

Towards Sustainable Mining

Water Stewardship Protocol

Launched in 2004, Towards Sustainable Mining (TSM) is an initiative of The Mining Association of Canada designed to enhance the industry's reputation in improving its performance.

The TSM guiding principles are backed by specific performance indicators. These indicators are designed to identify the industry's current performance in key areas, and point to actions that could be taken to improve.

The Chamber of Mines of the Philippines (COMP) adopts this TSM in instituting the COMP TSM Water Stewardship Protocol. The protocol is derived from the Mining Association of Canada Total Sustainable Mining Framework Water Stewardship¹, International Council of Mining and Metals (ICMM) Position Statement on Water Stewardship², the Philippine Presidential Decree No. 1067³, Republic Act No. 9275⁴, DENR Administrative Order No. 2016-08⁵, Republic Act No. 7942⁶ and its Revised Implementing Rules and Regulations⁷.

This document provides a tool to assist COMP Members in the assessment of Water Stewardship in conformance with the TSM. The use of this protocol also enhances the consistency of assessments conducted across members. In addition, this tool has been designed to enable internal and external verification of company performance, consistent with the TSM verification system, the relevant Philippine mining regulations, and the initiative's commitment to transparency and accountability.

1 <http://mining.ca/sites/default/files/documents/TSM-Water-Stewardship-Framework.pdf>

2 ICMM Position Statement on Water Stewardship (2017): <https://www.icmm.com/water-ps>

3 Presidential Decree No. 1063 - Water Code of the Philippines

4 Republic Act No. 9275 - Philippine Clean Water Act of 2004

5 DENR Administrative Order No. 2016-08 - Water Quality Guidelines and General Effluent Standards of 2016

6 Republic Act No. 7942 – Philippine Mining Act of 1995

7 DENR Administrative Order No. 2010-21 – Revised Implementing Rules and Regulations of R.A. 7942, otherwise known as the Philippine Mining Act of 1995

TSM ASSESSMENT PROTOCOL

A Tool for Assessing Water Stewardship Performance

Purpose

The purpose of the assessment protocol is to provide guidance to the COMP in establishing and completing their evaluation of water stewardship performance against TSM indicators. The assessment protocol sets out the general expectations for water stewardship 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 water management performance. This assessment protocol provides an indicator of the level of implementation of proactive water management practices as part of the TSM initiative. It is not, of itself, a guarantee of the effectiveness of water management performance.

TSM's Guiding Principles commit the COMP members to comply with all laws and regulations of the Republic of the Philippines. This protocol is intended to guide the development of water management practices beyond legal compliance.

Performance Indicators

The Water Stewardship Protocol contains four (4) indicators:

1. Water Governance
2. Operational Water Management
3. Watershed Planning
4. Water Reporting and Performance

1. WATER GOVERNANCE

Purpose

To confirm that corporate commitment and accountabilities are in place and communicated to relevant employees to support water stewardship.

Water Governance: Assessment Criteria

Level	Criteria	Verifiers/Evidences
C	The mine site does not meet all Level B criteria.	
B	Demonstrated commitment for water stewardship is evident. Commitments may not be consistent with the intent of the <i>TSM Water Stewardship Framework</i> (WSF).	<ul style="list-style-type: none"> • Corporate policy on water stewardship • Compliance to water stewardship policy discussed on Company manuals
	Accountabilities for water stewardship are assigned, but responsibilities may not be clearly defined.	<ul style="list-style-type: none"> • General knowledge on water stewardship based on interviews • Organizational charts showing roles
	Processes are in place to track and correct non-compliance with water-related regulatory requirements and permit/license commitments.	<ul style="list-style-type: none"> • Procedures and manuals on water-related compliance • General demonstration of process compliance through interviews and observations
A	Demonstrated commitment to address findings of non-compliance to regulatory requirements.	Documentation of actions relative to findings and with evidences of implementation
	Demonstrated senior management commitment to water stewardship that is	<ul style="list-style-type: none"> • Corporate policy on water stewardship

	<p>consistent with the TSM <i>Water Stewardship Framework</i>.</p>	<ul style="list-style-type: none"> • Approved budgets for water stewardship projects
	<p>Commitments to water stewardship have been communicated to relevant employees, contractors, and water-related mine site stakeholders.</p>	<ul style="list-style-type: none"> • Water stewardship policy discussed in Company manuals • Documentation of communications and policy roll-out
	<p>Roles, responsibilities and accountabilities for operational water management and watershed-scale planning are defined.</p>	<ul style="list-style-type: none"> • Documentation of water management plan and schedules, water stewardship procedures/manuals, etc.) • Documentation of roll-out to all relevant stakeholders • Materials, in hard copies and soft copies for information, education and communications
<p>AA</p>	<p>Assessment of water risks and opportunities is integrated into annual business planning and budgeting processes.</p>	<ul style="list-style-type: none"> • Documented identification and assessment of water risks and opportunities • Budgetary provisions on water-related projects as appropriately prioritized based on risk assessment conducted
	<p>Internal audit is conducted to determine:</p> <ul style="list-style-type: none"> • the degree of consistency of the commitments to water stewardship with the TSM <i>Water Stewardship Framework</i>; • whether commitments to water stewardship have been communicated to relevant employees, contractors, and 	<ul style="list-style-type: none"> • Documented results of internal audit • Regulatory agency-led audits to monitor performance

	<p>water-related mine site stakeholders; and</p> <ul style="list-style-type: none"> • whether roles, responsibilities and accountabilities for operational water management and watershed-scale planning are defined. 	
AAA	<p>External audit is conducted to determine:</p> <ul style="list-style-type: none"> • the degree of consistency of the commitments to water stewardship with the TSM <i>Water Stewardship Framework</i>; • whether commitments to water stewardship have been communicated to relevant employees, contractors, and water-related mine site stakeholders; and • whether roles, responsibilities and accountabilities for operational water management and watershed-scale planning are defined. 	<ul style="list-style-type: none"> • 3rd party audit/monitoring documents proving compliance to all criteria relative to Water Stewardship Protocols • Documented results of external audit

Water Governance: Frequently Asked Questions

#	FAQ	Page
1	What is water stewardship?	17
2	What are stakeholders?	17
3	What are relevant employees, contractors and water-related mine site stakeholders?	17
4	How should regional water stewardship approaches be reflected where there are multiple mine sites in a single watershed?	18
5	What is an internal audit?	18
6	What is an external audit?	18

2. OPERATIONAL WATER MANAGEMENT

Purpose

To confirm that water-related plans and management systems are implemented at the mine site. This indicator includes both water quality and water quantity.

Operational Water Management: Assessment Criteria

Level	Criteria	Verifiers/Evidences
C	The mine site does not meet all Level B criteria.	
B	Identification and assessment of risks in the mine site, related to surface water and groundwater, have been conducted.	<ul style="list-style-type: none"> • Documentation of risk identification and assessment • Risk registry
	Processes to monitor the mine site's water management performance are established.	Documentation of procedures and monitoring platforms (i.e. spreadsheets, checklists, etc.)
	Records of mine site water quality and water quantity data are maintained.	<ul style="list-style-type: none"> • Database of records on quantity and quality • Documentation of water-related projects and infrastructures
A	<p>A systematic approach to operational water management has been established and implemented, including:</p> <ul style="list-style-type: none"> • A site-wide water balance has been prepared, wherein balances are continually tracked and updated on a pre-defined periodic cycle; 	Water balance database
	<ul style="list-style-type: none"> • A water monitoring program, informed of identified risks, addressing both quality and quantity 	<ul style="list-style-type: none"> • Documentation of status updates

	of surface water and groundwater is being implemented;	<ul style="list-style-type: none"> • Documentation of actions made related to identified risks
	<ul style="list-style-type: none"> • Controls and mitigation measures based on identified risks have been established and are being implemented as planned. 	Documented plans and schedules on water-related scenarios
	<ul style="list-style-type: none"> • Response and contingency plans for water-related risks and incidents are established 	
	<ul style="list-style-type: none"> • Relevant employees and contractors are provided with training that is in accordance with their roles and responsibilities. 	<ul style="list-style-type: none"> • Training plans • Documentation of attendance
AA	Water balances are updated on a pre-defined frequency, incorporating monitoring data and relevant potential variability of conditions arising from climate change.	<ul style="list-style-type: none"> • Records of historical monitoring data • Documentation on scenario plans
	There is a process in place to identify opportunities to improve water performance and it is being implemented, as planned, and monitored for effectiveness.	<ul style="list-style-type: none"> • Documented action plans and schedules • Registry of risks and opportunities • Regular-frequency update reports
	Control measures are in place for water-related risks and being monitored for effectiveness.	Regular-frequency update reports
	Monitoring data are stored and trends are analysed on a pre-defined frequency to provide basis for continual improvement and/or decision-making processes.	<ul style="list-style-type: none"> • Annual reports (i.e. management review – minutes of discussions, action plans, etc.)

	<p>Groundwater is modelled with an appropriate level of detail and physical scale as informed by identified risks.</p>	<ul style="list-style-type: none"> • 3D model of groundwater attributes • 3D models of historical trends • Documentation of risks and opportunities
	<p>Internal audit is conducted to determine whether the operational water management practices meet the requirements of Level A.</p>	<ul style="list-style-type: none"> • Documented internal audit reports • Documented regulatory agency-led audits
<p>AAA</p>	<p>Long-term water management considerations are incorporated into current water management decision-making processes and closure plans.</p>	<ul style="list-style-type: none"> • Final mine site rehabilitation plan • Final land use plan • Mine closure plan
	<p>Where opportunities to minimize long-term water management activities beyond the life of mine have been identified, they are being incorporated into long-term investment decisions and/or closure plans.</p>	<ul style="list-style-type: none"> • Mine closure plan • Final land use plan • Opportunities registry
	<p>External audit is conducted to determine whether the operational water management practices of the mine site meet the requirements of Level A and Level AA.</p>	<p>3rd party audit report documentation</p>
	<p>An evaluation of effectiveness of operational water management system is conducted and a monitoring process is in place for identified opportunities for improvement.</p>	<ul style="list-style-type: none"> • Documentation of the evaluation for effectiveness conducted by a 3rd party • Documented verification by a 3rd party that a process for improvement is in place.

Operational Water Management: Frequently Asked Questions

#	FAQ	Page
7	What is meant by operational water management?	18
8	What do water quality and water quantity data means?	18
9	What is meant by water balance?	19
10	What is meant by contingency plans for water-related incidents?	19
11	What is meant by “monitoring data are stored, and trends are analyzed on a pre-defined frequency to enable integrated decision-making”?	19
12	What is meant by “groundwater is modelled with an appropriate level of detail and physical scale as informed by identified risks”?	20
13	Are improvement projects identified to mitigate risk assessed the same as projects that were identified as proactive opportunities?	20
14	What is meant by “long-term water management considerations”?	20

3. WATERSHED PLANNING

Purpose

To confirm that the mine site supports engagement with other water users and stakeholders inside the watershed and participates in watershed-scale planning and governance fora where they exist. This indicator focuses on watershed planning beyond the operational footprint of the mine site.

Watershed Planning: Assessment Criteria

<i>Level</i>	<i>Criteria</i>	<i>Verifiers/Evidences</i>
C	The mine site does not meet all Level B criteria.	
B	A relevant watershed boundary has been identified by the mine site.	Topographic map with defined boundary of the watershed inside which the mine site is located
	Relevant water-related stakeholders have been identified.	Documented listing of stakeholders within the identified watershed
	Responsibility for involvement in watershed planning has been designated.	Documentation of responsibility matrix
A	Engagement has taken place to better understand how water-related stakeholders in the watershed use water resources by seeking information on factors including water-related local practices, beliefs, customs and traditional knowledge.	<ul style="list-style-type: none"> • Documented proofs of the engagement. • Risk and opportunity registry • Land use map based on official and actual situations • Zoning map from the government

	<p>The mine site participates, either directly or indirectly, in watershed governance fora or groups where they exist.</p>	<ul style="list-style-type: none"> • Attendance to fora on watershed governance • Membership/participation in water stewardship groups
	<p>The mine site has assessed how operational water management practices contribute to cumulative effects in its watershed.</p>	<ul style="list-style-type: none"> • Documentation of sample-gathering, analysis, and water balance systems • Documented water-related baselining activities and water data monitoring
AA	<p>Through engagement with relevant water-related stakeholders, water-related risks and opportunities in the watershed have been identified and appropriately prioritized.</p>	<ul style="list-style-type: none"> • Engagement documentation • Risk and opportunity registry • Documentation of collaborative agreements
	<p>The mine site communicates with relevant water-related stakeholders to help them understand how operational water management practices address the priority watershed-related risks.</p>	<ul style="list-style-type: none"> • Engagement documentation with stakeholders • Information, education and communications IEC materials
	<p>For significant risks beyond the control of the mine site, the mine site participates in watershed governance fora, where they exist, to evaluate and develop collaborative response options.</p>	<ul style="list-style-type: none"> • Participation/membership to water stewardship groups • Documentation of proposed strategies

AAA	<p>Following Level A and Level AA engagement activities, at least one of the following initiatives is happening in the mine site's watershed:</p> <ul style="list-style-type: none"> • Setting watershed-scale goals; • Collaborative monitoring at the watershed scale • Developing a watershed plan • Tracking of watershed goals and engagement with water-related stakeholders on progress 	<ul style="list-style-type: none"> • Land use plan • Documentation of proposed engagements and dialogues • Documentation of plans and objectives
------------	--	---

Watershed Planning: Frequently Asked Questions

#	FAQs	Page
15	What is meant by "watershed"?	<i>20</i>
16	What is watershed planning?	<i>21</i>
17	How can a remote mine site with no other water users in the watershed support the types of collaborative initiatives identified in Indicator 3 Level AAA?	<i>21</i>
18	What is watershed boundary?	<i>22</i>
19	What does monitoring at the watershed-scale include?	<i>22</i>

4. WATER REPORTING AND PERFORMANCE

Purpose

To confirm that water-related objectives or targets have been established to measure performance and that reporting is in place to inform decision-makers and to communicate performance publicly.

Water Reporting and Performance: Assessment Criteria

Level	Criteria	Verifiers/Evidences
C	The mine site does not meet all Level B criteria.	
B	The mine site reports on water management performance and stewardship to mine site senior management on a regular basis.	<ul style="list-style-type: none"> • Documentation of reports transmittal to senior management
	Water performance objective(s) are established for relevant water risks and/or opportunities.	<ul style="list-style-type: none"> • Management review relevant to the report • Procedure/plan on water management
A	Progress of actions to achieve objective(s) or target(s) of water stewardship is regularly tracked and reported to mine site senior management.	Documented updates on action plans and tasks
	Public reporting on water includes performance relative to established water stewardship objectives and targets.	<ul style="list-style-type: none"> • Internal water management performance reports, containing both quantity and quality metrics • IEC documentation related to water stewardship • Digital platform (report publishing, DENR EMB and NWRB reports, etc.) to communicate results/accomplishments to stakeholders

	<p>Water-related requirements, as stipulated in the permits (as in ECC, discharge permits, etc) given to the mine site by mining industry-regulatory agencies, have been complied with in the reporting year, or corrective actions have been identified and are being implemented.</p>	<ul style="list-style-type: none"> • Compliance and monitoring report (CMR) • Self-monitoring report (SMR) • Corrective action reports
	<p>No untoward water-related incident during the reporting year.</p>	<ul style="list-style-type: none"> • Feedback and report mechanism from stakeholders. • Internal report and monitoring systems
<p>AA</p>	<p>Water-related performance exceeds requirements of other pertinent laws, which are not covered in the permits given by mining industry-regulatory agencies, in the reporting year, or corrective actions have been identified and are being implemented.</p>	<ul style="list-style-type: none"> • Compliance and monitoring report (CMR) • Self-monitoring report (SMR) • Corrective action reports
	<p>An internal audit system or process is in place for the independent verification of the accuracy of public reporting on water.</p>	<ul style="list-style-type: none"> • Published annual reports (i.e. sustainability reports) • Certification from external auditors that water management system is effectively in place
<p>AAA</p>	<p>Stakeholders' feedback on water management performance and stewardship reporting is actively sought.</p>	<p>Minutes of meetings with stakeholders</p>
	<p>Results of External Audit of the public reporting on water management performance are publicly available.</p>	<p>Documented external audit with findings and action plans</p>

Water Reporting and Performance: Frequently Asked Questions

#	FAQ	Page
20	What is meant by “water performance”?	22
21	What is the difference between objectives and targets?	22
22	What is meant by “water reporting” system?	22
23	What is meant by independent verification?	22
24	What is the intended scope of the independent verification of public reporting on water performance and can this be included in the external audit required in Levels AAA of indicator 2?	22

APPENDIX 1: FREQUENTLY ASKED QUESTIONS

Protocol-Specific Guidance

1. What is water stewardship?

As there is no universal definition for the term water stewardship, individual companies should consider how they define the term to ensure their definition fits within the context of their mine site and watershed. Below are two examples of definitions:

The Alliance for Water Stewardship defines water stewardship as follows:

“The use of water that is socially equitable, environmentally sustainable and economically beneficial, achieved through a stakeholder-inclusive process that involves site and catchment-based actions. Good water stewards understand their own water use, catchment context and shared risk in terms of water governance, water balance, water quality and important water-related areas; and then engage in meaningful individual and collective actions that benefit people and nature.”
<http://a4ws.org/about/>

“Water stewardship is about business understanding the risks they face from water scarcity and pollution and taking action to help ensure water is managed sustainably as a shared, public resource. – World Wildlife Fund
http://wwf.panda.org/our_work/water/water_management/

2. What are stakeholders?

Stakeholders are individuals who, and groups which, have an interest in, or may be affected by the mine site operations. They include, but are not restricted to:

- employees
- Indigenous Peoples (IPs)
- mining community members
- suppliers
- neighbors
- customers
- contractors
- environmental organizations and other non-governmental organizations
- government bodies, institutions and agencies
- the financial community, and
- shareholders.

3. What are relevant employees, contractors and water-related mine site stakeholders?

Relevant employees and contractors are those that have direct or indirect responsibilities related to water. Examples of those with direct responsibility would include the manager responsible for water treatment, water treatment operators or those with responsibility for environmental monitoring activities. Example of positions with indirect responsibilities are supply chain personnel as they may order critical control parts, pipes, etc. for water management and treatment infrastructure, but do not work directly on water management activities.

Examples of relevant mine site stakeholders are other water users or water rights holders in the watershed and those that express an interest in water-related issues in the watershed affected by the mine site operations.

4. How should regional water stewardship approaches be reflected where there are multiple mine sites in a single watershed?

Where a company operates multiple mine sites within a single watershed, the company may choose to adopt a regional approach to water stewardship. This could also include collaboration between different companies. In these cases, the division of roles and responsibilities between mine site-level personnel and regional personnel should be clear and supporting systems should be developed and implemented at the appropriate level. Water stewardship targets may be set for the region, rather than each individual mine site and public reporting of performance can be aggregated for the region.

5. What is an internal audit?

An internal audit is a company-initiated audit and/or an audit conducted by a regulatory agency-led team which refers to a systematic, documented verification process of objectively obtaining and evaluating audit evidence (verifiable information, records or statements of facts) to determine whether or not specified water-related activities, events, conditions, management systems or information about these matters conform with audit criteria (policies, practices, procedures or requirements against which the auditor compares collected audit evidence about the subject matter) and communicating the results of this process to the **company management**.

6. What is an external audit?

An external audit is conducted by external personnel and/or groups not connected with the company that refers to a systematic, documented verification process of objectively obtaining and evaluating audit evidence (verifiable information, records or statements of facts) to determine whether or not specified water-related activities, events, conditions, management systems or information about these matters conform with audit criteria (policies, practices, procedures or requirements against which the auditor compares collected audit evidence about the subject matter) and communicating the results of this process to the **concerned stakeholders**.

7. What is meant by operational water management?

Operational water management refers to systems, processes, procedures and plans implemented at the mine site level related to the mine site's management of water. It covers water quality and quantity.

8. What do water quality and water quantity data means?

Water quality is the characteristic of water which defines its use in terms of physical, chemical, biological, bacteriological or radiological characteristics by which the acceptability of water is evaluated⁸. Water quantity refers the volume of water.

9. What is meant by water balance?

A water balance forecasts site water inflows, outflows and changes in water inventory and water management infrastructure for the life of the mine. The water balance will allow for a range of scenarios to be modelled including “normal” hydrological conditions, less-frequent wet and dry hydrological conditions, and feasible upset conditions including those brought about by climate change (such as higher water inflows, restricted discharge, reduced storage capacity, droughts, etc.). The magnitude of the wet and dry hydrological conditions modelled will be defined on a risk basis. The water balance could also be used to develop a water quality model to forecast water quality over-time.

A site water balance is used to support planning and the associated evolution of water management infrastructure and to demonstrate how the operations can manage water in the short and long term to minimize the potential impact to the environment or other water users in the watershed.

ICMM provides the following useful guidance on defining “water balance” in *A Practical Guide to Consistent Water Reporting Guide (2017)*:

A water balance is an approach used to measure the flow of water in and out of an operational mine site. This provides the basis for understanding, managing and communicating the site's water requirements and use including for mine planning which includes medium and long-term business planning.

A site water balance is comprised of three main components, namely: water withdrawals, water discharge and water consumption. The formula for calculating a site water balance is: withdrawal volume = discharge volume + consumption volume + any change in the volume of onsite water storage.

10. What is meant by contingency plans for water-related incidents?

Contingency plans for water-related incidents are risk-based management plans and programs to address untoward water-related incidents.

11. What is meant by “monitoring data are stored, and trends are analyzed on a pre-defined frequency to enable integrated decision-making”?

Data relating to water quality and volumes are stored in a database that can be used to analyze the variables. A database can be a dedicated environmental management database, a more generic database or a spreadsheet such as Microsoft Excel. It is at the discretion of the mine site personnel responsible for water management to determine what type of database best serves their needs. Likewise, mine site personnel responsible for water management should determine which types of analyses are most relevant to adopt for their water management decision-making

⁸ Section 2, RA 9275

processes. Integrating the data and analyses into decision-making requires the mine site to be able to show that the results of the analyses are being considered by personnel with water-related responsibilities at both operational level and management levels.

For example, management decisions could include operational considerations such as making adjustments to the way a water treatment system is configured based on what the monitoring data is showing. A second example could be ensuring the purchasing department has a sufficient inventory of water treatment consumables such as lime, based on projected trends using water treatment system data. Management decisions could also include using water data to make investment decisions related to upgrading or investing in new water treatment technologies.

12. What is meant by “groundwater is modelled with an appropriate level of detail and physical scale as informed by identified risks”?

This means that the mine site has considered potential risks to groundwater such as water withdrawal, seepage into mine workings, or infiltration of mine-affected water into groundwater systems and has developed a conceptual and/or numerical model at a scale and to a level of detail that allows for assessment of the potential risk and mitigation options.

13. Are improvement projects identified to mitigate risk assessed the same as projects that were identified as proactive opportunities?

At some companies, the definition of risk includes opportunity. So, if a company can demonstrate implementation of mitigation measures as well as implementation of (improvement) opportunities, they would be assessed at Level AA. However, if only risks (i.e. threats) have been addressed then the company would be assessed as Level A.

14. What is meant by “long-term water management considerations”?

Long-term water management considerations are management water stewardship plans and programs that will be considered beyond the mine life of the project. These are incorporated in the Final Mine Rehabilitation and/or Decommissioning Plan (FMRDP). During the operational phase of the mine site, consideration should be given to such long-term water management considerations to look for opportunities to reduce closure liabilities and long-term treatment costs and to increase the long-term climate resiliency of the final closure configuration.

15. What is meant by “watershed”?

Watershed is the area of land from which all surface run-off and subsurface waters flow through a sequence of streams, rivers, aquifers and lakes into the sea or another outlet at a single river mouth, estuary or delta; and the area of water downstream affected by the site’s discharge. Watersheds, as defined here, include associated groundwater areas and may include portions of water bodies (such as lakes or rivers). Watersheds are also referred to as catchments, basins (or sub-basins). (Adapted from Alliance for Water Stewardship). For example, the term ‘catchment’ is used by ICMM whereas TSM uses ‘watershed’ though for the purposes of TSM, the terms are interchangeable.

The Alliance for Water Stewardship (AWS) provides guidance on defining a “catchment” or watershed. Some of the guidance include:

- Determining the limits of detectable influence downstream or down-gradient from a point of origin (water withdrawal or water discharge points).
- Considering if water-related incident (drought, flood, spill etc.) were to occur in a given location upstream or downstream, would it materially affect the operation?
- Typical size of watershed areas where generally water-abundant areas will have smaller catchment size, and water-scarce areas have larger catchment sizes.

Additional detailed guidance is provided in the ICMM’s A Practical Guide to Catchment-Based Water Management for the Mining and Metals Industry (2015).

16. What is watershed planning?

Watershed planning is a holistic approach to protecting water quality and quantity that focuses on the watershed affected by the mine site operations. It involves numerous activities which include:

- defining and prioritizing problems in the watershed, for each phase of the mine operations, from pre-mining up to its closure and final mine rehabilitation;
- developing solutions to problems through collaborative efforts of involved and affected stakeholders;
- active participation by interested and affected parties in the pursuit of effective implementation of the watershed management plans;
- measuring performance and success through monitoring and other data gathering.

The ICMM provides detailed guidance on watershed-based planning – (referred to by ICMM as catchment-based planning) and offers the following introduction:

A catchment-based approach to managing water resources looks at activities and issues in the catchment as a whole, rather than considering different aspects separately. It requires a diverse range of processes to be considered, including the hydrology and land use, as well as broader political, economic, social and ecological dynamics that influence water availability and quality. A catchment-based approach encourages organizations to consider holistically how competing demands on water resources from a range of stakeholders (domestic water users, industry, regulators, politicians) can create pressures and lead to conflict if not appropriately managed. It also requires that people from different sectors be brought together to identify issues and agree priorities for action, and ultimately build local partnerships to put these actions in place.

17. How can a remote mine site with no other water users in the watershed support the types of collaborative initiatives identified in Indicator 3 Level AAA?

Where a mine site is considered remote and there are no other identified water users in the watershed, that mine site can achieve Level AAA in Indicator 3 by demonstrating that operational water management practices and goals are informed by an understanding of the watershed.

18. What is watershed boundary?

Watershed boundary is defined as the aerial extent of surface water drainage directly affecting the mine site. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from the mine site.

19. What does monitoring at the watershed-scale include?

Monitoring at the watershed scale is defined based on the attributes of each watershed defined through engagement with water-related stakeholders and other users. It could include cumulative effects monitoring where there are multiple users, monitoring and assessment of minimum instream flow requirements, and collaborative monitoring programs.

20. What is meant by “water performance”?

Water performance is decided at a mine site level based on water related risks and includes both water quality and quantity.

21. What is the difference between objectives and targets?

For the purpose of this protocol, objectives are intended to reflect qualitative goals whereas targets are intended to be quantitative goals.

22. What is meant by “water reporting” system?

Water reporting system is a systematic mechanism that ensures the dissemination of water quality and water quantity data to the decision-makers and/or the public.

23. What is meant by independent verification?

Independent verification is the involvement of an independent group or person not connected to the mine site, project or company to conduct verification and validation of the water quality data, water quantity data and water performance.

24. What is the intended scope of the independent verification of public reporting on water performance and can this be included in the external audit required in Levels AAA of indicator 2?

The verification scope would include the accuracy, replicability, and completeness of water performance data and information, including performance relative to established objectives and/or targets. The verification can consider not only how the indicators are determined, but also the management and reporting systems used to ensure the indicators are consistently determined and reported over time. This requirement could be addressed through the external audit required in Level AAA of Indicator 2 if the scope of the audit explicitly includes accuracy, replicability and completeness of water performance data and information.

APPENDIX 2: COMP TSM SELF ASSESSMENT CHECKLIST

Water Stewardship Protocol

Mine site Name		Company Name	
Assessed by		Date Submitted	

Supporting Document

Name of Document	Location

Interviewees

Name	Position	Name	Position

	Question	Y	N	NA	Description and Evidence
Indicator 1 – Water Governance					
Indicator 1 Level B	Are the commitments for water stewardship evident? (Note: Commitments may not be consistent with the intent of the TSM Water Stewardship Framework)				
	Are accountabilities for water stewardship generally understood? (Responsibilities may not be clearly defined yet).				
	Are processes in place to track compliance and correct non-compliance with water-related regulatory requirements and permit/license commitments?				
	If you have answered “Yes” to all Level B questions, assess the mine site as Level B. If you have not answered “Yes” to all the Level B, assess the mine site as Level C.				
Indicator 1 Level A	Are the commitments to address findings of non-compliance to regulatory requirements demonstrated?				
	Has the senior management demonstrated commitment to water stewardship that is consistent with the TSM Water Stewardship Policy Framework?				
	Are the commitments to water stewardship have been communicated to relevant employees, contractors mine site stakeholders?				
	Are the roles, responsibilities and accountabilities for operational water management and watershed planning established and defined?				
If you have answered “Yes” to all Level A questions, assess the mine site as Level A. If you have not answered “Yes” to all the Level A, assess the mine site as Level B.					
Indicator 1 Level AA	Are the planning for the management of water risks and opportunities integrated into annual business planning and/or budgeting processes?				
	Has an internal audit been conducted to determine the degree of consistency of mine site water stewardship commitments with the TSM Water Stewardship Framework?				
	Has an internal audit been conducted to determine whether commitments to water stewardship have been communicated to relevant employees, contractors and mine site stakeholders?				
	Has an internal audit been conducted to determine whether roles, responsibilities and accountabilities for operational water management and watershed-scale planning are clearly defined?				
If you have answered “Yes” to all level AA questions, assess the mine site as Level AA. If you have not answered “Yes” to all the Level AA, assess the mine site as Level A.					
Indicator 1 Level AAA	Has external audit been conducted to determine the degree of consistency of mine site water stewardship commitments with the TSM Water Stewardship Framework?				

	Question	Y	N	NA	Description and Evidence
	Has external audit been conducted to determine whether commitments to water stewardship have been communicated to relevant employees, contractors and mine site stakeholders?				
	Has an external audit been conducted to determine whether roles, responsibilities and accountabilities for operational water management and watershed-scale planning are clearly defined?				
	If you have answered "Yes" to all level AAA questions, assess the mine site as Level AAA. If you have not answered "Yes" to all the Level AAA, assess the mine site as Level AA.				
	Assessed level of performance for indicator 1	Level:			
	Indicator 2 – Operational Water Management				
Indicator 2 Level B	Are risks related to surface water and groundwater been identified and assessed?				
	Are processes to monitor the mine site's water management performance established?				
	Are records of mine site water quality and water quantity data maintained?				
	If you have answered "Yes" to all Level B questions, assess the mine site as Level B. If you have not answered "Yes" to all the Level B, assess the mine site as Level C.				
Indicator 2 Level A	Has a systematic approach to operational water management been established and implemented through a site-wide water balance for the operational footprint of the mine site, and are these water balances updated on a pre-defined periodic cycle?				
	Has a systematic approach to operational water management been established and implemented through mine site water monitoring program (addressing surface water and groundwater), including both water quality and water quantity parameters and the identified risks thereof?				
	Has a systematic approach to operational water management been established and implemented as planned through controls and mitigation measures based on identified risks?				
	Has a systematic approach to operational water management been established and implemented through response and contingency plans for water-related incidents based on the identified risks?				
	Has a systematic approach to operational water management been established and implemented through provisions of trainings to relevant employees and contractors, in accordance with their roles and responsibilities?				
	If you have answered "Yes" to all Level A questions, assess the mine site as Level A. If you have not answered "Yes" to all the Level A, assess the mine site as Level B.				

Indicator 2 Level AA	Are water balances updated on a pre-defined frequency incorporating monitoring data, and relevant potential variability of conditions arising from climate change?				
	Is there a process in place to identify opportunities to improve water management performance and are they being implemented as planned and monitored for effectiveness?				
	When water-related risks are identified, are controls and mitigation measures in place and are being monitored for effectiveness?				
	Are monitoring data stored and trends analyzed on a pre-defined frequency to provide basis for continual improvement and decision-making processes?				
	Has the mine site modelled groundwater resources with an appropriate level of detail and physical scale as informed by identified risks?				
	Is internal audit conducted to determine whether the operational water management practices meet the requirements of Level A?				
	If you have answered "Yes" to all level AA questions, assess the mine site as Level AA. If you have not answered "Yes" to all the Level AA, assess the mine site as Level A.				
Indicator 2 Level AAA	Are long-term water management considerations incorporated into current water management decision-making processes and closure plans?				
	Were opportunities to minimize long-term water management activities beyond the life of mine identified and are they being incorporated into long-term investment decisions and/or closure plans?				
	Is external audit conducted to determine whether the operational water management practices of the mine site meet the requirements of Level A and level AA?				
	Has an evaluation of effectiveness of operational water management been conducted and is a monitoring process in place for identified opportunities for improvement?				
If you have answered "Yes" to all level AAA questions, assess the mine site as Level AAA. If you have not answered "Yes" to all the Level AAA, assess the mine site as Level AA.					
Assessed level of performance for indicator 2 Level:					
Indicator 3 – Watershed Planning					
Indicator 3 Level B	Has a relevant watershed boundary been identified by the mine site?				
	Are relevant stakeholders identified?				
	Has responsibility for involvement in watershed planning been designated?				
	If you have answered "Yes" to all Level B questions, assess the mine site as Level B. If you have not answered "Yes" to all the Level B, assess the mine site as Level C.				

Indicator 3 Level A	Has the mine site engaged with relevant water-related stakeholders in the watershed to better understand how they use water resources by seeking information on factors including water-related local practices, beliefs, customs and traditional knowledge?				
	Does the mine site participate, either directly or indirectly, in watershed governance fora or groups where they exist?				
	Has the mine site assessed how operational water management practices contribute to cumulative effects in its watershed?				
	If you have answered "Yes" to all Level A questions, assess the mine site as Level A. If you have not answered "Yes" to all the Level A, assess the mine site as Level B.				
Indicator 3 Level AA	Through engagement/coordination with relevant water-related stakeholders, have water-related risks and opportunities in the watershed been identified and appropriately prioritized?				
	Does the mine site communicate with relevant water-related stakeholders to help them understand how operational water management practices address the priority watershed-related risks?				
	For significant risks beyond the control of the mine site, does the mine site participate in watershed governance fora, where they exist, to evaluate and develop collaborative response options?				
	If you have answered "Yes" to all level AA questions, assess the mine site as Level AA. If you have not answered "Yes" to all the Level AA, assess the mine site as Level A.				
Indicator 3 Level AAA	Following Level A and Level AA engagement activities, has the mine site engaged in at least one of the following initiatives in the mine site's watershed: <ul style="list-style-type: none"> • Setting watershed-scale goals • Collaborative monitoring at the watershed scale • Developing a watershed plan • Tracking of watershed goals and engagement with water-related stakeholders on progress 				
	If you have answered "Yes" to all level AAA questions, assess the mine site as Level AAA. If you have not answered "Yes" to all the Level AAA, assess the mine site as Level AA.				
Assessed level of performance for indicator 3					Level:
Indicator 4 – Water Reporting and Performance					
Indicator 4 Level B	Does the mine site report on water management performance and stewardship to mine site senior management on a regular basis?				
	Has the mine site established water performance objective(s) for relevant water risks and opportunities?				
	If you have answered "Yes" to all Level B questions, assess the mine site as Level B. If you have not answered "Yes" to all the Level B, assess the mine site as Level C.				

Indicator 4 Level A	Are the objective(s) or target(s) established for relevant water risks and opportunities?				
	Are progress of actions to achieve objective(s) or target(s) of water stewardship regularly tracked and reported to mine site senior management?				
	Has the mine site done public reporting on water which includes performance relative to its established water stewardship objectives and targets?				
	Has the mine site complied to the water-related requirements, as stipulated in the permits (as in ECC, discharge permits, etc) given to the mine site by mining industry-regulatory agencies, or have corrective actions been identified and being implemented for the reporting year?				
	Has there been no untoward water-related incident during the reporting year?				
	If you have answered "Yes" to all Level A questions, assess the mine site as Level A. If you have not answered "Yes" to all the Level A, assess the mine site as Level B.				
Indicator 4 Level AA	During the reporting year, has the mine site's water-related performance exceeded the requirements of other pertinent laws not covered in the permits given by mining industry-regulatory agencies, or have corrective actions have been identified and being implemented?				
	Is there an internal audit system or process in place for the independent verification of the accuracy of the public reporting on water?				
	If you have answered "Yes" to all level AA questions, assess the mine site as Level AA. If you have not answered "Yes" to all the Level AA, assess the mine site as Level A.				
Indicator 4 Level AAA	Are stakeholders' feedback on water management performance and stewardship reporting actively being sought?				
	Are the results of external audit of the public reporting on water management performance publicly available?				
	If you have answered "Yes" to all level AAA questions, assess the mine site as Level AAA. If you have not answered "Yes" to all the Level AAA, assess the mine site as Level AA.				
Assessed level of performance for indicator 4		Level:			

APPENDIX 3: TSM Water Stewardship Protocol indicators

Assessment Guide

1. Water Governance

Factors to consider in this indicator are the following:

- A. Regulatory requirement that affects and/or related to water stewardship such as:
 - a. Environmental Compliance Certificate (ECC)
 - b. ISO 14001 Certification
 - c. Environmental Protection and Enhancement Program (EPEP)
 - d. Final Mine Rehabilitation and/or Decommissioning Plan (FMRDP)
 - e. Social Development and Management Plan
 - f. Permit to Operate
 - g. Discharge permits
 - h. Water permits

- B. Establishment of regulatory requirements that affect and/or related to water stewardship such as:
 - a. Mine Environmental Protection and Enhancement Office (MEPEO)
 - b. Community Relations Office (CRO)
 - c. Mine Rehabilitation Fund Steering Committee (MRFC)
 - d. MRFC Multi-Partite Monitoring Team (MMT)
 - e. Contingent Liability and Rehabilitation Funds (MRF, FMR/DF, RCF)

2. Operational Water Management

- A. Compliance to operational water management regulatory requirement:
 - a. Permit to Operate
 - b. Discharge permits
 - c. Water permits

- B. On-site Water management requirement:
 - a. Maintenance of Settling/Siltation Ponds, Tailings Storage Facility, etc.
 - b. Drainage system management
 - c. Sewerage system management
 - d. Groundwater management
 - e. Surface water management
 - f. Marine water management

3. Watershed Planning

- A. Implementation of activities/projects under the EPEP, including protection and progressive rehabilitation
- B. Water-related scenarios considered in the closure and final mine rehabilitation activities/projects through the FMRDP

4. Water Reporting and Performance

- A. Compliance Monitoring Reports, Self-Monitoring Reports
- B. Sustainability Reports
- C. Internal audit
- D. External audit

Parameters	Remarks
A. Company Information	
1. Company Name:	
2. SEC Registration No.	
3. Main Office	
a. Address	
b. Contact Person	
c. Contact Numbers	
d. Email Address	
4. Mine Site	
a. Location	
b. Contact Person	
c. Contact Numbers	
d. Email Address	
5. Project Name	
B. Mining Tenement and Permits	
1. Mining Tenement	
a. Mining Tenement Number	
b. Date Mining Tenement Approved	
c. Date Mining Tenement Validity	
d. Total Tenement Area	
2. ECC	
a. ECC Control/Reference No.	
b. Date Issued	
c. Total Area Covered	
d. Mineral Commodity	
e. Mining Method	
f. Production Capacity	
g. Water Facilities/Structures	
C. Water Governance	
1. Compliance to regulatory requirement that affects and/or related to water stewardship such as:	
a. Environmental Compliance Certificate (ECC)	
b. ISO 14001 Certification	
c. Environmental Protection and Enhancement Program (EPEP)	
d. Final Mine Rehabilitation and/or Decommissioning Plan (FMRDP)	
e. Social Development and Management Plan (SDMP)	
f. Permit to Operate	
g. Discharge Permits	
h. Water Permits	
2. Establishment of regulatory requirement that affects and/or related to water stewardship such as:	
a. Mine Environmental Protection and Enhancement Office (MEPEO)	
b. Community Relations Office (CRO)	
c. Pollution Control Office (PCO)	

d. Mine Rehabilitation Fund Steering Committee (MRFC)	
e. MRFC Multi-Partite Monitoring Team (MMT)	
f. Contingent Liability and Rehabilitation Funds (MRF, FMR/DF, RCF)	
D. Operational Water Management	
1. Compliance to operational water management regulatory requirement:	
a. Permit to Operate	
b. Discharge permits	
c. Water permits	
2. On-site Water management requirement (incorporated in the Annual EPEP):	
a. Maintenance of Settling/siltation Ponds, TSF, etc.	
b. Drainage system management	
c. Sewerage system management	
d. Groundwater management	
e. Surface water management	
f. Marine water management	
E. Watershed Planning	
a. Implementation of EPEP	
b. Closure scenarios included in FMRDP	

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

Quebec Mining Association

www.amq-inc.com

FinnMin

www.kaivosvastuu.fi/verkosto/jasenet/statement-of-intent

Reproduction of TSM publication for educational or other non-commercial purposes is authorized without prior written permission from the Mining Association of Canada provided the source is fully acknowledged. Reproduction of this publication for resale or other commercial purposes is prohibited without prior written permission of the Mining Association of Canada.

Water Stewardship Framework derived from International Council of Mining and Metals (ICMM)

