at regular intervals based on the complexity of the TSF and the consequence classification. Other types of independent reviews may involve the owner's desire to confirm the safety of their TSFs independently through an outside source based on corporate policies and applicable standards and guidelines. Such reviews can be tailored to specific objectives, and they are primarily carried out to present to stakeholders and boards of directors.

## Our expertise

Fully leveraging the benefits of independent review requires broad expertise. Our staff of over 1,000 employees, including over 100 professionals who routinely work on TSF projects, allows us to build review teams based on site-specific considerations. We have a broad bench with tailings management expertise that spans the TSF life cycle from permitting, concept, and design to closure and includes

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professionals with experience in geology, geotechnical, water management, design, construction, and operations.

## Review process

Our experts are well versed in industry standards and guidelines such as the *Global Industry Standard on Tailings Management* (GISTM), the Mining Association of Canada's (MAC) *Tailings Guide*, and the International Commission on Large Dams (ICOLD). We frequently conduct DSRs in general conformance with industry guidelines such as those released by the Canadian Dam Association (CDA), the Alberta Dam and Canal Safety Directive, and the Engineers and Geoscientists British Columbia (EGBC) *Legislated Dam Safety Review Guidelines*. We have also developed customized approaches for clients seeking independent review for purposes other than presenting to regulatory bodies.

## Our approach

We conduct independent reviews focusing on design, construction, operation, instrumentation and surveillance, and dam safety management. This also includes review of pertinent documents related to the facility, field inspections, and interviews with key staff, as well as review of facility operations and management. We issue a report for internal and/or external use, which presents the review findings and identifies potential safety deficiencies and non-conformances, along with a dam safety review statement where required. Prior to release of the final report, we meet with the client team to discuss the review findings and recommendations to align the findings with the scope and objectives of the review. We also provide recommendations that may further improve the TSF safety in accordance with the industry standards.

Through completion of independent reviews and DSRs across North America and internationally, we have assembled a strong, experienced, and respected team of reviewers that TSF owners can leverage to identify opportunities for improvement, reduce risk, and meet regulatory requirements.



### Third-party dam safety review of tailings-storage facility

Barr was commissioned by a confidential client to conduct an independent dam safety review (DSR) of a very large tailings-storage facility (TSF) in Mexico.

Barr's DSR consisted of reviews of documents (dam design, slope stability, seismic, shear strength, hydrotechnical and freeboard, risk control); construction (foundation and embankment materials, tailings materials); operations, maintenance, and surveillance (instrumentation and monitoring, manual); and safety management and emergency preparedness, public safety, and security. The DSR also included site inspection, staff interviews, and a dam safety report (analysis and findings of deficiencies, non-conformances, and recommendations).

Among the primary topics addressed were shear strength characterization of the tailings and foundation soils, deformation of the dam, instrumentation thresholds, and static liquefaction, in addition to operational and governance topics.

The DSR was conducted in general accordance with standard practices and regulatory requirements.