

# **Towards Sustainable Mining**

Tailings Management Protocol

Towards Sustainable Mining or TSM is an internationally recognized performance system that helps mining companies evaluate and manage their environmental and social responsibilities. Established in Y2004 by the Mining Association of Canada (MAC), TSM's main objective is to enable mining companies to meet society's need for minerals, metals and energy products in the most socially, economically and environmentally responsible way.

In the Philippines, prior to the release of DENR Memorandum Order No. 99-32, Y1999: Policy Guidelines and Standards for Mine Wastes and Mill Tailings Management, there was no detailed and specific regulatory legislation relating to tailings management. It only operates within a mutually reinforcing legislative framework and can be considered under pollution prevention statutes, environment and resource conservation bills (Cabalda, Velasco, et al. 1997). Presidential Decree 984 highlights the procedures for obtaining construction and operating permits of tailings storage facility. RA No. 7942: Philippine Mining Act and DENR Administrative Order No. 96-40 control the environmental impacts throughout the life cycle of a tailings storage facility. Each mine has an Environmental Compliance Certificate (ECC) that essentially reinforces the prevention of impacts to the environment from a tailings facility. At present, the operation, management and maintenance of mine wastes and tailings facilities, are governed by existing, relevant laws and legislations, hence the operative principle is compliance management. The DENR-issued Memorandum Circular No. 2018-02, re: Guidelines for Compliance Monitoring and Rating / Scorecard of Mining Permits/Contracts, which provides a standard monitoring system and performance scorecard rating system to determine compliance level contractors/permittees/permit holders.

December 19, 2017, the Chamber of Mines of the Philippines (COMP) signed a Mutual Cooperation and Licensing Agreement with the MAC for the adoption of the TSM program. This involves subscribing to the TSM Guiding Principles, which are backed by specific performance indicators that member companies publicly report on annually in TSM Progress Reports. Tailings facilities are necessary components of some mining activities and it is crucial that they be managed responsibly to protect human safety and environment.

The TSM Guiding Principles outline how mining companies can safely manage tailings facilities by adhering to best practices in tailings management. The Tailings Management Protocol measures adherence to these guides. It is a set of tools and indicators to drive performance and ensure that key mining risk are managed responsibly at participating mining companies. TSM is designed to enhance the industry's reputation by improving its performance.

## PURPOSE

The purpose of the assessment protocol is to provide guidance to companies in completing their evaluation of tailings management performance against Towards Sustainable Mining® (TSM®) indicators. The assessment protocol sets out the general expectations for tailings management as part of the TSM initiative.

As with any assessment of a management system, professional judgment is required in assessing the degree of implementation of a system indicator and the quality of management processes and intervention. Application of this Protocol will, therefore, require a level of expertise in auditing and systems assessment and knowledge of and experience in the practice of tailings management.

This assessment Protocol provides an indicator of the level of implementation of proactive tailings management practices as part of the TSM initiative. It is not, of itself, a guarantee of the effectiveness of tailings management activities.

The Tailings Management Protocol (the Protocol) provides five Indicators to measure the quality and comprehensiveness of systems for tailings management, specifically tailings facility-specific:

- tailings management systems;
- emergency response plans (ERPs) and emergency preparedness plans (EPPs); and
- operations, maintenance, and surveillance (OMS) manuals.

The Protocol is supported by two documents prepared by MAC:

- **A Guide to the Management of Tailings Facilities (the Tailings Guide);** and
- **Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities (the OMS Guide).**

These guides provide further specificity on expectations to meet performance Indicators described in the Protocol. The Protocol provides a measure of the level of implementation of tailings management practices as part of the TSM initiative. It is not, in itself, a guarantee of the effectiveness of tailings management activities.

## PERFORMANCE INDICATORS

Five (5) performance indicators have been established:

1. **Tailings Management Policy and Commitment**  
- has a policy and commitments in place to safely manage tailings facilities.
2. **Tailings Management System and Emergency Preparedness**  
- has implemented a tailings management system and emergency preparedness that conforms to COMP's tailings guides.
3. **Assigned Accountability and Responsibility for Tailings Management**  
- has assigned accountability for tailings management to CEO or COO of the Company
4. **Annual Tailings Management Review**  
- conducts an annual tailings management review
5. **Operation, Maintenance and Surveillance (OMS) Manual**  
- has implemented an OMS Manual that conforms to COMP's guidelines

While the Protocol focuses on the management of tailings facilities and internal accountability and review mechanisms, an additional component of good practice in tailings management is community engagement. TSM addresses tailings related community engagement as part of a broader topic of engagement regarding risks to communities and engagement requirements related to risks posed by tailings facilities are included in the **TSM Indigenous People and Community Outreach Protocol**. Indicator 2 of that Protocol requires companies to have processes in place to engage with stakeholders on credible risks to the public that are associated with company activities, including tailings management. Specific topics for engagement should be determined through dialogue with stakeholders.

## STRUCTURE AND USE OF THE PROTOCOL

The main body of the Protocol describes the purpose of each of the Indicators and the criteria for the performance rating levels used in TSM: **Levels C, B, A, AA, and AAA**.

To obtain a Level A or higher, criteria for Indicators 1 through 4 refer to elements that must be *"in conformance with the Tailings Guide"*, and criteria for Indicator 5 refer to the OMS Guide.

A **Table of Conformance** has been developed that identifies aspects of the Tailings Guide and the OMS Guide to be implemented to be *"in conformance"* with the Guides. A company would not be in conformance with the Guides if there is:

- an absence of a complete program area (e.g., risk assessment, training processes, independent review); or
- a chronic deficiency of a single program area (e.g. routine exceedance of performance criteria, surveillance requirements frequently missed).

Non-conformances that represent an administrative issue or a non-repetitive finding that does not directly affect safety, environment or quality (e.g., minor gap in training records, irregularity in inspection records,

etc.) should not prevent a company from achieving a Level A for a tailings facility for the relevant indicator. Professional judgment must be applied in assessing the significance of identified non-conformances.

Thus, use of the **Table of Conformance** is required to assess performance against the five Indicators.

Please note that TSM is applied on a facility-specific basis, meaning it is applied to a mine site as a whole. For mines sites with more than one tailings facility, the performance of those tailings facilities is assessed collectively against the Indicators and criteria described in the Protocol. For a mine site as a whole to obtain a specific TSM performance rating level for tailings management (e.g., Level A for Indicator 2), performance of all individual tailings facilities within the mine site must meet that level or higher.

The Protocol includes three appendices:

**Appendix 1: Frequently Asked Questions.** Users should refer to this appendix as a first step in addressing any questions that may have about the Indicators and use of the Protocol.

**Appendix 2: Glossary.** Provides definitions of various terms used in the Protocol. Definitions are harmonized with those in the Tailings Guide and the OMS Guide.

**Appendix 3: TSM Self-Assessment Checklist.** Users may apply this checklist to assist in assessing their performance level for each of the Indicators. However, use of this checklist is not required.

## ACTION PLANS

Companies that have not achieved a minimum of a Level A for all five Indicators are required to describe in their company profile section of MAC's annual TSM Progress Report actions that the company intends to take to achieve a Level A for all five Indicators.

These action plans should address at a minimum:

- identified gaps in Indicators where the company has not achieved a Level A;
- specific actions the company will take to reach a Level A; and
- timeline for implementing actions (note: actions must be implemented within 3 years).

## ORGANIZATION OF RELEVANT DOCUMENTATION

The Protocol and Guides refer to a range of documentation that a company must develop and implement to obtain a Level A or higher for each Indicator. However, the structure of the Protocol and Guides should not be interpreted as a prescription of how this documentation must be organized. How these documents are organized is at the discretion of the company, taking into account the site-specific circumstances, including the characteristics and life cycle phase of each of tailings facility.

**For Indicator 1:** A company does not need to develop a stand-alone policy or commitment specific to tailings management. The requirement for a tailings management policy and/or commitments can be met within an overarching company operations or environmental policy, provided that:

- the policy contains specific references to tailings management policies and/or commitments as described in the Tailings Guide; and
- the company can demonstrate that it is adhering to the policy and/or commitments.

**For Indicator 2:** A tailings management system does not require stand-alone documentation. A tailings management system will likely prove most effective and resilient if incorporated into broader site-wide environmental management systems (EMS). In such cases, the company would need to be able to demonstrate that the tailings management component of the EMS is in conformance with the tailings management framework described in the Tailings Guide, as per Indicator 2. There is no requirement that the EMS as a whole be in conformance with the Tailings Guide or be considered in assessing performance against the criteria for this Indicator.

Similarly, stand-alone ERP and EPP documents specific to a tailings facility are not required. An ERP and an EPP may be separate, or they may be combined. There may be a separate ERP and EPP for tailings management, or these may be included in a site-wide ERP and EPP that covers all aspects of the mine site. They may be included in the OMS manual for the tailings facility or may be separate from the OMS manual.

**For Indicator 4:** In cases where the tailings management system is incorporated into a site-wide EMS, there is no requirement that the scope of the annual tailings management review address the full scope of the EMS. For the purpose of this Protocol, only the tailings management component of the EMS needs to be addressed.

**For all Indicators:** Some mine sites (a facility as defined for TSM reporting) have more than one tailings facility. In such cases, there is no need for separate documentation for each tailings facility. Regardless of how the company organizes necessary documentation, it is necessary that the tailings management system, ERP, EPP, and OMS manual specifically address the performance objectives, risk profile, and risk management plan of each tailings facility. The company needs to be able to demonstrate that it has measures in place that are appropriate to the management of each distinct tailings facility, and in conformance with the Tailings Guide and OMS Guide as per the Indicators in the Protocol.

## **ASSESSMENT AND VERIFICATION**

Companies are required to annually report their performance for all Protocols by completing the assessment provided in the Protocols. A facility-level self-assessment and review of tailing management system must be conducted annually and report results to the accountable executive officer.

It is recommended that the assessment be completed using a process of interview, discussion and document review, including representative site management, operations and environmental personnel. A level of expertise in auditing and system assessment and some knowledge of and experience in the technical aspects of mining and tailings management is required.

Every third year, the self-assessment must be externally verified by an independent and certified third party. The TSM third-party verification system aligns with the initiative's commitment to transparency and accountability.

## INDICATOR 1 : TAILINGS MANAGEMENT POLICY AND COMMITMENT

**Purpose :** To confirm that companies have established and effectively communicated a policy and/or commitments that express intention, commitments and principles in relation to tailings management. Tailings Management Policy and Commitment.

### Assessment Criteria :

LEVEL	CRITERIA
<b>C</b>	The company has not met all Level B criteria.
<b>B</b>	The company has developed a policy and/or commitments that specifically address tailings management, but has not met all requirements for a Level A. The company has developed an action plan to meet all requirements for a Level A.
<b>A</b>	<p>An internal audit has been conducted and determined that:</p> <ul style="list-style-type: none"> <li>• The policy and/or commitments are: <ul style="list-style-type: none"> <li>✓ in conformance with the Tailings Guide;</li> <li>✓ approved by senior management; and</li> <li>✓ endorsed at the governance level.</li> </ul> </li> <li>• The company has a process in place to ensure that the policy and/or commitments are: <ul style="list-style-type: none"> <li>✓ communicated to employees;</li> <li>✓ understood to a degree appropriate to their roles and responsibilities by employees, contractors and consultants whose activities may affect tailings management either directly or indirectly; and</li> <li>✓ implemented with budget allocation.</li> </ul> </li> </ul>
<b>AA</b>	An external audit has been conducted and determined that all requirements for a Level A have been met.
<b>AAA</b>	The external audit for Level AA included an evaluation of the effectiveness of the policy and/or commitments and their implementation.



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## INDICATOR 2 : TAILINGS MANAGEMENT SYSTEM AND EMERGENCY PREPAREDNESS

**Purpose:** To confirm that companies have : (1) developed and implemented a tailings management system in conformance with the tailings management framework described in the Tailings Guide; and (2) developed and tested emergency response plans (ERPs) and emergency preparedness plans (EPPs) in conformance with the Tailings Guide.

**Assessment Criteria :**

LEVEL	CRITERIA
<b>C</b>	The company has not met all Level B criteria.
<b>B</b>	<p>The company has:</p> <ul style="list-style-type: none"> <li>• developed and implemented a tailings management system, but that system is not in conformance with the Tailings Guide; or</li> <li>• conducted a gap analysis comparing existing tailings management practices against the Tailings Guide and determined that existing practices for the tailings facility are not in conformance with the Tailings Guide.</li> </ul> <p>And, the company has:</p> <ul style="list-style-type: none"> <li>• developed an ERP and an EPP for the tailings facility but both are not in conformance with the Tailings Guide; or</li> <li>• developed an ERP and an EPP for the tailings facility which are in conformance with the Tailings Guide, but both have not been tested. The company has developed an action plan to meet all requirements for a Level A.</li> </ul>
<b>A</b>	<p>An internal audit has been conducted and determined that the company has:</p> <ul style="list-style-type: none"> <li>• developed and implemented a tailings management system that is in conformance with the Tailings Guide;</li> <li>• developed an ERP and an EPP for the tailings facility that are both in conformance with the Tailings Guide; and</li> <li>• tested both the ERP and the EPP.</li> </ul>
<b>AA</b>	An external audit has been conducted and determined that all requirements for a Level A have been met.
<b>AAA</b>	<p>The external audit for Level AA included an evaluation of the effectiveness of the:</p> <ul style="list-style-type: none"> <li>• development and implementation of the tailings management system; and</li> <li>• development and testing of the ERP and the EPP.</li> </ul>

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### INDICATOR 3 : ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT

**Purpose:** To confirm that accountability for tailings management is assigned to an Accountable Executive Officer (e.g., CEO, COO, or Vice President), and that an appropriate management structure and resources are in place to provide assurance to the company that tailings are managed responsibly

#### Assessment Criteria:

LEVEL	CRITERIA
<b>C</b>	The company has not met all Level B criteria.
<b>B</b>	The company has defined and documented accountability and responsibility for tailings management, but all requirements for a Level A have not been met. The company has developed an action plan to meet all requirements for a Level A.
<b>A</b>	<p>An internal audit has been conducted and determined that:</p> <ul style="list-style-type: none"> <li>• accountability for tailings management has been assigned by the Board or Governance Level to an Accountable Executive Officer;</li> <li>• the Accountable Executive Officer has a direct reporting relationship to the Board, a Board committee, or the Governance Level;</li> <li>• responsibility and authority for tailings management have been delegated in writing to qualified personnel; and</li> <li>• delegation of responsibility and authority for tailings management is in conformance with the Tailings Guide.</li> </ul>
<b>AA</b>	An external audit has been conducted and determined that all requirements for a Level A have been met.
<b>AAA</b>	<p>The external audit for Level AA included an evaluation of the effectiveness of the:</p> <ul style="list-style-type: none"> <li>• assignment of accountability for tailings management to the Accountable Executive Officer; and</li> <li>• delegation of responsibility and authority for tailings management.</li> </ul>

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**INDICATOR 4 : ANNUAL TAILINGS MANAGEMENT REVIEW**

**Purpose:** To confirm that there is an annual review of tailings management that is reported to the Accountable Executive Officer to ensure corporate governance over tailings management and to ensure that the company is satisfied that the tailings management organizational structures and systems are effective and continue to meet the needs of the organization.

**Assessment Criteria:**

LEVEL	CRITERIA
<b>C</b>	The company has not met all Level B criteria.
<b>B</b>	<p>The company has conducted periodic, documented reviews of tailings management for the tailings facility, but all requirements for a Level A have not been met.</p> <p>The company has developed an action plan to meet all requirements for a Level A.</p>
<b>A</b>	<p>An internal audit has been conducted and determined that the company conducts reviews of tailings management for the tailings facility:</p> <ul style="list-style-type: none"> <li>• on an annual basis; and</li> <li>• in conformance with the Tailings Guide.</li> </ul>
<b>AA</b>	AA External audit has been conducted and determined that all requirements for a Level A have been met.
<b>AAA</b>	The external audit for Level AA included an evaluation of the effectiveness of the annual tailings management reviews.

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**INDICATOR 5 : OMS MANUAL**

**Purpose:** To confirm that the company has developed and implemented a tailings facility-specific OMS manual in conformance with the OMS Guide to facilitate implementation of the tailings management system (Indicator 2).

**Assessment Criteria:**

LEVEL	CRITERIA
<b>C</b>	The company has not met all Level B criteria.
<b>B</b>	An OMS manual has been developed for the tailings facility but it is not in conformance with the OMS Guide. The company has developed an action plan to meet all requirements for a Level A.
<b>A</b>	An internal audit has been conducted and determined that an OMS manual has been developed and implemented for the tailings facility that is in conformance with the OMS Guide.
<b>AA</b>	An external audit has been conducted and determined that an OMS manual has been developed and implemented for the tailings facility that is in conformance with the OMS Guide.
<b>AAA</b>	The external audit for Level AA included an evaluation of the effectiveness of the development and implementation of the OMS manual.



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## APPENDIX 1 : FREQUENTLY ASKED QUESTIONS

**1. Can a company effectively implement a tailings management system without having a tailings management policy and/or commitments in place?**

No. There is a direct link between Indicators 1 and 2 of the Protocol. A company must have a tailings management policy and/or commitments in place in order to effectively implement a tailings management system, since the policy is part of the management system. A company cannot achieve a Level A for Indicator 2 (Tailings Management System) if it has not achieved a Level A or higher for Indicator 1 (Tailings Management Policy).

**2. What are some examples of employees or contractors whose activities may affect tailings management either directly or indirectly?**

Examples of personnel whose activities may directly affect tailings management include mill managers, tailings pipeline inspectors, and employees undertaking any operation, maintenance, or surveillance activities. An example of personnel whose activities may indirectly affect tailings management is procurement personnel who order parts or services related to tailings management.

**3. How can a company demonstrate whether personnel are qualified?**

Considerations for determining whether a person is qualified include, but are not limited to:

- previous training, including as appropriate formal education
- previous experience in performing the task/activity
- degree of relevant knowledge
- regulatory, professional, or industry- definitions of “qualified”

**4. What are examples of actions that should be the responsibility of the Accountable Executive Officer to demonstrate accountability for tailings management?**

Examples of actions the Accountable Executive Officer can take to demonstrate accountability for tailings management could include:

- ensuring that the senior management team and/or Board or governance level are appropriately informed on tailings management issues;
- reviewing risk assessment results;
- participating in tailings reviews;
- reviewing and approving adequate resources for tailings management;
- participating in independent tailings review meetings; and
- participating in crisis management planning simulation exercises.

### **5. *What is an audit?***

An audit is a formal, systematic and documented examination of a tailings facility's conformance with explicit, agreed, prescribed criteria, often requirements stipulated in law or in the company's tailings management system. Audits evaluate and report on the degree of conformance with stipulated criteria, based on the systematic collection and documentation of relevant evidence. Audits involve some degree of judgment but are not designed to determine root cause of deficiencies, or to evaluate management system effectiveness.

Internal audits are conducted by employees of the company with appropriate knowledge and competencies who are independent, impartial, and objective with respect to the management of the tailings facility being audited. For example, they could work at other tailings facilities in the corporate portfolio or that could work at the corporate level. External audits are conducted by auditors who are external to the company being audited. Auditors maintain an objective viewpoint throughout the audit process to ensure that findings and conclusions are based only on the evidence. (Adapted from ISO 19011).

### **6. *What is an evaluation of effectiveness?***

An evaluation of effectiveness goes beyond determining whether a condition has been met and includes an assessment of whether tailings management is achieving the intended results. It considers both the extent to which planned activities have been realized, and the extent to which performance objectives and indicators have been achieved. Criteria to be examined will depend on the scope of the evaluation. Typical sources of information that should be considered when evaluating tailings management effectiveness include changes in internal or external conditions that could affect tailings management and achievement of performance objectives. Performance results and trends that should be evaluated to determine the effectiveness of tailings management include:

- the extent to which performance objectives and indicators have been achieved;
- the extent to which planned activities have been implemented as intended;
- fulfillment of conformance obligations;
- non-conformities and corrective actions;
- surveillance results;
- adequacy of resources to support achievement of performance objectives;
- feedback from practitioners and end users; and
- any additional relevant information or feedback from COI.

### **7. *What is meant by the governance level of the company?***

The company Board of Directors (or a sub-committee of the Board of Directors) is considered the governance level of a company, the level at which the highest-level corporate decisions are made, particularly regarding organizational and financial resources. For companies headquartered outside of the country in which the tailings facility is located that do not have a Board of Directors based in that country, the governance level would be equivalent to the highest-level committee or board that provides oversight and review of tailings management activities within that country. Endorsement of the tailings management policy and/or commitments at the governance level will vary from company to company. For example, a Board resolution adopting

the policy will be appropriate for some companies, while others will fulfill this requirement through a presentation on the tailings management policy to a sub-committee of the Board of Directors.

**8. *How long are audits valid?***

Internal and external audits remain valid up to a maximum of three years. In addition, detailed assessments of conformance with the Table of Conformance remain valid until there is a material change in tailings management.

## APPENDIX 2 : GLOSSARY

**Accountability** : The answerability of an individual for their own performance and that of any personnel they direct, and for the completion of specified deliverables or tasks in accordance with defined expectations. An accountable person may delegate responsibility for completion of the deliverable or task, but not the accountability.

**Accountable Executive Officer** : An executive-level person (e.g., CEO, COO, Vice President) designated by the Board of Directors or Governance Level, who is accountable for tailings management, and the development and implementation of the systems needed for responsible tailings management. This accountability cannot be delegated. This Officer has a direct reporting relationship to the Board, a Board committee, or the Governance level and:

- needs to be aware of key outcomes of tailings facility risk assessments and how these risks are being managed;
- has accountability and responsibility for putting in place an appropriate management structure;
- delegates responsibility and authority for tailings management and defines the personnel responsibilities, authority, and reporting relationships to implement the systems needed for responsible tailings management through all phases in the tailings facility life cycle; and
- demonstrates to the Board of Directors/Governance level whether tailings are managed responsibly.

**Authority** : The power to make decisions, assign responsibilities, or delegate some or all authority, as appropriate. The ability to act on behalf of the Owner.

**Stakeholders** : All individuals and groups who have an interest in, or believe they may be affected by, decisions respecting the management of operations.

They include, but are not restricted to:

- employees;
- Aboriginal or Indigenous peoples;
- mining community members;
- suppliers;
- neighbors;
- customers;
- contractors;
- environmental organizations and other non-governmental organizations;
- governments;
- the financial community; and
- shareholders.

**Company** : The Tailings Guide uses the term “Owner” rather than “company.” The definition of “company” for the purpose of this Protocol is the same as “Owner” as defined in the Tailings Guide: Owner is the company, partnership, or individual who has legal possession or is the legal holder of a tailings facility under law in the applicable jurisdiction where the facility is located. For example, the

company, partnership or individual that owns the mine or ore processing facility from which tailings and water are generated is the owner of those tailings and can be considered the Owner of the tailings facility. In the case of joint ventures or similar projects, they may be more than one company involved in Ownership. In such cases, the Owner would comprise all companies that are represented on the Board of Directors and are involved in decision-making.

**Continual improvement** : The process of implementing incremental improvements and standardization to achieve better environmental and management system performance.

**Emergency** : A situation that poses an impending or immediate risk to health, life, property, the environment and which requires urgent intervention to prevent or limit the expected adverse outcomes.

**Maintenance** : Includes preventative, predictive, and corrective activities carried out to provide continued proper operation of all infrastructure (e.g., civil, mechanical, electrical, instrumentation, etc.), or to adjust infrastructure to ensure operation in conformance with performance objectives.

**Management system** : Processes and procedures that collectively provide a systematic framework for ensuring that tasks are performed correctly, consistently and effectively to achieve a specified outcome and to drive continual improvement in performance. A systems approach to management requires an assessment of what needs to be done, planning to achieve the objective, implementation of the plan, and review of performance in meeting the set objective. A management system also considers necessary personnel, resources and documentation requirements. Other definitions associated with management systems are:

**Policy** : The expression of management's commitment to a particular issue area that presents the stance of the company to interested external parties.

**Practice**: Documented approaches to carrying out a task.

**Procedure**: A documented description of how a task is to be carried out.

**Operation** : Includes activities related to the transport, placement, and permanent storage of tailings and, where applicable, process water, effluents and residues, and the recycling of process water. The term "operation" applies throughout all phases of the life cycle of a tailings facility and is not limited to the operations and ongoing construction phase of the life cycle when tailings are being actively placed in the facility. As a result, operation also includes reclamation and related activities.

**Responsibility** : The duty or obligation of an individual or organization to perform an assigned duty or task in accordance with defined expectations, and which has a consequence if expectations are not met. An individual or organization with responsibility is accountable to the person that delegated that responsibility to them.

**Surveillance** : includes the inspection and monitoring (i.e., collection of qualitative and quantitative observations and data) of activities and infrastructure related to tailings management. Surveillance also includes the timely documentation, analysis, and communication of surveillance results, to inform decision making and verify whether performance objectives and risk management objectives, including critical controls, are being met.

**Tailings Facility** : The collective engineered structures, components and equipment involved in the management of tailings solids, other mine waste managed with tailings (e.g., waste rock, water treatment residues), and any water managed in tailings facilities, including pore fluid, any pond(s), and surface water and runoff. This may include structures, components and equipment for:

- classification of tailings through water content management (e.g., cyclones, thickeners, filter presses);
- transporting tailings to the tailings facility (e.g., pipelines, flumes, conveyors, trucks);
- containment of tailings and associated water (e.g., dams, dykes, stacks, liner systems, cover systems);
- management of seepage (e.g., underdrains, collection ponds, pumping wells);
- water reclaim systems (e.g., pumping to the ore processing facility); management of surface water releases from the tailings facility (e.g., diversions, decant structures, spillways, outlets, flumes, water treatment);
- structures, components and equipment for the surveillance and maintenance of tailings facilities; and
- mechanical and electrical controls, and power supply associated with the above.

## COPYRIGHTS AND REFERENCES



*Chamber of Mines of the Philippines is an association advancing the interest of mining, quarrying mineral processing companies for the efficient exploration, development and utilization of minerals in consonance with sound economic, environmental and social policies.*

*The association consists of members coming from exploration, mining, mineral processing and services industries including professional associations. The members are united by a shared commitment to the principles of economic growth, sustainable development and as government's partners in development.*

TSM is a trademark of the Mining Association of Canada.



### **For more information about the TSM initiative, visit:**

The Mining Association of Canada

[www.mining.ca/tsm](http://www.mining.ca/tsm)

Quebec Mining Association

[www.amq-inc.com](http://www.amq-inc.com)

FinnMin

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