NEW GOLD RAINY RIVER MINE
APPENDIX I
OMS MANUAL

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RAINY RIVER MINE

OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL

PART I - GENERAL

Revision History						
Revision Index	Revision Date	Status	Author	Checker	Approver	Comments
A	2024-Oct-24	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for Internal Review
B	2024-Nov-21	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for EOR Review
02	2025-Mar-05	Approved	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Final 2025 OMS Manual Update. See section 2.4 for further information.

Change Log Summary		
Section Number	**Section Title**	**Comments**
2.7	Supporting Document and Document Control	Update Table 2 to include Stage 6 and 7design reports
3.0	Added OMS Governance Section	The section includes: • Roles, Responsibilities, and Authority • Reporting Requirements • Action Plan • Tracking of OMS Activities • Qualification Requirements • Resources and Scheduling • Management Review for Continual Improvement • Managing Changes
Appendix B	Forms and Template	Added a form for tracking OMS activities

Acronyms and Abbreviations	
Term	**Definition**
BCR1	Biochemical Reactor #1
BCR2	Biochemical Reactor #2
CDA	Canadian Dam Association
DSI	Dam Safety Inspection
DSR	Dam Safety Review
ECA	Environmental Compliance Approval
EDF	Environmental Design Flood
EDMS	Electronic Document Management System
EMRS	East Mine Rock Stockpile
EOR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
IDF	Inflow Design Flood
LRIA	Lakes and Rivers Improvement Act
MECP	Ministry of the Environment, Conservation and Parks
MNDM	Ministry of Northern Development, Mines, Natural Resources and Forestry
MRP	Mine Rock Pond
NAG	Non-Acid Generating
NGI	New Gold Inc.
NOWL	Normal Operating Water Level
OMS	Operation, Maintenance, and Surveillance
PAG	Potential-Acid Generating
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PTTW	Permits to Take Water
RASCI	Responsible, Accountable, Supportive, Consulting, Informed
RRM	Rainy River Mine
RTFE	Responsible Tailings Facility Engineer
SOP	Standard Operating Procedure
TDEIT	Tailings Dam Engineer in Training
TDT	Tailings Dam Technician
TMA	Tailings Management Area
TSM	MAC's Towards Sustainable Mining initiative
TSS	Total Suspended Solids
WDP	Water Discharge Pond
WMP	Water Management Pond
WMRS	West Mine Rock Stockpile
WTP	Water Treatment Plant
WTT	Water Treatment Train
MAC	Mining Association of Canada
ECCC	Environment and Climate Change Canada
MMER	Metal Mining Effluent Regulations
CEAA	Canadian Environmental Assessment Act

Table of Contents

List of Tables

List of Figures

List of Appendices

1. Additional Approvals

Title	Name	Signature	Date
Responsible Tailings Facility Engineer	Sam Amiralaei	Signed by: Sam Amiralaei 04566788B4BF47E...	3/11/2025
Capital Projects Manager	Jason Bell	Signed by: Jason Bell FA1E435E313B427...	3/11/2025
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2. Introduction

2.1 Purpose

The objective of this document is to ensure the safe, efficient, and environmentally responsible management of the tailings facility, referred to as the Tailings Management Area (TMA), throughout its lifecycle at the New Gold Inc. (NGI) Rainy River Mine (RRM), located near Emo, Ontario. It outlines procedures for operations, maintenance, surveillance, and emergency response to minimize risks and ensure compliance with safety and environmental standards. This OMS Manual (the Manual) also serves as a reference for the safe operation of water management facilities.

2.2 Scope

2.2.1 Scope Overview

The scope of the Manual provides a detailed framework for the safe and efficient operation of the key aspects of the TMA. It outlines comprehensive procedures for tailings deposition, water management, dam safety monitoring, and environmental oversight within the designated areas. This focus aligns with the operational controls, roles, responsibilities, and overall integration with broader site plans and procedures, ensuring that applicable standards and regulatory criteria are satisfied. However, it is essential to understand the limitations and exclusions from this manual to fully comprehend the scope, as described in Section 2.2.3.

Site-Specific Tailings and Water Management

The TMA and Water Management Facilities (WMF) were designed to optimize the containment of waste materials from the milling process, ensure water is recycled back to the mill, and facilitate the natural degradation of certain chemicals to acceptable levels. The design and operational strategies include comprehensive descriptions of dam zones, materials used, the raise schedule, and water and tailings transportation systems. Specific operational requirements are outlined in Part II of the Manual (TMA), including environmental and dam safety notice levels, tailings operation notice and incident levels, and detailed tailings deposition strategies.

Roles, Responsibilities, and Authority

The Manual describes the roles, responsibilities, and authority across all levels of the operation as pertains to TMA and WMF. Section 3.1 of the Manual describes the responsibilities for key roles, including the Responsible Tailings Facility Engineer (RTFE), Mill Manager, Environmental Manager, and all critical parties involved in tailings management (OMS Manual Part I - Section 3). The RASCI matrix shown in Table 3 shows the responsibilities, accountability, and information distribution across departments, promoting effective communication and decision-making.

Integration with Site Plans and Procedures

The TMA and WMF operations are fully integrated with site-wide environmental protection strategies, including erosion and sediment control plans, wildlife management, and dust suppression systems. Maintenance and surveillance procedures are integrated with broader site plans, ensuring predictive and preventative maintenance schedules are adhered to and special inspections or increased surveillance are conducted in response to specific triggers or unusual conditions.

Decision-Making Framework

A comprehensive decision-making framework is described in detail in the Manual, outlining the process for addressing environmental incidents, dam safety incidents, and tailings operation incidents. This includes specific levels (Part II – Section 4.2.3) triggering various responses, surveillance response plans for conditions like high pond levels or earthquake occurrence, and the engagement of an Engineer of Record (EOR) for critical decisions. The Manual focuses on continuous monitoring and assessment through surveillance programs and use of instrumentation data in conjunction with EOR support.

MAC Guidelines Alignment

The operational controls, roles and responsibilities, site integration, and decision-making processes outlined in the Manual align with the Mining Association of Canada (MAC) Tailings Guide (Version 3.2). The Manual emphasizes safety, environmental protection, and responsible management of tailings and water throughout the lifecycle of the TMA and WMF by including provisions for annual reviews, revisions following significant changes, and adherence to applicable standards and industry best practices.

2.2.2 Operational Controls

The operational controls, as defined by the MAC, refer to the structured procedures, practices, and management strategies designed to ensure safe, efficient, and environmentally responsible operations of tailings and water management facilities. These controls encompass all aspects of mine operation, including safety measures, environmental management, tailings management, emergency response, and compliance with regulatory requirements, aimed at minimizing risks and impacts.

Mill Department (also referred to as Mill Operations)

- Ensures efficient transport of tailings to the TMA through a comprehensive pipeline network. Responsibilities include:
    - Continuously monitoring tailings volumes and deposition patterns to maintain facility integrity and operational efficiency.
    - Performing routine and event-driven inspections of pipelines to prevent leaks, breaks, and ensure consistent tailings transport.

Environment Department

- Oversees all aspects related to water management and environmental compliance within the TMA and WMFs.
- Regularly scheduled environmental monitoring activities, including water, air, and noise quality assessments around the facilities.
- Managing the water treatment operation to ensure water quality meets or exceeds regulatory and environmental standards.
- Implementing proactive spill prevention strategies and maintaining readiness for effective spill response.

- Ensuring all operations comply with regulatory standards, focusing on water management practices and environmental safeguards.
- Managing water balance models to ensure the sustainable operation of the TMA and WMFs, including adjustments based on seasonal variations and operational needs.

Capital Projects – Construction

- Responsible for managing all construction-related activities within the TMA and WMFs, ensuring compliance with design specifications and regulatory requirements.
- Developing detailed construction plans, including schedules and resources needed, based on EOR specifications and operational needs.
- Facilitating effective collaboration among construction teams, EOR, Environment Department, Site Services, Mill Department, and Safety departments to ensure effective operations.
- Continuously tracking construction progress and adapting plans as necessary to address operational or environmental changes.

Capital Projects – Dam Monitoring

- Ensures the safe and efficient deposition of tailings while monitoring dam integrity through comprehensive instrumentation and inspections.
- Managing deposition strategies to optimize storage capacity and ensure dam stability, including periodic updates to deposition plans.
- Conducting routine visual inspections, as well as geotechnical monitoring, to identify and address potential issues early.
- Overseeing the continuous operation and maintenance of surveillance instruments and coordinating data analysis with EOR to manage dam safety proactively.
- Providing specialized training to all relevant departments on OMS Manual guidelines to foster a comprehensive understanding of tailings and water management practices.

Operations – Site Services

- Manages the conveyance of water within the facility, ensuring the reliability of the pumping infrastructure.
- Responsible for the upkeep and inspection of valves, pumps, spigots, and pipelines to ensure operational integrity and prevent failures.
- Collaborates with the Environment team for the effective management of the water treatment system, ensuring water quality standards are met.
- Implements strategies to control erosion and manage sedimentation around the facility, including dust control measures to minimize environmental impact.

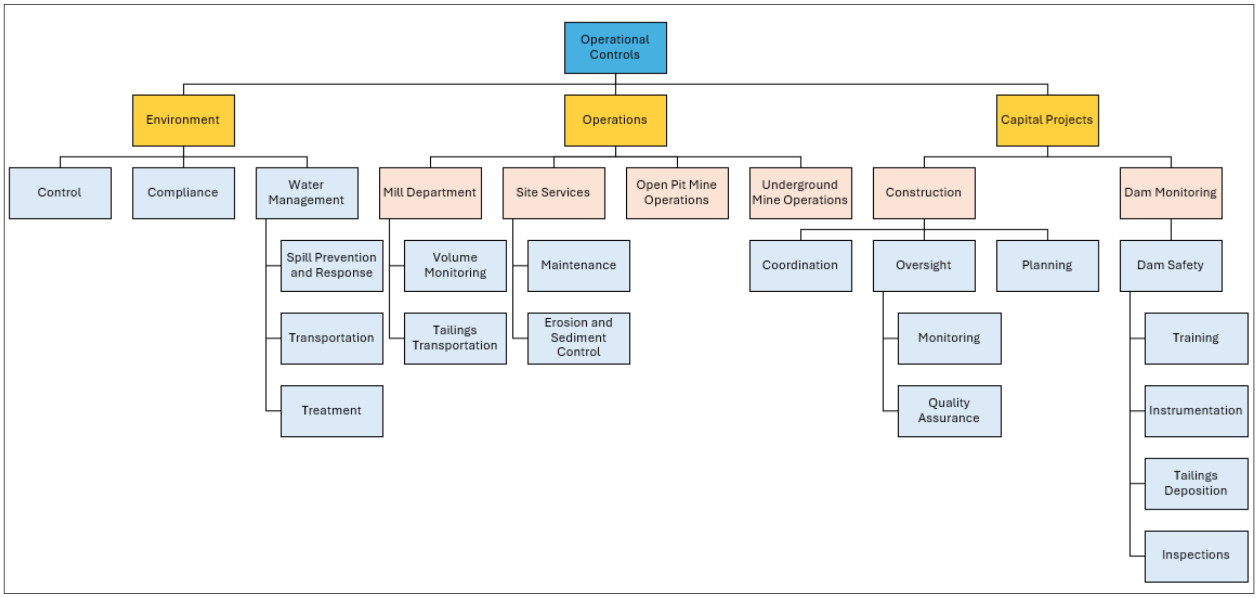

Figure 1: Summary of Operational Controls for the Facility

2.2.3 Geographical and Operational Limitations

The intent of the Manual is to provide a comprehensive understanding of the procedures required for the operation, maintenance, and surveillance of RRM facilities. However, the Manual must be read in conjunction with other relevant site documents such as Plans, Guidelines, and Standard Operating Procedures which provide more detailed information on their specific areas of application. These relevant documents can be found on New Gold SharePoint Document Control and are referenced throughout the Manual. This section of the scope identifies specific boundaries and limitations within which the OMS Manual should be used. This segment explicates the geographical coverage of the Manual, identifying areas beyond its scope.

1. This OMS manual does not cover critical aspects of mine operation, such as open-pit mining processes, underground mining activities, ore processing outside of tailings generation, and non-water-related environmental management (e.g., air quality, biodiversity).
2. While the Manual covers environmental monitoring and compliance within the confines of the TMA and WMFs, broader environmental impacts on surrounding ecosystems, communities, and other land uses are not explicitly detailed. This includes community engagement practices, indirect impacts on local water systems.
3. Additionally, the Manual focuses on the infrastructure directly related to tailings and water management. Therefore, other critical mine infrastructure, such as access roads, bridges, power supply, and telecommunications systems, are outside the scope of these documents. Maintenance, surveillance, and operational controls for these components are not discussed.
4. The management of non-tailings waste materials, including hazardous materials, general waste from mine operations, and spill materials, is not covered. Practices related to waste segregation, recycling, and disposal are outside the scope of the OMS manuals.
5. Strategies for long-term sustainability, including climate change adaptation, energy efficiency improvements, and broader environmental impact assessments, are beyond the scope of the Manual.

2.3 Manual Structure

The Manual has been separated into “Parts” based on the functions and consequence classification of the structures. Those parts are listed as below:

- Part I: General

    - Background
    - OMS Governance
    - Site Baseline Conditions
    - Facility Characteristics
    - Instrumentation Program Overview
    - Regulatory Requirements
- Part II: Tailings Management Area
    - Facility Description
    - Operations
    - Maintenance
    - Surveillance
    - Risk Assessment and Management
- Part III: Water Management Facilities
    - Facility Description
    - Operations
    - Maintenance
    - Surveillance
- Part VI: EPRP (Emergency Response and Preparedness Plan)
    - Purpose and Scope
    - Roles and Responsibilities
    - Emergency Response Process and Procedures
    - Maintenance, Training and Testing of Dam Emergency Plan
    - Emergency Preparedness Plan

This document presents Part I: General, which describes the OMG governance, basic site conditions, overall facility descriptions, and other general information related to the facilities.

2.4 Manual Revisions

RRM is currently engaged in the construction and operational phases of the mine's life cycle. As a result, the Manual is anticipated to be updated each year to incorporate changes due to construction activities and operational practices, ensuring compliance with the latest standards and best practices. Therefore, the Manual will be a living document, reviewed and updated annually by qualified persons to coincide with the annual TMA Stage Raise Letter of Conformance (LoC) at a minimum, or following any significant changes on site, to reflect the current condition of the tailings and water management facilities. The changes may include, but are not limited to:

- Changes to the milling process, and or mining methods,
- Design of annual TMA dam raise,
- Update of tailings management plan including deposition plan,
- Modification to existing water management facilities or procedures including the water balance model (WBM),
- Significant event or departure from expected conditions,
- Updates made to the risk management matrix and table,
- Changes to Trigger Action Response Plan (TARP) for instrumentation,
- Change of mine closure plans,
- Technological advancements adopted at the facility,
- Changes in personnel or roles referred to in the Manual, and
- Other changes that need to be addressed prior to the next scheduled review of the Manual.

Significant updates included in this revision of the OMS are as follow:

- Update to Organizational chart and responsibilities of roles,

- Policy updates to include Whistleblower Policy,
- Risk Assessment and Management section added to Part II as identified in Tailings Management Area Failure Modes and Effects Analysis (FMEA) report,
- Update to Dam Classifications from 2024 Dam Safety Inspection,
- Update of Part II to link with TARPs within Part IV – EPRP,
- Post-Incident Analysis added to the EPRT.
- Procedures for the following activities were added to Part I:
  - Tracking of OMS Activities
  - Quality Management
  - Reporting Requirements
  - Qualification Requirements
  - Training and Competences
  - Resources and Scheduling
  - Management Review for Continual Improvement
- Included the predictive and preventive maintenance requirements to Part II.
- Update to Part II with Stage 7 Raise design details for TMA.
- Update to instrumentation thresholds with 2024 updates from EOR (Part II).
- Added the Segment-Specific Dam Performance Status monitoring details to Part II.
- Included details regarding the annual risk review process (Part II).
- Update to the TMA conceptual closure plan based on 2021 Closure Plan Amendment that was updated in 2024.

Revisions to the Manual have been undertaken by NGI's RRM teams since 2016 on annual basis (at minimum). It is the responsibility of the RTFE to initiate the regular review of the Manual in a timely manner. The details of the individuals responsible for reviewing and approving this Manual are outlined on the signature page of the Manual. The revision history of the Manual is shown in Table 1.

Table 1: OMS Manual Revision History

Document Number	Date	Comments	Prepared by	Revision / Status
OMS-4000-DT00-MAN-0001	Mar. 2016	Final for Pre-Production	AFW	00 / ARC
OMS-4000-DT00-MAN-0002	Mar. 2017	AC, for Operation	AFW	00 / ARC
OMS-4000-DT00-MAN-0002.002	Jul. 2017	Issue for use for Pre-Production	AFW	00 / ARC
OMS-4000-DT00-MAN-0003	Aug. 2017	Update based on ITRB comments and MNRF conditions for MRP and Cell 2 and 3	NGI	00 / ARC
OMS-4000-DT00-MAN-0004	Nov. 2018	Annual review and update including ITRB comments	NGI	00 / ARC
OMS-4000-DT00-MAN-0005	Jan. 2019	Split to eight parts	NGI	00 / ARC
OMS-4000-DT00-MAN-0006	Feb. 9, 2021	2021 Issued for Review	NGI	00 / ARC
OMS-4000-DT00-MAN-0007	Sep. 2022	Change of tailing dam team Change of EOR Stage 4 dam raise 2022 Issued for Review	NGI	00 / ARC

Document Number	Date	Comments	Prepared by	Revision / Status
OMS-4000-DT00-MAN-0008	May 2023	Stage 5 dam raise, 2023 work on water management facilities	NGI	00 / IFU
OMS-4000-DT00-MAN-0008.001	Dec. 2023	Update of OMS to reflect works completed in 2023	SRK / NGI	00 / IFU
OMS-4000-DT00-MAN-0008.001	Dec. 2024	Update of OMS to reflect works completed in 2024	NGI	01 / IFU
OMS-4000-DT00-MAN-0008.001	Aug. 2024	MAC TSM Audit and Operational Criteria Updates	NGI	01 / IFU

Notes: Prior to May 2023, the OMS Manual (Part1-4) was archived (ARC) with a new document number assigned for every revision. This practice has now ceased, and the current document number remains as OMS-4000-DT00-MAN-0008. .001 and each sequential number up to .004 reflects the different sections of the OMS Manual. All approved parts of this manual are assigned a status of IFU (Issued for Use) in the Electronic Document Management System, InEight Document.

2.5 Regulatory Requirements

The Manual was prepared pursuant to the MAC guidelines for Developing an Operation, Maintenance and Surveillance Manual for Tailings and Water Management Facilities (MAC, 2021, Version 2.1).

As a MAC member, NGI maintains a Tailings Management System (TMS) which includes an annual review of tailings management, internal and external audits and verification process to support performance evaluation and provide opportunity for continuous improvement and feedback to inform future OMS updates. The RTFE are accountable for ensuring that these audits are carried out annually and the identified deficiencies are addressed in a timely manner.

Several Federal and Provincial environmental approvals are required to construct, operate, and eventually reclaim RRM. Key Provincial legislation related to the RRM includes:

- Ontario Water Resources Act.
- Environmental Protection Act.
- Endangered Species Act.
- Mining Act.
- Public Lands Act and Planning Act.
- MNDMNRF Lakes and Rivers Improvement Act.

The Ministry of Natural Resources and Forestry (MNRF) historically provided oversight and permitting for the TMA dams at RRM. Regulatory oversight for mining dams (defined as offline structures) in Ontario transferred to MNDMNRF (Ministry of Northern Development, Mines, Natural Resources and Forestry) in 2021. In addition to transferring regulatory oversight, changes to the Ontario Mining Act stipulate that offline mining structures follow the Canadian Dam Association (CDA) guidelines for mining dams.

From the Federal perspective, the Fisheries Act and the associated Metal Mining Effluent Regulation are the primary regulatory instruments related to the RRM.

The primary approval(s) for construction of the various tailings and water management facilities at RRM are as follows:

- Work Permits from Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF), under the Lakes and Rivers Improvement Act (LRIA).
    - These permits approve the design of the dams and appurtenances, in accordance with the provided design drawings and report.
    - LRIA approvals are required for each annual dam raising campaign.

- Discharge of effluent (e.g., from the TMA, Tailings Management Area of RRM) is governed by the Environmental Compliance Approvals (ECAs) for Industrial Sewage Works issued under the Environmental Protection Act by the Ontario Ministry of the Environment Conservation and Parks (MECP).
  - The ECAs dictate the quality and quantity of effluent allowed to be discharged to the environment as well as other measures intended to ensure the environment is protected, as well as the overall design of the facility.
- A Closure Plan has been filed with the MNDMNRF under the Mining Act, which describes the planned development and operation of the RRM, the proposed approach to closure of the RRM, and outlines the associated financial assurance related to closure aspects.
  - This Closure Plan will be amended as required, such as any changes to the proposed operation of the TMA, or other changes to the RRM.
  - The Closure Plan primarily focuses on the physical and chemical stability of the site post-closure or during a temporary shutdown scenario.
  - Planning to date has assumed long term cover of the potentially acid generating (PAG) tailings to inhibit oxidation.

In addition to these and other regulatory approval requirements, several commitments were made regarding the development of the RRM through the Federal and Provincial environmental assessment processes. These commitments are maintained and tracked by the Environmental Department as the Rainy River Mine Commitments Registry.

2.6 Policy and Commitment

NGI is committed to excellence in management of tailings by adopting internationally recognized standards and the Mining Association of Canada (MAC) guidelines. A copy of the NGI Tailings Storage Facilities Management Policy is provided in Appendix A. Although there is not a heap leach facility at the RRM, it is included in the corporate commitment for other New Gold sites (Site-Wide Commitment List) which have heap leach facilities.

New Gold is committed to working with local communities of interest (COI) including municipalities, neighbors, and Indigenous communities. The Rainy River Project Commitments Registry is available to all employees on the Environmental Department SharePoint site.

New Gold is committed to ensuring the safety of the tailings facility in all its stages and has ensured the protection of employees for reporting and addressing concerns through the New Gold Code of Ethics and Whistleblower Policy. A copy of the Code of Ethics and Whistleblower Policy is available to all employees (Whistleblower Policy). New Gold has implemented hotlines for making a whistleblower complaint at the following:

In Writing:
Personal & Confidential
The Chair of the Audit Committee
181 Bay Street, Suite 3320
Toronto, Ontario
Canada M5J 2T3

Hotline toll free numbers:

Canada and United States: (833) 627-1041
Mexico: 001-800-613-2737

Hotline online portal: https://newgold.ethicspoint.com

2.7 Supporting Document and Document Control

Controlled Documents are kept on the Document Control site on SharePoint in the “Controlled Documents” library and monitored by the Document Control Specialist. This library is accessible to all NGI employees.

All drawings from the original Engineer of Record (EOR), AMEC Foster Wheeler (AMECFW), are kept in the “AMEC E&I Drawings” library on SharePoint and on InEight Document Team Binder, which is New Gold’s electronic document management system (EDMS).

All documents and drawings from the current EOR, SRK Engineering (SRK), are kept on InEight Document Team Binder.

Processes to manage change are captured within the Management of Change Process (SAF-MOC-PRO-0001) to maintain the integrity of the tailings facility and management system.

The supporting documents for this version of the Manual are listed in Table 2. Each revision contains dedicated list of supporting documents.

Table 2: Supporting Documents for 2025 Update

Facility	Document Title	Consultant	Document Number
TMA	Stage 7 Raise Detailed Design Report (Combined)	SRK	CRW3295-4910-BA10-RPT-0008
TMA	Stage 6 Raise Design Basis	SRK	CRW3295-4910-BA10-RPT-0001
TMA	TMA Detailed Tailings Deposition Plan in Support of Stage 6 TMA Raise Design	SRK	CRW3295-4910-BA10-MEM-0005
TMA	Rainy River Mine TMA Stage 6 Raise Detailed Design Report	SRK	CRW3295-4910-BA10-RPT-0002
Site-Wide	2024 Instrumentation Threshold Update for TMA and Water Management Structures	SRK	CRW3295-4910-DT00-MEM-0008.001
Site-Wide	New Gold Rainy River Mine Annual Instrumentation Report: Jan 1 to Dec 31, 2023,	SRK	CRW3295-4910-DT00-RPT-0006
TMA	Tailings Management Area Failure Mode and Effects Analysis	SRK	CRW3295-4910-DT00-RPT-0001
WMF	Water Management Facility Design Basis Review	SRK	CRW3295-4910-DT00-RPT-0006.001
TMA	TMA Seepage Collection System Review	SRK	CRW3295-4910-DT00-MEM-0007.001
TMA	Tailings Management Area Failure Mode and Effects Analysis	SRK	CRW3295-4910-DT00-RPT-0001
Site-Wide	2024 Dam Safety Inspection	SRK	CRW3295-4910-BA10-RPT-0005

3. OMS Governance

3.1 Roles, Responsibilities, and Authority

An organization chart identifying the parties involved with the construction, operation, maintenance, and surveillance of the tailings and water management facilities at the RRM along with the chain of command is presented in Figure 2. Key staff for the owner, consultants, and external advisors are included. Responsibilities for the named individuals are presented in in Table 3.

The ownership of the tailings and water management facilities is divided among different departments within RRM. This collaborative approach facilitates better communication and coordination among departments, ensuring that all aspects of tailings and water management are effectively addressed and aligned with the NGI's overall operational goals. The involved departments along with their overall responsibilities are described below:

- **Open Pit Mine Operations** is the owner of Sediment Ponds (1, 2, and 3). Sediment Pond 3 dam is declassified as a dam and classified as a sump according to Water Management Facility Design Basis Review report prepared by SRK in 2023 (CRW3295-4910-DT00-RPT-0006.001). Site Services is delegated by Mine Operations to operate and maintain the mentioned three ponds with the support of Environment team for water quality monitoring.
- **Mill Operations** is the owner of TMA, MRP (Mine Rock Pond), WMP (Water Management Pond), WDP (Water Discharge Pond), SRP (South Runoff Pond), and North Runoff Pond (NRP, a sump).
- **Capital Projects** is delegated by Mill Operations to construct and monitor the TMA dams, with support of Environment team for water management.
- **Construction** which operates under the Capital Projects is responsible for the construction of annual raises of the tailings dams.
- **Dam Monitoring**, which operates under Capital Projects, is responsible for tracking the activities outlined in the Manual to ensure compliance and effective implementation. The team collaborates with other departments to ensure that all aspects of the OMS are being effectively executed and that resources are appropriately allocated. Additionally, they identify opportunities for continuous improvement in monitoring practices and contribute to the ongoing refinement of the OMS Manual based on performance feedback. They are also responsible for ensuring that all team members are trained on the OMS Manual and understand their roles in tracking the Manual activities, which is a crucial aspect of their responsibilities.
- **Environment** is the owner of freshwater diversion structures including Teeple Pond, Clark Creek Pond, West Creek Pond, and Stockpile Pond, as well as West Creek Diversion Channel, and Stockpile Pond Diversion Channel. Capital Projects supports Environment on monitoring and maintenance of the dam structures within the mentioned facilities.
- **Site Services** which operate under Operations is responsible for installation, modification, and relocation of the tailings and water management pipelines. They are also responsible for operating the pumps located at the sumps and ponds.

As described above, several departments participate in the management of the dam structures and ponds that are located at RRM. The roles and responsibilities of the above-mentioned departments with respect to implementation of the Manual are described in more detail in the following sections and summarized in Table 3.

Table 3: Dam Safety Management Roles and Responsibilities

Facility	Task Level 1	Task Level 2	Mill Operations	Mine Operations	Capital Projects	Environment	Site Services	Consultants	Dam Monitoring
TMA			A						
	Annual Dam Raise	Design	I	I	R	S	I	R	S
		Construction	I	S	R	I	I	S	I
	Tailings and Reclaim Water Line		R		S	I	S	I	I
		Planning	S		R	I	I	C	S

Facility	Task Level 1	Task Level 2	Mill Operations	Mine Operations	Capital Projects	Environment	Site Services	Consultants	Dam Monitoring
	Tailings Deposition	Schedule	S		I		I	I	R
		Execution	R		S		S	I	I
	Water management		S		S	R	S	C	I
	Maintenance	Pipelines	S		S		R	I	I
		Civil	I		R			C	S
		BS+PH	R		I		S	I	I
	Surveillance		I		S			I	R
WMP, MRP, WDP, SRP			A						
	Water Management		S		S	R	S	C	S
	Maintenance	Pipelines	S		S		R	I	I
		Civil	I		R			C	S
	Surveillance		I		S			I	R
Sediment Ponds				A					
	Water Management			S	S	R	S	C	I
	Maintenance	Pipelines		I		S	R	I	I
		Civil		I	R			C	S
	Surveillance			I	S			I	R
Freshwater Diversions						A			
	Water Management				S	R	S	C	I
	Maintenance	Civil			R	I		C	S
	Surveillance				S	I		I	R

A	Accountable	Has final decision-making authority and accountability for complete. Only 1 per task.
R	Responsible	Assigned to complete the task or deliverable
S	Support	Provides support and assistance to the responsible role
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action
I	Informed	Must be informed after a decision or action

3.1.1 Operations

Tailings Dam Raise

Capital Projects (Construction) is responsible for tailings dam construction annual raises. The work was self-performed by NGI personnel and equipment in 2024. The CQC and CQA was performed by the EOR (SRK Consulting Inc.).

Tailings Deposition

The tailings pipelines are operated by Mill Operations. Capital Projects (Monitoring Team) is responsible for tailings deposition planning and Site Services provides support such as pipeline modifications, installations, and relocations to Mill Operations, as needed.

3.1.2 Maintenance

Mechanical and Electrical Equipment

Maintenance of the tailings and reclaim pumps and the pipelines is the responsibility of the Mill Operations. Some of the maintenance related activities are carried out by Site Services.

Changes to pumping configurations, ditching, piping, or operating parameters need to be approved by the Mill and Environmental Manager.

Mobile Equipment Maintenance is completed by the Mobile Maintenance Department according to scheduled intervals based on equipment operating hoursor as otherwise required. The maintenance schedule uses the manufacturer's recommendations.

Roads and Infrastructures

Maintenance of the roads and infrastructures within TMA is the responsibility of the Capital Projects (Construction).

Instrumentation and Monitoring System

Maintenance of the instrumentation and monitoring systems within the TMA is the responsibility of the Dam Monitoring team, which operates under the Capital Projects.

3.1.3 Surveillance

Surveillance activities for tailings and water management dams are divided between NGI and the EOR, with each having specific responsibilities that complement one another. These roles and responsibilities include:

Dam Monitoring team will be responsible for:

- Conducting weekly and monthly visual inspections in accordance with the frequencies specified in Table 11 in Part II.
- Collecting, processing and submission of instrumentation data in accordance with the frequencies specified in Table 11 in Part II.
- Keeping the EOR apprised of all decisions regarding the facilities including the surveillance activities.
- Keeping the EOR appraised of monitoring results and observations regarding the dams, and provide timely access to all available data, relevant reports related to the dams and site operations.
- Keeping the EOR informed about any modifications made to the TMA and WMF dams.

The EOR will be responsible for:

- Preparing a consolidated design basis report for the TMA for Life-of-Mine (LOM) and each subsequent raise, as well as for the water management dams.
- The design and design reporting for subsequent TMA dam raises and other appurtenant works related to the TMA or water management dams, including alignment with final closure plans.
- Conduct annual Dam Safety Inspections (DSIs) on all retaining structures.
- Participate in Independent 3rd Party Reviews (i.e., DSRs, Independent Technical Review Board meetings, independent risk assessments).
- Participate in Risk Assessments for the TMA and water management structures.
- Review and provide recommendations to annual updates to the OMS and Emergency Preparedness and Response Plan (EPRP).
- Regularly review surveillance records and develop action/threshold levels for instrumentation readings or observations.
- Provide input into Trigger Actions Response Plans (TARPs) for inclusion in the OMS/EPRP.
- Provide review of possible modifications being considered by NGRR to any of the dams or related water management structures or their surveillance and/or maintenance programs.
- Design or review and comment on designs and construction of other structures or reclamation works associated with the water management system which may affect the integrity of the water treatment plants, water management ponds, and seepage collection systems.

- Respond to requests from NGRR with respect to dam safety issues that may arise.
- Provide support to NGRR in the event of a possible emergency condition with respect to the dams, and participate in development, planning, and testing of the EPRP.
- Participate and review studies performed by other parties relevant to the dams and critical water management structures.
- Provide support for safety concerns or emergency conditions.
- Report safety issues regarding the facilities to the RTFE and the Accountable Executive. This will include notifying NGRR of concerns and non-compliances, and if those issues are not addressed in a timely fashion or to the satisfaction of the EOR, or where otherwise reasonably determined by SRK, reporting those concerns to the relevant authorities.
- Respond to requests from NGI with respect to dam safety issues that may arise.
- Report safety issues regarding the facilities to NGI.
- Using the annual bathymetry and LiDAR surveys and confirming the dam crest elevations.

The RASCI chart presented in Table 4 provides additional details regarding dam safety governance roles for tailings and water management facilities.

Table 4: Dam Safety Governance Roles for Tailings and Water Management Facilities

Dam Safety Governance Roles					
Task	Board of Directors	Accountable Executive	RTFE	Engineer of Record	ITRB
Annual Budget	C	A	R		
Permitting	I	A	R	I	I
Design	I	I	A	R	I
Instrumentation and Surveillance	I	I	A	S	I
Water Management	I	A	R	I	I
Annual DSI	I	I	A	R	I
DSR	I	I	A	S	I
Annual TMS Review	I	I	A	I	I
ITRB Meetings	I	A	R	S	S

A	Accountable	Has final decision-making authority and accountability for complete. Only 1 per task.
R	Responsible	Assigned to complete the task or deliverable
S	Support	Provides support and assistance to the responsible role
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action
I	Informed	Must be informed after a decision or action

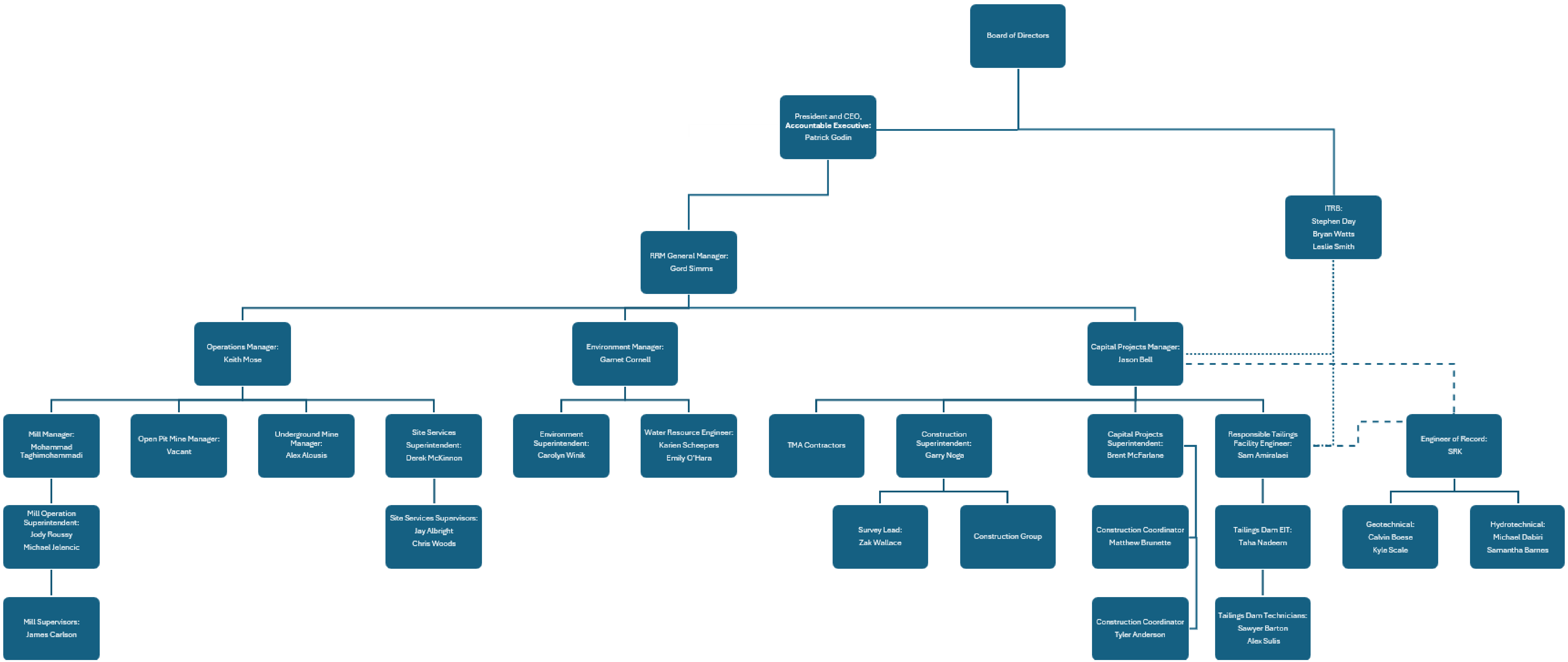

Figure 2: Organization Chart for Tailings and Water Management

Table 5: Responsibilities for Named Individuals

Role	Name/ Alternative	Company/ Department	Responsibilities	Contact Information	
Board of Directors	-	NG Corporate	• Has accountability related to tailings management, including the corporate "Tailings, Heap-Leach and Waste Rock Facilities Management Policy" (Appendix A). Responsible at a governance level of the company for which the highest-level of corporate decisions are made, particularly regarding organizational and financial resources.	N/A	
President and Chief Executive Officer – Accountable Executive Officer	Patrick Godin	NG Corporate	• Accountable for the safety of the tailings facility and for the environmental and social performance. • Approval of the adopted design criteria and measure to reduce the risk of failure of existing facilities to As Low As Reasonably Practicable (ALARP). • Accountable for tailings management training, emergency preparedness, and response. • Selection, or approval of the selection of, the RTFE and the EOR. • Schedule communication with the EOR, and communication with the Board of Directors as necessary. • Appoint the ITRB or a senior independent technical reviewer. • Establish a process for addressing concerns. • Needs to be aware of key outcomes of dam safety risk assessments and how these risks are being managed. • Will have accountability and responsibility for putting in place an appropriate management structure. • Will delegate responsibility and authority for dam safety management and define the personnel responsibilities, authority, and reporting relationships to implement systems needed for responsible dam safety management. • Will demonstrate to the Board of Directors/Governance Level whether dam safety is managed responsibly.	(514) 512 9724	Patrick.Godin@newgold.com
General Manager	Gord Simms	NG RRM	• Provide support for the implementation of tailings and water management OMS Manual. • Ensure resources are available for the management of water quality and effluent release. • Ensure that all dam design and operation meet the Canadian Dam Association Dam Safety Guidelines • Submit annual dam safety reports to the chief inspector. • Ensures that the RTFE, EOR, and Independent Reviewers have the appropriate competencies, experience, and resources commensurate with risk level and characteristics of the facility. • Ensures that a process is in place for personnel to be able to report concerns related to tailings management, and for following up on those concerns. • Ensures the non-compliance and dam safety concerns are addressed in a timely manner based on their risk levels.	(807) 707 5308	Gord.simms@newgold.com
Mill Manager	Mohammad Taghimohammadi	NG Mill	• Owner of the TMA, WMP, MRP, WDP and SRP • Accountable for the safe operation of TMA, WMP, MRP, WDP and SRP • Delegate TMA dam construction responsibility to Capital Projects Department • Review and approve OMS Manual for TMA, WMP, MRP, WDP and SRP	(807) 707 1050	Mohammad.Taghimohammadi@newgold.com
Mill Operation Superintendent	Jody Roussy Michael Jelencic	NG Mill	Responsible for TMA, WMP, MRP, WDP and SRP operation	(807) 708 6367 (807) 234 8200	Jody.Roussy@newgold.com Michael.Jelencic@newgold.com
Site Service Superintendent	Derek McKinnon	NG Site Services	• Accountable for operations fleet and dewatering maintenance • Responsible for maintenance of tailings and water pipelines	(807) 708 4381	Derek.McKinnon@newgold.com

Role	Name/ Alternative	Company/ Department	Responsibilities	Contact Information	
			• Responsible for operation of BCR 1 and BCR2		
Site Services Supervisor	Jay Albright Chris Woods	NG Site Services	• Responsible for maintenance, relocation of HDPE pipelines	(807) 709 3197 (807) 709 3207	Jay.Albright@newgold.com Chris.Woods@newgold.com
Environment Superintendent	Garnet Cornell Carolyn Winik	NG Environment	• Accountable for regulatory compliance • Owner of and accountable for the freshwater diversion structures • Review and approve OMS Manual for the freshwater diversion structures	(807) 276 0106 (807) 709 0115	Garnet.Cornell@newgold.com Carolyn.Winik@newgold.com
Water Resource Engineer (Acting)	Emily O'Hara Karien Scheepers	NG Environment	• Responsible for monitoring and reporting water balance and pond levels. • Responsible for communicating requirements of maintaining water balance. • Responsible for compliance testing and sampling. • Responsible for the quantity and quality of water discharge when needed.	(416) 324 6000 (403) 554 2280	Emily.O'Hara@newgold.com Karien.Scheepers@newgold.com
Open Pit Mine Manager	TBD	NG Mine Operations	• Owner and account for the sediment ponds. • Review and approve OMS Manual for the sediment ponds. • Accountable for supplying required/available rock (NAG/PAG) for TMA construction	TBD	TBD
Capital Projects Manager	Jason Bell	NG Capital Projects	• Report to the Accountable Executive regarding the status and performance of the dams. • Coordinate the design, construction, and overall management of the dams on the site with the EOR as well as internal and external resources. • Responsibility for implementation of designs associated with the TMA and water management facilities. • Responsibility for implementation of Construction Quality Management Plan. • Responsibility, with the EOR, for the Construction Records Reports. • Responsible for informing RTFE of any non-conformance or quality issues that arise during construction.	(807) 707 4237	Jason.Bell@newgold.com
Responsible Tailings Facility Engineer	Sam Amiralaei	NG Capital Projects (Dam Monitoring)	• Accountability for the integrity of the tailings facilities. • Developing and implementing a site-specific tailings management system including: ○ Setting the scope of work and budget requirements for the tailings facility, including risk management. ○ Accountability for the establishment of a change management system. ○ Develop succession plans for all identified roles, including the EOR, the ITRB, the RTFE and the Account Executive. ○ Prepare a formal annual corporate review of tailings and dam safety management systems, in conjunction with the Accountable Executive. ○ Ensure the management system and associated plans, processes, systems are developed and implemented, commensurate with the risk profile, characteristics, and life cycle phase of the tailings facility. ○ Ensure management reviews for continual improvement are conducted annually. ○ Ensure recommendations and action plans arising from management reviews, DSI, DSR, ITRB meetings are implemented. • Responsibility for development, maintenance, training, and application of the OMS Manuals and EPRPs for the tailings and water management facilities: ○ Implement training programs for tailings and water management activities. ○ Implement the surveillance, inspection, monitoring, and maintenance plan as outlined in the OMS Manual.	(604) 562-0991	Sam.Amiralaei@newgold.com

Role	Name/ Alternative	Company/ Department	Responsibilities	Contact Information	
			○ Implement inclusion of Quantifiable Performance Objectives (and/or TARPs) for operational and maintenance activities in the OMS. ○ Provide the EOR with operating, surveillance, and monitoring data in a timely manner. ○ Responsibility for the monitoring system and communication of the results to the EOR, including performance reviews. • Responsibility for liaising with the EOR, operations, planning, regulatory affairs, social performance, and environment teams. • Advise the EOR of potential modifications to the dams, pond water management, surveillance, site conditions and/or instrumentation, and include the EOR in the decision process related to any substantial modifications. • Responsible for development of the closure plan for the TMA and WM structures. • Ensure risk assessment is conducted and reviewed at an appropriate frequency, and a risk management plan is developed, implemented, and updated accordingly. • Staying updated on best industry practices, ensuring the adoption of the latest technologies, safety standards, and regulatory requirements in tailings and dam management. • Participate in planning, design, and construction and be familiar with the Design Basis Report, the design report and the construction and performance of the tailings facility and water management facilities.		
Tailings Dam EIT (TDEIT)	Taha Nadeem	NG Capital Projects (Dam Monitoring)	• Develop and implement tailings deposition and management plans for the TMA. • Carry out instrumentation measurements according to the schedule defined in OMS Manual • Review instrumentation data reports prepared by Tailings Dam Technicians • Support deployment and installation of instruments at the tailings and water management facilities in the mine and establish remote communications. • Conduct periodic maintenance and inspections to diagnose existing or potential issues on instrumentation equipment for safe and proper operation. • Support emergency repairs promptly and efficiently. • Implement and manage the instrumentation database together with EOR and GIS team. • Perform weekly and or monthly dam inspections. • Plan short term to mid-term tailings deposition. • Support site investigation (test pitting and drilling) projects by working with consultants and contractors. • Manage the Action Logs for various activities such as Dam Safety Inspections, ITRB meetings and others. • Asist annual update of OMS manual	(780) 660 8380	Taha.Nadeem@newgold.com
Tailings Dam Technicians (TDT)	Sawyer Barton Alex Sulis	NG Capital Projects (Dam Monitoring)	• Responsible for instrument data acquisition. • Responsible for data reduction and reporting. • Responsible for instrument maintenance including instrument raise. • Report data and instrument issues to RTFE. • Support new instrument installation. • Support other OMS activities assigned by RTFE.	(807) 707 3509	Sawyer.Barton@newgold.com Alex.Sulis@newgold.com rr.damtech@newgold.com
Capital Projects Superintendent	Brent McFarlane	NG Capital Projects	• Coordinate contracts and projects related to dam construction and maintenance	(807) 707 3433	Brent.McFarlane@newgold.com

Role	Name/ Alternative	Company/ Department	Responsibilities	Contact Information	
Construction Superintendent	Garry Noga	NG Capital Projects	• Responsible for upstream and downstream buttress construction on the TMA. • When needed, responsible for TMA core and filter construction, including abutments.	(807) 707 2015	Garry.Noga@newgold.com
Senior Construction Surveyor	Zak Wallace	NG Capital Projects	• Responsible for collecting survey data post incidents. • Provides survey support for construction team. • Responsible for survey of tailings beach elevations. • Develop as-built drawings, supported by Tulloch Engineering.	(807) 707 7485	Zak.Wallace@newgold.com
Consultants					
Engineer of Record (EOR)	Calvin Boese / Kyle Scale Michael Dabiri / Samantha Barnes	SRK Consulting	• Be responsible for preparing a consolidated design basis report for the TMA for Life-of-Mine (LOM) and each subsequent raise, as well as for the water management dams. • Be responsible for the design and design reporting for subsequent TMA dam raises and other appurtenant works related to the TMA or water management dams, including alignment with final closure plans. • Be responsible for construction reviews and performance reviews. • Be responsible, with the RTFE, for construction record reporting. • Support the RTFE with development of the Operations, Maintenance and Surveillance (OMS) manual. The following is a list of typical EOR activities that will be required to meet the requirements listed above: • Conduct annual Dam Safety Inspections (DSIs) on all retaining structures. • Participate in Independent 3rd Party Reviews (i.e., DSRs, Independent Technical Review Board meetings, independent risk assessments). • Participate in Risk Assessments for the TMA and water management structures. • Review and provide recommendations to annual updates to the OMS and Emergency Preparedness and Response Plan (EPRP). • Regularly review surveillance records and develop action/threshold levels for instrumentation readings or observations. • Provide input into Trigger Actions Response Plans (TARPs) for inclusion in the OMS/EPRP. • Provide review of possible modifications being considered by NGRR to any of the dams or related water management structures or their surveillance and/or maintenance programs. • Design or review and comment on designs and construction of other structures or reclamation works associated with the water management system which may affect the integrity of the water treatment plants, water management ponds, and seepage collection systems. • Respond to requests from NGRR with respect to dam safety issues that may arise. • Provide support to NGRR in the event of a possible emergency condition with respect to the dams, and participate in development, planning, and testing of the EPRP. • Participate and review studies performed by other parties relevant to the dams and critical water management structures. • Provide support for safety concerns or emergency conditions. • Report safety issues regarding the facilities to the RTFE and the Accountable Executive. This will include notifying NGRR of concerns and non-compliances, and if those issues are not addressed in a timely fashion or to the satisfaction of the EOR, or where otherwise reasonably determined by SRK, reporting those concerns to the relevant authorities.	(306) 370 0549 (306) 715 2549 (604) 868 9953 (587) 315 7306	cboese@srk.com/ kscale@srk.com mdabiri@srk.com/ sbarnes@srk.com

Role	Name/ Alternative	Company/ Department	Responsibilities	Contact Information	
			• The EOR may recommend additional or alternative tasks as he/she sees fit to fulfill the broader responsibilities stated above.		
Independent Technical Review Board (ITRB)	Bryan Watts Leslie Smith Stephen Day	N/A	• Providing technical review and recommendations for tailings design, storage, construction, operation, and closure. • Reviewing instrumentation and dam safety performance, including results from Dam Safety Inspections (DSIs) and Dam Safety Reviews (DSRs). • Reviewing any material changes to the Operational, Maintenance and Surveillance Manuals (OMS) and Emergency Preparedness and Response Plans (EPRPs), including results of tests and drills. • Reviewing water management practices, including water balance and quality models, water treatment, hydrogeology, and geochemistry. • Conducting site visits to assess the implementation of the company's tailings management system, and evaluate the safety, and environmental performance of the facilities. • Reviewing past recommendations and their progress to completion. • Providing a report to New Gold summarizing the findings of the review, including any recommendations for improvement.	(604) 251 8444 (604) 271 2799 (604) 601 8421	bwatts@bdwconsultingvan.com sday@srk.com lsmith@eos.bc.ca

3.2 Reporting Requirements

3.2.1 Operation

Communication with applicable contractors and consultants involved in tailings and water management will be conducted regularly. The operational reporting requirements with respect to construction activities are described in detail in the Technical Specifications included in the construction raise detailed design reports.

The reporting and communication requirements for tailings deposition is described in detail within the following SOP:

- DAM-SOP-0015 – Tailings Deposition Procedure

The effectiveness of reporting and communications related to operational activities is assessed annually as part of the OMS Annual Review to identify deficiencies and areas for improvement.

3.2.2 Maintenance

All employees and contractors are encouraged to communicate openly with site management regarding operational conditions that require maintenance and to report any observations, such as event-driven maintenance or maintenance needs that fall outside standard expectations.

- Maintenance information is communicated as per related RASCI charts and in accordance with this Manual.
- Equipment logs, manuals and calibration records are maintained for reference and use by responsible staff.
- Maintenance diaries and logs are maintained and accessible for review by other parties.
- Dam inspection checklist is uploaded to SharePoint and the inspection log summarizing the number of inspections carried weekly and monthly will be uploaded to SharePoint as well.

The effectiveness of reporting and communications related to maintenance activities is assessed annually as part of the TMS Annual Review to identify deficiencies and areas for improvement.

3.2.3 Surveillance

Surveillance reporting requirements encompass several key elements to ensure safety and compliance. The dam weekly and monthly visual inspections will be documented by NGI. These reports will be detailed, capturing essential information such as:

- **Date and Time**: the exact date and time of the inspection.
- **Inspector Information**: the name and title of all personnel involved in the inspection, along with their roles.
- **Photographic Evidence**: high-resolution photographs of critical areas and issues, with captions describing what each image represents.
- **Measurements**: relevant measurements, such as:
    - Dimensions of cracks or erosion
- **Problem Description**: description of any issues identified during the inspection, including:
    - Nature of the issue (e.g., structural, hydraulic, or environmental)
    - Specific location (e.g., erosion located on downstream slope of North Dam Segment 2 (STA 0+700) 10 meters from the crest)

Immediate reporting of any changes in condition during a dam inspection is vital for ensuring safety and preventing potential hazards. When a change is observed, it is essential to document the specifics, including the location and nature of the condition, along with relevant measurements. This information will be promptly communicated to the key personnel responsible for monitoring and managing the dams, following the specific reporting protocols outlined below.

Change in Condition

Any change in condition will be immediately reported to the following key personnel:

- Onsite Capital Projects Superintendent or Manager
- RTFE
- Tailings Dam EIT

Dam Alert/Dam Breach

In a situation where a critical scenario has emerged that poses an imminent threat to public safety or environment, immediate action is essential. The following key personnel will be notified to initiate the Emergency Response Plan:

- Emergency Response Team
- Onsite TMA Construction Supervisor
- Capital Project Superintendent or Manager
- Engineers of Record
- RTFE
- Tailings Dam EIT

Regular visual monitoring reports will be prepared in accordance with the frequencies specified in Part II (Table 11). Detailed inspection reports such as DSIs and DSRs will document the structural integrity of the dams and will include visual records such as photographs.

Data from monitoring instruments, will be collected, and processed, in accordance with the frequencies specified in Part II (Table 11) and will be submitted to the EOR.

The effectiveness of reporting and communications related to surveillance activities is assessed annually as part of the TMS Annual Review to identify deficiencies and areas for improvement.

3.2.4 Action Plan

Starting in 2025, an Action Plan will be utilized to effectively address the prioritized deficiencies. The Action Plan will include a structured work plan for the year, featuring clearly established objectives and assigned responsibilities to ensure accountability for addressing each deficiency. The main intent of utilizing this approach is to:

- Ensure performance objectives are met,
- To address non-conformance with requirements, standards, policy, or commitments, and
- Implement recommendations for continual improvement.

Prioritization of deficiencies in the Action Plan will be based on the following key criteria along with discussions with the EOR:

- **Risk Level**: Evaluate the potential environmental and dam safety risks associated with each deficiency. Prioritize those that pose the highest risks to COIs, environment, and operations.
- **Regulatory Compliance:** Identify deficiencies that violate NGI's regulatory commitments.
- **Impact on Operations**: Assess how deficiencies may affect operational efficiency and identifying those that could disrupt operations or lead to financial losses.

Preparation of the Action Plan will be the responsibility of the RTFE. The Action Plan will be approved by Capital Projects Manager and finalized prior to the end of each calendar year to be used and implemented in the following year.

3.3 Tracking of OMS Activities

Fundamental to tracking OMS activities is the establishment of a robust documentation and compliance review process. This involves thoroughly familiarizing the Dam Monitoring team (and others involved) with the requirement of the Manual and maintaining an organized document control system that includes all relevant policies, procedures, and operational practices to ensure:

- All documentation is accessible and up to date,
- The facility can facilitate audits,
- Demonstrate compliance during inspections, and
- Promote a culture of accountability among staff.

This approach will set the stage for ensuring an effective monitoring and continuous improvement within the tailings and water management framework.

A critical component of effective OMS tracking is the implementation of a comprehensive activity logging system. This system will detail all relevant OMS activities, including inspections, maintenance, audits, and training sessions. By using a standardized format for logging these activities, the tailings and water management facilities will ensure consistency and accuracy in reporting. Regularly reviewing these logs will allow for the identification of trends, enabling proactive measures to enhance operational efficiency and mitigate potential risks associated with tailings and water management.

NGI's logging system includes tracking the OMS activities in an Excel tracker (Appendix B) which includes the following details:

- **Activity Type**: the nature of the activity (e.g., inspection, maintenance, audit, training).
- **Responsible Personnel:** the individuals responsible for each activity.
- **Location:** the specific area of the tailings or water management facility where the activity occurred.
- **Findings and Observations**: any significant findings, issues, or observations made during the activity to inform future actions.
- **Corrective Actions:** any corrective measures taken in response to identified issues, including timelines for implementation.
- **Compliance Status:** indication whether the activity met compliance standards, along with any deviations or non-compliance issues.
- **Signatures and Approvals:** signatures from responsible personnel to verify completion and accuracy.
- **Attachments**: relevant documents, photographs, or reports that provide additional context or evidence for the activity.

The RTFE and TDEIT will be responsible for updating the tracking system on quarterly basis. In a situation where an activity has not been conducted as scheduled, the RTFE and Capital Projects Manager will be notified in a timely manner to take appropriate actions as needed.

The dam monitoring instrumentation program consists of a series of Excel sheets that outline a schedule for data collection based on the frequencies specified in Parts II and III. The status of each instrument is automatically updated when data is imported into these sheets. If data collection is missed, the instrument's status is flagged as "Late." This schedule is included in the instrumentation reports submitted to the Project Team (NGI and EOR) twice per week, ensuring that involved individuals are notified about any late data collection.

An automated notification system was implemented in 2024 to alert key personnel when the collected instrumentation data exceeds the thresholds (Flag and Trigger) defined by the EOR.

3.4 Quality Management

The operational quality requirements for TMA include the following key components:

- **Risk Assessment and Management**: Review of risk register twice per year as part of the Internal Technical Review Board (ITRB) workshops to review and discuss existing and new potential hazards associated with tailings and water management structures. Discuss and implement mitigation strategies based on these assessments. Additional reviews are also conducted independently of the ITRB with the EOR when material or operational changes occur.

- **Design and Construction Standards**: Ensure that tailings facilities are designed and constructed according to best practices and engineering standards that prioritize safety and environmental protection.
- **Operational Procedures:** Update the SOPs for tailings and water management, including monitoring, maintenance, and emergency response protocols on regular basis to capture changes to operations.
- **Monitoring and Reporting**: Continuously improve the monitoring programs to better track the performance of tailings facilities. This includes regular reporting on the condition of the facilities and any incidents or near misses.
- **Training and Competency**: Provide ongoing training for personnel involved in tailings facility operations to ensure they are knowledgeable about best practices and safety protocols.
- **Continuous Improvement**: Make continuous improvement through regular reviews of operations, seeking opportunities to enhance safety and environmental performance.

These requirements are described in detail for maintenance related activities in the SOPs referenced throughout Part II, Section 4.

The quality requirements related to maintenance activities for the tailings and water management facilities, include the following components:

- **Maintenance Planning**: Develop a comprehensive maintenance plan that outlines scheduled inspections, repairs, and upgrades for all components of the tailings facility.
- **Preventive Maintenance**: Implement a preventive maintenance program to regularly check and service equipment and structures, reducing the likelihood of failures and ensuring operational reliability.
- **Condition Monitoring**: Utilize condition monitoring techniques to assess the health of infrastructure and equipment, enabling timely interventions before issues escalate.
- **Documentation and Record Keeping**: Maintain detailed records of maintenance activities, inspections, and repairs. This documentation supports compliance and helps track the performance of maintenance efforts.
- **Safety Protocols**: Establish safety protocols for maintenance activities, including risk assessments and safe work practices to protect personnel and the environment.
- **Resource Allocation**: Ensure that adequate resources (personnel, tools, and budget) are allocated for effective maintenance activities to prevent degradation of the facility.

These requirements are described in detail for maintenance related activities in the SOPs referenced throughout Part II, Section 5.

The quality management related to surveillance activities for tailings and water management facilities, include the following requirements:

- **Monitoring Systems:** Continue to implement robust monitoring systems, such as real-time data collection, remote sensing, and visual inspections, to track the condition of tailings and water management facilities. Continue to implement automated notification systems for exceeding design and performance expectations.
- **Data Management:** Ensure effective data management practices, including data collection, storage, analysis, and reporting, to support informed decision making.
- **Risk Assessment:** Regularly conduct risk assessments to identify potential hazards related to tailings facilities and adapt surveillance strategies accordingly.
- **Standard Operating Procedures (SOPs):** Prepare and update the SOPs for surveillance activities, detailing protocols for inspections, data collection methods, and reporting procedures.
- **Training and Competency**: Provide training for personnel involved in surveillance to ensure they understand the technologies used and the importance of accurate data collection.
- **Continuous Improvement:** Review and refine surveillance practices based on feedback, incident analysis, and advancements in technology to enhance the overall quality management framework.

These requirements are described in detail for surveillance related activities in the SOPs referenced throughout Part II, Section 6.

3.5 Qualification Requirements

3.5.1 Dam Monitoring Team

To ensure effective surveillance of tailings and water management dams, the following minimum qualifications are required. These qualifications ensure that personnel involved in dam surveillance are capable of effectively monitoring and managing risks associated with the facilities.

- **Tailings Dam Technician:**
  - Mining or Civil Technology Diploma or similar combination of experience/training
  - 1-5 years of industry experience, preferably mining or heavy civil earthworks construction
  - Strong computer skills, familiarity with MS Office, MS Access, and MS Excel skills
  - Familiarity with GTILT Software
  - Experience monitoring geotechnical instrumentation.

- **Tailings Dam EIT:**
  - Bachelor's degree in civil engineering with Geotechnical specialization, or related field
  - Registered as an EIT with Professional Engineers of Ontario
  - 3-5 years of industry experience, in design, construction, operations and surveillance of mine tailings and water management facilities.
  - Experience with MS Office, GTILT, and MUK3D.
  - Experience with installing, monitoring, and troubleshooting geotechnical instruments including VWPs, SIs, MEs and SPs.

- **Responsible Tailings Facility Engineer:**
  - Degree in Civil or Geotechnical Engineering
  - P. Eng. Designation with Professional Engineers of Ontario is mandatory.
  - A minimum of 10 years' experience in in design, construction, operations and surveillance of mine tailings and water management facilities.
  - In depth knowledge of tailings facility industry guidelines and governance (CDA and MAC TSM)
  - Experience in geotechnical investigations and construction of tailings and water management dams.

3.5.2 Engineer of Record

The minimum qualifications for the EOR are described below in accordance with the referenced standards and guidelines:

- **Global Industry Standard on Tailings Management**
  - Requirement 9.1: Engage an engineering firm with expertise and experience in the design and construction of tailings facilities of comparable complexity to provide EOR services for operating the tailings facility and for closed facilities with 'High', 'Very High' and 'Extreme' Consequence Classification, that are in the active closure phase. Require that the firm nominate a senior engineer, approved by the Operator, to represent the firm as the EOR, and verify that the individual has the necessary experience, skills, and time to fulfill this role. Alternatively, the Operator may appoint an in-house engineer with expertise and experience in comparable facilities as the EOR. In this instance, the EOR may delegate the design to a firm (Designer of Record) but shall remain thoroughly familiar with the design in discharging their responsibilities as EOR. Whether the EOR or the DOR is in-house or external, they must be competent and have experience appropriate to the Consequence Classification and complexity of the tailings facility.
  - Requirement 9.2: Empower the EOR through a written agreement that clearly describes their authority, role and responsibilities throughout the tailings facility lifecycle and during change of ownership of mining properties. The written agreement must clearly describe the obligations of the Operator to the EOR, to support the effective performance of the EOR.
  - Requirement 9.3: Establish and implement a program to manage the quality of all engineering work, the interactions between the EOR, the RTFE and the Accountable Executive, and their

involvement in the tailings facility lifecycle as necessary to confirm that both the implementation of the design and the design intent are met.

- Canadian Dam Association
  - The EOR should be a qualified and competent engineer who is responsible for the design and performance of a mining dam.
  - The EOR should be clearly identified by the owner with the concurrence of the EOR. In the case of a change in the EOR or Owner, the Owner shall be responsible to ensure that reports, files, knowledge, and dam safety records are comprehensively transferred to the new Owner and/or new EOR.
  - The EOR may be declared after the construction is completed and, in this circumstance, the EOR and owner need to work together to make sure that the EOR is equipped with the appropriate information to be able to take on this responsibility.
- Mining Association of Canada
  - The Owner, in assuring that a tailings facility is safe, has the responsibility to identify and retain an EOR, who provides technical direction on behalf of the Owner.
  - The EOR verifies whether the tailings facility (or components thereof) has been:
    - designed in accordance with performance objectives and indicators, applicable guidelines, standards, and legal requirements, and
    - constructed, and is performing, throughout the life cycle, in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and legal requirements.
  - For tailings facilities that include retention structures/dams, the EOR is responsible for Dam Safety Inspections and associated reports.
  - The EOR should also participate in the facility's risk assessments and be accessible to Independent Reviewers, and, for facilities with retention structures, dam safety reviews.
  - The EOR must have experience and knowledge commensurate with the risk management requirements for the facility. The EOR must have the appropriate qualifications, which includes professional certifications relevant to the jurisdiction in which the tailings facility is located (e.g., Professional Engineer registration in the appropriate province or territory in Canada).
  - The EOR needs to closely support the facility operations team to ensure continuity with the original design requirements, and that an appropriate engineering assessment is carried out if the original design specifications or operating parameters/constraints are to be modified.

3.5.3 Maintenance

The following skilled personnel are involved with maintenance activities, and they are required to meet the minimum qualifications as described in National Occupations Classification (NOC) - https://noc.esdc.gc.ca/:

- Construction Millwright and Industrial Mechanic
- Pipefitter
- Electrician
- Equipment Operator Welder
- Heavy Duty Mechanic
- Carpenter

3.6 Training and Competences

Training will be provided to employees to ensure responsible personnel are competent. RRM, in conjunction with the EOR, will provide training on the use of the Manual, and the Standard Operating Procedures (SOPs). It will be the responsibility of the managers to ensure all involved and responsible parties have undergone the mandatory trainings. Table 6 outlines mandatory training requirements. Training completed by personnel to be documented with sign in sheets and signed SOPs where required. The mandatory training on SOPs is related to technical procedures and occupational health and safety.

Table 6: Mandatory Training Requirements

Mandatory Trainings	Chief Executive Officer	Senior VP Operations	General Manager	Mill Manager	Mill Supervisor	Mill Maintenance Superintendent	Electrical Supervisor	Mechanical Supervisor	Mobile Maintenance Manager	Site Services Superintendent	Environment Manager	Water Resource Engineer	Mine Manager	Capital Projects Manager	Construction Manager	RTFE	Tailings Dam EIT and Technician	Project Coordinator	Construction Superintendent	Surveyor & Drafting Support	Engineer of Record	TMA Construction Contractor
OMS – Part 1, General	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OMS – Part 2, TMA				X	X	X	X	X		X	X	X		X	X	X	X				X	X
OMS – Part 3, WMF				X	X	X	X	X		X	X	X			X	X	X				X	
OMS – Part 4, EPRP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	
ENV-SOP-0001, Spill Reporting				X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	
ENV-SOP-0008, Water Elevation Survey				X								X			X				X	X		
MIL-BCR-SOP-0004, BCR 2 Operation				X	X						X	X										
MIL-CND-SOP-0009, Line Inspections				X	X					X					X	X				X		
MIL-GEN-SOP-0043, Switching Pumps				X	X																	
MIL-WTP-SOP-0002, Response to Upset				X	X	X																
MIL-WTP-0010, Nitrification Cell Op.				X	X																	
MIL-WTP-SOP-0014, Bio. Treatment Op.				X	X																	
CST01-4340-M03-0001.001 WTP Op & Maintenance Manual				X	X	X	X	X														
SAF-SOP-0008, Risk Assessment and MOC		X	X	X	X	X	X	X		X	X	X		X	X	X		X	X		X	X
SAF-SOP-0011 Incident Management Procedure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X
SAF-SOP-0045 Working Around Water					X					X	X	X			X	X	X	X	X	X	X	X
Multi DAM SOPs Reading Geotech Instruments																X	X	X	X	X	X	
Dam Safety Inspection			X	X						X	X	X		X	X	X	X	X	X		X	

3.7 Resources and Scheduling

The RTFE and Capital Projects Manager are accountable for the allocation of sufficient resources, including personnel, financial support, required tools (software), and equipment. These resource allocation decisions will ensure that NGI meets its operational goals while satisfying the requirements outlined in the Manual for the safe and effective management of tailings and water at RRM.

The resource allocation process is initiated by assessing the specific needs associated with tailings and water management to ensure compliance with environmental regulations, safety standards, and operational requirements, including those specified in this Manual. Budgeting plays a critical role in ensuring that adequate financial resources are available for monitoring equipment, personnel training, and infrastructure upgrades.

Resource management for maintenance related activities involves close coordination between department managers to ensure the availability of necessary resources for timely completion of tasks. Managers from the involved departments regularly discuss and align on resource requirements, including personnel, equipment, and materials, to ensure that all maintenance activities are adequately supported. This collaborative approach helps identify potential resource gaps in advance and ensures that resources are allocated efficiently, allowing maintenance tasks to be completed on schedule and in accordance with operational needs. By fostering communication and planning across departments, the organization is able to meet its maintenance goals and maintain optimal asset performance.

Capital Projects leads and initiates resource allocation discussions with other departments and NGI's corporate personnel throughout the year to ensure that the required resources and budget are available for the subsequent year.

3.8 Management Review for Continual Improvement

Conducting a management review for continual improvement in tailings and water management involves an assessment of the current practices, performance metrics, and external factors influencing operations. This will lead to the development of action plans to improve both the tailings/water management systems and the OMS Manual. The management review for RRM TMA and water management facilities are carried out annually by RTFE and includes:

- **Assessing the integration of tailings management activities with site-wide systems:**
  In assessing the integration of tailings management activities with site-wide systems, NGI confirms that these activities align with broader organizational objectives, particularly those related to safety, environmental, and social responsibilities. This involves a thorough examination (through annual TMS review) of current policies and procedures to identify collaborations and gaps between different departments.
- **Changes to legal requirements, standards and guidance, industry best practice, and commitments to COIs:**
  Identify any changes in legal requirements and industry standards for maintaining compliance in tailings and water management.
- **Changes in mine operating conditions or site environmental conditions:**
  This includes identifying any variations in production rates, extraction methods, and operational challenges that may influence tailings and water management practices. To ensure these practices remain effective and aligned with operational objectives while minimizing potential impacts on human health and environment.
- **Changes in the risk profile of the tailings facility:**
  The risk register for RRM is reviewed during the ITRB workshops (Spring and Fall). As part of the annual management review, the RTFE will confirm that the internal and external risks associated with tailings and water management have been discussed and the risk mitigation measures are implemented. Additional reviews are also conducted independently of the ITRB with the EOR when material or operational changes occur.

The documentation of the findings from management reviews is essential for accountability and continuous improvement. The RTFE will be responsible for preparing a detailed report as part of the annual TMS review that will include action items and assigned responsibilities in a clear and accessible manner. This documentation serves not only as a historical record but also as a reference for future reviews.

3.9 Managing Changes

As part of the annual TMS review the RTFE will document the changes to maintain the integrity of the tailings and water management facilities and the tailings management system, including changes to:

- Approved designs and plans, including temporary changes, and expansions to tailings facilities.
- Persons involved with key duties related to tailings management, including the Accountable Executive Officer, RTFE, EoR, and member of ITRB.
- Conditions that may impact tailings management, including temporary suspension of mining operations.
- The closure plan.
- Any other changes that are potentially material to the risks associated with tailings.

3.9.1 Changes to key Personnel

NGI's procedure for succession planning ensures that knowledge and responsibilities for key personnel including the Accountable Executive Officer, RTFE, and individuals managing day to day tailings and water management activities are seamlessly transferred when individuals move on or retire. More specifically this process includes:

Identify Critical Roles

The first step in succession planning is to identify the key roles that are critical to the success of tailings and water management. AT RRM these roles include:

- Capital Projects Manager
- Capital Projects Superintendent
- RTFE
- Tailings Dam EIT
- Environmental Compliance Officer.

Assess Current Talent Pool

As part of ongoing succession planning, NGI assesses the current capabilities of the staff who hold the positions summarized above or staff who are potential candidates for these roles in the future. This process includes:

- Evaluate employees based on technical expertise, experience, and knowledge specific to tailings and water management. Considering skills such as risk assessment, environmental compliance, geotechnical stability, geotechnical instrumentation, water management, and project management.
- Identify employees who are ready to step into key roles immediately, and those who may need additional development.
- Assess whether there are any gaps in the current talent pool, particularly in highly specialized areas such as geotechnical engineering or environmental compliance, and create plans to address these gaps.

Develop Training

NGI will ensure employees receive the required training through its professional development plans designed for both current staff and potential successors to ensure they are prepared for leadership and technical roles in tailings and water management.

Mentorship Programs

NGI has developed structured mentorship programs that ensure the knowledge about specific tailings operations, safety protocols, and emergency response strategies is passed on to the next generation of leaders.

- RTFE, Capital Projects Manager, and Superintendent mentor junior staff to help them gain deeper insights into the complex aspects of tailings and water management. This mentorship covers both technical knowledge and broader strategic thinking such as regulatory compliance and community relations.
  - Allowing potential successors to shadow experienced professionals in key roles enables them to understand the full scope of responsibilities and challenges in managing tailings operations.
  - Holding regular knowledge-sharing sessions where senior staff can discuss past challenges, solutions implemented, and lessons learned. These sessions help preserve institutional knowledge.

2.5 Knowledge Transfer and Documentation

An essential part of succession planning is ensuring that critical knowledge and procedures are properly documented and accessible, ensuring continuity even when employees move on. At RRM, this achieved by ensuring:

- All critical procedures related to tailings and water management are well-documented. This includes SOPs, risk management protocols, emergency response plans, inspection procedures and checklists.
- The operational practices, engineering standards, environmental compliance processes, and safety protocols are followed in tailings and water management.
- All documents related to tailings and water management are stored (in InEight Document) and easily accessible by future staff. Encourage staff to update documents with the latest information to keep everyone aligned on best practices.

3.9.2 Changes to ITRB and EOR

For roles such as the EoR and member of the ITRB, succession planning includes having documented terms of reference (ToR), descriptions of required qualifications, and a documented process for filling roles in the event of change. To ensure that the terms of reference for the EOR and ITRB roles remain relevant and aligned with evolving regulatory, operational, and safety requirements, NGI updates the ToRs on an annual basis. This update process will allow the organization to adapt to changes in tailings management practices, industry standards, and legal requirements.

For the EoR, the succession plan addresses the transfer of necessary information to the new EoR, including the procedures and timelines for transfer. This process will address both short-term contingencies and long-term transitions:

- The succession planning includes a transition protocol for the EoR role, which involves identifying a potential successor and ensuring they are fully prepared to take over the responsibilities. The current EORs have appointed suitably qualified Deputy EORs for the TMA and water management structures. The designation of Deputy EORs also provides a second point of contact if the EOR is not available.
- The ToR will include:
  - Steps for transferring necessary documents, including ongoing safety assessments, project reports, risk management strategies, and any immediate actions that need to be taken to ensure the continuity of tailings management.
  - Timelines for the transfer of knowledge and responsibilities, depending on the complexity of the transition.
  - Ensuring that the outgoing EoRs ensure that all outstanding issues are addressed and that the incoming EoR is fully briefed on the tailings facility's current state, including regulatory compliance, safety inspections, and risk management.
- In case of sudden or unplanned turnover, NGI will appoint an interim EoR. This may involve designating the RTFE or CP Manager who have extensive experience in tailings and water management to temporarily step into the role until a permanent successor is found.

4. Site Baseline Conditions

4.1 Site Location and Tenure

The site is situated in the Township of Chapple, approximately 70 km by road northwest of Fort Frances in Northwestern Ontario. New Gold has 100% interest in the lands forming the RRM through direct ownership or option agreement, however, surface rights are not owned throughout the site boundary.

The RRM is located within lands used by Indigenous Groups for traditional and ceremonial purposes. NGI has regulatory requirements and/or bipartisan agreements to engage with the communities including, but not necessarily limited to those listed in Section 4.10.

Road access to the site is by provincial Highway 600 and Highway 71 and Korpi Road (east access road). A site location map is provided in Figure 3. The mine is serviced by local municipal infrastructure.

Refer to Land Use Management Plan developed by NG Environment for additional details.

4.2 Site Access

Site access is authorized through the issuance of electronic key cards following verified completion of pre-access training requirements. Site access is controlled by two main gates located at the Plant Site and Marr Site. Gate access requires an authorized and active key card and is monitored by an on-site security team. SAF-PRO-0046 Site Access Process provides further information.

4.3 Climate and Climate Change

During the summer months (April to October), the climate of the RRM area is affected by warm, moist air systems from the Gulf of Mexico interacting with dry air masses from central Canada. During the winter months (November to March), extended periods of clear, cold weather are a result of cold, dry Arctic air masses flowing from the north.

Based on 1981 to 2010 Canadian Climate Normal data from the Barwick weather station approximately 30 km south of the RRM site, daily temperatures range from as low as - 21.1°C in January to as high as 25.2°C in July, with recorded extremes of -49.0°C and 36.5°C. Daily average mean temperatures are below 0°C from November to March.

The mean annual precipitation is 710 mm (rain and snow) with the majority being rainfall. Monthly mean rainfall ranges from 30 mm to 125 mm in the summer months, and monthly mean snowfall ranges from 190 mm to 370 mm in the winter months (Environment Canada, 2020). Pond evaporation occurs from May until October with a cumulative annual evaporation of approximately 540 mm.

Average annual precipitation for the 1951-1980 period was 656 mm. Climate change projections published by https://climatedata.ca suggests that under a high emissions scenario, this is projected to be 6% higher for the 2021-2050 period, 5% higher for the 2051-2080 period and 10% higher for the last 30 years of this century.

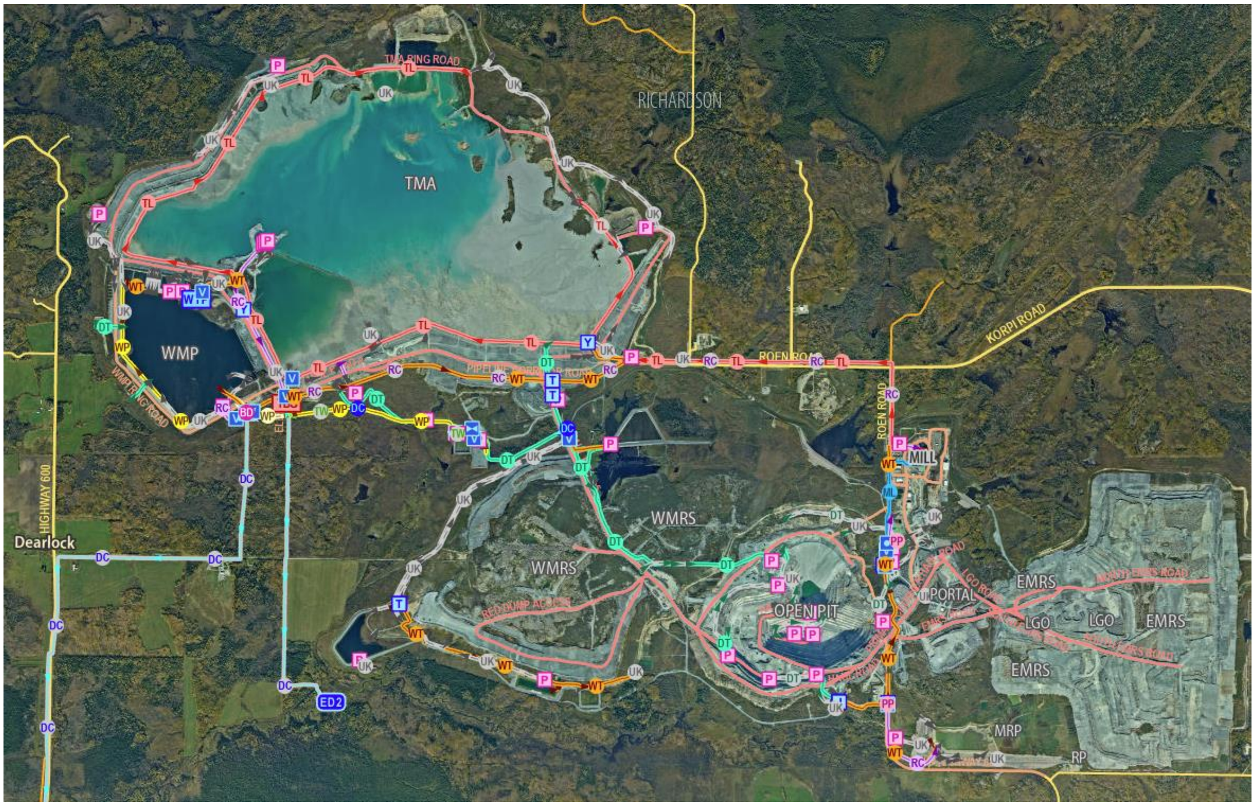

Figure 3: Site Map (Rainy River Web GIS Viewer (newgold.net), Dec 2023)

4.4 Topography and Geology

The site is situated within the Severn Upland of the Canadian Shield physiographic region, characterized by recently deglaciated crystalline bedrock with variable drift thickness. The specific site setting is a lowland area with variable to thick glacial overburden and sporadic bedrock outcrops. Available terrain mapping classifies the site as a glaciolacustrine plain with low, undulating, rolling or plain relief. The plain dominates the southwest portion of the site, giving way to shallow or exposed bedrock in higher topography areas along the northeast portion. The relief of bedrock outcrops above the plain is less than 20 m. Drainage passes through the lowland via dendritic systems of creeks. Broad peat deposits are common throughout the lowland and tend to inhibit drainage (BGC-2580-DT00-MEM-0001.001).

The area has been influenced by several cycles of glaciation and in some areas is overlain by glacial deposit thicknesses up to 40 m. At the mine site, the stratigraphic sequence (upwards starting from the lowest elevation above bedrock) consists of:

- Whiteshell Till, sand and gravel
- Wylie Formation, glaciolacustrine silts and clays
- Whitemouth Lake Till, glaciolacustrine silty clay
- Brenna Formation, glaciolacustrine silts and clays
- Poplar River Formation, fluvial sand
- Sherack Formation, glaciolacustrine.

In general, the controlling units for stability are the Whitemouth Lake Till and high plasticity faces of the Brenna Formation. A detailed description of the site geology is provided in the sitewide geological model report (BGC-2580-DT00-MEM-0001.001). A description of the Rainy River TMA foundation characterization is provided by BGC (BGC-4910-DT00-RPT-0019.008).

The RRM site is underlain by bedrock comprising the Wabigoon sub-province of the Superior Province of the Precambrian Shield. The Wabigoon sub-province is characterized by Archean metavolcanic bedrock with plutonic rock intrusions and northwest-trending diabase dikes estimated to be of Proterozoic age.

4.5 Hydrology and Hydrogeology

The RRM site, which is located on the north side of the Pinewood River, is drained by four small creek systems, which include from east to west: Clark Creek (Teeple Drain), West Creek, Marr Creek and Loslo Creek (Cowser Drain). Major portions of the Clark Creek, Marr Creek and Loslo Creek basins have been overprinted by RRM developments, principally the TMA and mine rock stockpiles. West Creek is currently diverted around the pit and flows to Loslo Creek via the West Creek Diversion.

Regional groundwater flow is towards the west in the Pinewood River watershed. Artesian conditions within the shallow bedrock and Pleistocene lower granular deposits are common along the stream corridors.

4.6 Groundwater Quality

Groundwater quality is typical calcium magnesium-bicarbonate type water with most sampling points having total dissolved solids exceeding 500 mg/L. Sampling of groundwater since 2007 has indicated metal concentrations above application guidelines. Then-EOR, AFW defined the threshold limit for each metal in in the 2016 contingency plan for groundwater according to the guideline B-7 of the MOEE groundwater Management Activities (1994a), since that year just Arsenic, Lithium, magnesium, manganese, and strontium consistently exceed the threshold limit in several wells.

4.7 Biodiversity

Refer to Biodiversity Management Plan developed by NG Environment for details.

4.7.1 Fish

The fish community proximal to the RRM is dominated by baitfish and forage fish species with sportfish (e.g., Walleye and Northern Pike) in the lower Pinewood River below the Pinewood Pumphouse. Presently the lower reaches of Marr and Loslo Creek remain fish bearing after the headwaters have been cut off by the TMA construction. West Creek and Clark Creek are former tributaries to the Pinewood River and have been offset for by the Clark Creek and West Creek Diversion structures which are offsetting habitat and support all life history stages of baitfish and forage fish species.

The freshwater diversions are fish bearing waters and subject to protection under numerous permits and legislation e.g., Fisheries Act. Cowser Drain (Loslo Creek) and the Pinewood River are also fish bearing. Water quality discharges into these areas must meet MNDMNRF and ECA permit requirements. The discharge threshold limits are set to avoid fish damage. ECA requested weekly samples during discharge for mercury, sulfate, and ammonia, if the criteria were not met, NG cannot discharge to the environment, affecting the water balance and TMA operations subsequently.

4.7.2 Vegetation

The RRM is within Ecoregion 5S (Agassiz Clay Plain) and there are no published “Significant Wildlife Habitat Ecoregion Criteria Schedules” for this ecoregion. Aspen-Birch hardwood forest is the dominant (46.6 %) forest type proximal to the mine, followed by coniferous swamp / wetland (29.4 %). Agricultural lands are present across 8% of the area proximal to the mine, primarily along roads and in areas of well drained clays. No records of rare vegetation communities or rare plants were identified during the Environmental Assessment.

Based on the ecoregion, the growing season length is 180-190 days with mean annual temperatures of 1.5 to 3.0°C. The frost-free period is ~125 days from mid-May to mid/late September (Ministry of Agriculture; 1976-2005).

4.7.3 Wildlife

Key wildlife aspects influencing the OMS manual include the presence of:

- Species at risk including but not limited to Eastern Whip-poor-will and Bobolink which require consideration of limits of disturbance, timing of works, noise mitigation and dust management.
- Snapping turtles, for which measures must be taken to prevent them entering the TMA, process water and water treatment facilities.
- Migratory birds requiring noise mitigation measures, reduced light pollution, timing windows on clearing, deterrents to prevent use of the TMA and monitoring for use of the TMA.
- Deer, which along with other wildlife require that a fence be to be constructed around the active tailings deposition areas.
- Bears, which along with other wildlife need to be managed through controlling wildlife-human interactions including reporting, no harassing of wildlife, no fishing or hunting on the mine site, speed restriction and waste management to exclude wildlife.

4.8 Seismic Setting

The seismic setting of the RRM is described in BGC-4910-DT00-RPT-0019-001. RRM is located within the stable Canadian Shield region within the North American Plate, which has a low level of seismic activity.

Based on a catalog of historical seismicity from the National Earthquake Database (NRCan 2018), 341 earthquakes were recorded within 200 km of RRM since 1985, 247 of which were less than magnitude M 2.0, and none greater than magnitude M 3.2. The nearest earthquake occurred 35 km from the mine. The estimated peak ground accelerations associated with the 1:2,475 and 1:10,000-year seismic events are 0.05 g and 0.11 g, respectively, for overburden conditions corresponding to the 2003 National Earthquake Hazards Reduction Program (NEHRP) site classification system Site Class D (Stiff Soil).

4.9 Other Hazards

Beyond earthquake, other natural hazards to the RRM are limited to weather related hazards e.g., flooding, drought, extreme cold or high winds and forest fires. Other natural hazards e.g., volcanic activity, subsidence, avalanches, and landslides are not expected to affect the mine given surrounding geology and topography. Responses to natural hazards are considered as part of the site EPRP. Potential natural hazards relating to the OMS are discussed here and refer to EPRP for the preparedness and response plans to the hazards.

- Forest Fire: there is potential for forest fires to affect operations of the mine, with the cycle in the RRM being 63 to 210 years. The RRM has a fire prevention and preparedness plan (June 2017) developed with the MNRF.
- Flooding: the precipitation between winter 2021 and spring 2022 is equivalent of 1:50 to 1:100 AEP rainfall event. Failure of ICS in northern TMA during the major rainstorm in late April and early May 2022 resulted in additional millions of cubic meters of water stored in TMA. The scale and intense rainfall plus the limited infrastructure capacity at the site can turn a major rainfall event into a flood hazard.
- The water treatment capacity of water treatment facilities including BCR1 has a limit of flow of up to 24,000 m^3/day through the WTP without it overflowing. In a wet year, this water treatment capacity may not be sufficient and results in storing too much water in TMA which is an operation constraint.
- Drought: drought conditions may result in a reduction in water availability for processing and limit allowable offsite discharge to the Pinewood River. Drought conditions for processing are mitigated through the design of the WMP and water storage structures. In the event of a 5th percentile low flow fall, only 1.53 Mm^3 could be discharged offsite. However, this is managed through capacity in the TMA, WMP and water treatment. The water balance model is regularly updated and reviewed by RRM management.

4.10 Community of Interest

NGI continues to inform and consult Communities of Interest which include:

- Local Indigenous communities of Big Grassy River First Nation, Anishinaabeg of Naongashiing, Ojibways of Onigaming First Nation, Naotkamegwanning First Nation, Naicatchewenin First Nation, Rainy River First Nations, Buffalo Point First Nation, and the Sunset Country Métis community (as represented by Métis Nation of Ontario Region 1 Consultation Committee), Mitaanjigamiing First Nation, Couchiching First Nation, Lac La Croix First Nation, Nigigoonsiminikaaning First Nation, Seine River First Nation, Northwest Angle #33 First Nation, Northwest Angle #37 First Nation and Anishinabe of Wauzhushk Onigum (in accordance with consultation requirements and/or communication protocols established through Agreements as modified over the life of the project).
- Those local indigenous communities can be found in the attached Figure 4: Treaty 3 Map.
- Site neighbors.
- Local townships include the Township of Chapple and Morley Township.

Refer to Community Management Plan developed by NG Rainy River Community team for details.

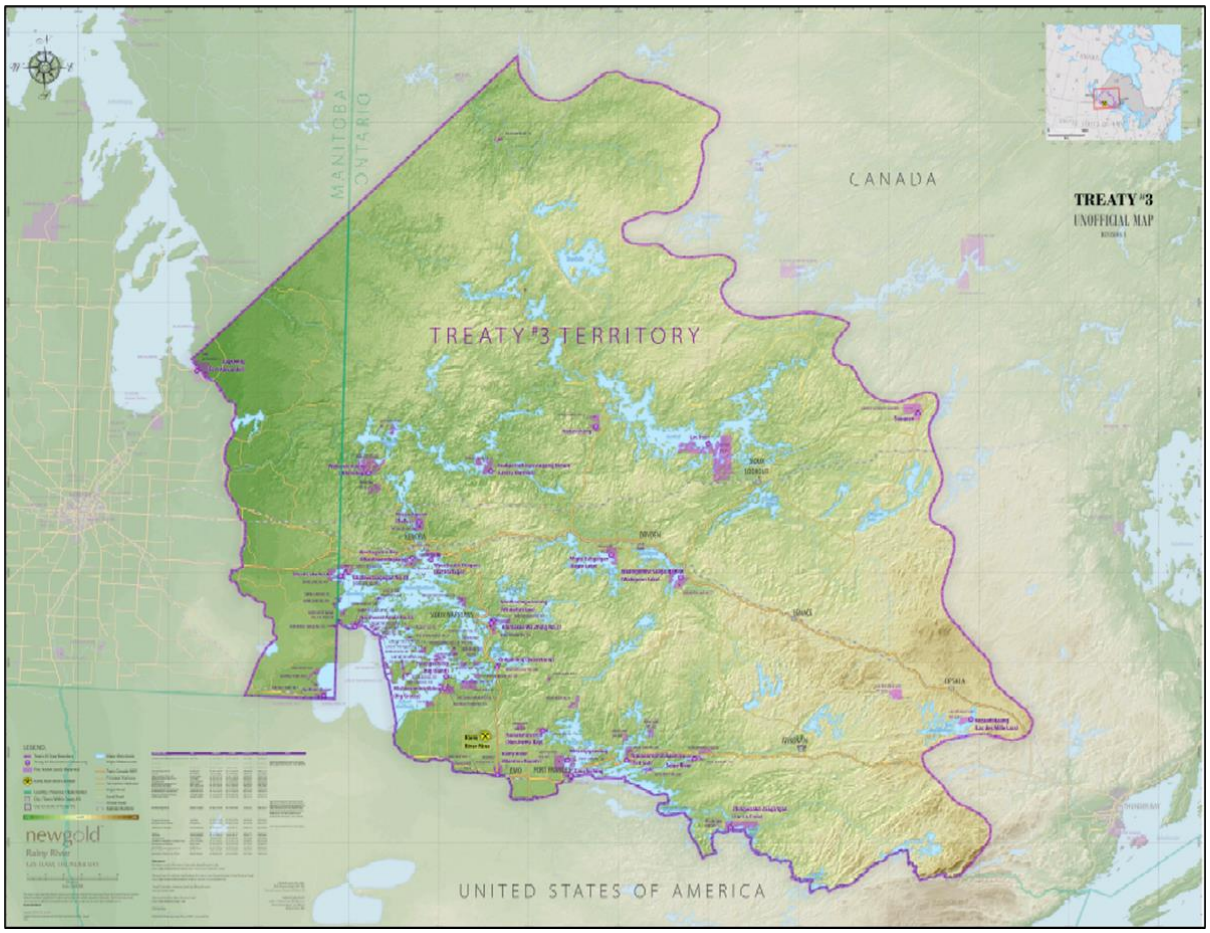

Figure 4: Local Indigenous Communities in Treaty # Map

5. Facility Characteristics

5.1 Facility Overview

The components of the RRM relative to the scope of the OMS include various tailings and water management facilities. They are grouped as:

- Tailings Management Facility
  - Tailings Management Area (TMA)
    - South Dam
    - West Dam (Dam 4 and Dam 5)
    - North Dam including an emergency spillway.
    - North Ring Road, the natural topographic highs
    - Tailings Pond (Cell 1, Cell 2, and Cell 3. Merge to one cell in Stage 4)
    - Decant Pond, part of the tailings pond in the SW corner.
  - TMA ancillary structures include:
    - Seepage and Runoff Collection Ditches and Sumps
    - North Catchment Area Diversion including ICS (Inflow Control Structure) at Loslo Creek, and a sump and ditch at Marr Creek
    - Tailings Pipeline System (Mill to TMA including a booster station)
    - Reclaim Water Pipeline System (Decant Pond to Mill)
    - Water Transfer Pipelines (TMA to Lime WTP, and TMA to BCR #2)
    - Sludge Transfer Pipeline (Lime WTP to TMA)
- Water Management Facilities
  - Treated-Water Management
    - Water Management Pond (WMP) including WTT (Water Treatment Train)
      - WMP Dam 1 including a spillway.
      - WMP Dam 2
      - WMP Dam 3
      - Settling Pond Dam
      - WTT (Nitrification Cells, BCR #1 and Lime WTP)
      - Seepage and Runoff Collection Ditches and Sumps (Sump 1 for Dam 1 & 2, Sump 2 for Dam 3)
      - Water Discharge Pipeline System
      - WMP to EDL1, EDL2
      - BCR #2 to WMP
  - Freshwater Management
    - Marr and Loslo Creek Diversion Ditches / Sumps and Pumps (ICS)
    - Clark Creek Diversion
      - Clark Creek Pond and Dam
      - Clark Diversion Ditch
      - Teeple Creek Pond and Dam
      - Teeple Diversion Ditch
    - West Creek Diversion
      - Stockpile Pond and Dam
      - Stockpile Pond Diversion Ditch
      - West Creek Pond and Dam
      - West Creek Diversion Ditch
  - Sediment Control / Contact Water Management Structures
    - Water Discharge Pond and Dam (WDP), BCR #2 and Constructed Wetland (CW, to be constructed at closure)
    - East Mine Rock Stockpile (EMRS) Pond and Dam (Mine Rock Pond, MRP)

- West Mine Rock Stockpile (WMRS)
  - Sediment Pond 1 and Dam including collection ditch.
  - Sediment Pond 2 and Dam including collection ditch.
  - Sediment Pond 3 and berm including two sumps and Open Pit diversion ditch.
- Plant Site Ponds
  - North Runoff Pond, technically a sump
  - South Runoff Pond and Dam

- Utilities
  - Power to the plant site is provided by 230 kV transmission lines connected to Hydro One northwest of the site at a Switching Station.
  - The main 230 kV Substation is near the concentrator building to power the process equipment via underground supply lines. Power to the remainder of the site is provided by a network of overhead power lines fed from the main substation; and
  - Site telecommunications and Process Control are distributed via fiber optic lines.

Figure 5 to Figure 9 presents the plan view of the faculties based on the RRM GIS Base Map dated October 17, 2024.

Figure 5: Plan View of WMP, TMA and Associated Structures

Figure 6:: Plan View of Clark Creek Division

Figure 7: West Creek Division and Plant Site Ponds

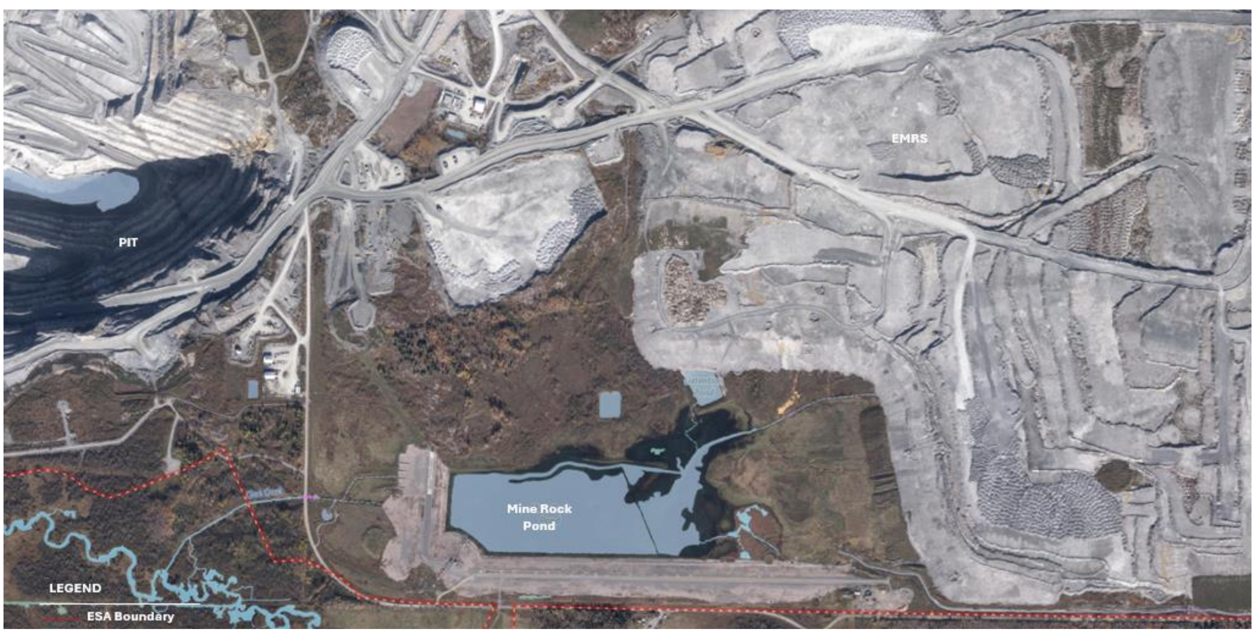

Figure 8:: Mine Rock Pond and Dam

Figure 9: Sediment Control Ponds

5.2 Facility Design and Construction

5.2.1 Summary of Facilities

- Summary of the RRM dam characteristics is presented in Table 7.
- Summary of the RRM pond characteristics is presented in Table 8.

Table 7: Summary of Dam Characteristics (Updated Based on Stage 7 Raise)

Purpose & Facility	Dam Name	Type of Dam	Construction Stage	Crest Elev. (m)	Max. Dam Height (m)	Dam Length (m)	Crest Width (m)	Slopes (H:1V)	Spillway Invert Elev. (m)	Spillway Width (m)	Normal Freeboard (m)
Tailings Management Dams											
Tailings Management Area (TMA)	North Dam	Central core	Stage 7 (Designed)	379.1	21.9	2,460	24.8	4:1 (U/S) 13:1 to 16:1(D/S)	377.4	20	2.2
	South Dam				27.0	3,582	24.8	4:1 (U/S) 8:1 to 24:1(D/S)			
	West Dam 4				20.5	927	26.8	4:1 (U/S) 12:1(D/S)			
	West Dam 5				18.9	698	26.8	4:1 (U/S) 13:1 (D/S)			
	North Dam	Central core	Stage 6 (Completed)	378.1	20.9	2,450	26.6	4:1 (U/S) 13:1 to 16:1(D/S)	376.6	20	2.0
	South Dam				26	3,580		4:1 (U/S) 8:1 to 26:1(D/S)			
	West Dam 4				19.5	910		5:1 (U/S) 12:1(D/S)			
	West Dam 5				17.9	695		5:1 (U/S) 13:1 (D/S)			
Treated Water											
Water Management Pond (WMP)	WMP Dam 1	Homogeneous clay fil	Final	371.5	4.2	850	10	4	370.5	8.4	3.6
	WMP Dam 2			371.5	9.5	800	10	5.5			
	WMP Dam 3			371.5	13.3	750	10	9.2			
	Settling Pond Dam			371.5		550	5	4	n/a		3.6
Freshwater Diversion											
Clark Creek Diversion	Clark Creek	Homogeneous clay fill	Final	380.25	4	285	6	5.5	379.9	6	1.3
	Teeple Road	Homogeneous clay fill	Final	379	7	465	6	6	378.7	6	0.5
West Creek Diversion	Stockpile Pond Dam	Central core	Final	375.5	9.8	380	6	6.5	372.3	20	3.2
	West Creek	Central core	Final	364.9	8.9	750	10	7.9	360.9	8	3.9
Contact Water											
Mine Rock Pond	Mine Rock Pond Dam	Central core	Final	360.2	13	1655	10	11	358.9	80	3.4
Water Discharge Pond	Water Discharge Pond Dam	Homogeneous clay fill	Final	355.2	2.2	350	6	4	354.2	5	1
Mine Rock Stockpile	Sediment Pond #1	Central core	Final	354	3.8	1750	6	4	353.7	60	0.8
	Sediment Pond #2	Homogeneous clay fill	Final	348.2	5.2	1460	6	4	348	115	2.2
	Sediment Pond #3[(1)]	Central core	Final	345.7	1	344	6.4	4	345	30.3	0.7
Plant Site Ponds	North Runoff Pond [(1)]	None - excavated	n/a	365	3.4 (internal)	n/a	4	3-Feb	n/a	n/a	n/a
	South Runoff Pond	Homogeneous clay fill	Final	363.5	6.5	420	4	4	362.9	40	0.6

(1) To be declassified as a dam by EOR

Table 8: Summary of Pond Characteristics (Updated Based on Stage 7 Raise)

Purpose & Facility	Dam/Pond Name	Catchment Area (km^2)	Inflow Design Flood (event/flow)	Peak IDF Inflow (m^3/s)	Peak IDF Water Level (m)	Peak IDF Outflow (m^3/s)	Minimum Freeboard Available [1] (m)	Environmental Design Flood (event/volume)	Normal Operating Water Level (m)	Impounded Volume to NOWL (Mm^3)	Maximum Operating Water Level [1] (m)
Tailings Management Area (TMA Stage 7 design)	TMA Dam and Pond	10.2 5.9 (TMA)	more critical of the summer-autumn or spring rainfall and snowmelt driven inflow events	570 to 1,670 m3/s	378.25	19.8	0.85 m above IDF level (Stage 7)	100-year 30-day storm (2.8 Mm^3)	376.9	2.9 between the NOWL and the MOWL	377.4
Tailings Management Area (TMA Stage 6 Operation)		10.2 5.2 (TMA)	689m^3/s (48-hour Spring PMP + 100-year snowmelt) 551mm to 1,070 m3/s (48-hour Summer PMP – 563mm)	689 to 1,070	377.35	18.0	0.75 m above IDF level (Stage 6)	100-year 30-day storm (2.79 Mm^3)	376.1	3.0 between the NOWL and the MOWL	376.6
Water Management Pond (WMP)	WMP Dam 1	1.0	Summer PMF	141	371.0	3.3	0.36	100-year 30-day storm (320 mm)	369.7	5.2	370.5
	WMP Dam 2										
	WMP Dam 3										
	Settling Pond			Not specified							
Mine Rock Pond	Mine Rock Pond	5.43	Summer PMF	225	360.0	134	0.0	100-year 30-day storm (320 mm)	356.8	0.603	358.9
Clark Creek Diversion	Clark Creek	3.0	100-year Summer Storm	4.9	379.5	2.6	0.37	No EDF. Ponds store freshwater	378.75	Not available	None specified
	Teeple Road	0.85		8.3	378.8	5.7	0.22	No EDF. Ponds store freshwater	378.5	Not available	None specified
West Creek Diversion	Stockpile Pond	2.85	Summer PMF	78	373.9	67	1.52	No EDF. Ponds store freshwater.	372.2	0.937	None specified
	West Creek	2.2		222	363.9	186	0.89	No EDF. Ponds store freshwater.	360.9	0.156	None specified
Water Discharge Pond (WDP)	Water Discharge Pond	0.69	100-year Summer Storm	22.7	354.1	4.7	0.91	Not specified	352.5[3]	79,000	354.2
Mine Rock Stockpile	Sediment Pond #1	0.65	100-year Summer Storm	10.3	353.7	1.0	0.25	25-year 24-hour storm (110 mm) without pumping, or 25-year 30-day rainfall (24 mm) with pumping	352.7	0.167	353.7
	Sediment Pond #2	1.35	100-year Summer Storm	6.7	348.0	6.5	0.19		347.2	0.29	348
	Sediment Pond #3	1.12	100-year Summer Storm	16.7	345.5	15.3	0.19		344.6	0.115	345
Plant Site Ponds	North Runoff Pond	0.17	100-year, 24-hr Summer Storm	7.0	364.0	0.0	0.39	Not specified	Not specified	0.015	363.1
	South Runoff Pond	0.65	2/3 between the 1,000-year and the PMF	20.1	363.27	13.0	0.0	Not specified	362.8	0.068	362.8

(1) Typically, equivalent to spillway invert elevation.
(2) Defined based on the more critical of the summer-autumn or spring rainfall and snowmelt driven inflow events. Inflow volume = 2.4 to 5.5 Mm3.

5.2.2 Dam Consequences Classification

The current dam consequence classifications for each facility at RRM are listed in the 2024 DSI (CRW3295-4910-BA10-RPT-0005) performed by the EOR. Table 9 lists consequence classifications for the dam structures at RRM.

Table 9: Dam Consequence Classifications (CDA Equivalent)

Facility	Dam Classification
Tailings Management Area (North, West & South Dams)	Extreme
Water Management Pond (Dam 1 to 3)	Extreme
Mine Rock Pond	Extreme
Water Discharge Pond	Low
Sediment Pond 1	Low
Sediment Pond 2	Low
Sediment Pond 3	Low
West Creek Pond	Extreme
Stockpile Pond	Extreme
Clark Creek Pond	Low
Teeple Pond	Low
South Runoff Pond	Very High

5.2.3 Design Criteria

The TMA is designed to provide sufficient storage for the projected tailings storage requirements and operational pond volume.

The water management facilities are designed to collect, divert, and store surface runoff and seepage from dams, and provide water storage for mill water reclamation.

IDF

IDF (Inflow Design Flood) is designed to pass through the emergency spillway without impacting the integrity of the dams.

For the TMA, an IDF equal to the full probable maximum flood (PMF) has been selected (corresponding to the CDA “Extreme” consequence classification).

The IDF event selected corresponds to the critical PMF event, which is the 24-Hour Spring PMP + 100-year Snow + 100-year critical temperature sequence.

The hydrotechnical parameters IDF event including IDF inflow, outflow and IDF water level for the TMA (Stage 6 and 7) and water management facilities are presented in Table 8.

EDF

EDF (Environmental Design Flood) is the most severe flood that can be managed without release of untreated water to the environment. This volume is maintained below the emergency spillway invert.

EDF is defined as a deterministic storm event corresponding to a flood event return period of 1:100 years and 30-day duration rainfall event for the TMA with a volume of 2.74 Mm^3 for Stage 6 and 2.8 Mm^3 for Stage 7.

The TMA dam raise schedule assumes that the EDF water level (EDFL, equivalent TMA spillway invert elevation) must be at or above the projected 99th percentile pond level. This would provide a minimum annual probability of discharge through the spillway of 1% or less, which is equivalent to a return period of approximately 1:100 years.

The EDF event for the water management facilities is presented in Table 8.

NOWL

Normal Operating Water Level (NOWL) is selected to provide sufficient depth to store the EDF below the MOWL. The NOWL is defined based on the simulated 1 in 100-year wet return period TMA operating water levels, using defined site water management logic as established through discussions with New Gold operational personnel and by SRK. This requirement was evaluated using the WBM.

NOWL for the TMA (Stage 6) and water management facilities is presented in Table 8.

Freeboard

Minimum Freeboard

According to CDA 2007 Hydrotechnical Bulletin, minimum freeboard is defined as the difference in elevation between lowest elevation of the top of the dam and the maximum still pool reservoir level that would results should the IDF occur. Min. freeboard is selected to ensure no overtopping by 95% of the waves caused by the most critical wind with an AEP based on the dam classification, when the reservoir is at its maximum level during the passage of the IDF. Table 10 summarizes the minimum freeboard of TMA for Stage 6 and 7.

Table 10: Minimum Freeboard

Dam Raise	Required Freeboard (1) (m)	Available Freeboard (2) (m)	Excess Freeboard (3) (m)	Reference
Stage 7	0.70	0.85	0.15	CRW3295-4910-BA10-RPT-0008
Stage 6	0.75	0.90	0.25	CRW3295-4910-BA10-RPT-0002

(1) Based only on wind and wave action.
(2) The vertical distance between dam crest and max. reservoir elevation during pass of IDF.
(3) The difference between available freeboard and required freeboard.

Normal Freeboard

Normal Freeboard is defined as the difference in elevation between the lowest elevation of dam crest and the maximum normal reservoir operating level (MOWL), which in this case is the spillway invert. The normal freeboard ensures that the structure is protected against the most critical of the following case:

- No overtopping by 95% of the waves is caused by the most critical wind with a frequency of 1000-year when the reservoir is at its MOWL.

Table 11 summarizes the normal freeboard of TMA for Stage 6.

Table 11: Normal Freeboard

Dam Raise	Required Freeboard (1) (m)	Available Freeboard (2) (m)	Excess Freeboard (3) (m)	Reference
Stage 7	1.1	2.2	1.1	CRW3295-4910-BA10-RPT-0008
Stage 6	0.75	2.0	0.9	CRW3295-4910-BA10-RPT-0002

(1) Based only on wind and wave action and 0.15m settlement.
(2) The vertical distance between dam crest and NOWL (SRK).

(3) The difference between available freeboard and required freeboard.

Minimum freeboard for the Stage 6 and 7 for TMA operation and water management facilities is presented in in Table 11. The normal freeboard for all dams is presented in Table 10.

Spillway

An emergency spillway is designed to pass IDF while maintaining minimum freeboard required to accommodate wind setup and wave run-up without discharge.

TMA spillway invert elevation is 1.5 m (Stage 6) and 1.7 m (Stage 7) below dam crest as shown in Table 8. The location for the Stage 6 and 7 Emergency Spillway is at the North Dam. The spillway will be relocated to the TMA West Dam (Dam 4) at closure.

The geometry of spillway and the invert elevations of all dams (Stage 6 and 7 for TMA spillway) is presented in Table 8.

Physical Stability

The stability criteria including loading conditions and minimum factor of safety adopted for the TMA design are summarized in Table 12 and are in accordance with the CDA guidelines.

Dam construction is staged such that the minimum FOS (Factor of Safety) is 1.5 throughout construction and at the End of Construction for each crest raise.

The rapid drawdown scenario is assessed for the downstream slopes of the TMA West Dam (Dam 4), considering rapid drawdown of the BCR#1 (Biochemical Reactor 1) pond, and for the TMA West Dam (Dam 5), considering rapid drawdown of the WMP.

Table 12: Minimum Factor of Safety Adopted for TMA Stage 6 Design

Loading Condition	Minimum Factor of Safety	Slope	Reference
End of construction – Static	1.5	Downstream and upstream	CDA 2019a
Full or partial rapid drawdown – Static	1.2	Where applicable	CDA 2019a
Pseudo-static	1.0	Downstream and upstream	CDA 2019a
Post-peak (regardless of trigger assessment)	1.1	Downstream and upstream	CDA 2019b

Seismic Design Criteria

Rainy River Mine is located within the Canadian Shield region within the North American Plate, which has a relatively low level of seismic activity. SRK evaluated the pseudo-static FOS using the method proposed by Bray and Macedo (2019). This method involves estimating a seismic coefficient (k) and implementing k as the horizontal ground acceleration in a limit equilibrium model (LEM).

BGC (2022a) determined the k value by considering a maximum exceedance percentile for a given displacement threshold, and for different fundamental periods. The displacement threshold was set at 0.3 m, with a percent exceedance threshold of 50%. No fundamental period for the site was available, so the k value was conservatively estimated by considering a range of fundamental periods (from 0.01 to 10 seconds). The maximum k value from these periods was selected. SRK agrees with the methodology used by BGC (BGC 2022a) and has continued to use k = 0.01 for stability modelling in the Stage 7 raise design.

5.2.4 Brief Dam Construction History

Summary of the construction of RRM onsite dams and ancillary structures is referenced in in Table 13.

Table 13: Construction Record Reports

Structure	Reference
Clark Creek Diversion System	RRP-GEO-REP-027
Water Management Ponds	RRP-GEO-REP-030
TMA Cell 1	RRP-GEO-REP-032
West Creek Diversion System	RRP-GEO-REP-028
Mine Rock Pond	RRP-GEO-REP-033
TMA Cell 2	RRP-GEO-REP-035
TMA Cell 3	RRP-GEO-REP-039
Sediment Pond 1	RRP-GEO-REP-040
Sediment Pond 2	RRP-GEO-REP-038
Water Discharge Pond	RRP-GEO-REP-037
TMA Stage 2 Raise	BGC-4910-DT00-RPT-0011
Sediment Pond 3	BGC-4460-DT00-RPT-0011
TMA Stage 3 Raise	BGC-4910-DT00-RPT-0014.001
TMA Stage 4 Raise	CRW3295-4910-DT00-RPT-0004.001
TMA Stage 5 Raise	CW3246-4910-DD10-TOP-0001
TMA Stage 6 Raise	CRW3295-4910-DD00-RPT-0032
TMA Stage 7 Butress	In Progress

5.3 Tailings Management

5.3.1 Tailings Characterization

Ore and Ore Processing

- Type of ore: Pyrite, Pyrrhotite, Chalcopyrite
- Ore processing method including reagents used: Leaching process using cyanide
- Ore processing rate : 24,000-28,600 tpd
- Treatments applied to tailings before transported to TMA: Inco SO2/Air detoxification of cyanide.

Tailings Deposition Parameters

Stage 7 Design Basis Report (CRW3295-4910-BA10-RPT-0011) presents the following tailings deposition parameters.

- Non-plastic, predominantly silt-sized particles
- Specific gravity: 2.78
- In-situ dry density: 1.35 t/m3
- PAG with an expected lag time to net acidic conditions of approximately 30 years.

- Metal leach from subaerial and subaqueous tailings and greater source of loading from subaerial.
- Tailings beach slope: above water: 0.5%, below water: 0.9% (beach far from dam) to 1.5% (beach close to dam).

5.3.2 Tailings Production

Mill start-up: August 9, 2017

Table 14 provides the life of mine tailings production including the projected total tailings tonnage and actual tailings production up to end of 2022.

Table 14: Life-of-Mine Tailings Production

Description	Open Pit and Underground (kt)	Total (kt)	
		Projected (1)	Actual (1)
Up to end of 2024	-		59,971
2025	9,147	9,147	-
2026	9,174	9,174	-
2027	9,282	9,282	-
2028	9,296	9,296	-
2029	8,386	8,386	-
2030	2,063	2,063	-
2031	2,054	2,054	-
2032	2,067	2,067	-
2033	1,457	1,457	-
LOM (Life of Mine) Total:	52,926	52,926	59,971

(1) According to Table 16-7 (NI 43-101 TECHNICAL REPORT, Effective Date: December 31, 2024)

5.3.3 Tailings Distribution System

The tailings deposition plan is developed annually and in conjunction with the corresponding year's dam raise schedule. Deposition plans are available in New Gold's document control system, In Eight Team Binder.

2024 tailings deposition is based on Stage 6/7 tailings deposition plan developed by the EOR (CRW3295-4910-BA10-MEM-0005).

Tailings is transported in a slurry state with approximately 47% solid content by mass and pumped through 24" HDPE pipeline from the mill to the TMA.

Tailings pipelines sit on upstream rockfill zone, Zone 2/2A, and permanently positioned off the dam core, Zone 1/1A. Before reaching the TMA, the tailings pipeline is placed in a lined collection trench (pipeline corridor).

Tailings can discharge to the TMA pond through spigots along perimeter dams and end-dumping along North Ring Road (NRR) and Y Junction.

5.4 Water Management

5.4.1 Types of Water

RRM site manages four types of water, based on the type of infrastructure or processes that the water encounters and its associated quality. Table 15 presents the types of water.

Table 15: Types of Water at RRM Site

Type of Water	Definition	Management Approach
Process-Affected Water (PAW)	Water used in the mill, which is influenced by reagents and process chemistry	Discharged to the TMA with tailings solids.
Treated Water	Treated effluent from the water treatment train which meets discharge criteria	Stored in WMP. Discharged to Pinewood River via EDL1 or EDL2
Contact Water	EMRS: Water that has been in contact with mine waste rock and ore from the East Mine Rock Storage (EMRS) area, or the Open Pit	Collected in storage MRP and SRP. Used for mill makeup water or pumped to TMA.
	WMRS: Water that has been in contact with waste rock or overburden from the West Mine Rock Storage (WMRS) area	Collected in sediment ponds (Sediment Pond 1, 2 and 3). Discharged off-site via Sediment Pond 1 or Sediment Pond 2
	Sumps: Water that contains some TMA dam seepage and has been in contact with Zone 3 of TMA perimeter dams	Collected in seepage collection system sumps including WDP. Discharged to WMP or TMA depending on the locations
Freshwater	Water that has not been in contact with mine infrastructure and is conveyed around the site	Collected in series of dams and ditches. Discharged to Pinewood River via West Creek Diversion or Teeple Pond Outlet channel

5.4.2 Treated Water

Facilities that convey treated water include the Water Management Pond (WMP) and the associated discharge infrastructure to Pinewood River.

The WMP collects treated water from the water treatment train and direct precipitation from its catchment. Water is then discharged to the Outflow Basin, where it can pump to Pinewood River via EDL1 or EDL2.

EDL2 is the primary discharge and will be prioritized over EDL1. Discharge through EDL1 can be greater than EDL2, however. The rationale for using two separate discharge locations derives from the need to achieve effective water quality treatment while minimizing adverse flow effects on the Pinewood River, under varying hydrologic operating conditions. EDL2 is located further upstream on the Pinewood River and will help to maintain flow in the Pinewood River but has a lower assimilative capacity. All effluent from the water management pond not discharged to EDL2 will be discharged by pipeline to EDL1 downstream of McCallum to take advantage of increased river assimilative capacity.

Additional details on the operations of the WMP are described in OMS Part III.

5.4.3 Process-Affected Water (PAW)

Facilities that manage PAW include the mill, the TMA, BCR2 and the water treatment train.

Mill

The Mill uses water, which becomes PAW once it leaves the Mill and is deposited with tailings into the Tailings Management Area (TMA). Mill operations and details are not described herein; however, Section 3.3.2 in OMS Part II presents reclaim water sources for mill use.

TMA

Water collected in the TMA includes process affected water from the Tailings Pipeline, direct precipitation and runoff in the TMA catchment, pumped inflows from seepage collection systems around the TMA, and pumped contact water from across the site. Details on the TMA operations are described in OMS Part II.

Seepage and runoff from the TMA and WMP are collected in a series of seepage collection sumps and ditches (NDSC Sumps 1 to 5, SDSC Sump 1 and 2, Emergency Dump Pond 4, and the Water Discharge Pond) and are pumped back to the TMA or, if water quality permits, the WMP.

The TMA has been designed to optimize natural degradation processes to provide further water treatment, by ensuring there is sufficient retention time to allow these reactions to occur. The natural degradation processes are most effective during warm weather conditions when biophysical activity is optimal and are also augmented by exposure to sunlight. Effluents that are planned for discharge to the environment will be held for a sufficient period under warm weather conditions, to maximize the effects of natural degradation. Such effluent aging will take place in the summer months (June through mid-September) in both the TMA and WMP.

Water Treatment Train

The Water Treatment Train consists of Lime WTP (water treatment plant), Nitrification Cells, and BCR #1 (Biochemical Reactor 1). It treats the process- affected water from the TMA. The treated water is stored in WMP before discharge to Pinewood River vis EDL1 and EDL2.

5.4.4 Contact Water

Facilities that manage TMA, WMRS, EMRS, open pit and mine facility area contact water include TMA seepage collection system, sediment ponds, MRP, SRP and NRP.

The design criteria, objectives and operations of the sediment ponds are described in Part III of the Manual.

Sediment Pond 1

Sediment Pond 1 is designed to collect runoff from the WMRS/ Overburden Stockpile but does not currently do so. Sediment Pond 1 is currently used as a transfer station for pit dewatering and other contact water flows to the TMA and WMP, or to Sediment Pond 2 for discharge if water quality allows.

Sediment Pond 2

Runoff from the WMRS is collected in Sediment Ponds 2 and 3 (which is then pumped to Sediment Pond 2). Water from Sediment Pond 2 is treated for total suspended solids by way of mechanical settling and is discharged to a splash pad located between the pond and the Pinewood River, if water quality allows, or is pumped to the TMA. This system is described in Part III of the Manual.

Sediment Pond 3

Sediment Pond 3 collects surface runoff from the WMRS and overflows from Temporary Sump 2, which collects water from the open pit dewatering wells and open pit diversion. Sediment Pond 3 water is pumped to Sediment Pond 2.

Mine Rock Pond

EMRS runoff is collected within the MRP and is either used for mill process, where it is used for tailings slurry and discharged to the TMA, or directed to the TMA directly, and follows the same treatment procedures for PAW, The MRP has a seepage collection pond which returns any collected seepage and runoff to the MRP. This system is described in Part III. Under the 2022 pilot program, water from the MRP can be directed directly to Biochemical Reactor (BCR) #2 at a rate of 10,000 m^3/day for discharge to the Pinewood River. This pilot program was put on hold and switched to treat TMA water in BCR 2. See Part II and III of the Manual for more information.

South Runoff Pond

Currently used for sediment control and mill water supply.

North Runoff Pond

Currently used for Mill water supply

Open Pit Water Management

Dewatering from the Open Pit is considered contact water, and is pumped either to the MRP, South Runoff Pond for use in the mill process, or directly to the TMA.

Two deep groundwater dewatering wells are located to the south-west of the Open Pit. Water pumped from these wells' reports to Temporary Sump 2, which flows by gravity to Sediment Pond 3.

A diversion ditch was completed in Winter 2023 to divert surface runoff from the north of the open pit to Sediment Pond 3.

Water Discharge Pond and Constructed Wetlands

The Water Discharge Pond (WDP) was originally designed to collect runoff from the natural catchment south of the TMA, as well as seepage from the seepage collection ditch, and bleed flow from the WMP (design rate of 10,000 m^3/day). The WDP was intended to discharge to a series of constructed wetlands, which would provide a target 30-day retention time to control water quality. With the construction of BCR2, the wetlands are not required until the end of mine life.

Currently, the WDP collects seepage from the TMA South Dam and local runoff. Water collected in the WDP is pumped back into the TMA.

5.4.5 Freshwater Water

Existing creeks and smaller water bodies are diverted through the mine with a system of dams and ditches called non-contact runoff. Three major systems are:

- Clark Creek originates north-east of the mine and flows towards the south-west, originally passing through the East Mine Rock Stockpile (EMRS) and MRP footprints. Clark Creek is diverted away from the EMRS and MRP by the Clark Creek Dam, Clark Creek diversion channel, Teeple Dam, and Teeple Pond Outlet channel.
- The West Creek system originates northeast of the mine and flows south, originally passing through the Open Pit, plant site, and crusher. The Stockpile Pond Dam (SPD) and West Creek Dam (WCD) were constructed to divert water into the West Creek diversion channel, which travels south of the TMA and discharges into the Pinewood River via Loslo Creek.
- Loslo Creek and Marr Creek historically passed through the TMA footprint but have been diverted towards the east of the TMA as Loslo and Marr Diversion Ditches, entering the WCD.

The Freshwater Diversion system includes:

- Marr and Loslo Creek diversion ditches
- Clark Creek diversion including the Clark Creek and Teeple dam structures

- West Creek diversion including the Stockpile and West Creek dam and diversions structures.

The freshwater diversions function to reduce inflows to the RRM and provide offsetting habitat for the loss of portions of Loslo, Marr, Clark, and West Creeks. Diversion of the non-contact runoff from these catchments and TMA pond water treatment reduces the water treatment and effluent management requirements and helps reduce pressure on the water treatment plant. All structures support fish habitat except for Marr and Loslo diversion ditches.

Note that operations, maintenance, and surveillance are discussed in OMS Part III: Water Management Facilities. No further details on the non-contact water systems are presented herein.

6. Instrumentation

The following sections provide an overall description of the instrumentation used at site and the processes that are used. Specific instrument locations and thresholds will be discussed in detail in the relevant Parts of the OMS manual.

6.1 Types of Instruments

Instrumentation measurements, along with visual inspections, serve as the primary mechanisms for performance monitoring of the TMA and Water Management facilities.

- Slope Inclinometers (SI) – A vertical PVC pipe installed through the ground typically into bedrock that measures horizontal deformation.
- Vibrating Wire Piezometers (VWP) – A pressure transducer and polyurethane coated wire that measures the pore water pressure within the dam core and foundation clay units.
- Standpipe Piezometers – A vertical PVC pipe with a perforated or screened section for measuring water levels and collecting water samples, typically in coarse foundation units.
- Settlement Plates – A base plate is installed at some depth with a riser pipe extending to surface to measure settlement of soils.
- Magnetic Extensometers – Installed as a series of magnetic rings, either around corrugated PVC tubing or slope inclinometer casing within the foundation units to monitor vertical consolidation-induced settlement.
- Survey Monuments – A bar of steel is driven into the ground and the top of the bar is surveyed to monitor displacement.
- Shape Array - Series of sensors or markers that are installed at different depths within the slope inclinometer casing. These sensors are designed to measure displacements or deformations in multiple directions unlike slope inclinometers.

Details are available in then-EOR's instrumentation reports (BGC-4910-DT00-RPT-00.001) produced by then-EOR twice a year for the assessment of instrument performance. The locations of the instruments can be viewed in NG's proprietary, GIS Viewer.

Figure 10: TMA Instrumentation Aerial View Dec. 2023 (GIS Web Viewer)

6.2 Data Collection and Storage

All instrumentation data is manually collected, except for VWPs and Shape Arrays. The VWPs are connected to dataloggers which record hourly readings of the instrument. These readings are then transmitted by radio frequency to Hubs (4 in total) located at the Marr site and the E-House at the intersection of WD4 and WD5. The Hubs transmit the collected data which is then stored on NG server. These files are located at: \\pcs01-yag\Campbellsci\LoggerNet.

Data collection frequency including processing and submission is to provide timely instrument response to internal factors such as construction activities, tailings deposition, and external factors such as precipitation etc. The reading frequency for all the automated instruments, such as VWPs, Shape Arrays, and weather station, is every hour. For the instruments requiring manual reading, such as SIs and settlement plates and Magnetic extensometers, the reading frequency is assigned in the instrumentation threshold report for TMA and water management dams by EOR. DAM-SOP-0001 through –00014 provide additional detail on data collection and reading of instrumentation.

Table 16: Data Collection Frequencies

Instrument Type	Reading Frequency	
	During Construction	Post Construction
Vibrating Wire Piezometer	1 hour	1 hour
Shape Array	1 hour	1 hour
Manually Read Instrumentation		
Slope Inclinometer	7 days	14 days / 30 days
Standpipe Piezometer	30 days	30 days
Settlement Plate	30 days	30 days
Magnetic Extensometer	30 days	30 days

Note: Reading frequency of Slope Inclinometers is subject to change based on movement rate and can be less than 7 days based on construction activity in the given area.

6.3 Data Visualization and Reporting

Instrumentation data gathered from SIs and VWPs is reported to the EOR through the Bi-Weekly Instrumentation Reports on Mondays and Thursdays. Furthermore, the recent integration of MEs, SPs, and PZs data into the GIS SQL database ensures seamless accessibility for the EOR at any given time. DAM-SOP-0006 provides additional detail on reporting.

6.4 Weather Stations

The RRM weather stations were installed at the Barron Site in September 2016, and Marr Site in early 2022 (later relocated TMA WTP site in late 2022, station name: Marr) and are maintained by the Environment Department and Capital Projects, respectively.

The data collected by the Barron weather station is hosted by Campbell Scientific, and the data is updated twice per day at 09:00 and 16:00. In Q4 2020, the Barron weather station was upgraded to include an all-weather precipitation gauge, snow depth sensor, evaporation pan and newer models of existing instruments.

The Marr Site station collects wind, precipitation, and air temperature data. It can be accessed in this link: Bulletin: Rainy River Mine - Marr (weatherlink.com)

6.5 Other Instruments

Additional instrumentation to support the OMS manual and management of water includes:

- Densometer on the tailings pipeline which is located in the Tailings room in the Mill.
- Flow meters on the Pinewood River and water management pipelines including from the Pinewood River, tailings reclaim lines, MRP line and freshwater line from the WMP.
- Pond automating project implemented in 2023 during which all dams, ponds, and sumps were automated. Water level transducers were installed in each structure which report hourly to the SQL database. Additionally, a new GIS dashboard was also implemented to track water levels with appropriate TARPs for each structure (Water Levels).

This instrumentation provides continuous recording, which is collected during routine inspections and included.

7. Regulatory

7.1 Approval Summary

Approvals for permits as well as Environmental Assessment (EA) commitments can be found on the Environment SharePoint webpage at:

https://newgold4.sharepoint.com/sites/yag_environment/SitePages/Home.aspx

7.2 Commitment Tracking

All Regulatory requirements are tracked in the Intelex software application. A link can be found on the Environment webpage.

https://newgold4.sharepoint.com/sites/yag_environment/SitePages/Home.aspx

The Environmental Management System framework is found in the EMS Manual ENV-MAN-EMS-0001 draft.

Appendix A – Tailings Storage Facilities Management Policy

newgold	Tailings Storage Facilities Management Policy		
	Department: SUS-Sustainability	Approval Date: 8/16/2023	Review Frequency: 3 Years
Document Name: NG-SUS-POL-0002	Owner: Director, Sustainability	Approver: President and CEO	

Tailings Storage Facilities Management Policy

New Gold Inc. ("New Gold") strives for zero harm to people and the environment as a result of tailings management. As a member of the Mining Association of Canada (MAC), New Gold adheres to the Towards Sustainable Mining (TSM) Tailings Management Protocol.

New Gold and its service providers, make the following commitments at all its operations and projects:

- Maintain strong and transparent tailings governance that considers external interests, including the allocation of clear responsibilities and accountabilities for tailings, from the Board of Directors to corporate management, to site levels. Ensuring appropriate budget and resources are allocated for strong tailings governance.
- Ensure all sites have oversight by an Independent Tailings Review Board (ITRB) that reports to site management and corporate management on performance of tailings management processes. Establish an organizational culture that promotes learning and collaboration with relevant stakeholders.
- Continue providing Indigenous partners the opportunity to review risks and findings from independent reviews annually through designated report out processes.
- Publicly disclose information on all tailings storage facilities including those currently active, under rehabilitation or closed, such as construction method, hazard categories, risks, opportunities, and management approach.
- Have a rigorous emergency preparedness plan including post-incident review and participation, and collaboration with appropriate regulatory authorities and communities of interest.

New Gold believes that by adopting these commitments, it can more safely manage tailings; and the protection of public health, safety and the environment will be better achieved.

Document History		
Date	Author	Comment
2017		Rev 0 – Initial Release
2019		Rev 1 – Update, New CEO
August 2023	Emily O'Hara	Rev2 (supersedes Tailings, Heap Leach and Waste Rock Facilities Management Policy), Update, New CEO
March 2025	Sam Numsen	Rev 3 Updated template

Appendix B – Forms and Templates

OMS Activity Tracking Form

newgold Rainy River

Date	
Completed By	

Activity Type	Date	Responsible Personnel	Status	Reportable Findings and Observations	Location	Corrective Actions	Status	Approved By
Surveillance								
Visual Inspections								
Weekly Inspections		TDT						
Monthly Detailed Inspections		RTFE /TDEIT						
Tailings Pipelines		Mill Operations						
y Inspection		EOR						
Dam Safety Review		Independent Consultant						
Instrumentation		TDT						
VWP Piezometers		TDT/TDEIT						
SIs								
MEs								
SPs								
Tailings Deposition								
Tailings Elevation Surveys		TDT/TDEIT						
Maintenance								
Electrical and Mechanical Equipment		Mill and SS						
Roads and Infrastructures		CP Construction						
Instruments and Monitoring Systems		CP Dam Monitoring						
Training								
ERP Refresher for Construction Crew		RTFE						
Dam Visual Inspection for TDTs		RTFE						
Audits								
Annual TMS Review		RTFE						

Signed by: Sam Amiralaei 04566788B4BF47E...

Signed by: Jason Bell FA1E435E313B427...

Signed by: Mohammad Taghimohammadi 646B027EC05546A...

RAINY RIVER MINE

OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL

PART II - TAILINGS MANAGEMENT AREA

2025 Revision History						
Revision Index	Revision Date	Status	Author	Checker	Approver	Comments
A	2024-Oct-24	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for Internal Review
B	2024-Nov-21	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for EOR Review
02	2025-Mar-05	Approved	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Final 2025 OMS Manual Update

Change Log Summary		
Section Number	**Section Title**	**Comments**
All	All	The design details for Stage 6 were updated
3.6	TMA Closure	Update this section based on design details from Rainy River Mine Closure Plan 2021 Amendment (revised in 2024)
5	All Sections	Predictive and preventive maintenance details for TMA were added to Section 5
6.6.5	Table 7: Other Unusual Condition for Inspection	Updated the inspection trigger threshold for storm events based on discussion with the EOR
6.7	Instrumentation	Updated this section based on 2024 TARP requirements
6.7.6	Segment-Specific Dam Performance Status	Included Segment-Specific Dam Performance Status details that were recommended by the EOR
6.7.7	Responses Action Plan (RAP)	Included RAP details that were recommended by EOR
6.9	Table 12: Surveillance Frequency	Removed data collection requirements based on discussions with EOR

Acronyms and Abbreviations	
Term	**Definition**
BCR1	Biochemical Reactor #1
BCR2	Biochemical Reactor #2
CDA	Canadian Dam Association
DSI	Dam Safety Inspection
DSR	Dam Safety Review
ECA	Environmental Compliance Approval
EDF	Environmental Design Flood
EMRS	East Mine Rock Stockpile
EOR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
FOS	Factor of Safety
GISTM	Global Industry Standard on Tailings Management
IDF	Inflow Design Flood
LRIA	Lakes and Rivers Improvement Act
MASL	Meters Above Sea Level
MECP	Ministry of the Environment, Conservation and Parks
MNDM	Ministry of Northern Development, Mines, Natural Resources and Forestry
MRP	Mine Rock Pond
NAG	Non-Acid Generating
NGI	New Gold Inc.
NOWL	Normal Operating Water Level
OMS	Operation, Maintenance, and Surveillance
PAG	Potential-Acid Generating
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PTTW	Permits to Take Water
RASCI	Responsible, Accountable, Supportive, Consulting, Informed
RRM	Rainy River Mine
RTFE	Responsible Tailings Facility Engineer
SOP	Standard Operating Procedure
SRK	SRK Consulting Inc. (Canada), Current responsible EOR
TDEIT	Tailings Dam Engineer in Training
TDT	Tailings Dam Technician
TMA	Tailings Management Area
TSM	MAC's Towards Sustainable Mining initiative
TSS	Total Suspended Solids
WDP	Water Discharge Pond
WMP	Water Management Pond
WMRS	West Mine Rock Stockpile
WTP	Water Treatment Plant
WTT	Water Treatment Train
MAC	Mining Association of Canada
MMER	Metal Mining Effluent Regulations
CEAA	Canadian Environmental Assessment Act

Table of Contents

List of Tables

List of Figures

List of Appendices

1. Additional Approvals

Title	Name	Signature	Date
Responsible Tailings Facility Engineer	Sam Amiralaei	Signed by: Sam Amiralaei 04566788B4BF47E...	3/10/2025
Capital Projects Manager	Jason Bell	Signed by: Jason Bell FA1E435E313B427...	3/10/2025
Environment Manager	Garnet Cornell	Signed by: 3841AC226266429...	3/11/2025
TMA Engineer of Record	Calvin Boese	Signed by: Calvin Boese EC0554BA50964B1...	3/11/2025
Mill Manager	Mohammad Taghimohammadi	Signed by: Mohammad Taghimohammadi 646B027EC05546A...	3/10/2025

2. Introduction

2.1 Purpose

The objective of this document is to ensure the safe, efficient, and environmentally responsible management of the tailings facility, referred to as the Tailings Management Area (TMA), throughout its lifecycle at the New Gold Inc. (NGI) Rainy River Mine (RRM), located near Emo, Ontario. It outlines procedures for operations, maintenance, surveillance, and emergency response to minimize risks and ensure compliance with safety and environmental standards. This OMS Manual (the Manual) also serves as a reference for the safe operation of water management facilities.

2.2 Manual Structure

For improved readability, the OMS Manual has been organized into the following "Parts":

- Part I: General
- Part II: Tailings Management Area (TMA)
- Part III: Water Management Structures
- Part IV: Emergency Preparedness and Response Plan (EPRP)

To simplify and condense the OMS Manual, site conditions are covered in Part I of the Manual. This Part (Part II) focuses solely on the operation, maintenance, and surveillance of the TMA.

3. Facility Description

3.1 TMA Overview

The purpose of the TMA is to:

- Contain waste material produced from the milling process.
- Provide recycle water to the Mill, and
- Provide sufficient time for certain chemicals to naturally degrade to low levels.

Foundation preparation and construction of the TMA commenced in 2016 by initially constructing Cell 1. Subsequently, tailings deposition in Cell 1 began in November 2017, followed by deposition in Cell 2 in May 2018. Tailings deposition into Cell 3 started in May 2019. The Cell 1 Dam was gradually overtopped in the first half of 2023.

3.2 Dam Zones and Materials

3.2.1 Low Permeability Units

Water retention and seepage are controlled through dams by the clay core. The clay core comprises compacted clay from WML or BRE (two local geological units). This material is divided into two zones:

- Zone 1 (Core – Select Clay) comprises WML with plasticity index greater than 40%.
- Zone 1A (Core – Random Clay) comprises WML or BRE.

3.2.2 Filters and Drains

Fine and coarse filter and drain materials are used downstream of the clay core to mitigate internal erosion (i.e., piping) and manage seepage through the clay core. Filter and drain materials for the TMA and water management dams consist of:

- Zone 4 (Chimney Fine Filter) and 4A (Blanket Fine Filter) material have a maximum particle size of 25 mm and maximum fines content (material below the No. 200 sieve) of 5% and 12%, respectively.
- Zone 5 (Transition Filter/Drain) is a coarse aggregate with a maximum particle size of 75 mm.

3.2.3 Dam Shells

Mine waste rock from the open pit (Run of Mine, ROM) is used as dam shell material to provide overall stability for the dams. The upstream shells are constructed from potentially acid generating (PAG) or non-acid generating (NAG) random granular fill (Zone 2 and 2A), and the downstream shells are constructed using NAG rockfill (Zone 3 and 3A).

Zones 2 and 3 comprise relatively coarse particle sizes to minimize material processing and sorting for construction. Zones 2A and 3A are transition rockfills between the relatively coarse shell material and the core and/or filters.

- Zones 2 and 2A (Upstream Shell - Random Granular Fill) comprises random granular fill with a maximum particle size of 900 mm and 450 mm, respectively.
- Zones 3 and 3A (NAG Rockfill) comprise a well-graded, free draining rockfill with a maximum particle size of 2000 mm and 450 mm, respectively.
- Table 1 summarize the dam zones, materials, and construction specifications for TMA. See Appendix B of CRW3295-4910-DT00-RPT-0001.002 for details.

Table 1: TMA Dam Zone and Materials

Intent	Zone	Material	Plasticity Index (PI, %)/ Particle Gradation Requirements	Source	Placement Specifications	Maximum Lift Thickness
Low Permeability Units	Zone 1 (Core – Select Clay)	WML	PI = 20%, Fines[1] content >55%	Approved Local Borrow	-2% to +8% of optimum moisture content, minimum of 95% proctor maximum dry density	300 mm
	Zone 1A (Core – Random Clay)	WML or BRE	Fines[1] content >55%	Approved Local Borrow	Whitemouth Lake Till: (see Zone 1) Brenna Formation: -2% to +4% of optimum moisture content, minimum of 95% proctor maximum dry density	300 mm
Filters and Drains	Zone 4 (Chimney Fine Filter)	NPAG sand	Maximum particle size of 25 mm, maximum fines[1] content of 5%	Off-site Borrow	95% proctor maximum dry density	300 mm
	Zone 4A (Blanket Fine Filter)	NPAG sand	Maximum particle size of 25 mm, maximum fines[1] content of 12%	Off-site Borrow	95% proctor maximum dry density	300 mm
	Zone 5 (Transition Filter / Drain)	NPAG drain rock	Maximum particle size of 75 mm	Crushed Material from Open Pit	Compacted with 6 passes of a minimum 10-tonne smooth drum compactor	300 mm
Dam Shells	Zone 2 (NPAG or PAG Waste Rock)	Waste Rock	Maximum particle size of 900 mm	Blasted from Open Pit[2]	Compacted with 10 one-way passes from uniform routing of >100 tonne loaded haul truck traffic.[3]	2000 mm
	Zone 2A (NPAG or PAG Waste Rock)	Waste Rock	Maximum particle size of 450 mm	Blasted from Open Pit[2]	Compacted with 6 passes of a minimum 15-tonne static smooth drum compactor	1000 mm
	Zone 3 (NPAG Waste Rock)	Waste Rock	Maximum particle size of 2000 mm	Blasted from Open Pit[2]	Compacted with 6 one-way passes from uniform routing of >100 tonne loaded haul truck traffic.[3]	3000 mm
	Zone 3A (NPAG Waste Rock)	Waste Rock	Maximum particle size of 450 mm	Blasted from Open Pit2	Compacted with 6 passes of a minimum 15-tonne static smooth drum compactor	1000 mm
Spillway Rip Rap	Zone 7	Cobbles and Boulders	Maximum particle size of 400 mm	Processed Material from Open Pit	Minimum layer thickness of 600 mm	-
	Zone 10	Boulders	Maximum particle size of 600 mm		Minimum layer thickness of 900 mm	-

Notes:
[1] Fines content is defined as the portion of material passing the 0.075 mm sieve.
[2] Dam shell material will be produced by blasting operations in the open pit. Only NPAG material is permitted for downstream construction.
[3] Zone 2 and 3 may alternatively be placed in 1500 mm thick lifts and compacted by either 10 one-way passes from a minimum 40-tonne bulldozer or 14 one-way passes from a minimum 30-tonne bulldozer.

3.3 TMA Raise Schedule

TMA dam raise construction is planned to be completed by November 30th of each year to avoid construction in freezing conditions. Table 2 presents the TMA dam raise schedule according to BGC (BGC-4910-DT00-RPT-0007.003) and SRK (CRW3295-4910-DT00-MEM-0001.002).

Table 2: TMA Dam Raise Schedule

Year	Dam Crest Elevation (m)	Raise Height (m)	Spillway Invert Elevation (m)
2019-2020	371.5	2.5	367.2
2021 (Stage 3 Raise)	373.6	2.1	371.8
2022 (Stage 4 Raise)	375.1	1.5	373.3
2023 (Stage 5 Raise) [1]	377.1	2.0	375.3
2024 (Stage 6 Raise)	378.1	1.0	376.6
2025 (Stage 7 Raise) [2]	379.1	1.0	377.6

Notes:
[1] Stage 5 is deviated from BGC's dam raise schedule. See CRW3295-4910-DT00-MEM-0001.002 for details.
[2] Ultimate raises will be revised in 2025 based on the revised life of mine tailings production and water balance model.

3.4 Mechanical and Electrical Equipment

The TMA mechanical and electrical equipment are owned by Mill Operations and operated by Mill Operations, Mill Maintenance, and Site Services.

The TMA pipelines include:

- Tailings line from Mill to TMA. At the Y junction, the tailings line splits into two: One goes along SD through Booster Station to West Dam, North Dam and NRRW (North Ring Road West). The other goes through NE section of South Dam to NRRE (North Ring Road East).
- Reclaim Water line from TMA pumpstation to Mill.
- Water lines to pump water in the sumps to TMA.
- Water treatment line from TMA pumpstation to Lime WTP.
- A sludge line pump sludge from Lime WTP to TMA.
- A new water line to pump TMA water to BCR2 for treatment to be constructed in 2023.
- A waterline takes dewatering from the Open Pit to the TMA.
- A waterline from MRP to TMA (inactive).

The TMA pumps include:

- RR-P-43-50-PU0030 - PUMP, MAIN, FRESH WATER
- RR-P-43-50-PU0031 - PUMP, FRESH WATER, SPARE
- RR-P-45-20-PU0023 - PUMP, VERTICAL, RECLAIM WATER #1
- RR-P-45-20-PU0024 - PUMP, VERTICAL, RECLAIM WATER #2
- RR-P-45-20-PU0025 - PUMP, VERTICAL, RECLAIM WATER #3
- RR-P-43-50-PU0035 - PUMP, RECLAIM WMP WATER
- RR-P-43-50-PU0036 - PUMP, BCR2 FEED
- RR-P-41-50-PU0001 - PUMP, TAILINGS BOOSTER #1

- RR-P-41-50-PU0002 - PUMP, TAILINGS BOOSTER #2
- RR-P-41-50-PU0003 - PUMP, TAILINGS BOOSTER #1 GLAND SEAL
- RR-P-41-50-PU0004 - PUMP, TAILINGS BOOSTER #2 GLAND SEAL

The electrical equipment within the TMA mainly include:

- Overhead Powerlines – Convey power to the mechanical equipment.
- Pumphouses – The electrical equipment included in the pumphouses:
    - Water Management Pond Pumping Station
    - Tailings Booster Station
    - Reclaim BLDG #23, #24, and #25

3.5 Seepage Collection Systems

The TMA seepage collection system includes a network of finger drains, seepage collection ditches, and sumps. Eleven sumps are located at the TMA, three at North Dam (NDSC Sump 3 to 5) two at the toe of WMP Dam 2 and 3 (SCS 1 and 2), Five at South Dam (SDC Sump 1 and 2, Emergency Dump Pond 4 and 5, WDP), and one at West Dam 4 built in early 2022. Seepage from West Dam 5 is collected in the WMP.

Except for WDP (Water Discharge Pond) which purely functions as a flow collection sump for surface runoff and South Dam seepage, the other four sumps at South Dam can function as both flow collection sumps and tailings emergency dump ponds. One of dual function sumps, Emergency Sump 2 (SDSC Sump 2) at SD 2+650, discharges to West Creek Diversion. According to recent EOR's review, SDSC Sump 2 cannot contain the EDF. If it continues to be pump back to the TMA, SDSC Sump 2 function can be left as-is (CRW3295-4910-DT00-MEM-0007.001).

Except for NDSC Sump 4, TMA seepage collection sumps were sized to contain an EDF corresponding to the 25-year 24-hour rainfall event without pumping and with spillway sized to convey IDF corresponding to 100-year 24-hour rainfall event while providing sufficient freeboard (min. 0.3 m) against overtopping. TMA NDSC Sump 4 was designed to store the IDF instead of the EDF.

See CRW3295-4910-BA10-RPT-0002 for details of seepage collection design.

3.6 TMA Closure Conceptual Plan

Information regarding the closure of the TMA is available in the site wide Rainy River Mine Closure Plan 2021 Amendment (revised in 2024). This document is available on the Environmental Department SharePoint site. The closure plan is updated every 5 years, per the regulations.

- The TMA dams will be raised sequentially over the life of the mine to an ultimate crest elevation of 380.4 masl in order to contain approximately 74.0 Mm^3 (104.3 Mt) of tailings anticipated to be produced over the projected mine life. TMA capacity is based on an average deposited tailings dry density of 1.41 t/m^3.
- The overburden cover will consist of 1.0 m overburden and 0.3 m growth medium placed on exposed tailings beaches to promote vegetation regrowth. The remainder of the surface will be maintained in a flooded condition with a nominal 2 m of water cover.
- Progressive reclamation is proposed as part of later mine operations, such that by the end of the operations phase a low permeability overburden cover of approximately 150 m in width will be placed on the upstream side of the dam around approximately two thirds of the ultimate perimeter, with the remaining approximately one third of the length to be reclaimed at closure. This cover is intended to prevent the permanent water cover from coming into contact with the TMA dams, and will also serve a secondary function of limiting oxygen diffusion into the uppermost portion of the tailings underneath. The overburden cover will be seeded with a native seed mix or equivalent, and will be armoured with NAG rock at the transition zone of the cover with the tailings to prevent suspension and oxidation of solids.

- The struck level of tailings throughout the majority of the reclaimed TMA will lie approximately 3 m below the level of the spillway. Allowing for up to 1 m of undulation in the surface of the tailings, the TMA will maintain a nominal 2 m of water cover.
- The maximum level of tailings at closure adjacent to the dam will be at or below the level of the closure spillway such that they remain below the maximum level of flooding.
- TMA closure spillway is to be located at the TMA West Dam (Dam 4).

The TMA closure plan described above is under review. An option of using desulphurized tailings as the cover has undergone pre-feasibility and feasibility study.

4. OPERATIONS

4.1 General Operating Requirements

4.1.1 Environment Notice Level

The Environment Notice Level (ENL) corresponds to a level at which the NGI Environment Manager and need to be notified. NGI must inform the regulator within 48 hours, as required by the ECA, and initiate the Environment Contingency Plan to lower the pond water level. The ENL is assigned to be the same as NOWL which is 376.9 m for TMA (Stage 7).

4.1.2 Environment Incident Level

The Environment Incident Level (EIL) refers to an abnormal condition with the potential for a spill of the contained tailings into the environment, without meeting the water discharge quality requirements as outlined by the ECA. If this occurs, NGI must report the incident to the regulator and pause the tailings discharge to the TMA. The EIL is assigned the same value as the MOWL (EDF event level), i.e., the invert of the spillway, which is 377.4 m (Stage 7).

4.1.3 Dam Safety Notice Level

The Dam Safety Notice Level (DSNL) corresponds to a level at which the RTFE and the Capital Projects Manager must be notified to prepare the Surveillance Response Plan (SRP) for a High Pond or other scenarios. The DSNL for TMA dams is assigned the same value as the EIL, which is 377.4 m.

4.1.4 Dam Safety Incident Level

A Dam Safety Incident Level (DSIL) refers to an abnormal condition or performance of the dam (including mis-operation or component failure) with the potential to jeopardize the stability of the dam, however, it is not expected to lead to a breach. NGI must report the incident to the regulator and initiate the EPRP. The DSIL for TMA dams is 378.25 m (IDF event).

4.1.5 Tailings Operation Notice

According to the Tailings Deposition Plan (TDP) prepared for Stage 7 raise (CRW3295-4910-BA10-MEM-0005) dated November 17, 2024, if the following operational criteria for the creation of the tailings beach above water (BAW) are not met, the Capital Projects Manager and EOR should be notified:

- Minimum 400 m for the South Dam (SD) at its normal operational condition (50th percentile pond elevation).
- Minimum 50 m for the West Dam (WD) and North Dam (ND) under normal operational conditions, but periodically and locally, water is allowed to be against the dams.
- For the 99th percentile pond elevation, BAW is 0–400 m for all tailings dams.

4.1.6 Tailings Operation Incident Level

A Tailings Operation Incident Level (TOIL) is a condition that the elevation of tailings beach close to the dam upstream face reaches the maximum elevation which is defined to be 0.4 m below the dam crest by the EOR. The dam crest should be considered the approved dam raised elevation. If TOIL is reached, the potential of tailings spill over the dam is high and NGI need to cease the discharge and move the discharge to other locations and report the incident to the regulator. TOIL for TMA dams is Tailings Elev. 378.7 m.

4.1.7 Summary of Pond Level and Tailings Operation Criteria

A summary of key operating requirements for tailings management for Stage 7 raise is provided in Table 3.

Table 3: TMA Dam Stage 7 Operation Elevation Data

Description	Elevation (m)
Stage 7 Dam Crest	379.1
Dam Safety Notice Level (DSN) / Peak IDF Water Level	378.25
Environment Incident Level (EIL) /Maximum Operating Water Level (MOWL)	377.4
Environment Notice Level (ENL) / Normal Operating Water Level (NOWL)	376.9
Functional Operating Water Level (FOWL)	375.9
Tailings Operation Incident Level (TOIL) / Maximum Tailings Elevation	378.7

IDF	Defined based on the more critical of the summer-autumn or spring rainfall and snowmelt-driven inflow events.
MOWL	Equivalent to the Emergency Spillway invert elevation. Selected to provide sufficient depth to convey the IDF and maintain minimum freeboard from the dam crest, while not allowing spillway discharge during the EDF.
NOWL	Selected to provide sufficient depth to store the EDF below the MOWL. Checked against the maximum water volume from WBM results using the projected 100-year wet conditions.
FOWL	Selected to reduce risk of exceeding the NOWL in the TMA and other mine water management facilities.

4.2 Water Conveyance

Water collected in the TMA includes process-affected water (PAW) from the tailings pipeline, direct precipitation and runoff in the TMA catchment, pumped inflows from seepage collection systems around the TMA, and pumped contact water from across the site including Mine Rock Pond, and Sediment Pond 1 (when necessary).

The TMA has been designed to optimize natural degradation processes to provide further water treatment, by ensuring there is sufficient retention time to allow these reactions to occur. The natural degradation processes are most effective during warm weather conditions when biophysical activity is optimal and are also augmented by exposure to sunlight. Such effluent aging will take place mainly in the summer months (June through mid-September) in both the TMA and WMP.

The main outflow of the TMA under normal operating conditions includes mill reclaim water, conveyance to the Water Treatment Train (WTT), natural evaporation, and infiltration through the foundation of the tailings dams (considered minimal due to the fine-grained nature of the foundation materials.

Figure 1 presents the TMA water operation logic which was developed for site-wide water balance model.

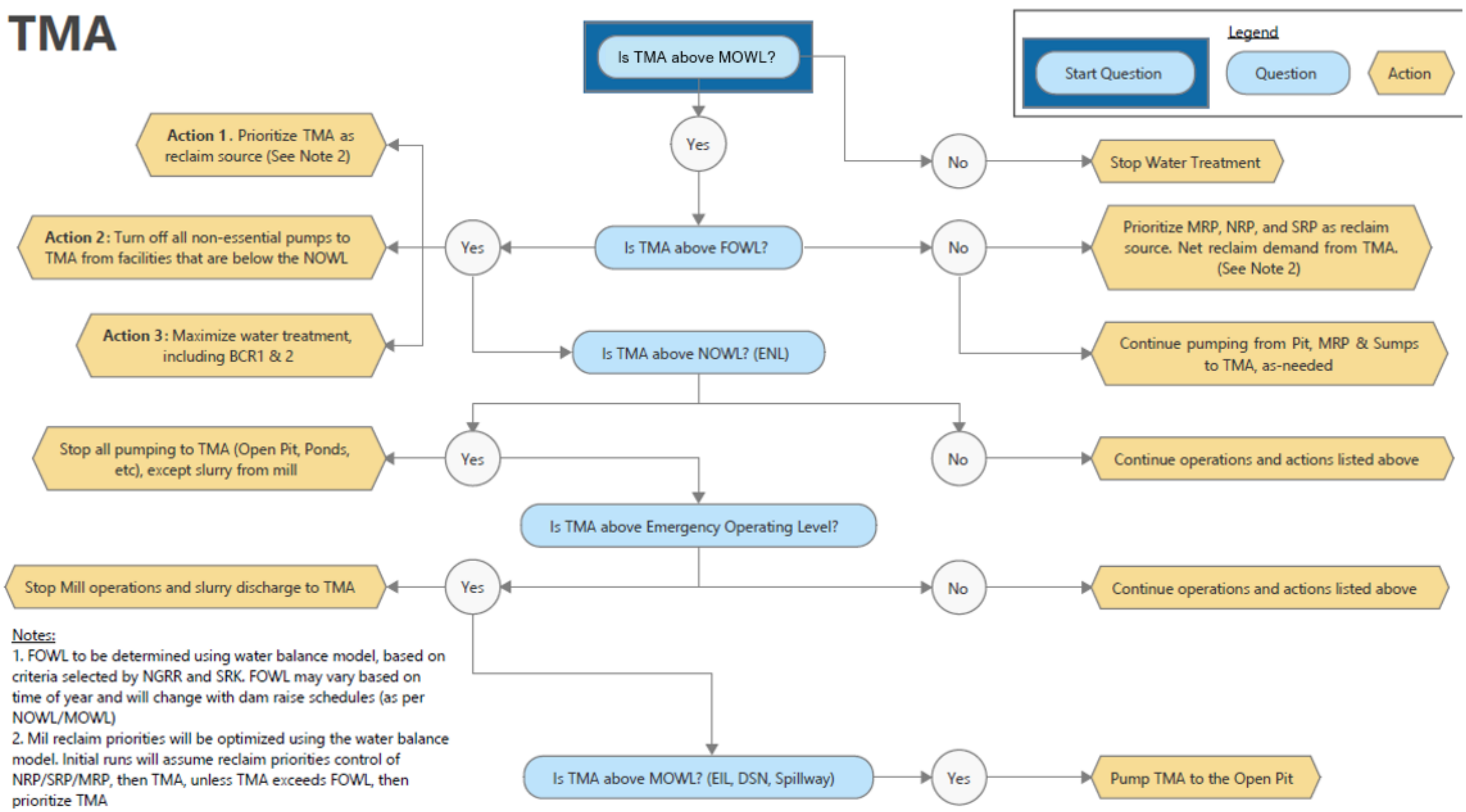

Figure 1: TMA Water Operation Logic

4.3 Tailings Deposition

The latest version of the TDP is included in the detailed design report for Stage 7 raise (CRW3295-4910-BA10-RPT-0008) and is updated on annual basis.

4.3.1 Deposition Criteria

- Slurry tailings can be deposited through spigots spaced approximately 100 m apart along the tailings dams, end-dumped at Y Junction, or along the TMA north ring road (NRRE and NRRW).
- The maximum allowable tailings elevation against the dams is 0.4 m below the dam crest for each stage of construction. Water storage requirements are currently governing the dam crest elevation, and not tailings.
- The minimum tailings elevation on the upstream face of the tailings dams must be reached prior to the start of the subsequent dam raise.
- Target elevation refers to the modelled discharge elevation of the tailings and does not necessarily coincide with the minimum elevation required to satisfy stability. In all cases, the target elevation is higher than the minimum elevation.
- Maintain the required BAW (beach above water) length in accordance with latest version of the TDP.

4.3.2 Deposition Locations and Constraints

Constraint 1: Maximum Pond Elevation

The average pond (operating pond) must always remain below the NOWL. As much as is reasonably achievable, the maximum pond should also remain below the NOWL. If at any time this is not reasonably achievable, the maximum pond must never exceed the MOWL. The MOWL is defined based on freeboard requirements, routing of the IDF, and storage of the EDF, and is described in the Stage 7 Hydrotechnical Design Report.

Constraint 2: Maximum Tailings Elevation

The maximum allowable tailings elevation against the dams is 0.4 m below the dam crest for each stage of construction.

Constraint 3: Dam Construction and Permitting

Permitting of each construction stage is directly dependent on the actual construction timeline and any delays that may be realized. It was assumed that permitted use of each dam raise would be obtained by December 31 of the corresponding year. Deposition under the permitted dam raise would therefore start on January 1 of the following year.

Constraint 4: Sequencing End of Pipe Deposition

Tailings should be deposited sequentially along each installed line, beginning nearest to the mill, and advancing outward. The tailings pipeline must be flushed prior to re-establishing discharge westward from either the 'X' junction or the 'Y' junction. In the case of transitioning to and from the NRRE, a mill shutdown is required.

Constraint 5: Booster Station

The Booster Station is required for spigotting of tailings at TMA West Dam, TMA North Dam, and the NRRW. The Booster Station is typically considered operable from April 1 to December 31.

Table 4 includes a summary of all design criteria used in the tailings deposition planning.

Table 4: Tailings Deposition Planning Design Criteria

Component	Value	Source / Comment
Tailings production	24,000 to 28,600 tonnes per day [tpd]	Supplied by NGI.
Tailings deposition period	Stage 5: June 2024 to December 2024 Stage 6: January 2025 to December 2025 Stage 7: January 2026 to December 2026	Assumed based on anticipated permitting timeline.
Minimum pond volume during Stage 6 and 7 operations	9.9 Mm^3	Volume based on SRK's Average Year WBM results.
Maximum pond volume during Stage 5 and 6 operations	18.1 Mm^3	Volume based on SRK's 100 Year Wet WBM results.
Dam Crest	Stage 5: 377.1 m Stage 6: 378.1	Stage 6 dam raise construction anticipated to be complete by November 2024.
Maximum Tailings Containment Elevation	Stage 5: 376.7 m Stage 6: 377.7 m	Based on a maximum containment elevation 0.4 m below the crest.
Normal Operating Water Level (NOWL)	Stage 5: 375.1 m Stage 6: 376.1 m	Based on values of 2.2 m below the crest for Stage 5 & 6
Maximum Operating Water Level (MOWL)	Stage 5: 375.6 m Stage 6: 376.6 m	Based on a value 1.7 m below the dam crest and 0.5 m above the NOWL. The MOWL also coincides with the emergency spillway invert.
Deposited tailings dry density	1.35 t/m3	This value aligns with previous deposition plans for NGRR.
Tailings beach slope	0.5% above water 0.9% below water	These values align with previous deposition plans for NGRR.
Tailings Discharge Method	Tailings Spigots (Sub-aerial)	Current deposition strategy and assumed for future deposition. Multiple sequential spigots are typically operated at the same time.
Booster Station	Operational: April 1 to December 31	Booster Station can only be operated from April 1 to December 31

4.3.3 Deposition Targets

The dam crest elevation is currently at 378.1 m. The Maximum Elevation for tailings deposition is therefore 377.7 m before approval of Stage 7 dam raise construction. The Stage 7 Dam Raise required minimum upstream tailings elevations are provided in Table 5.

Table 5: Stage 7 Dam Raise Required Minimum Upstream Tailings Elevation

Dam	Segment	Representative Stationing (to – from) (m)	Volume of Additional Buttress Required (m³)		Minimum Upstream Tailings Elevation[1] (m)
			Downstream	Upstream	
North Dam	1	0+045 – 0+600	50,000	-	**375.8**
	2	0+600 – 0+975	-	-	**375.8**
	4	1+250 – 1+860	42,000	-	**374.2**
	5	1+860 – 2+500	22,000	-	**373.8**
South Dam	1	0 – 0+815	80,000	-	-
	1A	0+815 – 1+400	30,000	-	-
	4	1+900 – 2+050	-	-	**375.5**
	5	2+050 – 2+350	-	-	**374.2**
	7	2+600 – 3+000	25,000	-	-
	8	3+000 – 3+585	6,000	-	-
	9	3+245 – 3+586	Minimal	-	N/A[2]

Notes:
[1] The minimum tailings elevations not met at time of stability modelling given in **BOLD**.
[2] No upstream tailings present at SD9.

4.3.4 Deposition Elevation Survey

Under normal deposition conditions, tailings at the active discharge locations must be surveyed at least once a week.

When the tailings elevation at an active discharge location is less than 0.4 m below the maximum tailings elevation, the elevation survey must be conducted every other day. Survey stakes can be spray-painted to mark the maximum tailings elevation, reducing the frequency of surveying required.

Once tailings discharge at a location is stopped, the tailings elevation at that location should be surveyed within a week.

The tailings elevation should be surveyed at the same location each time for consistency. It is suggested to place stakes within 6 m (20 ft) of the active spigot on both sides if it is safe to do so, even with snow cover during the winter months.

4.3.5 Tailings Pipeline Operation

Operating the tailings pipeline is Mill's accountability and responsibility. The Capital Projects team and Site Service team provide support, as needed.

Tailings pipeline modification is Site Service's accountability and responsibility. The Capital Projects team and Mill team provide support, as needed.

The tailings pipeline and pumps are operated in accordance with the following SOPs (Appendix A):

- MOP-SOP-0060 - Cutting HDPE Pipe
- MOP-SOP-0067 - T412 Pipe Fusion Operation

- MTC-SOP-0050 – Pipe Fusion Operation
- MTC-SOP-0051 – Towing/Relocation HDPE Pipe
- MTC-SOP-0052 - Chain Saw Operation and Cutting HDPE Pipe
- SOP MIL-CND-SOP-0009 – Tailings Line Inspection

4.3.6 RASCI and Reporting

Several departments within NGI at RRM are involved with tailings deposition. A RASCI (Responsible, Accountable, Support, Consulted, and Informed) chart has been developed, as shown in Figure 2. This table is reviewed as part of the annual updates for the Manual. Tailings elevation is reported weekly.

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Project Title: TMA Tailings Discharge & Pipe Relocation

Roles and Responsibilities

Responsible, Accountable, Supportive, Consulted, Informed

RASCI Matrix (Jan. 31, 2022)

Roles		Capital Projects Manager	Tailings Dam Engineer	Project Coordinator/ Dam technician	Superintendent	Mill Manager	Superintendent	Metalurgy Superintendent	Environmental Manager	Water Resources Engineer	Mine Manager	Chief Engineer	Superintendent	EoR	O'Kane	Maintenance Manager	Superintendent	Supply Chain
Deliverable or Task	Status	Project Team				Mill			Environment		Mine Operations			Consultants		Site Services		Others
Phase 1 - Deposition Schedule																		
1.1 Develop Deposition Plan		A	R			I	C		C	S	I	I		R	I	I	C	
1.2 Develop Schedule			R	S	I	A	S	S	I	I	I	I						
1.3 Survey Pond Elevations			I			I			A	R	I	I		I	I			
1.4 Survey Pond Bottoms			I			I			A	R	I	I		I				
1.5 Monitor Pond - Design Thresholds		I	S			I			A	R	I	I						
1.6 Develop Water Balance Model		I	I			C			A	R	C	C		I	S			
1.7 Beach Survey			S						A	R								
1.8 Monthly Presentation Feedback		A	R	I	I	C	I		I	C								
Phase 2 - Operating Tailings Line																		
2.1 Commission Tailings Line		A		R	S	C	S		I	I							S	S
2.2 Maintain Infrastructure - HDPE						C	S		I	I						A	R	S
2.3 Maintain Infrastructure - Pumping						A	R		I	I						I	S	S
2.2 Maintain Infrastructure - Instruments			A	R					I	I								S
2.4 Switch Spigot Discharge Locations			I	I		A	R		I	I								
2.5 Inspect Tailings Lines			I			A	R		I	I						I		
2.6 Monitor and Record Flow Rates		I	I	I		A	R		I	I	I	I					S	
2.7 Install New Tailings Lines		A	C	R	S	C	S		C	I							S	S
2.8 Install Booster Pumps		A	C	R	S	C	S		C	I								S
2.9 Water Quality Sampling			I						A	R								
2.10 Dust Management					R		R		A				R					
Phase 3 - Tailings Line Modifications																		
3.1 Detailed Work Plan		C	R	C	S	A	R		I	I	I	I		I		I	S	
3.2 Deactivating Tailings Line		I	I	C	S	I	S		I	I				I		A	R	
3.3 Moving Tailings Line		I	I	C	S	I	S		I	I				I		A	R	
3.4 Reconnecting Tailings Line		I	I	C	S	I	S		I	I				I		A	R	
3.5 Geotechnical Instrumentation		A	R		S												S	
3.6 Cutting Back Spigots			I						A	R						I	S	

R	Responsible	Assigned to complete the task or deliverable
A	Accountable	Has final decision-making authority and accountability for complete. Only 1 per task.
S	Support	Provides support and assistance to the responsible role
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action
I	Informed	Must be informed after a decision or action

Figure 2: RASCI Chart for Tailings Deposition and Pipeline Relocation

4.4 Dam Raise Construction

The detailed design report for Stage 7 raise was finalized (CRW3295-4910-BA10-MEM-0005) and submitted to NGI in November of 2024. Stage 6 raise construction to dam crest elevation of 378.1 m was completed in 2024. The construction of Stage 7 to the dam crest elevation of 379.1m is planned to complete before the end of 2025.

4.4.1 Construction Execution Plan

Capital Projects Construction team prepared an execution plan for each TMA stage of construction. The execution plan is reflective of the EOR's design and specifications, RRM climate conditions and procurement and availably of required resources. The execution plan includes the following items.

- Construction Schedule Considerations
  - Placement and compaction of rockfill can be conducted year-round in areas where the foundation has previously been prepared and approved.
  - Placement of the clay core and filters should not take place during freezing conditions and should typically be completed before the start of winter.
  - Buttresses must be completed in each Design Zone prior to raising of the crest within the Design Zone to meet factor of safety requirements.
  - Borrow areas for clay and filter material must be developed prior to construction.
- Foundation Preparation
  - Foundation surfaces require approval by the EOR and NGI's Representative prior to fill placement.
  - Foundation preparation specifications are outlined in the Technical Specifications.
- Water Management During Construction
  - Surface runoff and dam seepage are collected through perimeter ditches and reported to the eleven sumps for pumping back to TMA or discharging to the environment if meeting the discharge criteria.
  - Interception dewatering trenches excavated through the peat should be used to drain the peat and direct water away from foundation areas.
- Erosion and Sediment Control
  - The proposed Erosion and Sediment Control (ESC) plan consists of working within the established seepage collection ditches which will prevent sediment from leaving the TMA Area.
  - Where work is performed outside of the seepage collection ditch area, staked silt barriers should be placed to prevent sediment from leaving the construction areas.
- Ultimate Pre-loading Buttress Placement
  - The placement of fills for the Ultimate pre-loading design is optional, and completion of the Ultimate pre-loading fills is not required prior to the issuing of the letter of conformance for the TMA Stage 7 raise design.
  - Buttress placement will progress from downstream to upstream with the lowest elevation buttresses completed in advance of the start of construction of the higher elevation buttresses.
  - Pre-loading fills shall be placed according to the priority list provided by EOR.

4.4.2 CQC and CQA

The EOR (SRK) prepares the drawings and technical specifications for each TMA stage of construction. NGI performs the construction, while SRK provides oversight for construction quality control (CQC) and construction quality assurance (CQA).

A Quality Management Plan for CQC and CQA activities is developed by SRK based on the quality requirements defined in the technical specifications.

SRK prepares the construction records report (CRR) for each completed raise, summarizing the construction activities. The CRR includes construction record drawings, CQC and CQA test results, construction observations, a summary of design changes, documentation of special events during the construction season, site instructions, requests for information (RFIs), and a summary of non-conformance reports (NCRs). The report is typically due 60 days after the completion of construction.

After the completion of each annual TMA dam raise, the EOR issues a letter of conformance (LOC) to NGI.

4.4.3 Instrument Installation and Raise

The instrumentation at the Rainy River TMA plays a critical role with respect to construction operations. Vibrating wire piezometers (VWPs), slope inclinometers (SIs), magnetic extensometers (MEs), shape array accelerometer (SAA), and settlement plates (SPs) are currently used to monitor pore water pressure (PWP) development, lateral deformations, and settlement, respectively.

As part of the Stage 7 raise design, the EOR developed an instrumentation plan to replace damaged instrumentation and install new instrumentation that can be used to monitor the performance of the dam during Stage 7 raise construction. The proposed instruments will be installed prior to the start of Stage 7 construction, as several instruments were required to monitor the foundation performance during fill placement. Table 6 summarizes the summary of installed instruments.

Table 6: Proposed Instrumentation to be Installed Prior to Stage 7 Construction

Instrument	Quantity
VWPs	45
Slope Inclinometers	4
Magnetic Extensometers	0
Standpipe Monitoring Well	0
Shape Array Accelerometer	0
Drillholes	19

TMA Stage 7 raise design assumes Base-Case PWP conditions, which needs to be confirmed by instrumentation monitoring prior to the beginning of construction. Should observed PWP response exceeds the Base-Case PWP conditions, the following mitigation actions may be required:

1. placement of additional buttressing fill at the downstream toe,
2. temporary halt to fill placement in affected areas until acceptable PWP dissipation is achieved to satisfy the stability criteria, or
3. increase or add wick drain foundation mitigation to accelerate PWP dissipation.

Details regarding instrumentation raises for existing instrumentation, and installation were prepared by the EOR and included in the IFC drawing package in the detailed design report for Stage 7 raise.

Figure 3 presents the RASCI for the instrumentation. The list of SOPs related to instrumentation is summarized below and included in Appendix A of the Manual (Part II).

- DAM-SOP-0001 - Slope Inclinometers
- DAM-SOP-0002 - Slope Inclinometer Data Processing
- DAM-SOP-0003 - Data Logger Installation, Troubleshoot, and Maintenance
- DAM-SOP-0004 - Piezometer Installation and Troubleshoot
- DAM-SOP-0005 - Magnetic Extensometer
- DAM-SOP-0006 - Standpipe Piezometers
- DAM-SOP-0007 - Settlement Plate
- DAM-SOP-0008 - Shape Array Installation and Data Processing
- DAM-SOP-0009 - Geotechnical Weekly Reporting
- DAM-SOP-0010 - Instrument Raise Procedure
- DAM-SOP-0011 - Water Level Piezometer Installation
- DAM-SOP-0012 - Instrument Winterization
- DAM-SOP-0013 - MARR Weather Station Maintenance and Troubleshooting
- DAM-SOP-0015 – Safety Inspection of Dams

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Project Title: TMA Instrumentation

Roles and Responsibilities

Responsible, Accountable, Supportive, Consulted, Informed

RASCI Matrix

May 20, 2023

	Deliverable or Task	Status	Capital Projects Manager	Tailings Dam Engineer	Tailings Dam Technician	Construction Superintendent	Project Coordinator	Surveyor	Mill Manager	EoR
		Roles	Project Team						Mill	Consultants
Phase 1 - Instrumentation										
1.1	Collection and storage of instrument data.			A	R					C
1.2	Maintaining the record of data perform quality assurance of the data collection and reduction.		A	R	S					S
1.3	Timely reporting of instrumentation data, which includes comparing data to thresholds.		A	R	S	I	I		I	S
1.4	Responding to instrument threshold exceedances to assess dam performance.			A	S	I	I		I	R
1.5	Instrumentation data assessment in semi-annual reports.		A	S	S		I		I	R
1.6	Plan and execute instrumentation update project		A	S	I	S			I	R
Phase 2 - Instrument Raises										
2.1	Creat instrument inventory for dam raise including procurment of instruments, devices and accessories			A	R		S			I
2.2	Plan instrument raise according to construction schedule			A	R		S			I
2.3	Overall QA/QC process for instruments			A	R	S	S			I
2.4	Pre/post instrument survey			I	S	A	I	R		
2.5	Verifies adherence to IFC and SOPs			A	R	I	I	I		C
2.6	Complete raise/trench/burrito			A	R	S	S			
2.7	Verify complete forms and photos are stored in appropriate location			A	R					

R	Responsible	Assigned to complete the task or deliverable
A	Accountable	Has final decision-making authority and accountability for complete. Only 1 per task.
S	Supportive	Provides support and assistance to the responsible role
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action
I	Informed	Must be informed after a decision or action

Figure 3: RASCI Chart for Geotechnical Instrumentation

4.5 Environmental Protection

The TMA is surrounded by a wildlife fence installed to reduce wildlife contact with the TMA. The wildlife fence is inspected for any damage at least once per month.

To reduce the risk of airborne tailings during high wind events, tailings will be kept saturated with water whenever possible. In situations where water saturation is not feasible, alternative dust suppression methods will be employed. One such method is the application of latex dust suppressants, where appropriate.

5. MAINTENANCE

5.1 Maintenance Objectives

The key maintenance objectives at RRM's tailings and water management operations focus on safety, operational reliability, and cost efficiency. These goals prioritize personnel and equipment safety, aiming to reduce accidents through regular maintenance. Additionally, the objectives emphasize maintaining equipment readiness to minimize downtime and enhance productivity. Cost efficiency is pursued by optimizing maintenance practices to extend asset lifecycles while minimizing expenses. Environmental responsibility is also critical, to ensure and prevent spills and emissions, thereby supporting sustainable operations. Compliance with industry regulations ensures legal adherence, while fostering a culture of continuous improvement helps enhance overall performance.

Additionally, the risk assessment and management plan (Section 7) was utilized in preparing maintenance requirements by identifying potential risks and determining their impacts on asset performance. Critical controls, such as regular inspections, condition monitoring, and performance assessments, was applied within the plan to evaluate the condition of assets and identify areas requiring maintenance. These controls help prioritize maintenance tasks based on the severity and likelihood of risks, ensuring that the most critical issues are addressed first. By incorporating risk assessments and the application of these critical controls, the maintenance requirements are effectively prepared to ensure optimal asset performance, minimize downtime, and enhance overall reliability.

5.2 Maintenance Strategies

Preventative Maintenance, also called Routine Maintenance, is the planned, recurring maintenance activities conducted at a fixed or approximate frequency and not typically arising from results of surveillance activities.

Predictive Maintenance is the pre-defined maintenance conducted in response to results of surveillance activities that measure the condition of a specific component against performance criteria.

Event-Driven Maintenance, also called Corrective Maintenance, is in the event of unusual conditions or incidents that require immediate maintenance actions.

The maintenance work is carried out by various NGI departments, including Site Service, Mill, Environment, and Capital Projects, each following the procedures outlined in this document. Maintenance records are retained by the respective teams, and the maintenance process is illustrated in the flowchart in Figure 4.

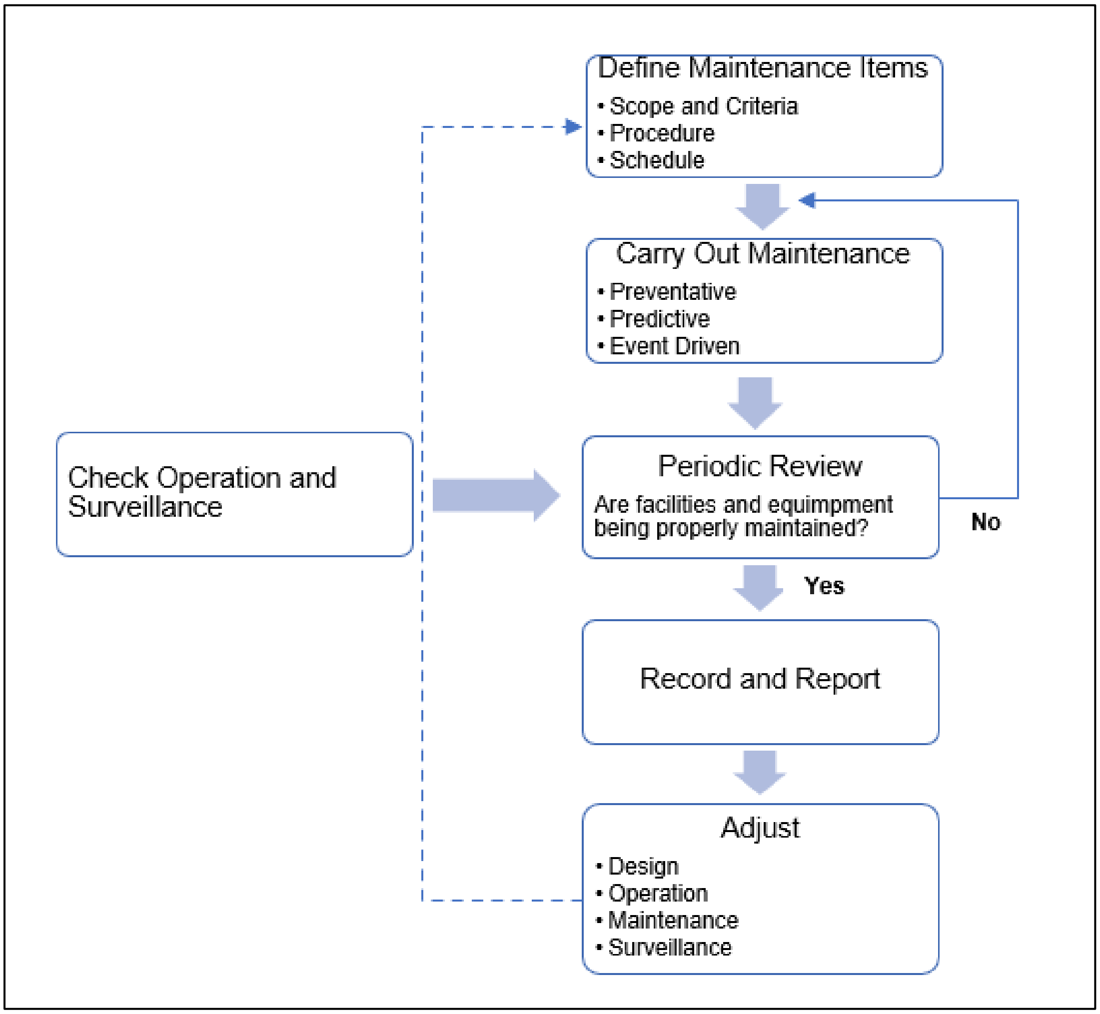

Figure 4: Maintenance Flow Chart

5.3 Maintenance Procedures

5.3.1 Preventative and Predictive Maintenance

Within the TMA, several types of equipment and infrastructures require regular maintenance to ensure safe and efficient operations. These key equipment and infrastructures include:

- Mechanical Equipment
- Electrical Equipment
- Roads and Infrastructures
- Instrumentation and Monitoring Systems

Figure 5 shows the location of the above-mentioned equipment and infrastructures within the TMA.

Figure 5: Location of Key Equipment and Infrastructures within the TMA

Mechanical Equipment

The list of mechanical equipment within TMA is provided in Section 3.4. The preventive and predictive maintenance activities for the mechanical equipment include:

- Packing mechanical seals inspections & adjustments.
- Checking oil levels and top-up as required. Re-lube grease points.
- Motor bearing temperature checks.
- Motor bearing vibration monitoring.
- Pump discharge pressure and flow checks.
- Pump structure & piping integrity checks.
- Belt inspection on belt driven pumps.
- Regular performance tests on seepage pond pumps.
- Annual calibration and maintenance as required on flow meters.
- Replacing pipe, bends and fitting components as required.
- Removing accumulated debris from valves, reducers and off takes.
- Ensuring no valves on the core of the dam.
- Placing liner beneath pipeline where it crosses the core.
- Carryout maintenance as recommended by fitting and valve suppliers.
- Regularly inspect major wear components.
- Maintaining emergency dump ponds in a dewatered/empty state.
- Maintaining and replacing system instrumentation as required.
- Regular performance tests on seepage pond pumps
- Annual calibration and maintenance as required on flow meters.
- Replacing pipe, bends and fitting components as required.
- Removing accumulated debris from valves, reducers and off takes.

- Ensuring no valves on the core of the dam.
- Placing liner beneath pipeline where it crosses the core.
- Carryout maintenance as recommended by fitting and valve suppliers.
- Regularly inspect major wear components.
- Mobile equipment maintenance is performed based on operating hours and as otherwise required. The maintenance schedule uses the manufacturer's recommendations.
- Changes to pumping configurations, ditching, piping, or operating parameters need to be approved by the Mill Manager and the Environmental Manager.

Additional details including step-by-step instructions regarding the maintenance activities for the mechanical equipment are included in the following documents (Appendix A):

- SAP Maintenance Plan 2905
- SAP Maintenance Plan 3402, 3403, 3561
- SAP Maintenance Plan 800029200507
- SOP MIL-CND-SOP-0009

Electrical Equipment

The list of electrical equipment within TMA is provided in Section 3.4. The preventive and predictive maintenance activities for the electrical equipment include:

- Checking lightings and performs repairs as required.
- Inspecting pump motors and drive system.
- Checking electrical cabinet internals.
- Trimming vegetation growth around electrical components.

Additional details including step-by-step instructions regarding the maintenance activities for the electrical equipment are included in the following documents:

- SAP Maintenance plan 4586
- SAP Maintenance plan 4141

Roads and Infrastructures

The roads and infrastructures within the TMA mainly include:

- Access and haul roads
- Tailings and water management dams and buttresses
- Seepage collection and water diversion channels
- Seepage collection ponds
- Flood protection berms

The maintenance activities for the roads and infrastructures include:

- Repairing erosion gullies, local slumps or slides in the dam face, diversion ditches or spillway channels.
- Clearing vegetation along the diversion channels, seepage collection ditches and sumps.
- Removal of beaver dams along the diversion channels, seepage collection ditches and sumps.
- Re-grading the dam crest, as required, to prevent local ponding and direct surface runoff towards the pond.
- If an annual survey determines necessary, correct dam crest, overflow spillway and diversion channel invert irregularities to avoid concentrated runoff.
- Maintaining emergency dump ponds in a dewatered/empty state.
- Maintaining and replacing system instrumentation as required.

The maintenance activities related to the roads and infrastructures are typically identified through the following activities:

- Dam safety inspections – conducted by the EOR on annual basis.
- Dam safety review – conducted by an independent consultant every 5 years.
- Monthly visual inspections – carried out by the RTFE and TDEIT on monthly basis.
- Weekly visual inspections – carried out by the TDTs on weekly basis.
- During construction activities – identified by construction crews.

The identified maintenance issues are tracked in appropriate excel tracking sheets described in Part I Section 3.3) and addressed based on their priority rankings.

Instrumentation and Monitoring Systems

The instrumentation and monitoring systems within the TMA mainly include:

- Vibrating wire piezometers
- Water level sensors
- Slope inclinometers
- Shape array accelerometers
- Magnetic extensometers
- Settlement plates
- Survey monuments
- Instrumentation data Loggers and hub systems

The maintenance activities related to the instrumentation and monitoring systems include:

- Periodic calibration of instruments follows the manufacturer's recommendations. Water monitoring instruments are calibrated and maintained by the Environment Department. Geotechnical instrumentation calibration records are maintained by the Dam Monitoring Team.
- Malfunctioning or damaged instruments may require repair or replacement per manufacturer guidelines and in consultation with the EOR or an approved procedure. Maintenance information is recorded in the instrument master sheets.
- In the event of replacing dam instruments, several consecutive readings of the old and new instruments are required to ensure continuity of the data records.
- Monthly inspections are conducted to maintain and verify the active instrumentation inventory. This practice ensures the ongoing functionality, accuracy, and reliability of the instruments, allowing for the timely identification and resolution of any issues (Instrumentation Inventory).

The maintenance activities related to the instrumentation and monitoring systems are described in detail in the following SOPs (Appendix A):

- DAM-SOP-0001 - Slope Inclinometers
- DAM-SOP-0002 - Slope Inclinometer Data Processing
- DAM-SOP-0003 - Data Logger Installation, Troubleshoot, and Maintenance
- DAM-SOP-0004 - Piezometer Installation and Troubleshoot
- DAM-SOP-0005 - Magnetic Extensometer
- DAM-SOP-0006 - Standpipe Piezometers
- DAM-SOP-0007 - Settlement Plate
- DAM-SOP-0008 - Shape Array Installation and Data Processing
- DAM-SOP-0009 - Geotechnical Weekly Reporting
- DAM-SOP-0010 - Instrument Raise Procedure
- DAM-SOP-0011 - Water Level Piezometer Installation

- DAM-SOP-0012 - Instrument Winterization
- DAM-SOP-0013 - MARR Weather Station Maintenance and Troubleshooting
- DAM-SOP-0014 - Dam Access and Earthworks on & around Dams
- DAM-SOP-0015 - Safety Inspection of Dams

5.3.2 Event-Driven Maintenance

RRM staff will provide a means to assess event-driven maintenance needs through response action planning. Response planning is based on risk prioritization, maintenance crew mobilization or "call out" procedures, required repairs and replacement material availability. Event-driven maintenance actions will follow applicable safety and performance procedures. Unusual conditions that require maintenance are to be communicated to maintenance staff as per related RASCI.

Pipeline Leaks or Breaks

In the event of a pipeline leak or break the system is de-energized and repaired as follows:

- Inspect entire pipeline.
- Repair or replace affected components.
- Repair damage caused by a leak or break.
- Remediate area of released tailings.
- Reclaim disturbed areas.
- Follow spill reporting procedures.

Earthquake Occurrence

After an earthquake, the following are undertaken:

- Repair the damaged roads, collection ditches, emergency spillway, and diversion channels.
- Repair the slumped/ cracked section of dam rockfill zones.
- Restore dam crest elevation if survey results indicate settlements.
- Clear spill and repair the disturbance to the pipeline and pumps if damage is observed.

Flood Event

Following a flood event, the following will be undertaken:

- Restore the damaged roads, collection ditches, and diversion channels.
- Repair the eroded area of the dams.
- Repair the emergency spillway if damaged.

5.4 Maintenance Schedule

5.4.1 Mechanical Equipment

- Mill Maintenance performs weekly mechanical inspections on pumps.
- Mill Operations conducts weekly function testing on non running pumps.
- Twice per a shift, Mill Operations conducts inspection on the tailings and reclaim pipelines.
- Mechanical repairs are performed as needed, based on priority rankings.

5.4.2 Electrical Equipment

- Mill Maintenance performs an electrical inspection on the pumphouses every 3 weeks.
- Electrical repairs are performed as needed, based on priority rankings.

5.4.3 Roads and Infrastructures

- DSIs are conducted annually.

- DSRs are conducted every 5 years.
- Monthly visual inspections are conducted monthly.
- Weekly visual inspections are conducted weekly.
- Roads and infrastructures repairs are performed as required based on their priority rankings.

5.4.4 Instrumentation and Monitoring System

- Instrumentation and monitoring system troubleshooting is performed as needed, based on priority rankings.

5.5 Maintenance Material Inventory

The maintenance material inventory for the tailings facility is prepared through a joint effort involving all relevant departments, ensuring a comprehensive and well-coordinated approach. Each department, including Capital Projects, Site Services, Mill, and Health and Safety contributes to identifying the required materials, spare parts, and equipment needed for ongoing maintenance activities. This collaborative process ensures that the inventory is aligned with operational needs. By working together, the departments ensure that the inventory is accurate, properly stocked, and responsive to both routine and emergency maintenance requirements, helping to minimize downtime and support the continuous, safe operation of the tailings management. Example of some of these materials that are currently stored at RRM include:

- Bearings, seals, and gaskets for pumps and motors.
- Valve components (e.g., diaphragms, seats, and stems).
- Electrical components such as circuit breakers, fuses, and transformers.
- Pump impellers and motor shafts.
- Pressure gauges and instrumentation parts.
- Rockfill and road surface gravel.
- Instrumentation and monitoring accessories including data loggers, batteries, antennas, cables for antennas, and SI reading probes.

6. SURVEILLANCE

6.1 General

The objective of the surveillance program is to provide confirmation of the adequate performance of the facility, including containment, stability, and operational function by observing, measuring, and recording data relative to potential failure modes and specific operational controls.

The surveillance at TMA involves:

- Visual inspections:
  - Daily pipeline inspections
  - Weekly visual inspections (within active construction areas)
  - Detailed monthly visual inspections
  - Drone inspection when needed
- Annual Dam Safety Inspections
- ITRB site visits
- Dam Safety Reviews
- Special inspections and increased levels of surveillance (when required)
- Instrumentation and monitoring systems

6.2 Visual Inspections

6.2.1 Pipeline Inspection

The visual inspections for tailings and water reclaim pipelines are conducted twice per a 12-hour shift by the Mill Operations. RASCI chart for the pipeline inspections is shown in Figure 6. The pipeline inspections are carried out in accordance with the following SOP (Appendix A):

- SOP MIL-CND-SOP-0009 – Tailings Line Inspection

6.2.2 Dam Inspections

Dam surveillance consists of the following weekly and monthly inspections:

- Minimum weekly visual inspection of active construction areas within the tailings dams and seepage collection systems during summer construction season. A more detailed inspection is carried out at the end of the construction season.
- Minimum monthly detailed visual inspections of side-wide dams throughout the year.

These inspections are carried out by RTFE, TDEIT, and TDTs and other trained onsite personnel. They are designed to detect and observe any change in conditions that could indicate a concern with the performance or operation of the dams. Dam maintenance requirements are captured in Action Tracker which identifies actions and responsibilities stemming from dam inspections. The Capital Projects Manager and RTFE are responsible for maintaining and ensuring actions are completed in a timely manner, according to their priority levels. The dam visual inspections are carried out in accordance with the following SOP (Appendix A):

- DAM-SOP-0015 - Safety Inspection of Dams

The weekly and monthly site inspection checklists can be found in Appendix C.

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Project Title: Tailings and Water Line Inspections

Roles and Responsibilities
Responsible, Accountable, Supportive, Consulted, Informed

RASCI Matrix

#	Deliverable or Task	Status (Roles)	Projects Team: Capital Projects Manager	Projects Team: Tailings Dam Engineer	Projects Team: Tailings Dam Technician	Mill: Mill Manager	Mill: Superintendent	Environment: Environmental Manager	Environment: Designate	Site Services (SS): Maintenance Manager	Site Services (SS): Superintendent	Safety: Health & Safety Manager	Safety: Designate	Others: Engineer of Record	Others: Regulators	Others: All workers and visitors at site	Mine Ops: Operations Manager	Mine Ops: Superintendent / Survey
Phase 1 – Daily Inspections																		
1.1	Twice/12-hr Shift Drive Inspection of Active Mill Lines					A	R											
1.2	Once/24-hr Drive Inspection of Active SS Lines									A	R		S					
1.3	Once/12-hr Drive Inspection of Active Ops Lines										S						A	R
1.4	Complete Mill Inspection Form (Appendix A) and Digitally Store N:\Mill\Mill Report Sheets\Line patrol-Tailings			I		A	R	I		I	I							
1.5	Complete SS Inspection Form (Appendix A) and Digitally Store Site Services forms TBD Site Services location TBD			I		I	I	I		A	R		S				I	I
1.6	Complete Ops Inspection Form (Appendix A) and Digitally Store Ops forms TBD Ops location TBD			I		I	I	I		I	I						A	R
1.7	Clear shrubs and bushes, as required to detect potential leaks									A	R							
Phase 2 – Weekly/Monthly Inspections																		
2.1	During instrumentation readings, inspect pipelines for spills			A	R	I												
2.2	Weekly inspection, by means of Drone or other, ~2.5 km of Lines west of Hwy 600, SW of WMP. Complete forms, as per item 1.2.			I				I		A	R							S
Phase 3 – Semi-Annual & Irregular Inspections																		
3.1	Inspection after commissioning and all irregular repairs on Mill lines		I	I		A	R	I	S									
3.2	Inspection after commissioning and all irregular repairs on SS lines							I	S	A	R							
3.3	Walk all active Mill lines in Spring (fluctuating temperatures)		I	I		A	R	I	S									
3.4	Walk all active Mill lines in Late Fall (fluctating temperatures)		I	I		A	R	I	S									
3.5	Walk all active SS lines in Spring (fluctuating temperatures)							I	S	A	R							
3.6	Walk all active SS lines in Late Fall (fluctating temperatures)							I	S	A	R							
Phase 4 – Actions & Reporting Requirements																		
4.1	Signs to be made for offsite lines, including unique location identifiers and Main Security phone (1-807-482-0955)									A	R							I
4.2	Report immediately any leaking water/tailings lines to Environment at 1-807-632-6152								S			A				R		
4.3	Once contacted, Security Personnel to implement "Reported Spill" procedure. TBD		I	I	I	I	I	I	I	I	I	A	R					
4.4	If a leak is detected, implement "Tailings and Water Line Leak" procedure. TBD		S	S		S	R	A	R	S	R	S		I	I			
4.5	Verify compliance to regulatory commitments on pipelines			I		R	S	A		R	S				I			

R	Responsible	Assigned to complete the task or deliverable
A	Accountable	Has final decision-making authority and accountability for complete. Only 1 per task.
S	Support	Provides support and assistance to the responsible role
C	Consulted	An adviser, stakeholder, or subject matter expert who is consulted before a decision or action
I	Informed	Must be informed after a decision or action

Note
Certain lines belong to different groups. A map of pipeline ownership is attached and should be read in tandem with this RASCI.
Pit to Sump 5 and Pit to MRP is owned by Ops.

Figure 6: RASCI Chart for Visual Inspections

TDTs and Trained Onsite Personnel shall:

- Conduct weekly inspections using the Weekly Site Inspection Checklists developed by the RTFE. The inspections can be documented on paper copies or by using the appropriate checklist on the Dam Inspection App.
- During dam construction season, use the weekly checklist to inspect the tailings dams and affiliated structures once a week within the construction impacted areas.
- During buttress construction (winter), use the monthly checklist to inspect the construction areas once per month.
- Notify the RTFE and TDEIT of any abnormal or unusual conditions.
- Forward completed Weekly and Monthly Site Inspection Checklists to the RTFE and TDEIT for timely review.

The TDEIT shall:

- Conduct monthly detailed inspections using the Monthly Site Inspection Checklists developed by the RTFE. The inspections can be documented on paper copies or by using the appropriate checklist on the Dam Inspection App.
- Notifying RTFE, and Capital Projects Manager of any identified deficiencies following the completion of each inspection.
- The monthly detailed inspections will be conducted at the following locations:
  - Tailings Management Area (TMA)
    - North Dam (including NDSCS #3, #4, and #5)
    - South Dam (including SDSCS #1 and #2)
    - West Dam 4
    - West Dam 5
    - Reclaim Structures
  - Water Management Structures
    - Water Discharge Pond Dam
    - Settling Pond Dam
    - Water Management Pond Dams 1, 2, and 3 (including SCS #1 and #2)
    - West Creek Pond Dam
    - Stockpile Pond Dam
    - Sediment Pond Dams 1, 2, and 3
    - Mine Rock Pond Dam
    - Teeple Creek Pond Dam
    - Clark Creek Pond Dam
    - South Runoff Pond Dam

The RTFE shall:

- Prepare and revise the Weekly and Monthly Site Inspection Checklists as required.
- Review the findings from the completed weekly and monthly site inspections.
- Conduct detailed monthly visual inspections as required.
- Notifying Capital Projects Manager of any identified deficiencies.
- Present the results of the inspections during the monthly Tailings Management System (TMS) presentations.

6.3 Annual Dam Safety Inspections

Annual inspections are intended to be part of a more thorough review of the condition of the facility and are conducted by the EOR. The inspections will include the following key items:

- Visual inspection of the facility by the EOR, including taking appropriate photographs of the observed conditions.
- Review of routine inspection records prepared by operating personnel in the past year.
- Review whether recommendations from previous year's inspection(s) have been addressed, and any incidents or actions arising from those previous recommendations.
- Review of instrumentation and monitoring data.
- Review of tailings deposition and water management operations of the facility including reconciliation of the annual water and mass balance. Review of pond levels (and depth) and freeboard, and reports of any incidents (and remedial measures) that may have occurred.
- Review construction records, QA/QC data and as-built information on dam construction and beaching.
- An evaluation and interpretation of the structural performance of the dam and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year; and

- Evaluation of the OMS Manual and EPRP to assess the need for updating.

The findings from the DSI are summarized and documented in a report which is typically provided to NGI in fall in a draft format and is ultimately finalized before the end of the calendar year. The 2024 DSI was carried out during the first week of June. The RTFE is responsible for organizing the DSIs.

An additional inspection will be carried out by the Dam Safety Review (DSR) consultant every 5 years, as required. The latest DSR was conducted in 2021, so the next inspection must be completed by 2026 or earlier.

6.4 ITRB Site Visits

A high-level review of the TMA design and construction is part of the responsibilities of the Independent Technical Review Board (ITRB), which meets with the Project Team (NGI and involved consultants) in Spring and Fall. The Spring session is typically held virtually, while the Fall session is conducted in-person and includes a brief site tour.

RTFE is responsible for organizing the meetings and tracking the recommendations from past ITRB meetings, with support from other NGI teams.

6.5 Dam Safety Reviews

The Canadian Dam Association (CDA) Dam Safety Guidelines (CDA 2019) recommends a comprehensive dam safety review be conducted every 5 to 10 years, depending on the consequences of failure and changes in the dam or surroundings, during operations, prior to decommissioning and following closure, by a qualified 3rd party consultant. Dam Safety Guidelines (CDA, 2013) state that it is the "owner's responsibility to ensure that the findings of the review engineer will not be influenced by his or her prior participation in the design, construction, operation, maintenance or inspection of the dam under review," and also that "it is advisable that the same review engineer not carry out two consecutive safety reviews of the same dam."

The comprehensive review provides independent verification of:

- Safety and environmental performance of the facility.
- Adequacy of the surveillance program.
- Adequacy of delivery of OMS Manual requirements.
- Design basis with respect to current standards and possible failure modes; and
- Compliance with new engineering standards (including analysis to confirm if necessary).

The initial DSR was completed in 2021 by SRK, which at the time had no prior involvements with the project. The subsequent DSR is scheduled to be conducted in 2026.

6.6 Special and Event Driven Inspections

Special and event driven inspections are required in response to unusual or uncertain performance a structure or element or unusual operating conditions or loading is applied to the TMA dams. These inspections will be designed to provide a better understanding of the performance of the structure, ensure developing issues are assessed and if required, appropriate actions are taken.

A special inspection may be required by the RTFE, when unusual conditions are discovered by routine site surveillance or detected by the instrumentation monitoring system, indicating possible poor performance of a design element or elements during normal operating conditions. Special inspections are initiated and managed by the RTFE. The RTFE will coordinate with other resources for arranging the inspections.

The increased site surveillance is normally required when there are unusual changes in loading and operating conditions at the dam (e.g., pond surcharge, spilling) or following the occurrence of natural events (e.g., flood, earthquake). Increased site surveillance can be initiated by RTFE and or Capital Projects Manager. Appendix B includes Surveillance Response Plan (SRP) for high pond, post earthquake, increase seepage and observed dam deformation scenarios.

When a special inspection and/or increased surveillance is required, the RTFE shall:

- Advise the Capital Projects Manager.
- Identify requirements for increased surveillance in consultation with the Capital Projects Manager.
- Identify the information needed for assessment of dam safety: instrument readings, pond operations, equipment availability, visual observations, etc.
- Document the requirements for increased surveillance.
- RTFE to discuss findings with the Engineers of Record.

The Capital Projects Manager shall:

- Initiate special inspections and/or increased levels of surveillance during or following any major flood, earthquake, or abnormal behaviour or event which may have or could damage equipment, structures or facilities affecting the safety of the dams.
- Initiate increased levels of surveillance whenever indications of potentially unsafe or deteriorating conditions (e.g., seepage, leakage, or deformation) exist.
- Maintain increased surveillance until the condition posing the threat to dam safety has been assessed and/or remediated to an acceptable condition.

Following initiation of a special inspection and/or increased site surveillance, the TDTs and the TDEIT shall:

- Follow the instructions of the RTFE, conduct inspections based on the recommended frequency, and provide completed copies of the inspection checklist.

6.6.1 Pond Surcharge

High Pond is defined as NOWL and higher. When the pond exceeds NOWL, special surveillance and increased surveillance is required for every other day. When the pond exceeds MOWL, special surveillance and increased surveillance is required for every day.

See Appendix B - Surveillance Response Plan for High Pond.

6.6.2 Earthquakes

The RTFE, in conjunction with the Capital Projects Manager and the EOR, will confirm the significance of the seismic event and the level of response required. If the seismic event is notable, an inspection of the facilities must be conducted.

The Surveillance Response Plan for Post-Earthquake Evaluation is included in Appendix B.

6.6.3 Increased Seepage through the Dams

Unusual seepage, which may indicate damage to the tailings dams, will be assessed. The RTFE, in conjunction with the Capital Projects Manager and the EOR, will determine if specific surveillance for the identified seepage through the dams is required.

The Surveillance Response Plan for the Increased Seepage is included in Appendix B.

6.6.4 Observed Dam Deformation

Settlement, sinkhole formation, cracking, offsets, erosion, bulging, or other signs of substantial distress within the tailings dams could indicate deformation and will require assessment. The RTFE, together with the Capital Projects Manager and the EOR, will determine if specific surveillance for the observed dam deformation is required.

The Surveillance Response Plan for Observation of Deformation is included in Appendix B.

6.6.5 Other Unusual Conditions

Other conditions that may require increased surveillance is included in Table 7.

Table 7: Other Unusual Condition for Inspection

Unusual Event	Post – Event Inspection/Surveillance
Rapid snowmelt and/or heavy rainstorms exceeding a 1:5-year, 24 hr rainfall (79.2 mm) and Longer duration heavy rainfall (5-day 70 mm)	• Inspect the (visible) slopes and the crests of all the tailings dams looking for areas of concentrated runoff and erosion. • Make note of saturated ground/soft ground conditions at dam slopes and toes. • Examine dam slopes for indications of localized slumping/instability. Inspect all pump stations and pipelines. • Check the water levels in all ponds/reservoirs against the critical levels and keep checking these levels until the pond/reservoir inflows subside. • Discuss findings with the Engineer of Record. • Check piezometric levels at dam sites if instructed to do so.
Unusually high winds (exceeding 60 kph i.e., 75 % of maximum used in design)	• Check the condition of erosion protection on the upstream slopes of the dams. • Check the instrument data relay device.
Extreme snowpack (170cm cumulative snowfall) (i.e., 120% or greater than normal snowfall at Barwick)	• Check the water levels in all ponds/reservoirs against the critical levels and keep checking these levels until the spring freshet is over. • Evaluate the situation in terms of snowmelt scenarios. • Make predictions as to the expected storage capacity available in ponds/reservoirs. • If deemed necessary, mobilize pumping and mobile treatment equipment to site.

6.7 Instrumentation

Geotechnical instruments were installed within the TMA and water management dams to monitor performance, identify deviations from expectations, and to facilitate implementation of mitigation measures before adverse consequences occur. These instruments include:

- Vibrating Wire Piezometers (VWPs)
- Slope Inclinometers (SIs) and Shape Array Accelerometers (SAAs)
- Magnetic Extensometers (MEs) and Settlement Plates (SPs)

To assess performance throughout the year, a Trigger Action Response Plan (TARP) was developed by the EOR and is updated on an annual basis for the instruments installed within the tailings (TMA) and water management dams at RRM. The following sections describe the 2024 updated instrumentation threshold levels for installed instruments.

6.7.1 Instrument Thresholds

Instruments have been installed to evaluate and assess geotechnical performance of the TMA and water management structures. Thresholds are assigned to specific instruments to highlight instances where deviations from the anticipated performance occurs:

- PWP measurements, using VWPs, are directly linked to the effective stress stability analysis in the TMA Stage 7 Design and Design Basis.

- Vertical survey measurements are directly compared to the freeboard and spillway requirements to ensure hydrotechnical performance.

- Instruments to measure deformation are used to inform lateral deformation in the foundation soils and potential shear plane development.

In 2024, the EOR reviewed and updated the thresholds for instruments installed on site. The terminology and performance indicators used to define the TARP threshold levels were assessed with respect to the MAC OMS Guidelines (Version 2.1). To better align with this document, the terminology used for 2024 instrument thresholds were revised as given in Table 8.

Table 8: Changes to Terminology in 2024

Description	2023	2024
A change greater than the anticipated response.	Trigger	Flag
A more significant magnitude threshold OR A value greater than the value used in the Stage 7 design.	Alert	Trigger

The change in the instrumentation TARP threshold terminology is coupled with the introduction of the Segment Status (Section 6.7.6). The following status categories will be assigned to individual dam segments, informed by instrumentation responses and other observations relevant to each segment:

- Green: Acceptable situation.
- Yellow: Minor risk situation.
- Orange: Moderate risk situation.
- Red: High risk situation.

6.7.2 Vibrating Wire Piezometer Thresholds

There are several geological units within the foundation soils at RRM that respond differently to placement of fill. These differing responses result in multiple piezometric surfaces in the stability analysis. In 2024 Instrumentation Threshold Update for TMA and Water Management Structures report (CRW3295-4910-DT00-MEM-0008.001) the EOR assigned Flag and Trigger thresholds to the WML, BRE, and Clay Core units based on the following:

- **Flag**: A change in PWP that results in a total head greater than anticipated based on the B-bar, fill placement, and PWP response assumptions.
- **Trigger**: A change in PWP that results in a total head greater than the piezometric surface used during Stage 7 Stability and Design.

The water management structures at RRM are static structures which are not subject to fill placement but have limited instrumentation installed. Due to the limited existing instrumentation coverage in the foundation to monitor PWP, a Trigger threshold equal to the ground elevation has been established for all VWPs installed at Water Management Structures:

- **Trigger**: A change in PWP that results in a total head greater than the final ground elevation.

6.7.3 SI and SAA Thresholds

Slope inclinometers (SIs) and Shape Accelerometer Arrays (SAAs) have been installed to monitor embankment and foundation soil displacement. Based on observations in the 2022 and 2023 construction seasons, modified (from 2023) lateral deformation thresholds were adopted as given in Table 9. (CRW3295-4910-DT00-MEM-0008.001).

Table 9: Flag and Trigger thresholds for foundation lateral deformations in TMA and Water

Location	Flag Threshold	Trigger Threshold

TMA Structures **AND** **Water Management Structures with Defined Shear Zones AND/OR movement over the past year[1]**	Rate of displacement greater than 6 mm/mo (0.2 mm/day) within a discrete deformation zone OR Readings indicating the potential of a developing discrete shear deformation zone	One or more of: • Rates of displacement greater than 9 mm/mo (0.3 mm/day) within a discrete deformation zone • Blockage of the slope inclinometer casing due to lateral deformation
Water Management Structures with NO observed movement within the prior year[1]	Rate of total displacement greater than 5 mm/quarter[2] OR Readings indicating the potential of a developing discrete shear deformation zone OR Increasing displacement rate over 3 consecutive readings	

Notes:
[1] As defined in Table 10 of this manual or updated at the EOR's discretion.
[2] A quarter is defined as a 3-month period, as per the monitoring frequency given in Table 12.

6.7.4 Deformation and Settlement Threshold

Thresholds for dam settlement at the crest were developed to ensure adequate freeboard along the dam crest, and sufficient elevation differential between the crest and spillway invert. Survey equipment, including RTK GPS or LIDAR drones are used to measure elevations. It is anticipated that the dam crest and invert elevations may vary based on construction activities, settlement of soil units, or seismic events.

The total settlement Trigger and Alert elevations are as follows:

- **Trigger:** crest or invert elevation < 0.1 m than design
- **Alert:** crest or invert elevation < 0.2 m than design

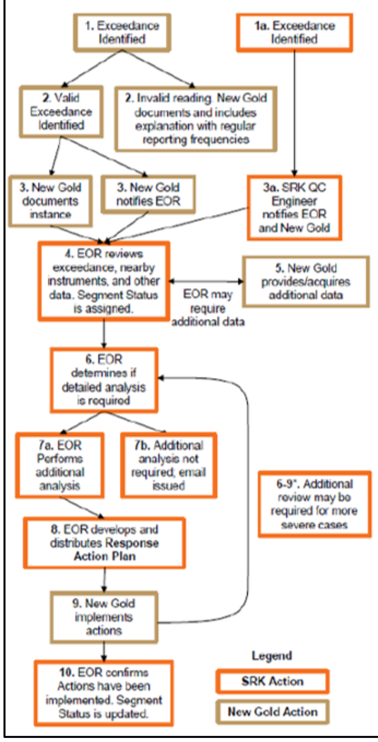
A separate threshold is applied to differential settlements between the crest elevation and invert elevation of the spillway (i.e., the Normal Freeboard):

- **Trigger:** Normal Freeboard < 0.95 m
- **Alert:** Normal Freeboard < 0.9 m

The dam crest elevations and spillway invert elevations are shown in Table 7 (Part I).

6.7.5 Action Plan for Threshold Exceedance

The action plan to address exceedance of the thresholds is shown in Figure 7.



Item	Responsible Party(s)	Notes
1	New Gold	New Gold to identify threshold exceedances at the minimum frequency as defined in *2024 Instrumentation Threshold Update for TMA*.
1a	SRK	SRK to monitor threshold exceedances daily in areas of active construction.
2	New Gold	May include, but not limited to: • Frequency and temperature checks • Checks on database integrity and proper values entered • Systematic errors • Other explainable reason for a reading error New Gold to document any invalid readings and include with the regular reporting frequency, at minimum.
3	New Gold	Once the reading is verified, New Gold should immediately inform the EOR and document the instance.
3a	SRK	SRK notifies both the EOR, other SRK staff, and New Gold.
4	SRK	EOR will review the exceedance. **A Segment-Specific Dam Performance Status (Segment Status) is assigned** based on the Segment Status Escalation Plan in Figure 3.
5	SRK	EOR may request additional information from New Gold, including, but not limited to: • Additional readings • Additional surveys • Photographs or inspection of area
6	SRK	SRK will determine if additional analysis is required. Generally, this will be: • Flag: Additional analysis MAY NOT be required. • Trigger: Additional analysis **REQUIRED** prior to construction proceeding.
7a	SRK	If additional action is required, SRK will perform the additional action.
7b	SRK	If additional action is not required, SRK will issue an email to New Gold detailing the assessed cause of the exceedance.
8	SRK	SRK will develop and distribute a Response Action Plan to New Gold. The Response Action Plan will include: • Documentation of exceedance, required actions, changes to instrument thresholds or monitoring plans • Any updated analysis performed • Any additional relevant information • Any data provided by New Gold • **Any change to the Segment Status, per Figure 3.**
9	New Gold	New Gold implements any actions required by the EOR, which may include, but are not limited to: • Suspension of construction activities • Additional buttressing • Reduction in pond levels • Revise instrumentation thresholds • Daily structure inspections • Increase monitoring and reporting frequency or initial related surveillance response plan • Daily surveys
10	SRK	SRK verifies the actions have been implemented through: • Communication with New Gold • Onsite Quality Assurance • Review of files, including survey data, instrumentation reports, etc. **The Segment Status may also be updated to reflect new conditions, per Figure 3.**

Figure 7: Threshold Exceedance Responsibilities Workflow

6.7.6 Segment-Specific Dam Performance Status

New in 2024, NGI implemented a Segment-Specific Dam Performance Status (Segment Status) which will be assessed for each segment of the TMA dam as informed by the instrumentation installed within that segment, coupled with other dam performance indicators which may include but are not limited to visual observations, TMA water levels, or others.

The Segment Status is intended to align with the risk levels recommended by in the MAC OMS guide (MAC 2021). Table 10 outlines the events or conditions that define the individual Segment Status levels. The Segment Status may be changed for any dam segment at the discretion of the EOR and will be documented with a Response Action Plan.

Figure 8 illustrates the Escalation Plan for the different types of instrumentation or observation exceedances and Figure 9 provides examples of several potential situations resulting in a reduction or escalation of the Segment Status.

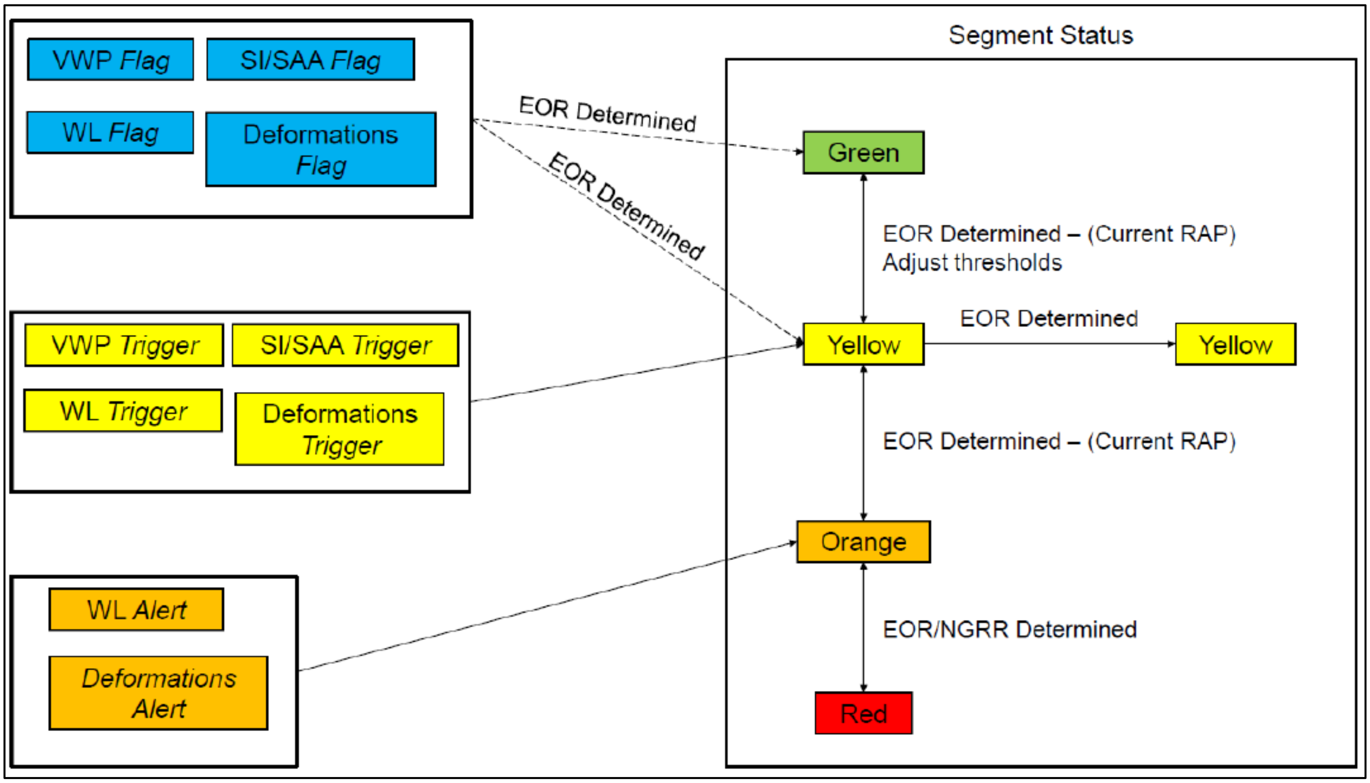


Figure 8: Segment Status Escalation Plan

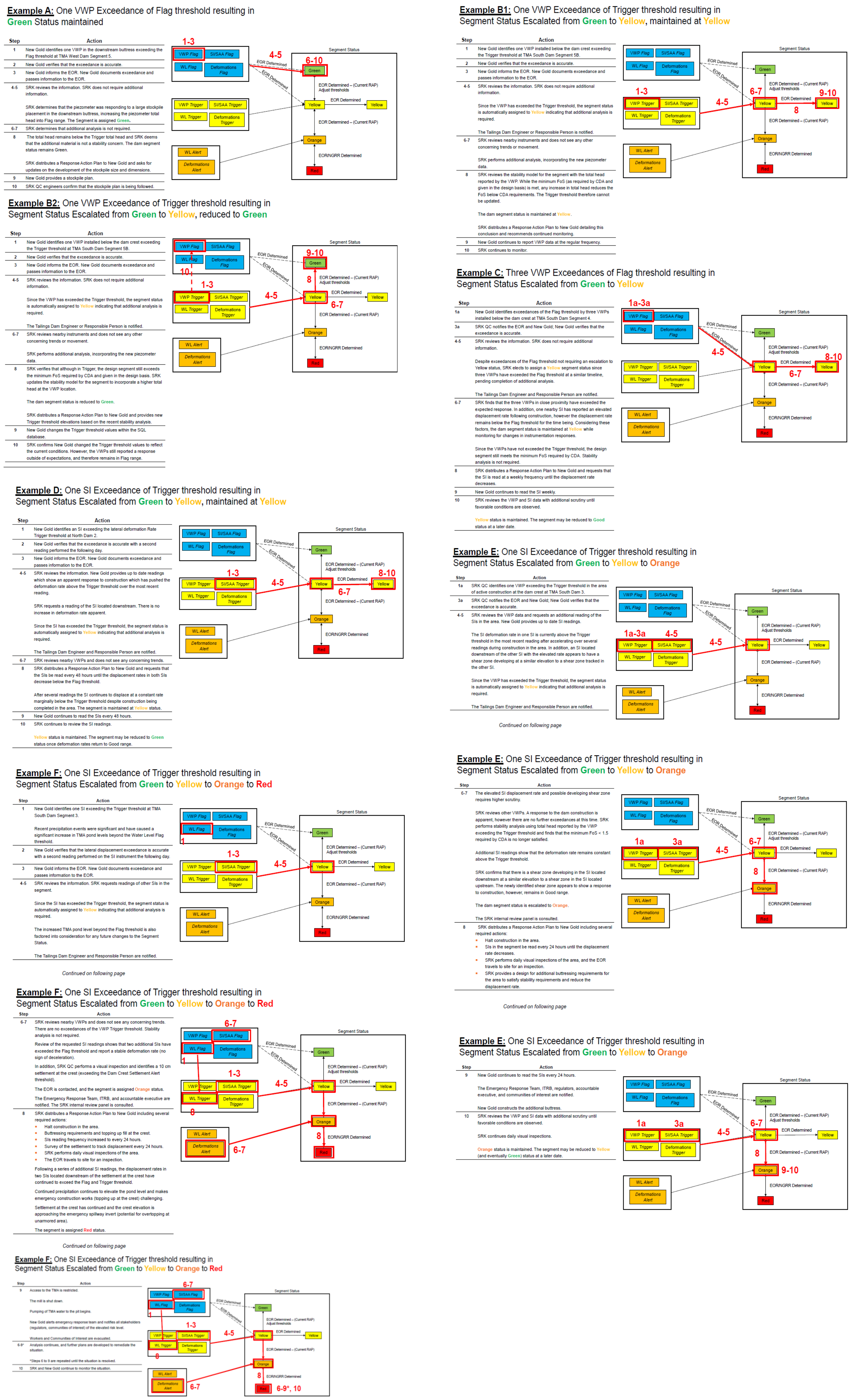


Figure 9: Segment Status Example Scenarios

Table 10: Summary of Events defining Segment-Specific Dam Performance Status Levels

Segment Status	Risk Level	Description	VWP Response	Lateral Deformation Instrumentation Response	Pond Levels	Visual Observations
Green	Acceptable	Performance is in line with performance objectives.	Instrumentation is performing as anticipated, or any reported exceedances are minor. Instrumentation exceedances of the Flag threshold will not cause an immediate escalation of the Segment Status to Yellow, however, the Segment Status may be escalated at the discretion of the EOR.		TMA water levels remain within acceptable limits.	No unfavorable visual observations (i.e., depressions, cracking, differential settlement, bulging, etc.) have been made.
Yellow	Minor	Pre-defined risk management actions may be taken, which may include increased frequency of surveillance and analysis. Additional surveillance activities may be undertaken. The Segment Status may remain Yellow, be reduced to Green, or be escalated to Orange at the discretion of the EOR.	Any VWP exceeding the Trigger threshold. OR Any VWP(s) exceeding the Flag threshold that in the opinion of the EOR represents a low level of risk and requires additional scrutiny.	Multiple lateral deformation instruments within the segment have displacement rates exceeding the Flag threshold. (6 mm/mo or 0.2 mm/day), or any lateral deformation instrument is exceeding the Trigger threshold (9 mm/mo or 0.3 mm/day). OR Any lateral deformation instrumentation exceeding the Flag threshold that in the opinion of the EOR represents a low level of risk and requires additional scrutiny.	TMA water levels have increased beyond the Water Level Trigger threshold.	Minor unfavorable visual observations (i.e., small depressions) have been made.
Orange	Moderate	Pre-defined risk management actions are implemented. Surveillance activities are intensified to monitor the performance indicator in question, related performance criteria, and the effectiveness of the risk management action implemented. The Segment Status may be reduced to Yellow or be escalated to Red at the discretion of the EOR and NGI.	Multiple VWPs have reported exceedances of the Trigger threshold and represent a condition where the FoS = 1.5 requirement as outlined by CDA (2019b) is not met.	Displacement rates in lateral deformation instrumentation remain elevated beyond the Trigger threshold post-construction. OR There is evidence of continuation of discrete deformations across multiple lateral deformation instruments (SIs or SAAs).	TMA water levels have exceeded the Water Level Alert threshold.	Significant unfavorable visual observations (i.e., large depressions, cracking, differential settlement, bulging, etc.) have been made. OR Seepage of TMA water has been observed.
Red	High	An imminent loss of control or a loss of control has occurred. Depending on the potential consequence, this may trigger a very significant pre-defined risk management action (e.g., ceasing ore processing operations) or it may trigger the implementation of the ERP. The Segment Status may be reduced if adverse conditions are sufficiently remediated to the satisfaction of the EOR and NGI.	Porewater pressure reported by VWPs continues to climb beyond the Trigger threshold.	Displacement rates in any lateral deformation instrumentation continue to accelerate beyond the Trigger threshold.	TMA water levels have increased where loss of containment is imminent or has occurred.	Differential settlements at the dam crest have occurred such that the crest elevation is less than the emergency spillway invert elevation. OR Significant unfavorable visual observations (i.e., large depressions, cracking, differential settlement, bulging, etc.) have been made. OR Seepage of TMA water has been observed and is worsening.

The EOR may recommend actions to remediate or respond to potentially unfavorable dam Segment Status as outlined in Table 11. This table is not necessarily exhaustive, and actions may vary depending on the specific instrumentation responses, TMA pond levels, and observations.

Table 11: Responses to Elevated Segment-Specific Dam Performance Status Levels

Segment Status	Potential Actions	Notified Personnel
Green	Standard surveillance activities and frequencies	-
Yellow	Halting construction Additional buttressing Reduce pond volume Increased instrumentation reading frequency Increased survey and inspection frequency Adjustments to instrumentation thresholds	EOR Team RTFE
Orange	All applicable activities in Yellow Preparation for unfavorable conditions; EOR site visit Reassess thresholds and conditions that may result in a high- risk situation	SRK internal review panel; NGI ITRB Emergency Response Personnel Accountable Executive
Red	All applicable activities in Orange; Mandatory EOR site visit Prepare to activate the Emergency Response Plan Evacuate areas of concern and notify Communities of Interest	All stakeholders. Communities of Interest; Regulators

6.7.7 Response Action Plan (RAP)

The EOR will be responsible for issuing a Response Action Plan (RAP) in a timely manner depending on severity of the situation, after evaluation of the threshold exceedance and dam Segment Status. RAPs will be issued for all Trigger exceedances, and also for Flag exceedances which are significant in the opinion of the EOR. The RAP will be distributed to NGI and includes:

- Date of reported exceedance.
- Date EOR was notified.
- List of instruments or observations and corresponding thresholds exceeded.
- Change in status (if required) for affected dam segment.
- Actions required, as listed in Table 9 above.
- Changes to instrument thresholds or monitoring frequency.
- Any additional notes.
- Any supporting documentation or attachments.

NGI will be responsible for implementing any actions required from the RAP in a timely manner or within the period indicated in the plan. The EOR will then ensure the actions have been implemented to their satisfaction.

Actions to be taken in the event of a threshold exceedance are essential for monitoring dam performance and safety.

If any instrument becomes non-functional due to damage or inaccessibility, it will be logged, and NGI and the EOR will be notified. If the instrument is deemed critical for monitoring dam performance by the EOR, the instrument will need to be replaced in an acceptable timeframe as determined by the EOR.

6.8 Other Surveillances

6.8.1 Pond Level

The water elevation in the TMA pond is collected on a continuous basis by a water level sensor, and the real-time data is transmitted through a data logger. The water management ponds are surveyed three times per week (at minimum) during summer months and once a week during the winter months. NGI Environment is responsible for surveying the TMA pond level. Information obtained from the survey is logged in a tracking spreadsheet and kept on the Environment Department SharePoint site. This is required to:

- Calculate the distance to all target and threshold pond operation levels.
- Estimate pond volume including ice of winter months for mill water make-ups.

Should the ponds exceed the NOWL elevation, a plan to return water levels to below the NOWL will be implemented. This plan may include options of transferring water to the Open Pit or shutting down the mill. The decision will be made by the General Manager in consultation with the Environmental Manager, Mill Manager and EOR.

6.8.2 Water License Sampling and Testing

At RRM, water and effluent quality monitoring is conducted in accordance with the prescribed analytes and sampling frequency as required by Amended Environmental Compliance Approval (ECA) #3855-C4E3FF issued on June 28, 2021, by the Ontario Ministry of Environment, Conservation and Parks (MECP). Additionally, the federal *Metal and Diamond Mining Effluent Regulation SOR/2002-222 (MDMER)* and provincial O. Reg 560/94: *Effluent Monitoring and Effluent Limits – Metal Mining Sector* also have prescribed analytes and sampling frequencies that are applicable to RRM.

NGI Environment collects all water and effluent quality samples. Water and effluent quality data are stored by the Environment Department in the environmental data management software Equips by EarthSoft. A water and effluent quality sampling schedule are produced by NGI Environment in Q4 annually for the following year to ensure compliance with ECA and other regulatory sampling requirements.

6.8.3 LiDAR, Bathymetry, and Other Survey

Bathymetric surveys of TMA pond are scheduled annually by the GIS team. These coincide with LiDAR surveys of rest of TMA area.

All dam crest elevations and spillway/diversion channel invert elevations will be surveyed annually to check the dam settlement threshold.

The “Fill Placement Summary” (FPS) is collected weekly, and data is submitted monthly. The FPS includes maps of weekly fill placement and fill elevation heatmaps relative to TMA stage design surface.

In 2024, the bathymetry data was collected in June by NGI GIS team. The LiDAR data was collected in October by an external contractor.

6.9 Surveillance Schedule

The frequency of all surveillance activities including the action owner(s) is summarized in Table 12. .

Table 12: Surveillance Frequency

Type of Surveillance		Facility	Season/Event	Data Collection Frequency [1,2]	Data Submission Frequency[3]	Action by	Notes
Visual Inspection	Routine	Dams	Summer	Weekly in areas of active dam construction[4]	TMS Monthly Presentation	TDT, Trained Personnel	Use the monthly checklist for the month-end week inspection.
				Monthly detailed inspection on all dams		RTFE, TDEIT	
			Winter	Monthly in areas of active buttress construction		TDT, Trained Personnel	When dams are covered by snow.
				Monthly detailed inspection on all dams		RTFE, TDEIT	
		Pipelines	Twice per 12-hour shift			Mill	
	Special	Dams	High Pond	As Required	As Requested	TDT, Trained Personnel, TDEIT RTFE	
			Earthquake/Flood				
			Seepage				
			Dam Deformation				
			Other Unusual Events				
Instrumentation	Vibrating Wire Piezometers[5]	Dams	In Areas of Active Construction	Twice Weekly	Weekly[6]	TDT, TDEIT Trained Personnel	
			Immediately Post Construction	Weekly			
			Operations	Weekly			
	Slope Inclinometers/Shape Array Accelerometers within TMA or for instruments in structures showing significant movement[9]		In Areas of Active Construction	Weekly	Monthly		
			Immediately Post Construction	One reading two weeks after end of construction[8]			
			Operations	Monthly			
	Slope Inclinometers/Shape Array Accelerometers for instruments in structures not showing significant movement[9]		In Areas of Active Construction	Weekly	Quarterly		
			Immediately Post Construction	One reading two weeks after end of construction[7]			
			Operations	Quarterly			
	Ground Elevation Above VWPs		In Areas of Active Construction	Monthly	Monthly		
	Fill Placement Summary[7]			Weekly	Weekly		
	Settlement Plates/Magnetic Extensometers			Monthly	Monthly		
	Pond Elevations	Ponds		Weekly	Weekly	NGI Environment	
	Effective Crest Elevations	Dams		Annually	Annually	NGI Surveyor	
	Effective Spillway/Diversion Channel Invert Elevations	Spillway/ Diversion Channel		Annually	Annually	NGI Surveyor	
Others	Pond and Sump Level	Ponds and Sumps	Summer	Min. three times a week	As Requested,	NGI Environment	Automated, manual reading for calibration
			Winter	Weekly to monthly			
	Water Sampling and Testing	Ponds and Sumps				NGI Environment	See ECA or Part III for details
	LiDAR	Dams	Summer	Annually		External	
	Bathymetry	TMA Pond	Summer	Annually		External	

Notes:
[1] Data collection frequencies may be increased or decreased by the EOR based on observed conditions.
[2] Acceptable deviations for monthly readings are one week. Acceptable deviations for weekly and biweekly readings are one day.
[3] Submission frequency to the EOR.
[4] Areas of active dam construction refers to segments of the tailings dams (ND, SD, WD) where construction activities, such as material placement, have commenced.
[5] VWPs not connected to the automated system shall be read manually, and data should be uploaded to the SQL server at the same frequencies as the standpipe piezometers.
[6] VWP data is logged and available hourly, threshold exceedances will be reported on Monday and Thursday of each week.
[7] Fill placement summary includes maps of weekly fill placement and fill elevation heatmaps relative to TMA Stage 6 Construction IFCs.
[8] End of construction is defined as two weeks after the completion of TMA Stage 5 and any buttress fill placements within a specific design segment.
[9] Instruments outside of the TMA in structures that show significant movement to be determined and adjusted by the EOR.

7. Risk Assessment and Management

7.1 General

In 2023, the EOR with input from NGI completed a Potential Failure Modes Assessment (PFMA), which is considered the first step in assessing and managing dam safety risk (Figure 10). The PFMA identified hazards, initiating events or conditions that could lead to a potential failure mode (PFM). Once PFMs are identified, the second step was to assess the risk in terms of potential effects and likelihood of occurrence. The following sections describes the FMEA procedure and the results of the risk analysis.

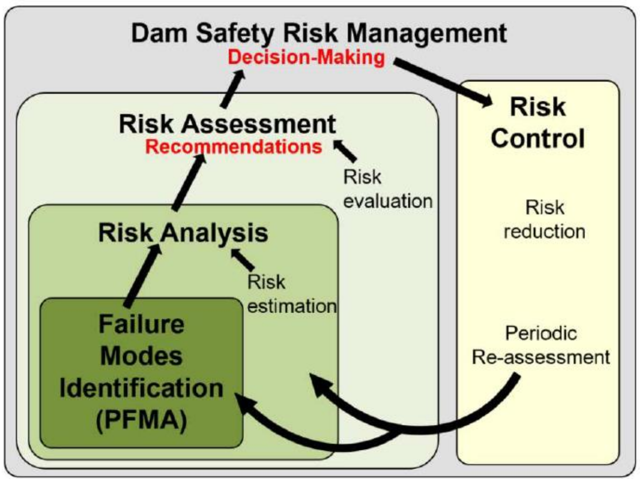


Figure 10: Risk Management Framework. Adapted from FERC (2016)

The overarching objectives of the risk analysis and FMEA were to:

- Prioritize the PFMs identified from the PFMA in terms of risk;
- Communicate the risks in a structured format and improve the general understanding of risk.
- Identify key controls and assess their adequacy.
- Identify any further risk reduction measures to bring facilities within appropriate tolerance levels; and,
- Document the assessment so that it can be reviewed and updated in the future as needed.

The type and severity of the consequences for each failure mode were evaluated using the criteria described in Table 13. Consequence categories include:

- Reputation
- Business
- Environment
- Damage/Loss
- People

In general, the most severe consequence was rated rather than all categories. The type and severity of the consequence were recorded in the Risk Register.

Table 13: Consequence Type and Severity

Category	Consequences				
	(1)	(2)	(3)	(4)	(5)
	Severe	Major	Moderate	Minor	Low

Consequences					
Reputation	Major damage to reputation receiving national or international negative media; Production to cease as a result of statutory body concerns; Potential delay of future project approvals	Major damage to reputation receiving countrywide negative media; Non-compliance with statutory requirements resulting in major fine.	State/Provincial negative media; Non-compliance with laws or regulations immediately reportable to statutory/regulatory authorities.	Local community negative media; Technical divergence attracting inquiry from statutory/regulatory authorities	Technical divergence that *may* attract attention from either the media, or statutory/regulatory authorities.
Business	Greater than 3-month production loss.	1-3 months production loss.	1–4-week production loss.	1–7-day production loss.	Less than 1 day production loss.
Environment	Irreparable Damage, very serious long-term impairment of eco-systems	Major Impact, serious medium term environmental impact affecting whole ecosystem	Minor Impact Moderate short term effects affecting part but not affecting whole of eco-system	Minor impact on biological or physical environment	Limited damage to minimal area of low significance or previously disturbed areas.
Damage/Loss	Extreme financial loss (Cashflow greater than \$100m)	Major financial loss (\$50m - \$100m)	Moderate financial loss (\$15m - \$50m)	Minor financial loss (\$2m - \$15m)	Low financial loss (Cashflow <\$2m)
People	Fatality(s).	Permanent or total disability resulting in an inability to work.	Lost Time Injury	Medical treatment or injury resulting in change of normal duties.	First Aid injury. Treatment on site.

The likelihood of the failure mode was evaluated using the criteria described in Table 14.

Table 14: Likelihood Definitions

NGI Descriptors	Alternative descriptors	Frequency of Occurrence for Other Events	Likelihood of occurrence over 20 years
Happens often	Almost certain	Occurs more than once in 5 years	> 98%
Could easily happen	Likely	Once in 5 to 20 years	65% - 98%
Could happen and has happened here or elsewhere	Possible	Occurs once in 20 to 200 years	10% - 65%
Hasn't happened yet but could	Unlikely	Occurs once in 200 to 1,000 years	2% - 10%
Conceivable but only in extreme circumstances	Very Unlikely	Occurs less than once every 1,000 years	2%
	Almost Impossible	Occurs less than once every 10,000 years	0.2%
	Almost impossible	Occurs less that once every 100,000 years	0.02%

After the consequence and the likelihood of a failure mode were determined, a level of risk was assigned based on the Risk Matrix, included in Table 15.

Table 15: FMEA Risk Matrix

Likelihoods	Consequences				
	Severe	Major	Moderate	Minor	Low

		1	2	3	4	5
Almost certain	1	Extreme	Extreme	Extreme	High	High
Likely	2	Extreme	Extreme	High	High	Medium
Possible	3	Extreme	Extreme	High	Medium	Medium
Unlikely	4	Extreme	High	Medium	Medium	Low
Very Unlikely	5	High	Medium	Medium	Low	Low
Almost Impossible	6	High	Medium	Low	Low	Low
Almost impossible	7	Medium	Low	Low	Low	Low

Note: PFMs identified as Extreme risk ratings are not acceptable by NGI and SRK, and Critical Controls must be implemented to reduce the risk prior to work continuing.

3.1 Results

Table 16 provides a description of each PFM. The results from the FMEA risk analysis are presented in the risk matrices shown inTable 17 (with controls). The complete FMEA risk register is presented in Table 18.

Table 16: Description of PFMs for FMEA

PFM ID	Dam	PFM Description
OT.001a	TMA	Dam overtopping during spillway construction, resulting in top 1-2 metres of water and tailings released
OT.002	WMP	Dam overtopping due to blocked spillway from ice accumulation
OT.003	TMA	Dam overtopping due to differential settlement of core and insufficient freeboard, releasing top ~1m of tailings and water
OT.004	TMA	Dam overtopping due to differential settlement of core and large wind event, releasing top ~1m of tailings and water
OT.007	WMP	Cascading failure of West Dam (TMA) from poor QAQC into WMP, resulting in WMP Dam failure (full WMP breach)
OT.008	TMA	Dam overtopping due to insufficient spillway capacity
PS.001	TMA	Foundation is normally consolidated and high porewater pressure occurs, resulting in localized settlement which releases top 1-2 m of water and tailings
PS.002	TMA	High porewater pressure due to construction and inadequate beach with an undetected weak layer result in failure of upstream slope and release of tailings and water.
PS.003	TMA	High porewater pressure due to construction with inadequate QAQC around bedrock abutments, resulting in cracking, settlement and release of water and tailings.
PS.005	TMA	Excavation at toe or on buttress results in loss of strength and downstream slope failure. Expected to result in reduction of FoS, not a full dam failure
PS.007	TMA	WMP fails, resulting in rapid drawdown of West Dam water levels and West Dam slope fails, releasing tailings and water
PS.009	TMA	Broken tailings line results in local erosion of clay core. Not expected to cause dam failure, business disruption only.
PS.010	WMP	Large flood event in the WMP and inadequate rock armouring on the upstream dam face result in erosion of the clay core and release of water
PS.012	WMP	Erosion (rilling) on dam face and clay core in WMP and high-water levels result in overtopping and dam failure, releasing water.
IE.001	TMA	Piping failure due to inadequate cleaning at bedrock abutments with inadequate tailings beach and high porewater pressures. Results in release of contact water as seepage, unlikely to produce full dam failure.
IE.003	TMA	Poor bonding at interface of clay core raise results in preferential flow pathway and piping failure, releasing top 1-2m of water and tailings
IE.004	TMA	Differential settlement below clay core, resulting in cracking and sustained porewater pressure from high water levels produces a preferential flow pathway and piping failure (top 1- 2m of water and tailings released)
IE.005	TMA	Inadequate tailings beach and elevated porewater pressure and drilling through clay core occurs, resulting in fracturing of core and new preferential flow pathway, leading to piping failure and release of water and tailings
CWR.001	TMA	Dam raise results in new seepage pathway to northeast of site, releasing contact water outside of the Permit Boundary
CWR.002	TMA	Unknown seepage pathway from TMA to environment results in contamination of groundwater outside of Permit Boundary
BD.001	TMA	Construction rock shortage results in delay of TMA dam raise, and stop operations

BD.002	TMA	High water levels in TMA result in flooding of clay borrow area and subsequent delay of TMA dam raise, resulting in stop to operations
BD.003	TMA	Poor water quality and inadequate water treatment capacity result in high water levels in the TMA and a need to stop operations.
BD.004	WMP /TMA	Inadequate Pinewood River flows result in inability to discharge water offsite and accumulation of water in WMP and TMA, stopping operations
BD.005	TMA	External factors (labour shortage, delay in permitting, pandemic, etc) result in delay in dam raise and stop operations

Table 17: FMEA Risk Matrix Based on Current Situation and Existing Controls

Likelihoods		Consequences				
		Severe	Major	Moderate	Minor	Low
		1	2	3	4	5
Almost certain	1					
Likely	2			BD.003	BD.004, CWR.001	
Possible	3			CWR.002		PS.005, PS.009, BD.001
Unlikely	4					BD.002
Very Unlikely	5		BD.005			
Almost Impossible	6			PS.012		
Almost impossible 2	7	OT.007, PS.007		OT.001a, OT.003, OT.004, OT.008, OT.009, PS.001, PS.002, PS.003, PS.010, IE.001, IE.003, IE.004	OT.002	IE.005

Table 18: Description of PFMs with Associated Critical Controls and TARPs

PFM ID	Dam	PFM Description	Critical Controls			Applicable TARP(s) in ERP
			Design Control	Administrative Control	Mitigative Control	
OT.001a	TMA	Dam overtopping during spillway construction, resulting in top 1-2 m of water and tailings released	• Proactive scheduling of the spillway decommissioning based on TMA water levels and short-term weather forecasts. • Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities.	• Flexibility in timing of spillway construction based on water levels in the TMA. • Remove and transfer of spillway location during favourable weather conditions and in a timely manner. • Bathymetry will help develop understanding of available water storage.	• Water can be pumped to the open pit (could be preventative, or mitigative) • Use an upstream clay dyke to hold back water + increase freeboard (used during Stage 4 Raise). • Pumping supernatant (untreated) water from the TMA to the environment downstream of the spillway to prevent potential release of tailings. • Continue to treat water and pump into WMP - allow a spill from the WMP as this water would be clean. • Emergency placement of rockfill could be placed relatively quickly to mitigate erosion during a spill event.	• Overtopping • Spillway Flow • Rainfall
OT.002	WMP	Dam overtopping due to blocked spillway from ice accumulation	• Mobilize equipment for spillway repair. • Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Culverts in ditches are overdesigned. •	• Routine inspections of dams, to identify signs of accumulation of ice or other debris in spillway. • Automated water levels to indicate when there is a need to discharge. • Increase site inspections at the WMP site during the time of freshet.	• Water released would be compliant water (it is discharge quality), but the wrong timing. • Road crossings are the same height as the dam crest, so washout of roads may be limited. • Continue to treat water and pump into WMP - allow a spill from the WMP as this water would be clean.	• Overtopping • Spillway Flow • Snowmelt
OT.003	TMA	Dam overtopping due to differential settlement of core and insufficient freeboard, releasing top ~1 m of tailings and water	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Freeboard design accounts for wave run-up and is conservative in settlement allowances. • Yearly bathymetry survey to control / confirm tailings properties. • Large rock downstream of core (buttress). • Annual dam raises eliminate the possibility of settlement accumulation.	• Routine inspections of dam crests and associated maintenance. • Routine crest surveys.	• In this PFM, it is assumed the spillway is functioning and mitigating spill through localized area.	• Dam Settlement • Overtopping • Rainfall •
OT.004	TMA	Dam overtopping due to differential settlement of core and large wind event, releasing top ~1 m of tailings and water	• Same as OT.003 • Conservative assumptions in wave run-up (utilized different beach and upstream scenarios)	• Routine inspections of dam crests and associated maintenance. • Routine crest surveys.	• Water can be pumped to the open pit (could be preventative, or mitigative) •	• Dam Settlement • Overtopping • Surface / External Erosion
OT.007	WMP	Cascading failure of West Dam (TMA) from poor QAQC into WMP, resulting in WMP Dam failure (full WMP breach)	• Maximize discharge, stop pumping into the WMP, stop water treatment.	• QA/QC during construction.	• N/A	• Internal Erosion • Overtopping • Slope Inclinometer • Piezometers •
OT.008	TMA	Dam overtopping due to insufficient spillway capacity	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • There is a conservative freeboard allowance from top of IDF to Dam crest allows to account for uncertainty in IDF. • QA/QC of design construction. • Prior to overtopping, water can be pumped to the open pit.	• Regular surveys of the crest to prevent the development of local low points in the crest that may be exploited during overtopping scenario. • Checks within the design system such as internal review, + ITRB are in place to ensure the spillway is adequately sized.	• In the event of a uniform increase in water level, • The dam can likely be overtopped without resulting in failure. • Any discharge directed to the Pinewood will have some attenuation while it flows, which may mitigate deposition of solids.	• Spillway Flow • Overtopping •
PS.001	TMA	Foundation is normally consolidated and high porewater pressure occurs, resulting in localized settlement which releases top 1-2 m of water and tailings	• Shape Arrays to monitor foundation movements. • Slope Inclinometers monitor foundation movements. • VWPs monitor porewater pressure. • Wick drains • Shear keys	• Monthly inspections performed by NGI Engineers (visual inspections) • Increase inspection frequency to by biweekly. • Suspend construction.	• Stockpile of NAG material in Frank's Pad can be quickly mobilized to flatten buttress or add additional buttressing. • Manage water levels below (NOWL)	• Piezometers • Slope Inclinometer / Shape Accelerometer Array • Dam Settlement •
PS.002	TMA	High porewater pressure due to construction and inadequate beach with an undetected weak layer result in failure of upstream slope and release of tailings and water.	• Annual bathymetry to verify tailings density and placement. • Tailings deposition plan / design requires that tailings are deposited prior to construction.	• Upstream VWPs and monitoring system. • Visual Inspections. • Tailings lines are inspected twice daily, add monitoring of the dam crest for deformations to this inspection task.	• N/A •	• Piezometers • Slope Inclinometer / Shape Accelerometer Array • Dam Settlement •
PS.003	TMA	High porewater pressure due to construction with inadequate QAQC around bedrock abutments, resulting in cracking, settlement and release of water and tailings.	• FEM to assess vulnerability of the facility to this type of failure.	• VWPs, SIs, SPs, MEs • Visual inspection (performed regularly during construction). • Monitor for different rates of porewater pressure dissipation within the alignment of the dams.	• N/A •	• Piezometers • Slope Inclinometer / Shape Accelerometer Array

PFM ID	Dam	PFM Description	Critical Controls			Applicable TARP(s) in ERP
			Design Control	Administrative Control	Mitigative Control	
				• Monitor any known areas of deformation on a higher frequency		• Dam Settlement •
PS.005	TMA	Excavation at toe or on buttress results in loss of strength and downstream slope failure. Expected to result in reduction of FoS, not a full dam failure	• Design of borrows, sumps, or ditches need to consider their effect on the existing structures. • EOR team needs to be in good communication when designing structures so that the design FoS accounts for downstream excavations or vice versa.	• Training to avoid this situation (on the operational level) • Excavations should be approved by EOR prior. • Confirmation of stockpile locations (inverse situation of unloading via excavation). • Survey control to ensure that stockpiles are not over excavated. • Active monitoring of excavations and/or any deformation.	• N/A •	• Dam Settlement • Piezometers • Slope Inclinometer / Shape Accelerometer Array •
PS.007	TMA	WMP fails, resulting in rapid drawdown of West Dam water levels and West Dam slope fails, releasing tailings and water	• Design of West Dams considers rapid drawdown stability.	• Instrumentation (VWPs, SIs, MEs, SPs)	• N/A	• Dam Settlement • Piezometers • Slope Inclinometer / Shape Accelerometer Array
PS.009	TMA	Broken tailings line results in local erosion of clay core. Not expected to cause dam failure, business disruption only.	• Tailings pipeline is predominantly located on armored upstream slope. • There are no valves on the core, and this practice should be maintained. • place liner beneath pipeline where it crosses the core.	• Routine inspections (twice daily) of tailings lines along crest would identify this issue and shutoff pipeline. • Pressure drop in line would be noted in the mill.	• N/A	• Tailings Line Leak / Rupture • Surface / External Erosion
PS.010	WMP	Large flood event in the WMP and inadequate rock armoring on the upstream dam face result in erosion of the clay core and release of water	• Ensure upstream rock armoring meets design requirements.	• Monitor WMP water levels	• N/A	• Rainfall • Surface / External Erosion
PS.012	WMP	Erosion (rilling) on dam face and clay core in WMP and high water levels result in overtopping and dam failure, releasing water.	• N/A	• Regular Maintenance • Annual DSIs	• Released water would be clean	• Surface / External Erosion • Overtopping
IE.001	TMA	Piping failure due to inadequate cleaning at bedrock abutments with inadequate tailings beach and high porewater pressures. Results in release of contact water as seepage, unlikely to produce full dam failure.	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Downstream filters are in place to prevent piping from progressing. • Adequate QA/QC of the clay abutment tie ins. • Confirm that the risk of piping is low by following ICOLD procedure.	• QA/QC during construction.	• Tailoring deposition plans to ensure there is perimeter tailings deposition around the entire facility. • Ensure you have adequate tailings beach to reduce the gradient on the core and any bedrock ties in.	• Internal Erosion • Seepage through Dam
IE.003	TMA	Poor bonding at interface of clay core raise results in preferential flow pathway and piping failure, releasing top 1-2m of water and tailings	• Lengthen seepage path by promoting upstream beach development. • QA/QC hold points. • Downstream filter designs prevent progression of erosion. • Ensuring material used for new lifts is suitable WML.	• QA/QC during construction.	• N/A	• Internal Erosion • Seepage through Dam
IE.004	TMA	Differential settlement below clay core, resulting in cracking and sustained porewater pressure from high water levels produces a preferential flow pathway and piping failure (top 1-2m of water and tailings released)	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. •	• VWPs, SIs. • Visual inspection. • Crest survey settlements. • Look for trends in where settlement has occurred historically.	• N/A	• Dam Settlement • Seepage through Dam
IE.005	TMA	Inadequate tailings beach and elevated porewater pressure and drilling through clay core occurs, resulting in fracturing of core and new preferential flow pathway, leading to piping failure and release of water and tailings	• Same as IE.004	• Drilling through the core requires EoR approval. • If you must drill through the core, take care to ensure appropriate measures are in place to avoid fracking.	• N/A	• Internal Erosion • Seepage through Dam
CWR.001	TMA	Dam raise results in new seepage pathway to northeast of site, releasing contact water outside of the Permit Boundary	• Potential solution is to design and construct dyke structure to provide containment of contact water.	• Site investigation to characterize seepage and containment.	• Perform an updated hydrogeological investigation/modelling to characterize groundwater migration in TMA area.	• Water Facility Freeboard
CWR.002	TMA	Unknown seepage pathway from TMA to environment results in contamination of groundwater outside of Permit Boundary	• N/A	• Site investigation to characterize seepage and containment.	• Perform an updated hydrogeological investigation/modelling to characterize groundwater migration in TMA area.	• Water Facility Freeboard
BD.001	TMA	Construction rock shortage results in delay of TMA dam raise, and stop operations	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Moving to a HDPE liner (or other geosynthetic) is likely a less attractive option relative to just using Brenna for the final lift. • Potentially blend NAG with PAG rock from the WMRS.	• Frank's Pad contains 200 - 300k m3 of available NAG rock and serves as contingency.	• Develop a clay borrow development at a location further away from the TMA.	• N/A

PFM ID	Dam	PFM Description	Critical Controls			Applicable TARP(s) in ERP
			Design Control	Administrative Control	Mitigative Control	
			• Borrow pit test work and modelling has been performed to assure there is 2-3 years of available borrow identified. • Potentially use Brenna for last 1m lift.			
BD.002	TMA	High water levels in TMA result in flooding of clay borrow area and subsequent delay of TMA dam raise, resulting in stop to operations	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Preparing contingency borrow areas building berms and pumping to prevent borrow areas from flooding. • Drill holes and test pits to further inform what borrow areas look like.	• Ensuring 1 full year of contingency is in place at all times during construction.	• Desktop study of how much clay required to raise dam to 381 m, greater than anticipated, and if there is sufficient clay to achieve this dam height (Assuming that the borrows align with prelim investigations, and water management controls are in place)	• Water Facility Freeboard • Rainfall
BD.003	TMA	Poor water quality and inadequate water treatment capacity result in high water levels in the TMA and a need to stop operations.	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • In progress: Detailed monitoring program and seep surveys. • Water quality data review/analysis/ forecasting during operations. • Flexibility in the water treatment system to accommodate new constituents (BCR1/BCR2). • BCR2 had added capacity last year to increase treatment capacity. • Investigate alternative treatment systems. • Investigate making snow/glacier that would passively release water to the environment. • Develop water quality model with updated source terms. • Increase ability to treat water throughout the winter, so you could discharge in the spring. • Drain WMP down to 1 m3 during spring, treat all summer, then dump the WMP in the fall. • Investigate evaporator discharge to environment. • Investigate permit for new discharge location and or dilution ratios (i.e., Loslo).	• Changes in mill process. • In progress: Amend permit to treat TMA/MRP in BCR2. • Collaboration with the mining/exploration (geology team) to ensure that water quality experts have all information necessary to update their source terms and develop a model. • Update water balance model. • Be proactive to bring the situations up with the regulator ahead of time, so that in the situation where you need to discharge above permitted rates, you can accelerate the emergency order process.	• N/A	• N/A
BD.004	WMP /TMA	Inadequate Pinewood River flows result in inability to discharge water offsite and accumulation of water in WMP and TMA, stopping operations	• Control water levels by maximizing treatment, reclaim, discharge, and minimizing pumping into the TMA/WMP from other facilities. • Investigate a larger diffuser capacity. • Investigate permit for new discharge location and or dilution ratios (i.e., Loslo). • Increase ability to treat water throughout the winter, so you could discharge in the spring. • Drain WMP down to 1 m3 during spring, treat all summer, then dump the WMP in the fall. • Investigate making snow/glacier that would passively release water to the environment.	• Be proactive to bring the situations up with the regulator ahead of time, so that in the situation where you need to discharge above permitted rates, you can accelerate the emergency order process.	• N/A	• N/A
BD.005	TMA	External factors (labour shortage, delay in permitting, pandemic, etc.) result in delay in dam raise and stop operations	• Establishing deadlines for drawings and design packages to be completed by.	• 6-month buffer with current raise (stage 5) standard practice is 1 year. • Divert NGI construction efforts from other works to prioritize dam raise. Use other contractors to supplement the work force. • Bring in alternative labour force if the case that there is a dispute with existing personnel (or shortage).	• Heating/hoarding through winter months could be implemented to complete construction if deadlines cannot be met during warmer months. • Amendments to the design to facilitate continuous tailings deposition	• N/A

7.2 Annual Risk Review

As part of the ITRB workshops, the risk register for the TMA and water management dams is reviewed. The main objectives for these reviews are:

- Conduct a comprehensive risk assessment by identifying new risks and reassessing existing ones to evaluate any changes in their likelihood or impact.
- Evaluate the effectiveness of current risk management strategies and resource allocation to ensure adequate risk mitigation.
- Ensure compliance with relevant regulations and alignment with industry best practices.

The review ensures continuous improvement, allowing the organization to adapt to changing circumstances and emerging risks. Also engaging ITRB in the Annual Risk Review process adds significant value by bringing external perspectives and expertise.

8. Emergency Preparedness and Response Plan

A detailed Emergency Preparedness and Response Plan (EPRP) is outlined in Part 4 of this Manual.

APPENDIX A: STANDARD OPERATING PROCEDURES (SOPs) AND PLANS

Dam Monitoring:

- DAM-SOP-0001 - Slope Inclinometers
- DAM-SOP-0002 - Slope Inclinometer Data Processing
- DAM-SOP-0003 - Data Logger Installation, Troubleshoot, and Maintenance
- DAM-SOP-0004 - Piezometer Installation and Troubleshoot
- DAM-SOP-0005 - Magnetic Extensometer
- DAM-SOP-0006 - Standpipe Piezometers
- DAM-SOP-0007 - Settlement Plate
- DAM-SOP-0008 - Shape Array Installation and Data Processing
- DAM-SOP-0009 - Geotechnical Weekly Reporting
- DAM-SOP-0010 - Instrument Raise Procedure
- DAM-SOP-0011 - Water Level Piezometer Installation
- DAM-SOP-0012 - Instrument Winterization
- DAM-SOP-0013 - MARR Weather Station Maintenance and Troubleshooting
- DAM-SOP-0014 - Dam Access and Earthworks on & around Dams
- DAM-SOP-0015 – Safety Inspection of Dams
- DAM-SOP-0016 - Safety Inspection of Dams
- DAM-SOP-0017 - Tailings Deposition Procedure

Electrical and Mechanical:

- MTC-SOP-0050 – Pipe Fusion Operation
- MTC-SOP-0051 – Towing/Relocation HDPE Pipe
- MTC-SOP-0052 - Chain Saw Operation and Cutting HDPE Pipe
- MOP-SOP-0060 - Cutting HDPE Pipe
- MOP-SOP-0067 - T412 Pipe Fusion Operation
- MIL-CND-SOP-0009 - Tailings Line Inspection
- SAP Maintenance Plan 2905 - Reclaim, Fresh Water, & Tails Booster Pumps Running Weekly Pm's
- SAP Maintenance Plan 3402 - PM02 Preventive Maintenance Work order - 1WK-NON-RUNNING PUMP START/STOP
- SAP Maintenance Plan 3403 - PM02 Preventive Maintenance Work order - 1WK-NON-RUNNING PUMP START/STOP
- SAP Maintenance Plan 3561 – Preventive Maintenance Work order - 1WK, INSP, BCR2 & OUTFLOW BASIN
- SAP Maintenance Plan 4141 – PM02 Preventive Maintenance Work order - R,3WK, EL, PUMPHOUSE INSPECTIONS
- SAP Maintenance Plan 4586 - R,25WK, EL, A, H2S XMT CAL
- SAP Maintenance Plan 800029200507

APPENDIX B: SURVEILLANCE RESPONSE PLANS

The Surveillance response Plans (SRP) are intended to provide initial guidance to the first on-site inspector until the extent of the situation has been identified and further surveillance plans and/or remedial options developed.

Surveillance Response Plans for the following scenarios are included in this Appendix:

- High Pond
- Post-Earthquake
- Increased Seepage through the Earth Dam
- Observation of Dam Deformation

SURVEILLANCE RESPONSE PLAN

HIGH POND

MANIFESTATION OF FAILURE MODES

- Increased risk of piping (dam has not experienced this reservoir level before)
- Increased or new seepage (new historic high for reservoir, overtopping of the core)
- Deformations
- Inability to pass or store inflows resulting in overtopping of dam
- Spill causing damage to dam
- Runoff causing erosion of the dam or abutment

POTENTIAL CAUSES OF HIGH POND

- Surcharged pond due to high inflows

INITIAL DUTIES / ACTIONS

If the pond level exceeds or is expected to exceed one of the increased surveillance levels (once per day, 24 /7) the Capital Projects Manager shall dispatch appropriate personnel to inspect the dams as documented in this SRP and shall notify the Responsible Tailings Facility Engineer (RTFE).

The purpose of this inspection is to evaluate the performance of the dam and spillway during higher-than-normal pond conditions. As the level of the pond continues to rise the frequency and detail of the increased surveillance response will also increase.

Based on the pond level and the observed performance of the dams, the Capital Projects Manager in conjunction with the RTFE and / or Surface Water Engineer shall determine the severity of the situation and the appropriate level of response as identified in the EPRP.

i) Stand Down (no further actions required)
ii) No expanded notifications required (situation will be monitored by site staff only)
iii) Declare a Dam Incident (EPRP)
iv) Declare a Dam Alert / Breach (EPRP)

The Capital Projects Manager and RTFE supported by other resources will determine if immediate remedial measures are required.

Personnel Dispatched to Site

- Take a copy of the attached Inspection Checklists.
- Obtain the required supplies and tools
- Access by crew trucks may not be safe. If the crew cannot reach the site, advise the Capital Projects Manager as soon as possible.
- Once at site the crew should observe the dam from a safe vantage point to confirm the dam appears safe to access.
- The crew should pay special attention to:
    - Condition of the spillway channel
    - Spillway flows causing erosion of the toe of the dam
    - Potential new or increased seepage flows
- Once the inspection of the dam and spillway are complete the crews will relay the results of the inspection to the Capital Projects Manager.
- Do not leave site until instructed to do so.

Responsible Tailings Facility Engineer

- Inform the Capital Projects Manager of Dam Safety Surveillance of the situation as it develops.
- Develop an increased surveillance plan appropriate for condition.
- Review instrumentation data.
- Review potential remedial measures with:
    - Capital Projects Manager
    - EOR

SITE INSPECTOR CHECKLIST

for TMA High Pond

Name:_________

Date: _________

Time of arrival: _

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Projects Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level____
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations
7. Estimate the length of tailings beach. SD:___m, WD:___m, ND:___m

Fig 1. Plan View of TMA

SURVEILLANCE RESPONSE PLAN

POST-EARTHQUAKE EVALUATION

SIGNIFICANCE

TMA dams are designed to withstand small earthquakes. During an earthquake, some structural damage could occur to the dam or ancillary structures that could compromise the integrity of the dam.

MANIFESTATION

- Deformation of the dam (see Deformation SRP)
- Increased seepage (see Increased Seepage SRP)
- Structural damage ancillary structures (spillway and ditches)
- Sand boils, liquefaction

INITIAL DUTIES / ACTIONS

General Response

Following any felt earthquake the Capital Projects Manager and the RTFE shall determine if an inspection is required.

When conditions are considered safe, staff will report to work at a designated location. Once staff has returned to work, the Capital Projects Manager should dispatch crews to inspect the dam(s).

Following the initial inspection of the dam, the Capital Projects Manager in conjunction with the RTFE and / or other appropriate resources shall determine the severity of the situation and the appropriate level of response.

i) Stand Down (no further actions required)
ii) No expanded notifications required (situation will be monitored by site staff only)
iii) Declare a Dam Incident (EPRP)
iv) Declare a Dam Alert / Breach (EPRP)

The Capital Projects Manager and RTFE supported by other resources will determine if immediate remedial measures are required.

Personnel Dispatched to Site

- Take a copy of the attached Inspection Checklists.
- Obtain the required supplies and tools
- Access by crew trucks may not be safe. If the crew cannot reach the site, advise the Capital Projects Manager as soon as possible.
- Once at site the crew should observe the dam from a safe vantage point to confirm the dam appears safe to access.
- Starting at the crest of the dam and working down the slope the crew should check for any unusual deformations and / or seepage.
- Following the inspection of the dam the crew should inspect the spillway for obvious signs of structural damage.
- Once the inspection of the dam and spillway are complete the crews will relay the results of the inspection to the Capital Projects Manager.
- Do not leave site until instructed to do so.

Responsible Tailings Facility Engineer

- Inform the Capital Projects Manager of the situation as it develops.
- Develop an increased surveillance plan appropriate for condition. Define resources from site.
- Review instrumentation data.
- Review potential remedial measures with:
    - Capital Projects Manager
    - EOR

SITE INSPECTOR CHECKLIST

For TMA Post-EQ Evaluation

Name:__________

Date: ______Time of arrival: _____________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Projects Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level______________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
   - Is there any sign of new or increased seepage? YES NO
5. If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of TMA

SURVEILLANCE RESPONSE PLAN

INCREASED SEEPAGE

SIGNIFICANCE

Seepage flows are a prime indicator of the performance of an earthfall dam. Unexpected changes in seepage flow and in particular the occurrence of "dirty" or "muddy" seepage could indicate a deteriorating condition within the dam. If left unattended the situation could result in the failure of the dam in a relatively short period of time. As a result, any report of unexpected increased seepage or "muddy" seepage should be treated with the utmost concern.

Changes in seepage flows are directly associated with a failure mode, so if a change in seepage flows is reported to site, trained personnel should be immediately dispatched to investigate. Preferably RTFE will be available to respond immediately, however if an Engineer is not available, one of the routine inspectors, i.e., TDT, should be dispatched. The inspector should follow the attached checklist titled "Site Inspector".

MANIFESTATION

- Increased or decreased core piezometer levels
- Increased downstream shell water levels
- Wet spot(s) on the downstream face, toe or downstream of the dam
- New seepage flows.
- Observation of "dirty" or "muddy" seepage exiting the ground
- Seepage boils downstream
- Deformations (sinkholes, slumping)

POTENTIAL CAUSES

Possible causes for a change in seepage flows downstream of the crest of the dam are listed below in order of highest to lowest concern.

- Rupture or leakage of a through-going water passage
- Internal erosion (piping) of the core
- Cracking of the core due to earthquake, settlement, hydraulic fracture
- Deterioration of a foundation cut off
- Overtopping of the core (flood)
- Diverted surface seepage
- Environmental
    - Higher than normal pond levels
    - Extraordinary rainfall, snowmelt

INITIAL DUTIES / ACTIONS

GENERAL RESPONSE

Unusual observations are to be reported to the Capital Projects Manager immediately. Capital Projects Manager shall call the RTFE immediately and dispatch personnel to site for further observations. The level of increased surveillance to be determined based on the severity of the situation.

The Capital Projects Manager in conjunction with the RTFE and / or other appropriate resources shall determine the severity of the situation and the appropriate level of response as identified in the EPRP.

i) Stand Down (no further actions required)
ii) No expanded notifications required (situation will be monitored by site staff only)
iii) Declare a Dam Incident (EPRP)
iv) Declare a Dam Alert / Breach (EPRP)

The Capital Projects Manager and DSE supported by other resources will determine if immediate measures are required.

Personnel Dispatched to Site

- Take a copy of the attached Inspection Checklist.
- Obtain the required supplies and tools
- Assess personal safety conditions and observe the seepage area from a safe vantage point.
- Note the location, size, clarity (i.e., "thick" muddy condition vs. a "cloudy" appearance) and estimate of the flow quantity
- Note if the condition is "stable" or "deteriorating " (i.e., seepage area enlarging/flows increasing quickly)
- Note any other unusual features in the immediate area (i.e., fresh cracks or depressions/holes)
- If safe to do so, try to mark the limits of the seepage area for future referencing
- Do not leave site until instructed to do so.

Responsible Tailings Facility Engineer

- Decide if site visit is warranted.
- Inform the Capital Projects Manager of the situation.
- Develop an increased surveillance plan appropriate for condition. Define resources from site,
- Review instrumentation data.
- Review potential mitigation with:
  - Capital Projects Manager
  - EOR

SITE INSPECTOR CHECKLIST

For Increased Seepage at TMA

Name:_________

Date: _____Time of arrival: ____________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ______________________________
9. Record pond level________________________
10. Photograph seepage area
11. Call details back to Capital Projects Manager.

If no further direction given by Capital Projects Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Projects Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Projects Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Projects Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of TMA

SURVEILLANCE RESPONSE PLAN

DAM DEFORMATION

SIGNIFICANCE

Deformation of the dam can lead to increased seepage and / or loss of freeboard which could threaten the integrity of the dam. Deformations may be triggered by a change in conditions such as earthquake loading or increased piezometric levels in the downstream shell.

Observation of surface deformations could be the external manifestation of internal damage to the dam such as ongoing internal erosion or piping.

MANIFESTATION

- Cracking (transverse, longitudinal)
- Slumping / sliding
- Sinkholes
- Dips or depressions
- Bulging
- Change of alignment of linear features (sharp or gradual)
- Changes in instrumentation readings (survey, extensometers, or inclinometers)
- Increased piezometric levels due to cracking of the core

POTENTIAL CAUSES

Possible causes for deformations of the dam are listed below:

- Loss of strength of shell or foundation (liquefaction, strain softening, internal erosion)
- Internal erosion, loss of material (sinkhole)
- Increased piezometric levels reducing effective stress (core cracking, internal erosion, leak from water passage, extraordinary rainfall, or snowmelt)

INITIAL DUTIES / ACTIONS

GENERAL RESPONSE

Unusual observations are to be reported to the Capital Projects Manager immediately. Capital Projects Manager shall call the RTFE immediately and dispatch personnel to site for further observations. The level of increased surveillance to be determined based on the severity of the situation.

The Capital Projects Manager in conjunction with the RTFE and / or other appropriate resources shall determine the severity of the situation and the appropriate level of response as identified in the EPRP.

i) Stand Down (no further actions required)
ii) No expanded notifications required (situation will be monitored by site staff only)
iii) Declare a Dam Incident (EPRP)
iv) Declare a Dam Alert / Breach (EPRP)

The Capital Projects Manager and DSE supported by other resources will determine if immediate measures are required.

Personnel Dispatched to Site

- Take a copy of the attached Inspection Checklist.
- Obtain the required supplies and tools
- Assess personal safety conditions and observe the extent of the deformations from a safe vantage point.

- Note the location, size, offset, amount of freeboard, etc. on the attached checklist.
- Note if the condition is "stable" or "deteriorating " (i.e., is the rate of movement visible)
- Note any other unusual features in the immediate area (i.e., new seepage or wet spots at or downstream of the deformation)
- If safe to do so, try to mark the limits of the deformed area for future referencing
- Do not leave site until instructed to do so.

Responsible Tailings Facility Engineer

- Decide if site visit is warranted.
- Inform the Capital Projects Manager of the situation.
- Develop an increased surveillance plan appropriate for condition. Define resources from site,
- Review instrumentation data.
- Review potential mitigation with:
  - Capital Projects Manager
  - EOR

SITE INSPECTOR CHECKLIST

for TMA Dam Deformation

Name:__________

Date: ______Time of arrival: _____________

1. Check that it is safe to approach the deformed area.
2. Record Pond level___
3. Estimate Freeboard ________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length_____________Width___________of crack
      iii. Vertical offset ______________
      iv. Depth of crack _____________
   b. Slumping or Slide
      i. Length_____________Width___________of slumped area
      ii. Vertical offset at top of slump________________
      iii. Estimated Volume
   c. Sinkhole
      i. Length_____________Width __________
      ii. Depth _____________
   d. Other types of deformations describe below:

      ____

      ____

6. Photograph deformed area.
7. Call details back to Capital Projects Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Projects Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
   - New or increased seepage (If observed go to the Increased Seepage SRP)
   - Other areas of deformation

10. If anything looks unusual report back to Capital Projects Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Projects Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig. 1. Plan View of TMA

APPENDIX C: INSPECTION CHECKLISTS

The following inspection checklists are prepared and issued by the Responsible Tailings Facility Engineer

- Weekly Site Inspection Checklist
- Monthly Site Inspection Checklist

TMA – WEEKLY INSPECTION CHECKLIST

Inspector:______________________Date: _____

Weather:______________________Pond Water Level (m):____________________

Inspect the following items for safety, general appearance, and evidence of damage or potential instability.

Legend: ✓ = No change since previous inspection or normal
D = Defect or deterioration since previous inspection. (Add details under Remarks)
- = Not inspected (explanation)

ITEM	Check	REMARKS
1. South Dam		
1) Abutments		
2) Crest		
3) Upstream Slope		
4) Downstream Slope		
5) Downstream Toe		
6) Estimate length of tailings beach		
7) Erosion below spigot?	Y / N	
8) Tailings stacking up.	Y / N	
2. West Dam		
1) Crest		
2) Upstream Slope		
3) Downstream Slope		
4) Estimate length of tailings beach		
5) Erosion below spigot?	Y / N	
6) Tailings stacking up?	Y / N	
3. North Dam		
1) Abutment		
2) Crest		
3) Upstream Slope		
4) Downstream Slope		
5) Downstream Toe		
6) Estimate length of tailings beach		
7) Erosion below spigot?	Y / N	
8) Tailings stacking up?	Y / N	
4. Spillway		
1) Spillway Sill		
2) Spillway Channel		
3) Spillway Toe		
4) Estimate length of tailings beach		
5. Diversion Ditches and Sumps		
1) Flow	Y / N	
2) Estimate flow (lpm)		
3) Vegetation growth		
4) Sloughing or slumps		

TMA DAM – MONTHLY INSPECTION CHECKLIST

Inspector:______________________Date: _____

Weather:_______________________Pond Water Level (m):_____________________

Inspect the following items for safety, general appearance, and evidence of damage or potential instability.

Legend: ✓ = No change since previous inspection or normal
D = Defect or deterioration since previous inspection. (Add details under Remarks)
\- = Not inspected (explanation)

ITEM	Check	REMARKS
1. ACCESS AND SECURITY		
1.1 Access Road		
1.2 Security (gates and locks)		
1.3 Fence		
2. SOUTH DAM		
2.1 Dam Crest		
2.1.1 Cracking		
2.1.2 Settlement		
2.1.3 Erosion		
2.1.4 Other Movement, such as Alignment		
2.2 Upstream Slope		
2.2.1 Angles		
2.2.2 Bulging/Cracking		
2.2.3 Erosion		
2.2.4 Non-Uniform Slope		
2.2.5 Settlement		
2.2.6 Sloughing		
2.3 Downstream Slope		
2.3.1 Angles		
2.3.2 Bulging/Cracking		
2.3.3 Erosion		
2.3.4 Non-Uniform Slope		
2.3.5 Settlement		
2.3.6 Sloughing		
2.4 Downstream Toe		
2.4.1 Vegetation		
2.4.2 Wet Spot/ Ice		
2.4.3 Bulging		
2.4.4 Piping		
2.5 Tailings Deposition		
2.5.1 Leaking along Tailings Line		
2.5.2 Tailings Stacking Up		
2.5.3 Tailings Formed Channel		
2.5.4 Erosion at Spigot		
2.5.5 Tailings Dusting		
2.5.6 Discharge 0.4 m below Dam Crest		

2.5.7 Estimate Beach Length		
2.6 Seepage Collection Ditch		
2.6.1 Estimate Flow		
2.6.2 Sloughing		
2.6.3 Vegetation		
2.6.4 Sump		
3. WEST DAM		
3.1 Dam Crest		
3.1.1 Cracking		
3.1.2 Settlement		
3.1.3 Erosion		
3.1.4 Other Movement such as Alignment		
3.2 Upstream Slope		
3.2.1 Angles		
3.2.2 Bulging/Cracking		
3.2.3 Erosion		
3.2.4 Non-Uniform Slope		
3.2.5 Settlement		
3.2.6 Sloughing		
3.3 Downstream Slope		
3.3.1 Angles		
3.3.2 Bulging/Cracking		
3.3.3 Erosion		
3.3.4 Non-Uniform Slope		
3.3.5 Settlement		
3.3.6 Sloughing		
3.4 Tailings Deposition		
3.4.1 Leaking along Tailings Line		
3.4.2 Tailings Stacking Up		
3.4.3 Tailings Formed Channel		
3.4.4 Erosion at Spigot		
3.4.5 Tailings Dusting		
3.4.6 Discharge 0.4 m below Dam Crest		
3.5.7 Estimate Beach Length		
3.5 Seepage Collection Ditch		
3.5.1 Estimate Flow		
3.5.2 Sloughing		
3.5.3 Vegetation		
3.5.4 Sump		
4. NORTH DAM		

4.1 Dam Crest		
4.1.1 Cracking		
4.1.2 Settlement		
4.1.3 Erosion		
4.1.4 Other Movement, such as Alignment		
4.2 Upstream Slope		
4.2.1 Angles		
4.2.2 Bulging/Cracking		
4.2.3 Erosion		
4.2.4 Non-Uniform Slope		
4.2.5 Settlement		
4.2.6 Sloughing		
4.3 Downstream Slope		
4.3.1 Angles		
4.3.2 Bulging/Cracking		
4.3.3 Erosion		
4.3.4 Non-Uniform Slope		
4.3.5 Settlement		
4.3.6 Sloughing		
4.4 Downstream Toe		
4.4.1 Vegetation		
4.4.2 Wet Spot/ Ice		
4.4.3 Bulging		
4.4.4 Piping		
4.5 Spillway		
4.5.1 Estimate Tailings Beach Length		
4.5.2 Erosion		
4.5.3 Sill		
4.5.4 Toe		
4.6 Tailings Deposition		
4.6.1 Leaking along Tailings Line		
4.6.2 Tailings Stacking Up		
4.6.3 Tailings Formed Channel		
4.6.4 Erosion at Spigot		
4.6.5 Tailings Dusting		
4.5.6 Discharge 0.4 m below Dam Crest		
4.5.7 Estimate Beach Length		
4.7 Seepage Collection Ditch		
4.7.1 Estimate Flow		
4.7.2 Sloughing		
4.7.3 Vegetation		
4.7.4 Sump		

RAINY RIVER MINE

OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL

PART III – WATER MANAGEMENT FACILITIES

2025 Revision History						
Revision Index	Revision Date	Status	Author	Checker	Approver	Comments
A	2024-Oct-24	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for Internal Review
B	2024-Nov-21	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for EOR Review
00	2025-Mar-05	Approved	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Final 2025 OMS Manual Update

2025 Change Log Summary		
Section Number	**Section Title**	**Comments**
All	All	Changed the report template and updated the figures with the October 17, 2024, orthophoto
Section 3	Facility Description	Added Figure 2 – Water Management Overview at RRM
Section 4.4	Water Conveyance and Discharge	Update the figure to present the current water treatment layout
Section 6.5.2	Instrument Thresholds and Response Action Plan	This section was updated based on 2024 Instrumentation Threshold Update for TMA and Water Management Structures memo

Acronyms and Abbreviations	
Term	**Definition**
BCR1	Biochemical Reactor #1
BCR2	Biochemical Reactor #2
CDA	Canadian Dam Association
DSI	Dam Safety Inspection
DSR	Dam Safety Review
ECA	Environmental Compliance Approval
EDF	Environmental Design Flood
EDMS	Electronic Document Management System
EMRS	East Mine Rock Stockpile
EOR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
FOS	Factor of Safety
GISTM	Global Industry Standard on Tailings Management
IDF	Inflow Design Flood
LRIA	Lakes and Rivers Improvement Act
MASL	Meters Above Sea Level
MECP	Ministry of the Environment, Conservation and Parks
MNDM	Ministry of Northern Development, Mines, Natural Resources and Forestry
MRP	Mine Rock Pond
NAG	Non-Acid Generating
NGI	New Gold Inc.
NOWL	Normal Operating Water Level
OMS	Operation, Maintenance, and Surveillance
PAG	Potential-Acid Generating
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PTTW	Permits to Take Water
RASCI	Responsible, Accountable, Supportive, Consulting, Informed
RRM	Rainy River Mine
RTFE	Responsible Tailings Facility Engineer
SOP	Standard Operating Procedure
SRK	SRK Consulting Inc. (Canada), Current responsible EOR
TDEIT	Tailings Dam Engineer in Training
TDT	Tailings Dam Technician
TMA	Tailings Management Area
TSM	MAC's Towards Sustainable Mining initiative
TSS	Total Suspended Solids
WDP	Water Discharge Pond
WMP	Water Management Pond
WMRS	West Mine Rock Stockpile
WTP	Water Treatment Plant
WTT	Water Treatment Train
MAC	Mining Association of Canada
MMER	Metal Mining Effluent Regulations
CEAA	Canadian Environmental Assessment Act

Table of Contents

List of Tables

List of Figures

List of Appendices

1. ADDITIONAL APPROVALS

Title	Name	Signature	Date
Responsible Tailings Facility Engineer	Sam Amiralaei	Signed by: Sam Amiralaei 04566788B4BF47E...	3/10/2025
Capital Projects Manager	Jason Bell	Signed by: Jason Bell FA1E435E313B427...	3/10/2025
Environment Manager	Garnet Cornell	Signed by: Garnet Cornell 3841AC226266429...	3/11/2025
TMA Engineer of Record	Calvin Boese	Signed by: Calvin Boese EC0554BA50964B1...	3/11/2025
WMF Engineer of Record	Michael Dabiri	Signed by: Michael Dabiri 8A9A40ACF59D46E...	3/11/2025
Mill Manager	Mohammad Taghimohammadi	Signed by: Mohammad Taghimohammadi 646B027EC05546A...	3/10/2025

2. INTRODUCTION

2.1 Purpose

The objective of this document is to ensure the safe, efficient, and environmentally responsible management of the tailings facility, referred to as the Tailings Management Area (TMA), throughout its lifecycle at the New Gold Inc. (NGI) Rainy River Mine (RRM), located near Emo, Ontario. It outlines procedures for operations, maintenance, surveillance, and emergency response to minimize risks and ensure compliance with safety and environmental standards. This part of the Manual (Part III) includes the safe operation of water management facilities.

2.2 Manual Structure

- Part 1: General
- Part 2: TMA
- **Part 3: Water Management Facilities**
  - **Treated Water**
    - Water Management Pond (WMP): The WMP consists of three dam structures, each with an Extreme consequence of failure. These structures contain treated water and play a critical role in water management at RRM.
  - **Contact Water**
    - Mine Rock Pond (MRP): The MRP consists of a dam structure with an Extreme consequence of failure. It is designed to contain contact water from the East Mine Rock Stockpile (EMRS) and the open pit. Due to the potential environmental impact and the associated risks, it is crucial that the dam structure is rigorously monitored and maintained to prevent failure and ensure safe management of the contact water.
    - Water Discharge Pond (WDP) – WDP consists of a dam structure with a Low consequence of failure. It contains the seepage contact water from South Dam.
    - South Runoff Pond (SRP) – SRP consists of a dam structure with a very high consequence of failure and contains the contact water from Open Pit and MRP. It is also used as an interim storage facility for Mill reclaim water supply.

        - Sediment Ponds – Include 3 ponds that have a Low consequence of failure and contain the contact water from West Mine Rock Stockpile (WMRS) and Open Pit perimeter runoff.
    - **Freshwater**
        - Freshwater Management Facilities – Include a series of structures that collect, store, divert freshwater including West Creek Pond (WCP), Stockpile Pond (SP), Teeple Pond (TP), Clark Creek Pond (CCP), Stockpile Pond Diversion, and West Creek Diversion.
    - **Pipelines and Pumps**
        - Water Conveyance and Discharge – Site-wide network of pipelines and pumps for water conveyance and discharge.

- Part 4: EPRP

To simplify and condense the OMS Manual, site conditions are covered in Part I of the Manual. This part is only focused on the operation, maintenance, and surveillance of the water management facilities.

3. FACILITY DESCRIPTION

3.1 Overview of Structure Design and Construction

3.1.1 Water Treatment and Treated-Water Structures

Water Treatment Train

The water treatment facilities are located on in the vicinity of the WMP and consist of three components: Lime-Based Water Treatment Plant (WTP), Nitrification Cells, and BCR #1 (Biochemical Reactor 1).

Contact water from the TMA is conveyed to the WTP for treatment of total suspended solids (TSS), as well as the metals and metalloids.

After the TSS, metals and metalloids are removed, the treated water is then discharged into the Nitrification Cell where the microbial process termed 'nitrification' is performed for treatment of ammonia. The Nitrification Cell uses microbial nitrification to convert the nitrogen compounds to nitrate. Some amount of manganese is also expected to be removed in the Nitrification Cell. Additional settling of TSS is performed in the first section of the Nitrification Cell.

Water from the Nitrification Cell is then pumped to BCR #1 for nitrate and nitrite treatment through a microbial process termed 'denitrification'. The outflow from BCR #1 then reports to the WMP (Section 3, Rainy River Mine – Water Treatment Train Design Report, Document # 053_0719_20B, by Alexco and Contango dated July 2019).

Water Management Pond

WMP Dam 1 through Dam 5 contain the pond with a crest elevation of 371.5 m for Dam 1, 2 and 3 (homogenous clay fill dams). Dam 4 and Dam 5 (clay core) comprising of TMA West Dam (WD) are being raised annually together with other dams required for tailings storage.

Construction of the WMP dams and ancillary structures under the original LRIA work permit No. FF-2015-04 began in September 2015. Construction of the dams, spillway, and intake channel were completed in early August 2017 followed by completion of the seepage collection system in September 2017. Works were completed in 2017 under amended LRIA work permits FF2015-04A and FF2015-04B based on revised design details.

Suspended construction periods occurred on two separate occasions for WMP Dam 3 due to high porewater pressure detected in the foundation. This occurred on December 15, 2015, and January 26, 2016. This information is documented in WMP As-Built Report (RRP-GEO-REP-030 R1) provided by then-EOR, AMEC Foster Wheeler (AFW).

Settlement cracking in WMP Dam 5 was observed in December 2015 and a Stop Work Order was issued by the MNRF in January 2016. A geotechnical investigation was completed, and remedial design measures were implemented. An amended LRIA approval was received in September 2016.

Major design revisions at the WMP included:

- Lowered the dam crest from the original design elevation of 373.0 m to 371.5 m because additional volume of borrow material inside the WMP impoundment area was taken for construction of WMP dams (AFW, RRP-GEO-REP-030 R1).
- Addition of toe berms to WMP Dams 2, 3, 4 and 5 following supplemental geotechnical investigations to satisfy revised design criteria.
- Revised toe-drain details to suit interim 2015/early 2016 As-Built conditions and mitigate potential stability issues.
- Remedial works to the interim clay fill placed in 2015/early 2016 at WMP Dam 3 which included a 14 m wide key trench through the existing crest of the dam.

- Utilization of additional thickness of Zone 8 (Dam 2) and Zone 3 (Dam 4) to address underbuilt or trimmed clay fill slopes to satisfy the neat line geometry.
- Re-alignment of the emergency spillway to avoid in-place infrastructure.

Constructed Wetlands

WMP and WDP were intended to discharge to a series of constructed wetlands, which would provide a target 30-day retention time to control water quality. After the construction of BCR2, the wetlands are not required until the end of mine life.

3.1.2 Contact Water Management

The structures that manage contact water at RRM include Mine Rock Pond (MRP), Sediment Ponds (SPs), Water Discharge Pond (WDP), and South Runoff Pond (SRP).

Mine Rock Pond

The MRP is located in the remnant of lower Clark Creek and is designed to collect runoff and seepage from the EMRS, Low Grade Ore Stockpile (LGOS), and dewatering from the Open Pit and underground mine. Importantly, there is no direct discharge to the environment from the MRP (Figure 2).

The MRP is operated at a minimal pond volume to reduce seepage and enhance dam safety. Water collected in the MRP is repurposed as process water for the Mill. In cases of excess water, it may be transferred by pipeline to the TMA, or to BCR 2 and subsequently to the WMP for discharge to the environment, depending on the water quality.

The design details for the MRP are summarized in Table 1.

Table 1: MRP Design Document Summary

Document Title	Reference
Design Brief – Water Management Dams	3098004-004400-A1-ETR-0004-00
Mine Rock Pond Dam – Design Revision and Operating Guidelines	RRP-GEO-REP-007-R0
MRP As-built Report	RRP-GEO-REP-033 R1
Drawing Title	**New Gold Document Number**
Mine Rock Pond Dam General Arrangement Plan	3098004-002590-A1-D70-0002
Mine Rock Pond Dam Profile	3908004-002590-A1-D70-0003
Mine Rock Pond Dam – Typical Cross Section	3098004-002590-A1-D70-0004
Mine Rock Pond Dam Emergency Spillway Plan and Sections	3098004-002590-a1-d70-0005
Interim Mine Rock Pond – Plan, Cross Sections, and Details	3098004-002590-A1-D50-0006

Construction of the MRP commenced in 2015 and was completed in the fall of 2017. Construction of the MRP dam was slowed in July and August of 2017 to allocate resources to the completion of TMA Cell 1.

Sediment Ponds

Three sediment ponds, Sediment Pond 1, 2, and 3, have been constructed to manage runoff and seepage from the WMRS (Figure 2).

- **Sediment Pond 1** is located to the north of the WMRS and is designed to provide a 12-day hydraulic retention time during sustained wet conditions, including the wettest month of a 100-year wet year, and during the 25-year, 24-hour storm event. Additionally, it will receive overflow from the West Creek Box Culvert Spillway during large storm events exceeding the 10-year return period.

- **Sediment Pond 2** is located to the west and shares similar design parameters with Sediment Pond #1 for retention time and stormwater management. Both ponds are critical in supporting progressive reclamation efforts to improve overall site safety and minimize environmental risks.
- **Sediment Pond 3** is located to the south and is designed with collection ditches, a sump in the Marr Creek valley, temporary sumps, and a containment berm with an emergency overflow spillway. It collects shallow seepage from the remnant Marr Creek, which is typically maintained in a dry condition. The pond is designed to accommodate the 25-year, 24-hour storm event and the 25-year, 30-day storm event. The emergency spillway can handle the 24-hour, 100-year return period intensity-duration-frequency (IDF) event. Water from Sediment Pond 3 is pumped to Sediment Pond 2, and the pond level is maintained as low as possible. Sediment Pond 3 does not discharge to the environment.

Seepage collection ditches have been constructed around the Overburden Stockpile and WMRS to convey runoff to the sediment ponds. The ditches are designed to minimize erosion and protect the surrounding areas. Roadside ditches may also direct flows to the sediment ponds when necessary.

Water Discharge Pond

The WDP was originally designed to collect runoff from the natural catchment south of the TMA, as well as seepage from the seepage collection ditch and bleed flow from the WMP at a design rate of 10,000 m^3/day. Initially, the WDP was intended to discharge to a series of constructed wetlands, which would provide a 30-day retention time to control water quality. However, with the construction of BCR2, the wetlands are no longer required until the end of mine life.

Currently, the WDP collects seepage from the TMA South Dam and local runoff. The water collected in the WDP is pumped back into the WMP for further management, ensuring that it remains contained and treated as necessary.

South Runoff Pond

The SRP was originally designed to store mine site runoff water but has since been repurposed as a temporary storage facility for Open Pit water before it is pumped to the mill. Due to its limited storage capacity, overspill has occurred a few times during its operational history. To address this, a seepage collection and pump-back system has been installed downstream of the SRP to prevent seepage and overflow, as well as to manage flows from the surrounding catchments, ensuring that water does not flow into the Open Pit (Figure 2).

Design and construction details for the SRP are summarized in documents in Table 2. While As-Built drawing packages are often available, original design drawings may not be readily accessible.

Table 2: Document Summary

Document Title	Reference
LRIA Work Permit Application Support Document - Sediment Ponds	RRP-GEO-LRIA012 R1
As-Built Report – Sediment Pond #1	RRP-GEO-REP-040 R1
As-Built Report – Sediment Pond #2	RRP-GEO-REP-038 R1
As-Built Report – Sediment Pond #3	BGC-4460-DT00-RPT-0011
Sediment Pond 3 Detailed Design	BGC-4460-DT00-RPT-0002
LRIA Work Permit Application Support Document – Water Discharge Pond and Constructed Wet land	RRP-GEO-LRIA-004D R2
Drawing Title	**New Gold Document Number**
Temporary Sedimentation and Plan and Details	3098004004430-A1D70-0002
Sediment Pond #2 – Plan, Cross Sections, and Details	3098004-004440-A1-D70-0002

South Runoff Pond Grading Plan	100126-2510-DD10-GRD-0003.001.08.IFC
South Runoff Pond Section and Details	100126-2510-DD10-GRD-0004.001.07.IFC
Water Discharge Pond Dam – As-Built Plan and Typical Cross Sections	3098004-004410-A1-D70-0002

Seepage Collection Systems

The seepage collection systems consist of several ditches and sumps that collect seepage and downstream runoff within the dam structure and were design and constructed for TMA (See Part II), WMP and MRP.

WMP

The seepage collection system for WMP includes Seepage Collection (SC) Sump 1 and 2 and is located at downstream toe of WMP dams. The design intent is to manage a 1:25 year 24-hr rainfall:

- SC Sump 1 is located downstream of WMP Dam 2, and the storage capacity is 18,200 m3.
- SC Sump 2 is located downstream of WMP Dam 3, and the storage capacity is 11,800 m3.

Due to local topographic highs between SC Sump 1 and 2, as well as between SC Sump 2 and NDSC Sump 3 (downstream south end of North Dam), the seepage collection ditches do not connect. The seepage collection ditch at the toe of WMP Dam 1 drains to SC Sump 1, while the collection ditch at the downstream toe of WMP Dam 3 drains to SC Sump 2.

The collected water from SC Sump 1 and 2 is pumped back to WMP.

MRP

MRP is located within a topographic low area and collects the seepage from the EMRS. The MRP dam and spillway are located within the footprint of the Clark Creek original alignment. No specific seepage collection system was designed for MRP, however, the natural low area between the dam toe and Highway 600 becomes a ditch which collects dam seepage and surface runoff which is pumped back to MRP. Two culverts under the old Highway 600 drain the ditch water to south without environment concern.

3.1.3 Freshwater Diversions

The freshwater diversions function to reduce inflows to the RRM and provide offsetting habitat for the loss of portions of Loslo, Marr, Clark, and West creeks. Diversion of the non-contact runoff from these catchments reduces the effluent management requirements. All structures support fish habitat. Freshwater diversion is provided by two systems:

- West Creek Diversion includes the Stockpile and West Creek dams, ponds, and diversion channels.
- Clark Creek Diversion includes the Clark Creek and Teeple dams, ponds, and diversion channels.

3.1.4 West Creek Diversion

The West Creek Diversion system diverts flows from the West Creek and its tributaries around the Open Pit and discharges into the Pinewood River at Loslo Creek. It includes the Stockpile Pond Dam and Diversion Channel, which divert flows around the Plant Site, and the West Creek Pond and Diversion Channel, which diverts flows around the Open Pit. The following sections describe the components of this diversion.

Stockpile Pond and Diversion Channel

The Stockpile Pond is located north of the Primary Crusher and east of the Mill. It is blocked by the Stockpile Pond Dam, and the water in the pond increases until it reaches the Diversion Channel, which conveys the flow around the mine via the West Creek Pond and West Creek Diversion.

The primary objective of the Stockpile Pond is to divert freshwater from natural ground into the West Creek Watershed. The Stockpile Pond Diversion Channel was designed to convey the Probable Maximum Flood (PMF) from the plant site area to the West Creek Pond, ensuring proper water flow management. In addition to its hydrological function, the diversion also provides fish habitat compensation. The base width of the Stockpile Pond Diversion Channel varies from 33 m to 6 m at the tapered inlet, with 4H:1V side slopes. The total length of the diversion channel is approximately 1,200 m.

The Stockpile Pond Dam has a height of 9.8 m, with overall side slopes of 6.5H:1V (4H:1V without berms), a crest width of 6 m, and a length of 175 m. The dam crest elevation is 375.5 m, and the diversion channel invert is at 372.2 m, which provides capacity for 93,700 m³ of storage. Greater volumes of water are discharged through the 33 m spillway into the diversion channel. The diversion channel has a low (<1%) gradient and reports to the West Creek Pond with a typical bottom width of 6 m.

The design brief for the dam is documented in RRP-GEO-REP-003. Construction of the diversion channel was completed in November 2016, confirmed by the then-EOR (RRP-GEO-MEM-080-R1). The dam construction was finished in May 2017 and confirmed by the then-EOR (RRP-GEO-MEM-119-R1). The dam was built with a central clay core and random fill or NPAG rock shells.

West Creek Pond and Diversion Channel

The West Creek Pond is located north of the Open Pit and west of the Mill, positioned to allow the raising of the pond water level sufficiently to divert flows westerly through a diversion channel, bypassing the Open Pit. The West Creek Dam intercepts all West Creek flows from the north, as well as drainage from two tributaries to the east, which are diverted through the Stockpile Diversion Channel.

The West Creek Dam features a central clay core with a random fill upstream shell and NPAG mine rock downstream shell. It has a crest elevation of 364.9 m, with a total storage capacity of approximately 156,000 m³. The dam reaches a maximum height of 8.9 m, and the overall side slopes are 7.9H:1V, including rock toe berms (4H:1V without toe berms). The West Creek Pond has been designed to contain the Probable Maximum Flood (PMF), with excess water discharging to the West Creek Diversion Channel.

The first 615 meters of the West Creek Diversion Channel function as the emergency spillway for the West Creek Dam, designed to convey a PMF event. The spillway has an invert elevation of 361.0 m and is 8 meters wide, providing a freeboard of 4.0 meters at the normal water level in the pond. This design ensures the pond's capacity to manage extreme flood events while maintaining structural integrity.

West Creek Diversion Overflow Structure

The Overflow Structure, also referred to as the weir, is located at Sta. 0+615 within the West Creek Diversion Channel, as illustrated in Figure 1. The structure includes a 62.5-meter-long box culvert (2.4 meters wide and tall) that constricts the channel flow, activating a side overflow weir when the flow exceeds a certain threshold. The weir has an invert elevation of 360 meters and a width of 50 meters. Its primary function is to regulate the flow rate discharging from the culvert during high-flow conditions, particularly during extreme events.

The remaining approximately 4,000 meters of the diversion channel traverses relatively flat terrain with minimal elevation changes, allowing for a smaller excavation. The overflow structure is designed so that during a Probable Maximum Flood (PMF) event, the flow rate downstream of the culvert (in the diversion channel) will not exceed the 100-year flood outflow from the West Creek Pond, which is 26.9 m³/s. If excess flow occurs, the diversion channel upstream of the structure will back up, with the surplus water being diverted through the side overflow channel into Sediment Pond 1.

To prevent overflow, a berm is constructed across the diversion channel above the culvert, with a crest elevation of 363 meters. During a PMF event, the peak water level in the diversion channel will reach 362.5 meters, providing 0.5 meters of freeboard above the crest of the berm. The overflow structure is designed to activate for events exceeding the 10-year storm. During a PMF event, the peak overflow discharge will reach 163.8 m³/s. The overflow channel discharges onto a flat, grassy plain located south of the West Creek Diversion Channel and north of the ultimate WMRS.

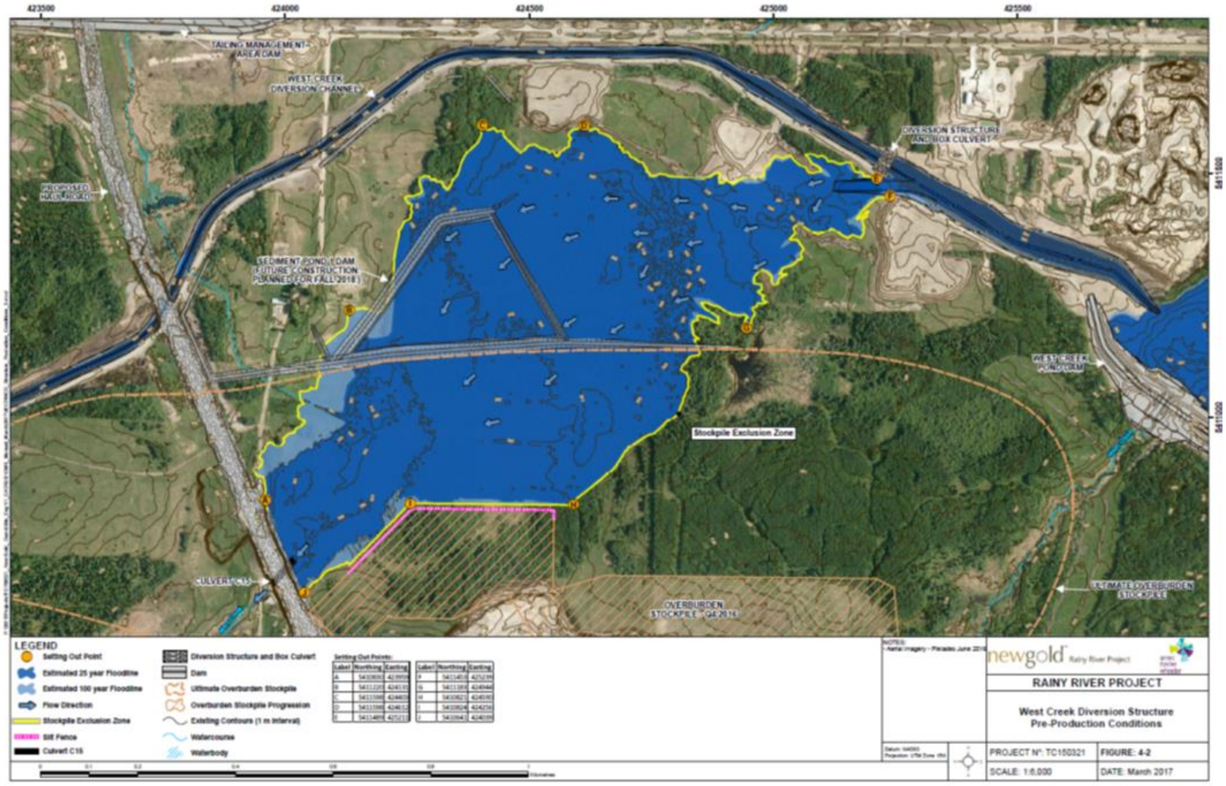


Figure 1: West Creek Diversion Overflow Map

Summary of West Creek Design Features

The design parameter of the West Creek Diversion is summarized in Table 3.

Table 3: Design Parameters for the West Creek Diversion

Design Parameter	Unit	Stockpile	West Creek
Embankment dam crest elevation	m	375.5	364.9
Diversion channel inlet invert elevation	m	372.2	360.9
Diversion channel outlet elevation	m	360.6	344.2
Diversion channel gradient (average)	%	0.85	0.35
Diversion channel side slopes	H: V	4:1[1]	4:1

Note: [1] Different (near vertical) at rock section of the channel

2.1.1.1 Clark Creek Diversion

The purpose of the Clark Creek Diversion is to redirect natural drainage and runoff around the EMRS and provide fish habitat offsetting. The diversion channel directs runoff from Clark Creek upstream of the Clark Creek Dam and the EMRS, through the Clark Creek Diversion Channel into Teeple Pond, and subsequently into the Teeple Diversion before flowing into the Pinewood River via a culvert under Teeple Road.

Construction of the Clark Creek Diversion took place between August 29, 2015, and December 4, 2016, and was authorized under LRIA FF-2015-03A and Fisheries Act approval. While there are applicable federal and provincial environmental assessment commitments, the diversion has limited Ministry of the Environment, Conservation, and Parks (MECP) requirements beyond sediment control due to its nature as a freshwater diversion.

Both Clark Creek and Teeple Dams were constructed as homogeneous clay fill embankments utilizing native clay overburden. The clay fill is protected by gravel and cobble-sized materials, with a layer of geotextile separation to prevent erosion. The dams include overflow sections designed to carry storm flows, activated by a 2-year return event, and are capable of managing flows greater than the 100-year return design flow. These overflow sections ensure the safe passage of water if the pond level exceeds the maximum operating water level. The Clark Creek Dam features a 20-meter-wide overflow section, while the Teeple Road Dam includes a 150-meter-wide overflow section to allow water and fish to pass over the structure.

The diversions are designed to convey a 1:100-year flow, with a typical base width of 6 meters and 4:1 side slopes. The Clark Creek Diversion is 1,200 meters long, and the Teeple Diversion is 580 meters long.

Table 4: Design Parameters for the Clark Creek Diversion

Design Parameter	Unit	Clark Creek	Teeple
Embankment dam crest elevation	m	380.0	379.0
Dam overflow section invert elevation	m	379.9	378.7
Diversion channel inlet invert elevation	m	378.75	378.5
Diversion channel outlet elevation	m	377.6	371.5
Diversion channel gradient (average)	%	0.1	1.2
Diversion channel side slopes	H: V	4:1	4:1

Deviations from the original design occurred for both diversions; however, these are not expected to negatively impact their stability. Examples of these deviations include the absence of a low-flow channel, the presence of oversized boulders, variations in the frequency of habitat features, and riffles that either do not meet the design elevation or are too steep.

Loslo and Marr Diversion

The diversion system, comprising ditches and pipelines, is located within the northern part of TMA to collect and redirect the natural flow from old Loslo Creek and Marr Creek, as well as surface runoff from the northern portion of the TMA. The diverted water flows to the Pinewood River via the West Creek Diversion. The Loslo portion of the system is known as the Inflow Control System (ICS).

ICS was initially constructed in 2020 using a cut-and-fill method but overtopped during the 2022 spring freshet. To improve the system, additional work was carried out in the winter of 2022/23, which included the following upgrades:

- Raising the ICS berm crest to an elevation of 377.5 m.
- Adding a 20-meter-wide spillway with an invert elevation of 376.9 m.
- Installing a pump and pipeline system to redirect ICS water to Marr Ditch, located east of the South Dam (instead of the Marr sump), with an estimated capacity of 680 m^3/hr.
- Relocating part of Marr Ditch to the northern end of the South Dam.

Open Pit Diversion

A diversion ditch was constructed in the winter of 2022/23 to direct surface runoff around the north of the Open Pit to Sediment Pond 3 and then to Sediment Pond 2 for discharge, as per CAP-RFI-000005-02CAP001767-2023. The diversion is designed with the capacity to convey peak flows from a 100-year return period event.

Documentation

The freshwater diversion structures have been developed in accordance with the design briefs and as-built reports summarized in Table 5.

Table 5: Supporting Documents for the West Creek and Clark Creek Diversions

Document Title	Reference
Design Brief – Water Management Dams	3098004-RPT-0015 REV 00
Design Update – Clark Creek Pond Dam	MNRF-IPT-0004.008
Stockpile Pond Dam – Design Revision and Operating Guidelines	MNRF-IPT-0005.007
West Creek Dam – Design Revision and Operating Guidelines	MNRF-IPT-0005.006
Clark Creek Diversion – As-built Report	RRP-GEO-REP-027
West Creek Diversion – As-built Report	RRP-GEO-REP-028 R1
Drawing Title	**New Gold Document Number**
West Creek Pond Dam – Layout and Foundation – Preparation Plan & Details	3098004-002510-A1-D50-0001
West Creek Diversion Channel – Plan and Profile	3098004-002510-A1-D70-0003
West Creek Diversion Plan, Profile, and Section As Built	3098004-002510-A1-D70-0003-2
West Creek Diversion Plan, Profile and Section As Built	3098004-002510-A1-D70-0003-3
West Creek Dam Spillway Plan and Sections	3098004-002510-A1-D70-0004
West Creek Diversion Channel Overflow Diversion Structure Section and Details	3098004-002510-A1-D70-0005
West Creek Diversion Channel Culvert C11 Plan and Section	3098004-002510-A1-D70-0006
West Creek Diversion Channel Culvert C12 Plan and Section	3098004-002510-A1-D70-0007
West Creek Diversion Channel Culvert C13 Plan and Section	3098004-002510-A1-D70-0008
West Creek Diversion Channel Culvert C14 Plan and Section	3098004-002510-A1-D70-0009
Marr Creek Diversion Channel Culvert C15 Plan and Section	3098004-002510-A1-D70-0010
West Creek Diversion Channel Culvert C16 Plan and Section	3098004-002510-A1-D70-0011
West Creek Diversion Channel Temporary Side Spillway Plan, Profile and Sections	3098004-002510-A1-D70-0012
West Creek Pond Dam Temporary Overflow Spillway Typical Section, Profile and Details	3098004-002510-A1-D70-0014
Stockpile Pond Dam – Plan and Typical Section	3098004-002580-A1-D70-0002
Stockpile Pond Dam Layout and Foundation Preparation Plan and Profile	3098004-002580-A1-D70-0003
Stockpile Pond Diversion Channel – Plan and Profile	3098004-002580-A1-D70-0004
Stockpile Pond Plan View	3098004-002580-A1-D50-0001
Stockpile Pond Cross Sections	3098004-002580-A1-D50-0002
Stockpile Diversion Typical Cross Sections in Overburden	3098004-002580-A1-D50-0003
Stockpile Diversion Plan and Profile in Overburden	3098004-002580-A1-D50-0004
Stockpile Diversion Typical Cross Sections in Rock	3098004-002580-A1-D50-0005
Stockpile Diversion Plan and Profile in Rock	3098004-002580-A1-D50-0006

Clark Creek Pond Dam – Plan, Typical Section and Profile	3098004-004400-A1-D70-0001
Clark Creek Pond Diversion Channel – Plan and Profile	3098004-004400-A1-D70-0002
Clark Creek Pond Plan View	3098004-004400-A1-D50-0002
Clark Creek Pond Cross Sections	3098004-004400-A1-D50-0003
Clark Creek Diversion Typical Cross Sections	3098004-004400-A1-D50-0004
Clark Creek Diversion Typical Plan and Profile	3098004-004400-A1-D50-0005
Marr Creek Connection to West Creek Diversion Channel	3098004-002510-A1-D50-0009
Teeple Road Dam – Plan, Typical Section and Profile	3098004-004400-A1-D70-0003
Teeple Road Pond Diversion Channel – Plan and Profile	3098004-004400-A1-D70-0004
Teeple Road Dam Overflow Section Permanent Repairs	3098004-004400-A1-D70-0005
Teeple Road Dam Overflow Section Permanent Repairs	3098004-004400-A1-D70-0006
Teeple Road Dam Non-Overflow Section Permanent Repairs	3098004-004400-A1-D70-0007

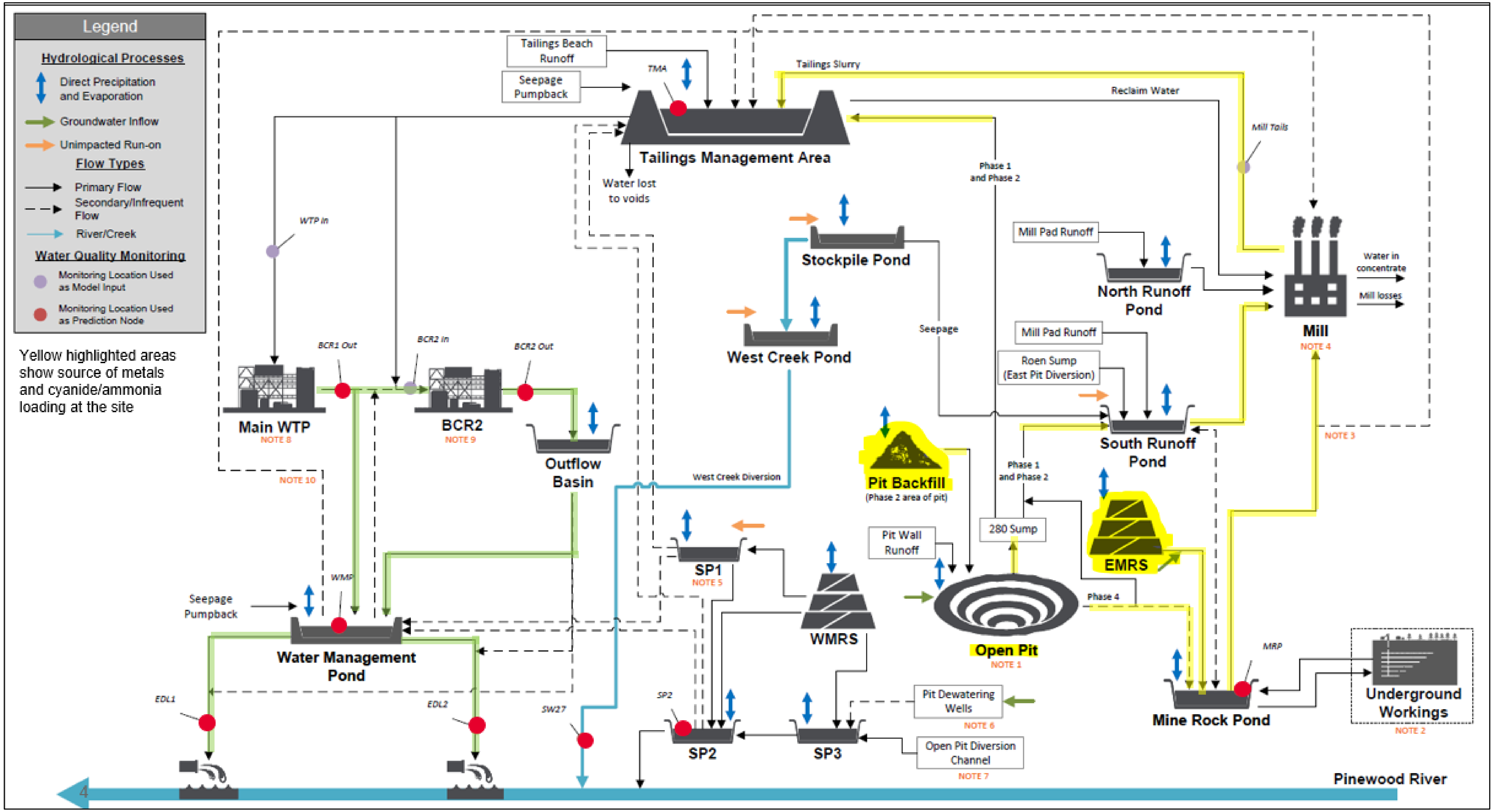


Figure 2:Water Management at RRM

3.1.5 Review of Dam Consequence Classification

The Dam Safety Guidelines (CDA 2013) include a classification scheme which provide guidance for the standard of care expected of dam owners and designers. The classification scheme considers the following consequences: population at risk, loss of life, environmental and cultural values, and infrastructure and economics.

The Dam Safety Guidelines for mining dams (CDA 2019a) rely on these guidelines for assigning consequence classifications. The consequence classification of a dam is used to select the appropriate hydrologic and seismic design criteria.

Prior to the Rainy River Mine regulatory agency transitioning from the MNRF to the MNDMNRF, the TMA design criteria complied with MNRF/LIRA regulations which stipulated that design criteria generally correspond to the "Extreme" consequence classification specified by the CDA. BGC, the previous EOR, adopted the "Extreme" consequence classification and used it to establish the hydrologic and seismic criteria for design.

SRK, the current EOR for water management structures, reviewed the dam consequence classification as part of a comprehensive DSR completed in 2021 (SRK 2021). Note that consequence classifications are under review, as detailed in the Water Management Structure Design Basis Review (SRK, 2023a). Notably, the recommended South Runoff Pond classification was increased from Low to either High or Very High, depending on the presence of workers in the Open Pit. In 2023, SRK understands that backfilling of the Open Pit has commenced and the presence of workers at risk in the potentially impacted areas is minimized or eliminated, in which case the appropriate consequence classification remains Low.

Table 6 provides the dam consequence classification of each facility. WMP Seepage Collection Sumps are not classified as dams (Rainy River – 2023 Dam Safety Inspection – CRW3295-4910-BA10-RPT-000).

Table 6: Dam Classification for NGRR (DSI 2024)

Facility	Current Classification
Tailings Management Area (North, West & South Dams)	Extreme
Water Management Pond	Extreme
Mine Rock Pond	Extreme
Water Discharge Pond	Low
Sediment Pond 1	Low
Sediment Pond 2	Low
Sediment Pond 3	Low
West Creek Pond	Extreme
Stockpile Pond	Extreme
Clark Creek Pond	Low
Teeple Pond	Low
South Runoff Pond	Very High

3.2 Pipelines

The following major pipeline corridors are used to transfer tailings and water around the site, as shown in Figure 2. These pipelines are categorized based on the types of water/fluids they convey and their respective functions. It is important to note that the pipelines are not insulated.

3.2.1 Tailings Lines (TL)

This corridor extends from the Mill to the TMA. At the Y Junction, the tailings pipeline branches into two segments: One segment extends along SD through Boster Station to TMA WD and TMA ND. The other segment extends through northeast section of TMA SD to North Ring Road (NRR).

The tailings pipeline between the Mill and Y Junction extends within a lined corridor with six emergency discharge ponds. The tailings pipeline beyond Y Junction is installed with valves and spigots for tailings discharge.

3.2.2 Mill Makeup Water Pipelines

Mill water supply need is collected from various sources:

- TMA reclaim pond (RC). The pipeline extends from the reclaim structures to the mill within the lined corridor along with TL, with six emergency dump ponds. An extension to this pipeline provides the ability to reclaim from the WMP in addition to the TMA.
- MRP (WT, Wastewater)
- NRP and SRP (ML, Mill Water)

3.2.3 Contact Water Pipelines

The contact water pipeline network conveys water within the following ponds:

- Open Pit to SRP (DT, Dewatering Line)
- Sed. Pond 1 to TMA RC (DT)
- WMP to Y Junction (WT):
- MRP to TMA along South Ring Road (WT). There is an extension to discharge water directly to the WMP or to the BCR2. A tee valve enables flows from Sed Pond 2 and Sediment Pond 1 to also discharge into this pipeline.
- Sediment Pond 1 to Sediment Pond 2 (not shown)
- Sediment Pond 3 to Sediment Pond 2 (WT)
- WDP to WMP (DT)

3.2.4 Treated Water Pipelines

The contact water is pumped from TMA, treated in the water treatment facilities, and retained in WMP prior to discharge to environment, mine facility usage, or mill water supply. The following pipelines are used to achieve this:

- TMA to WTT (WT)
- WMP to Wash bay, and Other Ming Facilities (FR)
- WMP to BCR 2 and OB (WP, WAMP Water)
- WMP to EDL1 (DC, Discharge Water). The line is 10,000 m in length between the Outflow Basin and a diffuser in the Pinewood River, and discharges treated water to the environment.
- WMP to EDL2 (DC). The line is 2,000 m in length between the Outflow Basin and a diffuser in the Pinewood River and discharges treated water to the environment.

Additional minor pipelines include connections from seepage collection sumps to the TMA or WMP, pipelines within the Water Treatment Train and the WMP, and discharge pipelines from Sediment Pond 1 and 2 to splash pads which discharge to West Creek Diversion and Pinewood River, respectively.

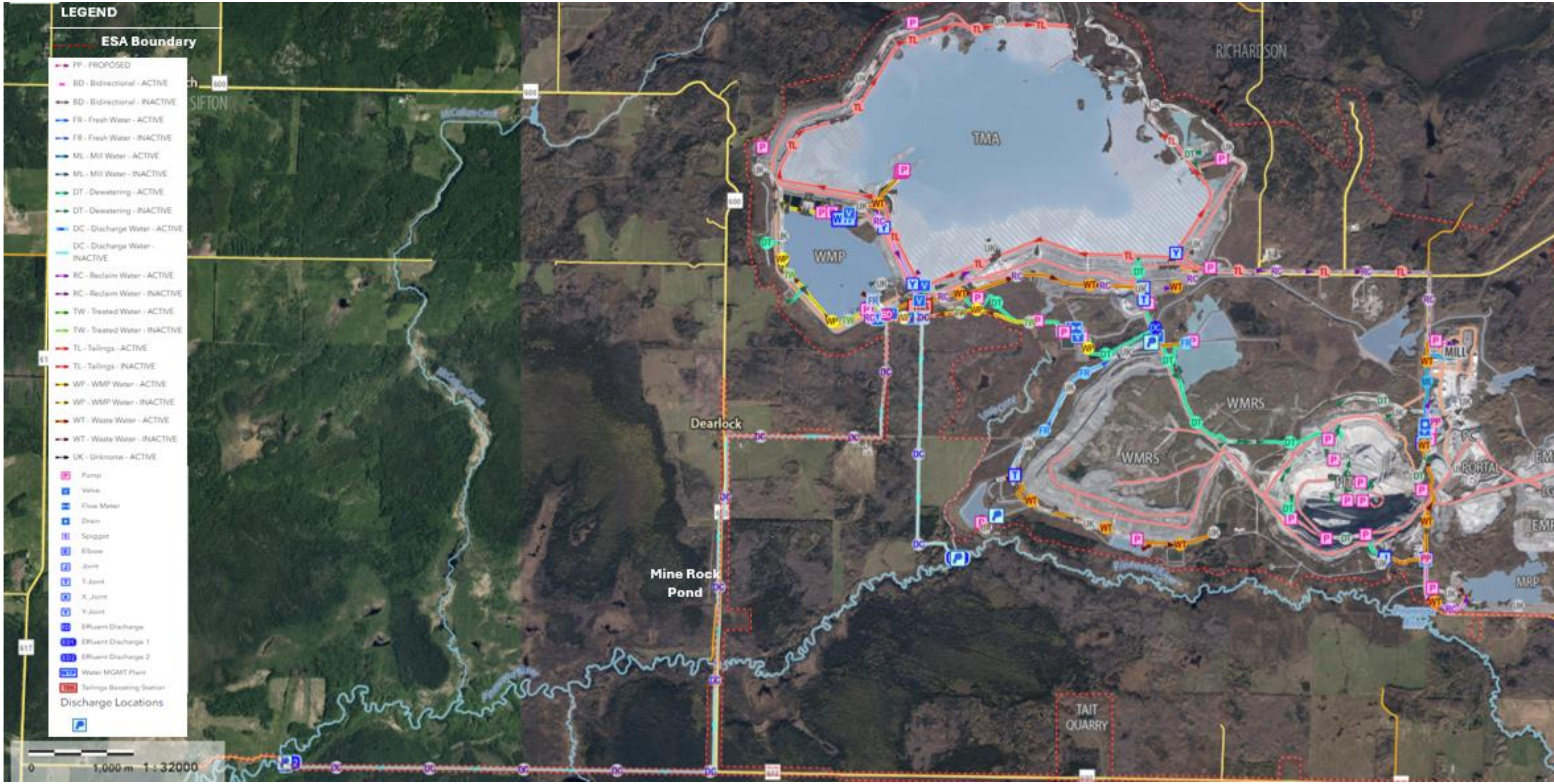


Figure 3: Pipeline Layout (Orthophoto, October. 17, 2024)

3.3 Discharge Locations

There are four provincially and federally permitted locations where discharge from the mine into the environment can occur (Table 7).

Table 7: Permitted Discharge Locations

Type of Water	Discharge Location	Details
Treated Water	Effluent Discharge Location #1 (EDL1)	Consists of a 10 km pipeline and an effluent mixing structure (EMS#1) with two duckbill diffusers and riverbed armoring, downstream of the McCallum Creek and Pinewood River confluence
	Effluent Discharge Location #2 (EDL2)	Consists of a 2 km pipeline and an EMS (#2) with two duckbill diffusers and riverbed armoring, downstream of the Loslo Creek and Pinewood River confluence
Contact Water (WMRS)	Sediment Pond 1	Pumped discharge to a splash pad, downstream of Sediment Pond 1 spillway, which discharges to the West Creek Diversion, then flows into to the Pinewood River at the Loslo Creek confluence
	Sediment Pond 2	Pumped discharge to a splash pad, downstream of Sediment Pond 2 spillway, which discharges to the Pinewood River upstream of the Loslo Creek confluence

The locations of these discharge points are presented in Figure 4. Each discharge location has specific discharge criteria as specified in MECP ECA #7004-BC7KQ5 which must be satisfied prior to discharge. These criteria are described in Section 4.4.5 Discharge Criteria.

At closure, effluent will be discharged through the constructed wetland to the Pinewood River at the Loslo Creek outflow (via lower Loslo Creek).

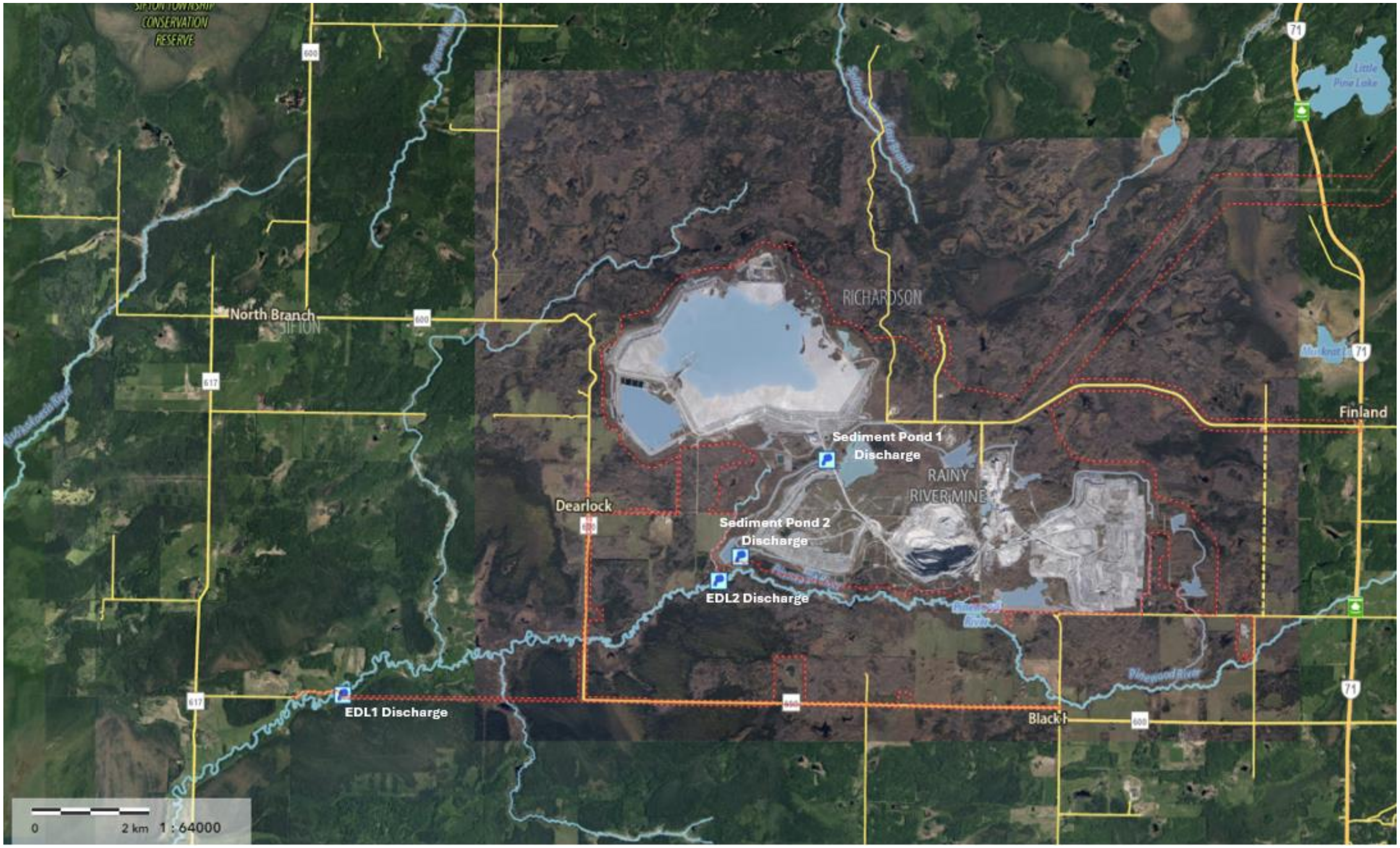


Figure 4: Discharge Locations (Orthophoto, October. 17, 2024)

3.4 Closure Plan

3.4.1 WMP

The WMP dams will be breached once they no longer serve a water management function. Any exposed upstream dam faces will be revegetated. The constructed wetlands will remain in place, as they are designed to operate passively and are expected to stabilize into a wetland complex during operations.

3.4.2 MRP

The MRP will remain in place to collect runoff and seepage from the East Mine Rock Stockpile (EMRS). This water will then be directed to the Open Pit for flooding. The water levels in all water management structures must remain within their respective Normal Operating Water Levels (NOWLs). Should the NOWL be exceeded, the owner must notify the appropriate authorities and submit a plan to return to the NOWL within an agreed timeframe. At this stage, it is undetermined whether water will be transferred to the Open Pit via ditching or pumping.

3.4.3 Open Pit

The Open Pit will collect overland flow, which will be discharged into the Pinewood River. It is expected that the Open Pit will take approximately 75 years to fill.

3.4.4 Sediment Ponds

Sediment Ponds will be maintained until the site is recognized as a closed mine and monitoring associated with the Metal and Diamond Mining Effluent Regulation is no longer required. At that point, all Sediment Ponds will be breached, and residual pond sites will be stabilized by infilling with overburden and revegetating.

The closure strategy for the WDP involves the collection of passive outflows from the WMP and TMA and discharging them to the constructed wetlands. The current design includes five ponds (Pond A, B, C, D, and E), with Pond A, the downstream pond, featuring a control structure to stop discharge if water quality does not meet the required discharge criteria. If necessary, water from Pond A would be pumped back to the TMA or WMP. The constructed wetlands will remain part of the closure plan permanently. A pilot study is ongoing to evaluate the effectiveness of the constructed wetland system.

The WDP dam will be breached once it no longer serves a water management function.

3.4.5 Freshwater Diversions

Closure of the freshwater embankments will generally involve breaching the embankments to prevent ponding of water and revegetating the slopes to reclaim the area. Some embankment structures, such as the SPD, will continue to play a role during the closure phase and will not be breached. Freshwater diversions and the constructed wetland structures, which are designed to operate passively, will remain in place during closure.

3.4.6 Constructed Wetlands

As part of the WDP closure strategy, passive outflows from the WMP and TMA will be directed to the constructed wetlands. The wetlands design currently includes five ponds (Pond A, B, C, D, and E), with Pond A having a control structure to stop discharge if water quality fails to meet discharge criteria. If necessary, water in Pond A will be pumped back to the TMA or WMP. The constructed wetlands will remain in place permanently as part of the closure plan. A pilot study is underway to assess the effectiveness of the constructed wetland system.

3.4.7 Monitoring

Monitoring requirements are outlined in the Rainy River Mine Comprehensive Closure Plan Amendment (O'Kane Consultants, 2019). A review of this plan is currently in progress, with completion expected in 2024.

4. OPERATION

4.1 Pond Storage Capacity

Estimates of storage capacity with respect to elevations are based on comparison of existing conditions with as-built drawings. Appendix A provides the stage storage capacity for all water management facilities.

The pump inlet elevation at WMP is Elev. 363.0 m which corresponds to the minimum operation level and dead storage volume of approximately 1.1 Mm^3.

MRP requires a minimum water storage of 0.1 Mm^3 to ensure underground has sufficient water for operations. It is also the minimum volume for mill reclaim (see Mill Water Reclaim Logic in Part I). It corresponds to minimum operation water level of Elev. 352.0 m.

4.2 Water Balance Model

A water balance model has been developed by SRK in 2024 (CRW3295-4910-BA10-MEM-0007). The water balance model documentation provides projected water levels under various hydrometeorological conditions, as well as key operating criteria for water management infrastructure such as target water levels, pumping hierarchies and decision trees. Updated mine site water balance information and forward-looking projections will be reported monthly and uploaded to the NGI's Pond Water Level GIS dashboard.

Additionally, a monthly water balance memo is provided by SRK. This memo offers a comprehensive review of the water balance model performance to date and includes updated water balance projections for the upcoming 12 months. The primary purpose of the monthly water balance reporting is to inform operational water management decision-making. Monthly reporting also addresses the regulatory requirements contained in the Amended Environmental Compliance Approval (Number: 2290-CAVKGN, April 14, 2022)

4.3 Pond Level Operation Criteria

4.3.1 Environment Notice Level

The Environment Notice Level (ENL) corresponds to a level at which the NGI Environment Manager and Surface Water Engineer need to be notified. NGI must inform the regulator within 48 hours, as required by the ECA, and initiate the Environment Contingency Plan to lower the pond water level. ENL is assigned to be the same as NOWL.

4.3.2 Environment Incident Level

The Environment Incident Level (EIL) refers to an abnormal condition with the potential for a spill of the contained tailings into the environment, without meeting the water discharge quality requirements as outlined by the ECA. If it occurs, RRM must continue the Environment Contingency Plan to lower the pond level and report the incident to the regulator.

EIL is assigned to be the same as the MOWL (EDF event), i.e., the invert of spillway if one exists, or to the required minimum freeboard depth of the Inflow Design Flood (IDF) in the absence of a spillway.

4.3.3 Dam Safety Notice Level

The Dam Safety Notice Level (DSNL) corresponds to a level at which the RTFE and the Capital Projects Manager must be notified to prepare the Surveillance Response Plan (SRP) for a High Pond or other scenarios. The DSNL is assigned the same value as the EIL.

4.3.4 Dam Safety Incident Level

A Dam Safety Incident Level (DSIL) refers to an abnormal condition or performance of the dam (including mis-operation or component failure) with the potential to jeopardize the stability of the dam, however, it is not expected to lead to a breach. NGI must report the incident to the regulator and initiate the EPRP.

Summary of operation elevation data of water management facilities are shown in Appendix B.

4.4 Water Conveyance and Discharge

4.4.1 Water Treatment and Treated Water Operations

Operations associated with conveyance and discharge of water treatment and the treated water are discussed in the following subsections.

Water Treatment

TMA contact water is treated in two facilities: WTT and BCR 2.

Table 8 presents the expected flow rates entering each component in the treatment train. Inflow water to the WTP is higher than the remainder of the treatment train as clarifier underflow will be returned to the tailings facility as sludge. Inflow rates then remain the same from the Nitrification Cell to BCR 1.

Table 8: Expected Inflow Rates for Each Component of Treatment Train [1,2]

Treatment Train Component	Expected Inflow Rate (m^3/day)
Lime WTP	24,000 (up to 26,400)
Nitrification Cell	20,000 (up to 24,000)
BCR #1	20,000 (up to 24,000)

1) from the original design by Alexco and Contango in July 2019 (Rainy River Mine – Water Treatment Train Design Report, Document # 053_0719_20B).
2) historical flow rates are in the range of 14,000-17,000 m^3/day for the Lime WTP.

Normal operating conditions for the WTT require the full functionality of all necessary equipment, including pumps, pipelines, and valves, to transport water from the TMA to the Lime Water Treatment Plant (WTP). Additionally, the internal infrastructure connecting the WTP to the nitrification cells and Biochemical Reaction Cells (BCRs) must be operational. This process depends on a consistent power supply.

Under normal conditions, key personnel must be available to monitor the treatment process. This includes staff at the WTP and those from the Environmental Department responsible for sample collection and monitoring water quality discharged to the nitrification cells, BCRs, and the WMP.

Upset conditions for the Water Treatment Train include flow restrictions or inadequate discharge water quality. Flow restrictions may arise from debris or sediment buildup that obstructs water flow, ineffective or blocked pipelines, damaged or malfunctioning pumps and valves, lack of key personnel, or insufficient materials.

Due to excessive Process Affected Water (PAW) in the TMA, BCR 2 is converted to treat PAW. Pipeline size, pumping rates, and operating criteria will be outlined by the EOR.

WMP

Water in the WMP is pumped to the Mill via a 24-inch diameter pipeline and to the Outflow Basin via a separate 24-inch diameter pipeline.

Water can be discharged to the Outflow Basin when there is sufficient flow in the Pinewood River, which typically occurs between May and October. To accommodate freshet inflows, water levels in the WMP should be drawn down as much as possible by the end of April each year, through discharges via ELD1 and EDL2.

Discharge to the Outflow Basin is subject to the following conditions (MECP ECA #7004-BC7KQ5):

Seasonal Discharge: Treated effluent shall only be discharged to the Pinewood River via EDL1 and/or EDL2 during the seasonal period. No discharge will occur after December 1st of each year until the spring melt, when the Pinewood River is largely ice-free and meets the minimum flow threshold (Condition 4(8)).

1. **Flow Threshold**: Treated effluent shall not be discharged via EDL1 and/or EDL2 or any other means unless the Pinewood River is flowing at 10,000 m³/day or greater, as measured at hydraulic station H1 (formerly site 19), unless specified otherwise by the District Manager in writing (Condition 4(9)).
2. **Sample Collection & Approval**: The Environmental Department is responsible for collecting samples and approving discharge. Samples will also be collected during discharge to monitor water quality and ensure effluent criteria are met. The Department will control the combined effluent discharge rate from EDL1 and EDL2 such that the ratio of the combined effluent flow rate to the Pinewood River flow rate at station H1 does not exceed 1:1 (Condition 4(10)).
3. **Discharge Prioritization**: The discharge from EDL2 should be prioritized. Discharge from EDL1 is only allowed if there is insufficient flow in the receiver (i.e., Loslo Creek) to accommodate discharge from EDL2 (Condition 4(11)).
4. **Discharge Limits**: Discharge from the outflow points must not exceed the respective daily and monthly average objectives and limits specified in Section 6.6.2, Table 14 (Conditions 5 and 6).
5. **Sampling & Monitoring**: Discharge samples must be collected for effluent parameters at the monitoring frequencies listed in Section 6.6.2 Table 13 (Conditions 8(2) and 8(3)).
6. **Acute Toxicity**: The effluent must not be acutely lethal to Rainbow Trout and Daphnia magna. Acute lethality tests on any grab sample of effluent should result in no more than 50% mortality of the test organisms in undiluted final effluent (100% effluent).

Pump System Capacities:

- Pump from WMP to Outflow Basin: up to 1,500 m³/hr.
- Pump from WMP to Mill: up to 800 m³/hr.

WMP operation logic is shown in Figure 2.

Water Treatment and Discharge

Water treatment strategy has been constantly adjusted to adapt to the site water storage conditions based on the lessons that were learned from the 2022 Spring freshet high flows encounter. Figure 5 presents the most recent flowchart of water treatment and discharge.

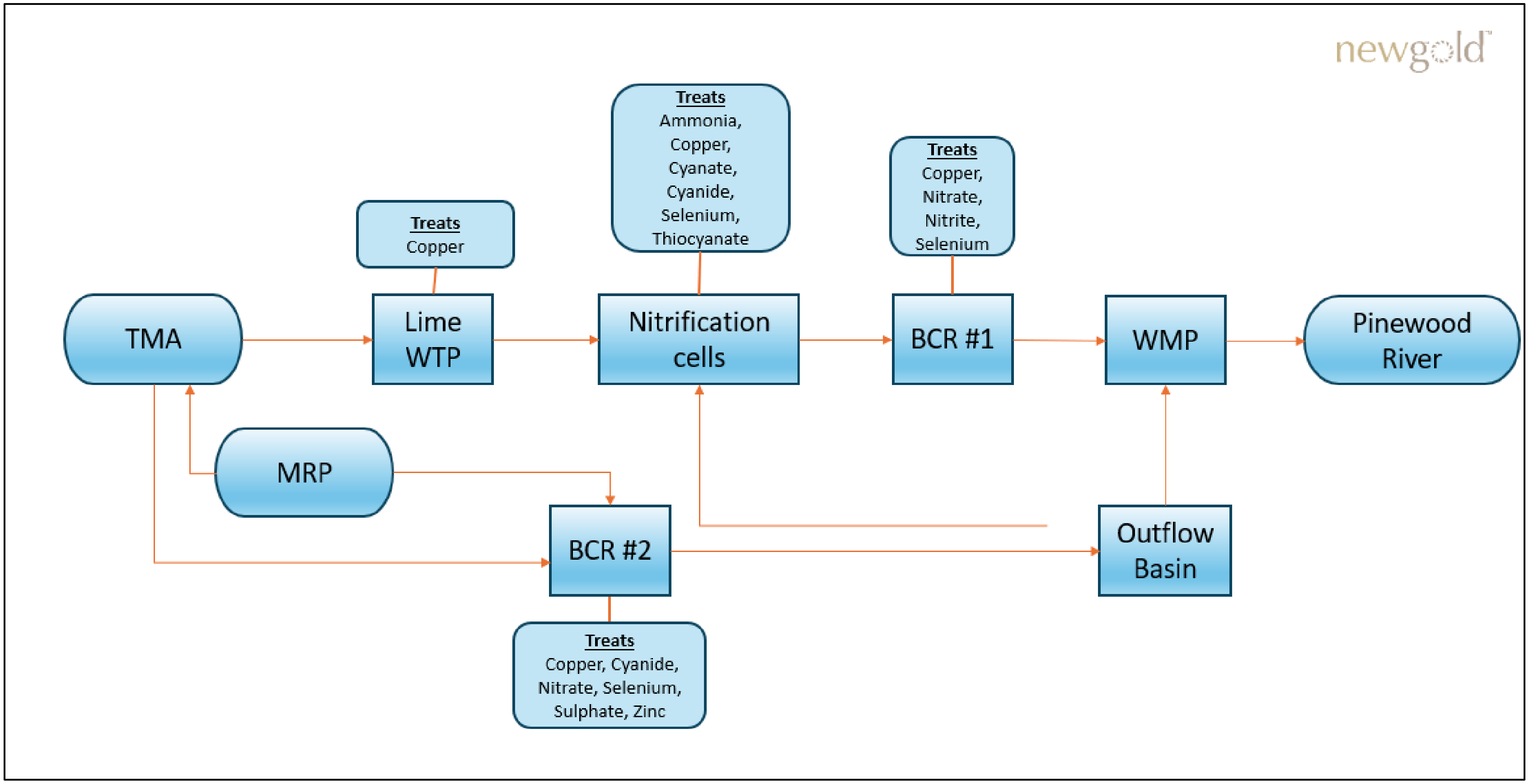


Figure 5: Water Treatment and Discharge

4.4.2 Mill Makeup Water Operations

Water for use in the Mill is collected from the SRP, MRP, NRP, WMP and the TMA. Most flows are pumped as reclaim from the TMA.

The Mill reclaim is prioritized to maintain water levels below the NOWL in the NRP, SRP, MRP, WMP and TMA. The Mill reclaim sources are decided by Mill Operations on a weekly basis, based on current water levels and water balance projections provided by the Environmental Department during the weekly meeting.

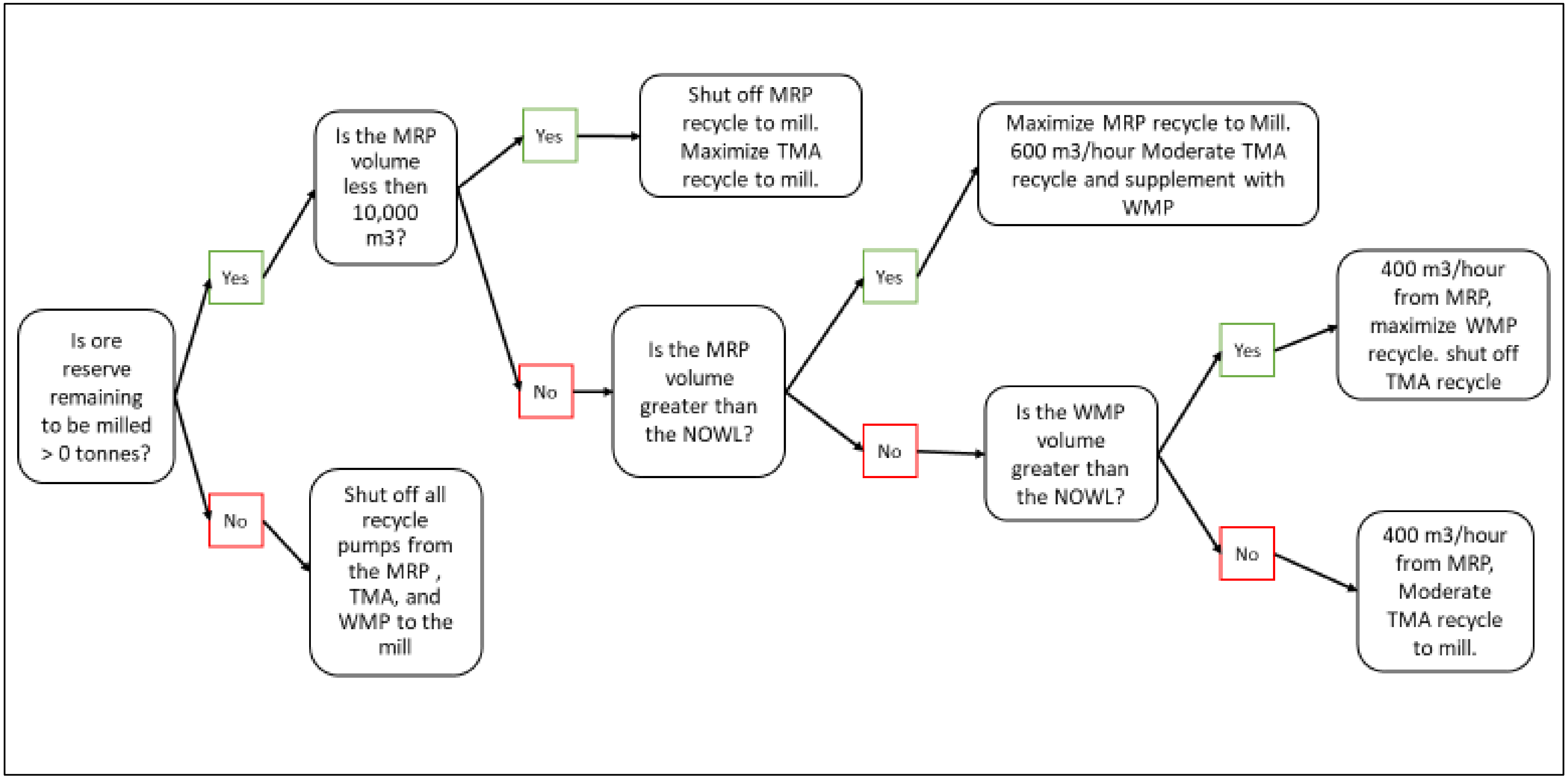


Figure 6: Mill Water Reclaim Logic

Notes: This water reclaim logic will be updated to reflect the following:

- MRP stops at 100,000 m³ and not 10,000 m³. Underground operation requires 100,000 m3 to be available during operations.
- As MRP isn't winterized so is drawn down before winter.
- TMA is prioritized.
- WMP is kept at elevated levels over winter so we can discharge as soon as possible in the spring.

4.4.3 Contact Water Management

Contact Water operational strategies are shown in Figure 2. Further details can be found in this section.

Sediment Pond 1 Operations

Water in Sediment Pond 1 is discharged to the West Creek Diversion (via the permitted discharge location) or pumped via a 16-inch diameter pipeline to the WMP, Sediment Pond 2, or the TMA, depending on water quality.

- If water quality meets the respective daily and monthly average objectives and limits listed in Table 14, it can be discharged to either the WMP or West Creek Diversion:
  - The discharge rate to the splash pad upstream of the West Creek Diversion must be controlled to ensure the ratio of effluent flow to the receiver flow (West Creek Diversion) does not exceed 1:5 (i.e., the effluent flow must be no more than 17% of the total flow rate in the West Creek Diversion after mixing).
  - Any excess flow beyond the allowable discharge rate to the splash pad will be pumped to the WMP.
- If water quality does not meet the discharge limits in Section 6.6.2, Table 14, the water will be pumped to the TMA.
- Discharge samples will be collected for the effluent parameters at the monitoring frequencies outlined in Section 6.6.2, Table 13.
- The Owner shall operate and maintain the Works such that the effluent is non-acutely lethal to Rainbow Trout and Daphnia magna. Specifically, each Rainbow Trout acute lethality test and each Daphnia magna acute lethality test performed on any grab sample of effluent must result in less than 50% mortality of the test organisms in undiluted final effluent (100% effluent).

The capacity of the pumping systems from Sediment Pond 1 is summarized below:

- Pump from Sediment Pond 1 to TMA at a rate of up to 400 m^3/hr.
- Pump from Sediment Pond 1 to Sediment Pond 2 at a rate of up to 600 m^3/hr.
- Pump from Sediment Pond 1 to WMP at a rate of up to 400 m^3/hr.
- Pump from Sediment Pond 1 to West Creek Diversion at a rate of up to 700 m^3/hr.

Sediment Pond 3 Operations

Water from Sediment Pond 3 is pumped to Sediment Pond 2. The capacity of the pumping system from Sediment Pond 2 are summarized below:

- Pump from Sediment Pond 3 to Sediment Pond 2 at a rate of up to 600 m^3/hr.

Sediment Pond 2 Operations

Water in Sediment Pond 2 is pumped to the splash pad, which discharges to the Pinewood River, or pumped via a 16” diameter pipeline to either the TMA or the WMP, depending on the quality of water in the pond.

- If water quality does not exceed the respective daily and monthly average objectives and limits listed in Section 6.6.2, Table 14, it can be discharged to either the WMP or to the splash pad upstream of the Pinewood River.
  - The discharge rate to the splash pad shall be always controlled such that the ratio of the flow rate of the effluent to the flow rate of the receiver (Pinewood River) is less than or equal to 1:10 (i.e., the flow rate of the effluent must be less than or equal to 10% of the total flow rate in Pinewood River after mixing).
  - Note that an exception has been granted to the discharge permit to allow the effluent ratio to be 1:1 (i.e., the flow rate of the effluent must be less than or equal to the total flow rate in Pinewood River prior to mixing), as long as water quality meet CCME and PWQG criteria.

  - All other flows (more than the allowable discharge rate to the splash pad) shall be pumped to WMP.

- If water quality does not meet the discharge limits presented in Table 14, it is pumped to the TMA.
- Discharge samples are collected for the effluent parameters at the monitoring frequencies listed in Table 13.
- The Owner shall operate and maintain the Works such that the effluent is non-acutely lethal to Rainbow Trout and Daphnia magna by ensuring that each Rainbow Trout acute lethality test and each Daphnia magna acute lethality test performed on any grab sample of effluent shall not result in >50% mortality of the test organism in undiluted final effluent (i.e., 100% effluent).

The capacity of the pumping systems from Sediment Pond 1 are summarized below:

- Pump from Sediment Pond 2 to TMA at a rate of up to 400 m3/hr.
- Pump from Sediment Pond 2 to WMP at a rate of up to 500 m3/hr.
- Pump from Sediment Pond 2 to splash pad upstream of Pinewood River at a rate of up to 500 m3/hr.

Mine Rock Pond Operations

Water in MRP is pumped to the Mill via a 20” diameter pipeline, or to either the TMA or the WMP via a 16” diameter pipeline.

The capacity of the pumping systems from MRP are summarized below:

- Pump from MRP to TMA at a rate of up to 700 m3/hr.
- Pump from MRP to WMP at a rate of up to 700 m3/hr.
- Pump from MRP to Mill at a rate of up to 800 m3/hr.
- Pump from MRP to BCR2 at a rate of 415 m3/hr (10,000 m3/day).

South Runoff Pond Operations

Water in the South Runoff Pond (SRP) is pumped via a 10” diameter pipeline to either the mill or the MRP.

The capacity of the pumping systems from SRP are summarized below:

- Pump from SRP to MRP at a rate of up to 700 m3/hr.
- Pump from SRP to Mill at a rate of up to 375 m3/hr.

North Runoff Pond Operations

Water in the North Runoff Pond (NRP) is pumped via an 8” diameter pipeline to the Mill.

The capacity of the pumping system from NRP are summarized below:

- Pump from NRP to Mill at a rate of up to 100 m3/hr.

Open Pit Sumps

Water in the Open Pit is collected in a series of sumps and pumped to either the TMA, the SRP, or the MRP. There are two internal dewatering systems located within the Open Pit (280 Bench and Phase 4) and two external dewatering systems located along the perimeter of the Open Pit (Roen Sump and North Ditch Sump). The 280 Bench system can discharge to the TMA as well as the SRP.

The capacity of the pumping system from the Open Pit are summarized below:

- 310 North tank – TMA: max flow 570-600 m3/hr.

- 310 South tank – TMA max flow 570-600 m3/hr.
- 280 sump east line – South Pond: 550-580 m3/hr.
- 280 sump west line – South Pond: 550-580 m3/hr.
- Phase 4 – Mine Rock Pond: 350-385 m3/hr.

4.4.4 Pumping Elevations

The elevations to initiate pumping and enhance pumping capacities to avoid spilling at sumps and ponds are presented in Table 9.

Table 9: Pond and Sump Level Monitoring

Type	Location	Status	NOWL	MOWL	TRIGGER	ALERT
Sump	SDSC1	Installed	353.0	355.5	353.5	354.9
	SDSC2	Installed	353.5	354.6	354.0	354.3
	NDSC3	Installed	360.5	363.7	361.0	362.8
	NDSC4	Installed	366.5	370.2	366.5	369.6
	NDSC5	Installed	368.0	371.0	367.9	370.4
	MRP Ditch	Not installed	TBD	TBD	349.0	349.3
	EDP4	Installed	355.5	357.0	356.4	357.0
	EDP5	Installed	358.0	359.5	358.5	358.9
	WMP1	Installed	359.5	362.1	360.0	361.8
	WMP2	Installed	358.0	360.2	358.5	359.9
	ICS Sump	Installed	375.0	377.0	374.0	376.1
	WDS	Installed	368.0	TBD	367.9	369.9
	Sediment Pond 3	Installed	344.6	345.0	342.6	344.1
Pond	South Runoff Pond	Installed	362.8	362.9	361.3	362.0
	TMA	Installed	372.8	373.3	N/A	372.8
	WMP	Installed	369.7	370.5	366.7	369.7
	MRP	Installed	356.8	358.9	353.8	356.8
	Stockpile Pond	Installed	372.2	DSI=375	N/A	375.0
	West Creek Pond	Installed	360.9	DSI=364.5	N/A	364.5
	Sediment Pond 1	Installed	352.7	353.7	351.2	352.7
	Sediment Pond 2	Installed	347.2	348.0	344.2	347.2
	WDP	Installed	352.5	354.2	351.5	353.3
	Clark Creek Pond	Installed	378.75	379.8	N/A	N/A
	Teeple Pond	Installed	378.5	378.6	N/A	N/A

Notes:

- NOWL and MOWL: see CRW3295-4910-DT00-MEM-0007.001 for sumps. See Table 8 (Summary of Pond Characteristics) in Part I of this Manual.
- Trigger Level is the water level to initial pumping if there is. Alert Level is the water level to increase pumping capacity.
- Table was dated on May 21, 2023.
- These instruments are removed annually prior to freezing and recalibrated and reinstalled upon thaw to prevent damage.

4.4.5 Discharge Criteria

Refer to Section 4 of ECA (2290) for the operation and maintenance requirements of the Works and related equipment and appurtenances which are installed or used to achieve compliance with the Approval (ECA, 2290) are properly designed, constructed, operated, and maintained.

Table 14 presents the respective daily and monthly average concentration objective for effluent discharges from EDL1, EDL2, Sediment Pond 1, and Sediment Pond 2.

4.4.6 Roles and Responsibilities

RRM Environment

The contact information for the Environment Manager is provided in Table 5 in Part I, of the Manual. The Environmental Department is responsible for the following:

- Monitor pond water levels, volumes, and projections.
- Identify need for pond drawdown and inform Mill Operations on reclaim priorities.
- Maintain hydrometric stations and calculate daily Pinewood River and West Creek Diversion flows.
- Monitor site contact water and treated effluent quality for compliance with daily and monthly average objectives and limits listed in Section 6.6.2, Table 14 prior to discharge.
- Identify on-site water routing based on water quality (e.g., Sed Pond 1 to TMA or Sed Pond 2; TMA seepage collection sumps to TMA or WMP).
- Notify Environment and Climate Change Canada of planned discharge dates and cessation of discharge.
- Conduct discharge sampling for parameters at the frequencies listed in Section 5.6.2, Table 13. Report on daily and monthly average discharge quality and maintenance of records.
- Discharge and inter-pond conveyance volume calculations and maintenance of records.
- Daily discharge report with allowable discharge volume by final discharge point and cumulative discharge statistics.

RRM Mill

- Discharge the allowable volume at final discharge points EDL1 and EDL2 as indicated in the daily discharge report.
- Ensure flow meters and inline temperature and pH probes are always functioning during discharge and make the data available if not accessible.
- During active tailings deposition, the Mill is responsible for inspecting the tailings lines at a frequency established in Table 15, Section 6.8.
- Report any incidents relating to discharge and associated infrastructure to the Environment Department immediately.

Site Services

- Discharge the allowable volume at final discharge points Sediment Pond 1 and Sediment Pond 2 as indicated in the daily discharge report.
- Ensure flow meters are always functioning during conveyance and discharge and provide pumping records.
- Site services is responsible for inspecting the active water lines at a frequency established in Table 15, Section 6.8.
- Report any incidents relating to discharge and associated infrastructure to the Environment Department immediately.

4.5 Operation Changes and Upsets

4.5.1 Summary of Operation Changes

MRP to WMP

MRP water to TMA. Excessive water reported to TMA during 2022 Spring freshet generated a need to treat MRP water, and store in WMP before discharge to environment. A pilot project conducted by contractor involving pumping MRP water to BCR #2 for treatment at max. 10,000 m^3/day before sending to WMP was successful and accepted by MCEP in August 2022. NG Environment amended ECA (2290) in winter 2022 to allow this change permanently when needed.

TMA to BCR2

One of the water management priorities identified for 2023 is to reduce the TMA pond volume by pumping TMA water to BCR #2 for treatment and then store in WMP before discharge. This operation change was accepted by regulator according to the Limited Operational Flexibility clause in the ECA 2290 as a Pilot Project and will be implemented once BCR #2 is ready for restart.

Operation Upsets

The operations are sensitive to water balance and water quality in discharges. The following are contingencies based on water management and functioning of the diversions.

Two contingency plans have been developed as part of MECP approvals for water treatment:

- Pinewood River Quality Contingency Plan, Version 1 August 2016
- Groundwater and Surface Water Contingency Plan, Version 2 October 2015

Contingency options are to limit discharges, acceleration of TMA dam raises, add water quality treatment, additional monitoring, provision of water to affect areas and increased mixing ratios/improved mixing. The trigger for implementation of contingency in surface water is if protection of aquatic life criteria is not achieved 90 % of the time. The trigger for contingencies in groundwater is if water quality parameters exceed background metals concentrations in groundwater at the mining lease boundary or groundwater wells outside of the zone of influence are affected.

4.6 Reporting

The environmental approvals and permits received from the government are maintained by the New Gold Environmental Department. They should be referred to for details of monitoring, inspection, and reporting requirements. Permitting, reporting, and monitoring information is available on the Environmental Department SharePoint site and is available for all employees to access.

Records are retained consistent with IACC condition 11 for a minimum of 25 years or until decommissioning ends, whichever is longer and kept locally. This exceeds the ECA permit requirement of 5 years. Records include place/date/time of sampling, dates and analysis performed, analytical techniques used, names of persons collecting/analyzing samples and results of analysis.

4.6.1 Routine

Below is a list of routine reporting requirements:

- Submission of as-builts within 3 months of construction for any major part of the ECA permitted Works, i.e., WMP, TMA, MRP, Sediment ponds 1 and 2, etc.
- Monthly performance report including an overview of the success and adequacy of the Works, summary of all non-routine calibration/maintenance procedures, tabulation and description of any bypass/upset conditions, a summary of all effluent monitoring data collected, other relevant information including QA/QC

measures and occurrences requiring implementation of an investigation, contingency or remedial action plan, and a summary of all modifications completed as a result of Schedule B of the ECA to MECP.

- Quarterly electronic effluent monitoring reports to MECP.
- Annual reporting to MECP on March 31 for the previous year, a works performance report, and a surface water monitoring report.
- Quarterly electronic effluent monitoring reports to ECCC.
- Annual electronic effluent monitoring report and environmental effects monitoring reports to ECCC by March 31.

4.6.2 Non-routine

Below is a list of non-routine (event driven) reporting requirements:

- Report all spills as defined in the Environmental Protection Act immediately to spills action centre SAC, follow New Gold Incident Reporting Guidelines, and follow up in writing to MECP within 10 days describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.
- In the event an effluent objective is exceeded for two consecutive months as specified in condition 5 of ECA 2290-CAVKGN (stated in Section 3.3), notify the MECP in writing within seven (7) days, and submit to the District Manager, within sixty (60) days, a plan to assess the cause of the exceedance and recommend actions to address potential impact.
- In the event of a non-compliant event, including an exceedance of daily or monthly average limits, pH outside of 6-9.5 or an acute toxicity failure, notify the MECP as soon as reasonably possible, followed by a written report within seven (7) days. Within fifteen (15) days of a toxicity test failure, the Owner shall submit a written report to the District Manager outlining the cause(s) of toxicity and proposed or implemented remedial measures to control toxicity a written report to the District Manager outlining the cause(s) of toxicity and proposed or implemented remedial measures to control toxicity.
- Any observation of sheen/foam/settable solids within the works report immediately to MECP immediately and followed by a written report within 7 days.
- Any exceedance of effluent limits report to SAC immediately, written confirmation to MECP within 7 days
- Notify ECCC immediately if MDMER Schedule 4 limits are exceeded, pH is outside 6-9.5 range or if the effluent is acutely lethal, followed by a written report without delay (when most results are available).

4.6.3 Operation Report

A monthly Water Balance Update Memo is prepared by the Senior Water Resource Engineer or designate. The report includes metrics and information collected as part of normal operation. Examples of information contained in the Operations report include:

- Total monthly tailings deposition tonnage and slurry water volume
- Total monthly reclaim volume.
- Pond level and freeboard
- Updated water balance.
- Water quality results.
- Discharge quantities.

5. MAINTENANCE

5.1 Type and Procedure

Prev Preventative Maintenance, also called Routine Maintenance, is the planned, recurring maintenance activities conducted at a fixed or approximate frequency and not typically arising from results of surveillance activities.

Predictive Maintenance is the pre-defined maintenance conducted in response to results of surveillance activities that measure the condition of a specific component against performance criteria.

Event-Driven Maintenance, also called Corrective Maintenance, is in the event of unusual conditions or incidents that require immediate maintenance actions.

Maintenance records are retained by NGI teams who perform the work in accordance with the procedures described in this document. The teams are Site Services, Mill, Environment and Capital Projects. The maintenance flowchart is illustrated in Figure 7.

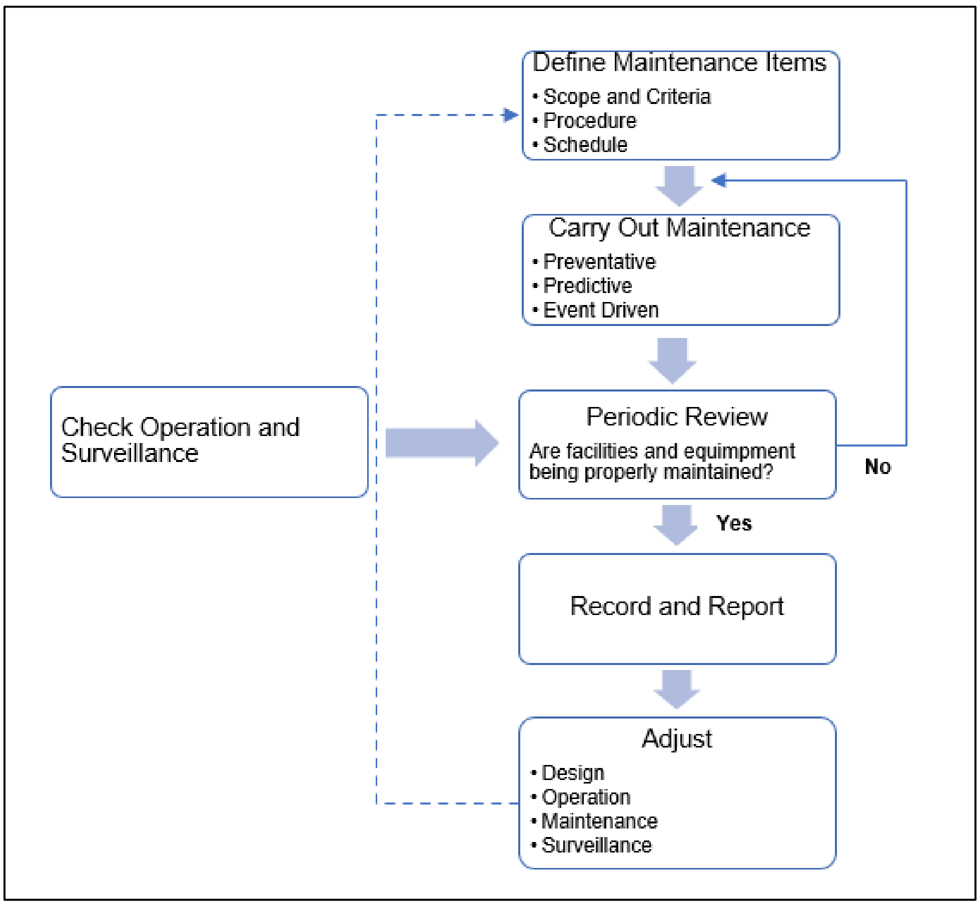


Figure 7: Maintenance Flow Chart

5.2 Preventive and Predictive Maintenance

Preventive and predictive maintenance includes removal of vegetation, beaver dams, ice blockage or sediment accumulation that would otherwise affect the performance of a structure when required.

5.2.1 Pumps

The maintenance of pumps is the responsibility of New Gold Site Services and maintenance records are required to be maintained. Each installation is required to be equipped with spill tray and spill kits. Changes to pumping configurations, ditching, piping, or operating parameters need to be approved by the New Gold Mill Manager, the New Gold Maintenance Manager, and the New Gold Environmental Manager, during normal working hours. This is particularly the case if splash pads need to be altered in any way.

Maintenance of the water discharge pumping systems includes:

- Perform regular performance tests on pumps.
- Perform annual calibration and maintenance as required on flow meters.
- Remove accumulated debris from valves, reducers and off takes.
- Carry out maintenance as recommended by fitting and valve suppliers.
- Regularly inspect major wear components.
- Maintain and replace system instrumentation as required.

Pumps are inspected daily by Site Services.

5.2.2 Discharge Lines

During discharge, active lines including culverts and spillways require daily inspections. All water discharge lines are the responsibility of Site Services to maintain and inspect.

Maintenance of the water discharge lines will include:

- Replace pipe work, bends and fitting components as required.
- Perform regular non-destructive testing, including for example, periodic measurement of pipeline thickness to identify areas of wear and to schedule pipeline replacement if necessary.

Pipelines are inspected daily by Site Services (Site Services to develop the ARSCI for pumps and pipelines).

5.2.3 Dam Inspection and Predictive Maintenance

Repair any deficiencies as noted in the Survey 123 online Dam Safety Inspections by related teams, such as

- Repair erosion gullies, local slumps or slides in the dam face, diversion ditches or spillway channels.
- Clearing vegetation along the diversion channels, seepage collection ditches and sumps.
- Removal of beaver dams along the diversion channels, seepage collection ditches and sumps.
- Re-grade the dam crest, as required, to prevent local ponding and direct surface runoff towards the pond.
- If annual survey determines necessary, correct dam crest, overflow spill way and diversion channel invert irregularities to avoid concentrated runoff or loss of freeboard or flood storage capacity.
- Repair/modify fish habitat features if monitoring determines they are not meeting the success criteria as per Fisheries Act Authorization 15-HCAA-00039, including dam crest/slope. The success criteria are available in Section 7.1, Table 4 of document RRP FA Offset Plan. This document is available on the Environmental Department SharePoint site.

5.2.4 Instruments

Geotechnical instrument calibration by Capital Projects and water monitoring instrument calibration by Environment.

- Periodic calibration of instruments follows manufacturer's recommendations.
- Calibration certificates will be maintained by Mill Maintenance for water monitoring instrumentation. Geotechnical instrumentation records are maintained by the RTFE.
- Malfunctioning or damaged instruments may require repair or replacement per manufacturer guidelines and in consultation with the EOR or approved procedure.
- Real time water level monitoring system was installed for all ponds. Calibration of the system should be carried out after the pond is ice-free.
- In the event of replacement of dam instruments, several overlapping readings of the old and new instrument are required to ensure continuity of the data records.

5.3 Event-Driven Maintenance

In the event of unusual conditions or incidents that require immediate maintenance actions but are not considered an emergency, repairs and replacement of facility components are made as required and activities are documented. RRM staff will provide a means to assess event driven maintenance needs through response action planning. Response planning is based on risk prioritization, maintenance crew mobilization or "call out" procedures, required repairs and replacement material availability. Event driven maintenance actions will follow applicable safety and performance procedures. Normal documentation and maintenance records will be maintained because of any event driven maintenance actions. Unusual conditions that require maintenance are also communicated to maintenance staff as they occur.

5.3.1 Pipeline Leaks or Breaks

In the event of a pipeline leak or break the system in question is de-energized and repaired as follows:

- Report to the Environment Department immediately, by phone call, to initiate sampling and external reporting, when required.
- Inspect entire pipeline.
- Repair or replace affected components.
- Perform opportune and scheduled maintenance.
- Repair any collateral damage caused by a leak or break.
- Reclaim any disturbed areas.
- Follow any spill reporting that may be required pending type of spill and following documentation procedures.

5.3.2 Earthquake Occurrence

After an earthquake, the following are undertaken:

- Notify EoR.
- Repair the damaged roads, collection ditches, emergency spillway, and diversion channels.
- Repair the slumped section of dam rockfill zones.
- Restore dam crest elevation if survey results indicate settlements.
- Clear spill and repair the disturbance to the pipeline and pumps if damage is observed.

5.3.3 Flood Event

Following extreme storms (as defined in Section 6.4.1) the following are undertaken:

- Measure freeboard for compliance with design requirements

- Inspect dam, ditches, spillways, and diversions for signs of excessive erosion and repair if required.
- Inspect seepage return system for adequacy.
- Implement appropriate response based on observations/measurements as defined in this manual.

5.4 Reporting

Maintenance information will be communicated internally through formal and informal meetings, interaction between various levels of the organization (department and/or crew meetings), through information posted at the site and through this OMS Manual.

- Maintenance information is communicated as per related RASCI chart and in accordance with this Manual.
- Equipment logs, manuals and calibration records are maintained for reference and use by responsible staff.
- Maintenance diaries and logs are maintained and accessible for review by other parties.
- Dam inspection checklist is uploaded to SharePoint and the inspection log summarizing the number of inspections carried weekly and monthly will be uploaded to SharePoint as well.

6. SURVEILLANCE

6.1 General

The objective of the surveillance program is to provide confirmation of the adequate performance of the facility, including containment, stability, and operational function by observing, measuring, and recording data relative to potential failure modes and specific operational controls.

The surveillance at WMP dams involves:

- Visual Inspections
    - Daily pipeline inspection
    - Monthly dam inspection
    - Drone inspection when needed
    - Annual Dam Safety Inspections
- Instrumentation
- Special Inspections and Increased Levels of Surveillance
- Dam Safety Reviews

6.2 Visual Inspections

6.2.1 Pipeline Inspection

Inspection of water pipeline including pumps is conducted daily by Site Service. ARSCI chart is to be developed.

6.2.2 Dam Inspection

All water management dams are visually inspected every month end. These inspections are conducted by TDTs and other trained site inspectors and are designed to detect / observe conditions that could indicate a concern with the performance or operation of the dam.

TDTs and Trained Site Personnel shall:

- Conduct monthly inspections using Monthly Site Inspection Checklists developed by the RTFE. The inspections can be conducted using the appropriate checklist on the Dam Inspection App.
- Notify the RTFE of any abnormal or unusual conditions.
- Forward the completed Monthly Site Inspection Checklists to the RTFE for timely review.

The RTFE shall:

- Prepare and revise the Monthly Site Inspection Checklists as required.
- Review copies of the completed Monthly Site Inspection Checklists.
- Present to results of inspection to the monthly Tailings Management System (TMS) presentation.

A GIS App, Water Dams - Monthly Checklists for Water Dams, has been used for dam inspection and the number of inspections conducted is presented to monthly tailings management meetings.

6.2.3 Dam Safety Inspections

Annual dam safety inspections (DSI) are intended to be part of a more thorough review of the condition of the facility and are conducted by the EOR. The inspections will include the following key items:

- Visual inspection of the facility by the EOR, including taking appropriate photographs of the observed conditions.
- Review of routine inspection records prepared by operating personnel in the past year.

- Review whether recommendations from previous year's inspection(s) have been addressed, and any incidents or actions arising from those previous recommendations.
- Review of instrumentation and monitoring data.
- Review of water management operations of the facility including reconciliation of the annual water and mass balance. Review of pond levels (and depth) and freeboard, and reports of any incidents (and remedial measures) that may have occurred.
- An evaluation and interpretation of the structural performance of the dam and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year.
- Evaluation of the OMS Manual including EPRP to assess the need for updating.

The DSI in 2024 was undertaken on June 4 to 7. The following water management structures were included in the DSI:

- Water Management Pond
- Settling Pond Dam and BCR1
- Water Discharge Pond Dam
- Stockpile Pond Dam
- West Creek Pond Dam
- South Runoff Pond
- Sediment Pond 1
- Sediment Pond 2
- Mine Rock Pond
- Clark Creek Pond Dam
- Teeple Pond Dam

A series of ancillary seepage collection ditches and sumps were also included in the DSI:

- North Runoff Pond
- Sediment Pond 3
- TMA South Dam Seepage Collection Sumps
- TMA North Dam and WMP Seepage Collection Sumps
- TMA West Dam 4 Sump
- Influent Collection System (ICS)

Field inspections were completed by Calvin Boese, PEng., the Engineer of Record (EOR) for the Tailing Management Area (TMA), Michael Dabiri, PEng., the EOR for the water management structures, Kyle Scale, PEng., the deputy EOR for the TMA, and Gordon Johnston, EIT.

The RTFE is responsible for organizing the DSI. An additional inspection will be conducted by the Dam Safety Review (DSR) consultant currently scheduled for 2026.

6.3 Dam Safety Reviews

CDA Dam Safety Guidelines (CDA, 2019) recommend a comprehensive dam safety review be conducted every 5 years during operations, prior to decommissioning and following closure, by a qualified 3rd party consultant. The DSR must be completed by a consultant who is free of any conflict of interest that could be caused by prior participation in the design, construction, operation, maintenance, or inspection of the dam under review.

The comprehensive review provides independent verification of:

- Safety and environmental performance of the facility.
- Adequacy of the surveillance program.
- Adequacy of delivery of OMS Manual requirements.
- Design basis with respect to current standards and possible failure modes; and
- Compliance with new engineering standards (including analysis to confirm if necessary).

The first DSR was completed in 2021 by SRK Consulting. Next DSR will be performed in year 2026.

6.4 Special Inspections and Increased Levels of Surveillance

Special and increased site surveillance is required in response to unusual or uncertain performance a structure or element or unusual operating conditions or loading is applied to the water dams. These inspections will be designed to provide a better understanding of the performance of the structure, ensure developing issues are assessed and if required, appropriate actions are taken.

A special inspection may be required by the RTFE, when unusual conditions are discovered by routine site surveillance or detected by the instrumentation monitoring system, indicating possible deficient performance of a design element or elements during normal operating conditions. Special inspections are initiated and managed by the RTFE. The RTFE will coordinate with other resources for arranging the inspections.

Increased site surveillance is normally required when there are unusual changes in loading and operating conditions at the dam (e.g., pond surcharge, spilling) or following the occurrence of natural events (e.g., flood, earthquake). Increased site surveillance can be initiated by RTFE and or Capital Project Manager.

When a special inspection and/or increased surveillance is required, the RTFE shall:

- Advise the Capital Project Manager.
- Identify requirements for increased surveillance in consultation with the Capital Project Manager.
- Identify the information needed for assessment of dam safety: instrument readings, pond operations, equipment availability, visual observations, etc.
- Document the requirements for increased surveillance.
- RTFE to discuss findings with the Engineer of Record.

The Capital Project Manager shall:

- Initiate special inspections and/or increased levels of surveillance during or following any major flood, earthquake, or abnormal behavior or event which may have or could damage equipment, structures or facilities affecting the safety of the dams.
- Initiate increased levels of surveillance whenever indications of potentially unsafe or deteriorating conditions (e.g., seepage, leakage, or deformation) exist.
- Maintain increased surveillance until the condition posing the threat to dam safety has been assessed and/or remediated to an acceptable condition.

Following initiation of a special inspection and/or increased site surveillance, the TDTs and Trained Site Personnel shall:

- Follow the instructions of the RTFE and provide complete copies of the inspection checklist.

Appendix E contains Surveillance Response Plan (SRP) for High Pond, Post-EQ, Increase Seepage and Observed Dam Deformation.

6.4.1 Pond Surcharge

High Pond is defined as NOWL or MOWL as shown in Appendix B for all water management ponds. SRP will be initiated if High Pond is reached. The frequency of SRP will be decided by RTFE and CP Manager according to site situations.

See Appendix E1 – Site Inspection Checklist for High Pond.

6.4.2 Earthquakes

The RTFE in conjunction with the Capital Project Manager and other teams will confirm the significance of the seismic event and level of response required. If the seismic event is significant, an inspection of the facilities must be conducted.

See Appendix E2 – Site Inspection Checklist for Post-Earthquake Evaluation.

6.4.3 Increased Seepage through the Dams

Unusual leakage from the dam which may indicate damage to the dams. RTFE and EOR will determine a specific surveillance (SRP) for the increase seepage through the dams is required.

See Appendix E3 – Site Inspection Checklist for the Increased Seepage.

6.4.4 Observed Dam Deformation

Settlement, sinkhole/depression formation, cracking, offsets, leaking or other signs of substantial distress of the perimeter dams. RTFE and EOR together with the Capital Project Manager will determine a specific surveillance (SRP) for the observed dam deformation is required.

See Appendix E4 – Site Inspection Checklist for Observation of Deformation.

6.4.5 Other Unusual Conditions

Other conditions that may require increased surveillance is included in Table 10.

Table 10: Other Unusual Condition for Inspection

Unusual Event	Post – Event Inspection/Surveillance
Rapid snowmelt and/or heavy rainstorms exceeding a 1:5-year, 24 hr rainfall (79.2 mm) and Longer duration heavy rainfall (5-day 70 mm)	• Inspect the (visible) slopes and the crests of all the tailings dams looking for areas of concentrated runoff and erosion. • Make note of saturated ground/soft ground conditions at dam slopes and toes. • Examine dam slopes for indications of localized slumping/instability. Inspect all pump stations and pipelines. • Check the water levels in all ponds/reservoirs against the critical levels and keep checking these levels until the pond/reservoir inflows subside. • Discuss findings with the Engineer of Record. • Check piezometric levels at dam sites if instructed to do so.
Unusually high winds (exceeding 60 kph i.e., 75 % of maximum used in design)	• Check the condition of erosion protection on the upstream slopes of the dams. • Check the instrument data relay device.
Extreme snowpack	• Check the water levels in all ponds/reservoirs against the critical levels and keep checking these levels until the spring freshet is over. • Evaluate the situation in terms of snowmelt scenarios. • Make predictions as to the expected storage capacity available in ponds/reservoirs using the Water Balance Model.

Unusual Event	Post – Event Inspection/Surveillance
	• If deemed necessary, mobilize pumping and mobile treatment equipment to site.

6.5 Geotechnical Instrumentation

6.5.1 Instrumentation Data Reading Frequency

Instrument data reading and report frequency following Operation condition outlined in Table 11 according to the Stage 5 Instrumentation Thresholds for TMA and Water Management Dams CRW3295-4910-DT00-MEM-0008.0001. SRK is working on Stage 5 Instrumentation Thresholds for TMA and Water Management Dams.

Table 11: Data Collection and Submission Frequencies

Instrument/ Elevation	Frequency (1)
Vibrating Wire Piezometers	Online every hour update
Standpipe Piezometers	Monthly
Slope Inclinometers	Four times a year
Settlement Plates	Annually
Pond Elevations	Online every hour update
Effective Crest Elevations (2)	Annually
Effective Spillway/Diversion Channel Invert Elevations (3)	Annually

Notes:

1. Data collection frequencies may be increased or decreased by the EOR based on observed conditions. Data collection frequencies will progress from active construction, to post construction, to operations. Acceptable deviations for monthly readings are up to one-week, acceptable deviation for weekly and biweekly readings is up to one day.
2. The effective crest elevation is the lowest surveyed point along the dam crest.
3. The effective spillway/diversion channel invert elevation is the lowest surveyed elevation along the spillway/diversion channel sill.

6.5.2 Instrument Thresholds and Response Action Plan

In 2024, the terminology and performance indicators used to define the TARP threshold levels were assessed with respect to the MAC OMS Guidelines (MAC 2021b). To better align with this document, the terminology used for 2024 instrument thresholds were revised as given below:

- Flag - A change greater than the anticipated response.
- Trigger - A more significant magnitude threshold OR A value greater than the value used in the design.

These thresholds are monitored using the following instruments and methods:

- Piezometers, which are used to monitor the PWP within the embankment and foundation materials.
- Slope inclinometers (SI), which are used to monitor soil deformation within the embankment and foundation materials.
- Survey equipment, which is used to monitor effective crest and effective spillway/diversion channel elevations.

6.5.3 PWP Thresholds

The Water Management Structures at RRM are static structures which are not subject to fill placement but have limited instrumentation installed. Due to the limited existing instrumentation coverage in the foundation to monitor PWP, a Trigger threshold equal to the ground elevation has been established for all VWPs installed at Water Management Structures:

Trigger Levels: A change in PWP that results in a total head greater than the final ground elevation.

Installation of additional VWPs at the Water Management Structures has been planned and is expected to take place in the first quarter of 2025. The approach used to set VWP thresholds may change based on the findings of that installation program and the total heads reported by the new VWPs.

Thresholds for water management dams is same as Stage 6 as presented in CRW3295-4910-DT00-MEM-0008.0001. SRK did not revise any VWP thresholds to the water management structures in their 2024 Instrumentation Threshold Update for TMA and Water Management Structures memo. The Trigger and Alert Thresholds will remain equal to those set by the previous EOR (BGC 2022).

SI Thresholds

Slope inclinometers have been installed to monitor embankment and foundation soil displacement. The four out six SIs' reading frequency have been reduced four times a year. Deformation thresholds were based on CRW3295-4910-DT00-MEM-0008.0001, dated June 9, 2023.

- Water management structures with defined shear zones and/or movement over the past year:
  - **Flag**
    - Rate of displacement greater than 6 mm/mo (0.2 mm/day) within a discrete deformation zone, or
    - Readings indicating the potential of a developing discrete shear deformation zone.
  - **Trigger**
    - One or more of:
      - Rates of displacement greater than 9 mm/mo (0.3 mm/day) within a discrete deformation zone.
      - Blockage of the slope inclinometer casing due to lateral deformation.
- Water management structures with NO observed movement within the prior year:
  - **Flag**
    - Rate of total displacement greater than 5 mm/quarter (a quarter is defined as a 3-month period), or
    - Readings indicating the potential of a developing discrete shear deformation zone, or
    - Increasing displacement rate over 3 consecutive readings.
  - **Trigger**
    - One or more of:
      - Rates of displacement greater than 9 mm/mo (0.3 mm/day) within a discrete deformation zone.
      - Blockage of the slope inclinometer casing due to lateral deformation.

Dam Deformation and Settlement Threshold

It is expected that deformations occur due to the compressibility of the foundation soils and differential settlement expected. In 2023, NGRR developed an in-house database system for tracking and monitoring depressions observed around site. More defined guidance is provided in this threshold update in Table 12.

Table 12: Thresholds for Visually Observed Deformations in Water Management Structures

<table>
<tr><th>Deformation Location</th><th>Flag Threshold</th><th>Trigger Threshold</th><th>Alert Threshold</th></tr>
<tr><td>Deformation/cracking observed within the buttress material</td><td>Cracking, deformations, settlements with similar characteristics of historical observations</td><td>Cracking or deformations outside of historical observations
OR
Increasing size, depth, or length of identified deformation.</td><td rowspan="2">Significant cracking observed beyond historical observations
OR
Notable cracking/ displacement at the crest and measurable bulging (upward movement) in the buttress material
OR
Other visual indicators determined by NG/SRK to escalate to an “ORANGE” status.</td></tr>
<tr><td>Deformation/cracking observed on the crest</td><td>None (Automatically Trigger)</td><td>Cracking or deformations observed on the crest.</td></tr>
</table>

Green: Acceptable situation, Yellow: Minor risk situation, Orange: Moderate risk situation, Red: High risk situation.

Thresholds for dam settlement at the crest were developed to ensure adequate freeboard along the dam crest, and sufficient elevation differential between the crest and spillway invert. Survey equipment, including RTK GPS or LIDAR drones are used to measure elevations. It is anticipated that the dam crest and invert elevations may vary based on construction activities, settlement of soil units, or seismic events. Consistent with the 2023 thresholds, SRK is defining the total settlement Trigger and Alert elevation as follows:

- **Trigger:** crest or invert elevation < 0.1 m than design
- **Alert:** crest or invert elevation < 0.2 m than design

A separate threshold is applied to differential settlements between the crest elevation and invert elevation of the spillway (i.e., the Normal Freeboard). SRK has opted to maintain the same thresholds as the previous report, as given below:

- **Trigger:** Normal Freeboard < 0.95 m
- **Alert:** Normal Freeboard < 0.9 m

The dam crest elevations and spillway invert elevations are shown in Part I of this Manual. Survey of the dam crest and spillway is conducted every year in summer season.

Action Plan for Threshold Exceedance

A Response Action Plan to address exceedance of the thresholds is discussed in detail in Section 6.7.7 in Part II

6.6 Environmental Monitoring

Environment monitoring at RRM includes water level monitoring, flow monitoring and water quality monitoring at rivers and or water conveyance and discharge pipelines.

6.6.1 Pond and Sump Level

Water levels in 11 ponds and 13 sumps have been or will soon be continuously monitored by the installed hydro-static pressure transducers. Pond Warning Levels (newgold.net) presents the view of water levels and updates every hour.

6.6.2 Water License Sampling and Effluent Discharge Limits

RRM site-wide Water License Sampling and Testing program by Environment Department is defined by ECA (2290).

Water quality monitoring includes water sampling at ponds, sumps, wells to monitor background levels and seepage potential. The Environment Department is responsible for water quality monitoring. The water quality data is managed in software AQUARIUS. The water monitoring locations are shown in Figure 8.

Table 13 provides a summary of the sampling parameters and frequency for the four final discharge points.

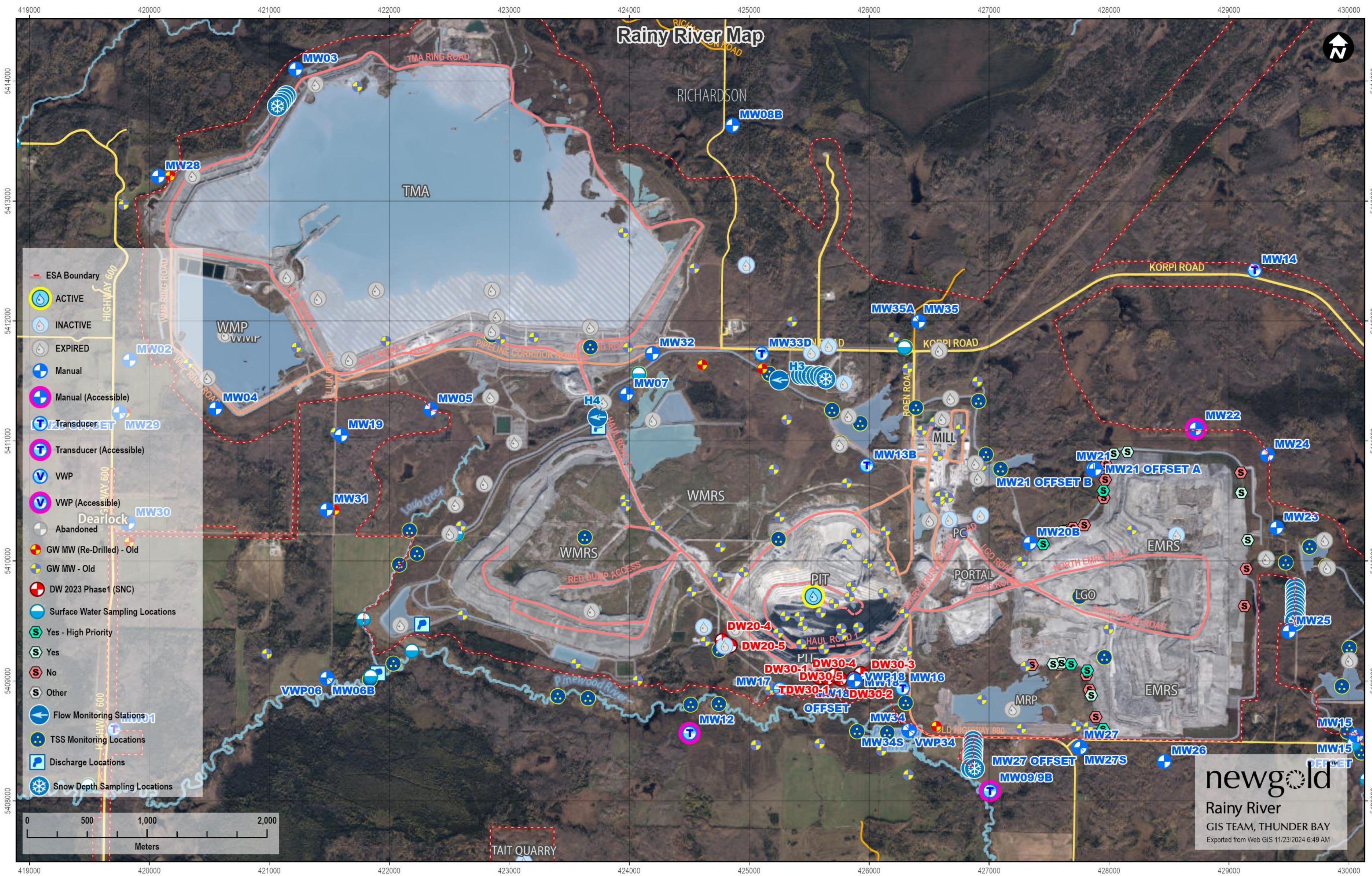


Figure 8: Water Monitoring Map (Orthophoto October 17, 2024)

Table 13: Discharge Sampling Parameters and Frequency by Final Discharge Point

Effluent Parameter	Frequency	
	EDL1 & EDL2	Sediment Pond 1 & 2
Temperature	Continuous, Weekly	Weekly
pH	Continuous, Thrice Weekly	Weekly
Hardness	Weekly	Weekly
Alkalinity	Weekly	Weekly
Total Suspended Solids	Thrice Weekly	Weekly
Total Dissolved Solids	Weekly	Weekly
Turbidity	Weekly	Weekly
Conductivity	Weekly	Weekly
Chloride	Weekly	Weekly
Sulphate	Weekly	Weekly
Orthophosphate	Weekly	Weekly
Total Kjeldahl Nitrogen	Weekly	Weekly
Total Ammonia	Weekly	Weekly
Nitrate	Weekly	Weekly
Nitrite	Weekly	Weekly
Dissolved Organic Carbon	Weekly	Weekly
Dissolved Oxygen	Weekly	Weekly
CBOD5	Weekly	NA
E. Coli	Weekly	NA
Total Cyanide	Thrice Weekly	Annually
Weak Acid Dissociable Cyanide	Thrice Weekly	NA
Free Cyanide	Thrice Weekly	NA
Thiocyanate	Weekly	NA
Cyanate	Weekly	NA
ICP Metals	Weekly	Weekly
Radium-226 (MDMER)	Weekly	Weekly
Acute Toxicity (*Daphnia* and Rainbow Trout) *(MDMER)*	Monthly	*Monthly/*Quarterly

Table 14 provides a summary of the effluent discharge limits that must be prior to and during discharge to the environment.

Table 14: ECA Effluent Objectives and Limits by Final Discharge Point

Effluent Parameter	Effluent Objectives and Limits (mg/L)			
	EDL1 & EDL2		Sediment Pond 1 & 2	
	Daily Max	Monthly Avg	Daily Max	Monthly Avg
CBOD5		25		25
Cadmium		0.001		0.001
Cobalt		0.0044		0.0044
E. Coli		100/100 mL		100/ 100mL
Total Suspended Solids	30	15	30	15
Unionized Ammonia	0.08	0.04	0.2/0.4	0.1/0.2
Total Phosphorus		0.1		
Total Cyanide	0.1	0.05		
Free Cyanide	0.02	0.01		
Total Arsenic	0.034	0.017	0.034	0.017
Total Copper	0.028	0.014	0.028	0.014
Total Lead	0.03	0.015	0.03	0.015
Total Nickel	0.094	0.047	0.094	0.047
Total Zinc	0.348	0.174	0.348	0.174
Acute Toxicity (Daphnia and Rainbow Trout)	Not greater than 50% mortality in undiluted effluent			
pH	Always maintained between 6.0 and 9.5			
Radium-226 (MDMER)	1.11 Bq/L	0.37 Bq/L	1.11 Bq/L	0.37 Bq/L

To monitor background water chemistry and changes that may occur because of mining activities, the "PLAN" sets out water sampling well frequencies and targets. Should there be risks associated with seepage impacting the Pinewood River, a remediation program will be designed and implemented.

6.7 Other Surveillance

- Densometer on the tailings pipeline monitors the bulk density of tailings and can be viewed in software PARCView. The data are managed by Mill Operations.
- Flow meters on the water conveyance and discharge pipelines. Data collection is automated and managed in PARCView by the Environment Department.

6.8 Summary of Surveillance Frequency

The frequency of surveillance activities including the action owners is summarized in Table 15. A table recording the visual routine inspections over the year is presented in monthly tailings management meeting.

Table 15: Surveillance Frequency

Type of Surveillance		Season/Event	Frequency	Action by	Notes
Visual Inspection	Routine	Dam Inspection	Monthly	TDT, RTFE, TDEIT	Use monthly inspection app for water dams
		Tailings line	Twice Per shift	Mill	
		Water line	Per shift	Site Service	
	Special	Pond Surcharge	When needed	TDT, Trained Personnel, RTFE	
		Earthquake			
		Seepage			
		Dam Deformation			
		Other Unusual Events			
Instruments	Routine	Daily, Weekly, monthly, annually		TDT, Trained Personnel	
Others	Pond & Sump Level	Summer	Automated Hourly	Environment	
		Winter	Manually Weekly		
	Water Sampling and Testing	Throughout the Year	Manually	Environment	See Table 13
	Dam Crest and Spillway Invert	Summer	Annual	Surveyor	

6.9 Reporting

The Mill Manager, Environment Manager or designated responsible party, and RTFE will review collected data records from facility monitoring and assess the need for maintenance activities or response. Corrective actions will be identified and tracked to closure.

The Environmental Manager is responsible for overseeing sample and data collection and analysis. Reporting will meet MECP requirements and the annual DSI report will also be submitted to the MNDM. Reporting includes:

- An annual report based on the DSI including ECA approval requirements.
- Monthly water quality monitoring report.
- Annual report shall include:
    - Status of recommendations made in previous annual performance reports.
    - Summary of geotechnical instrumentation performance.
    - Changes in the facilities/structures from the previous year.
    - Dam safety documentation status (i.e., OMS, EPRP, DSR).
    - Record of inspections conducted throughout the reporting period.
    - Summary of construction planned for the upcoming year.

- Operating problems and corrective actions.
- Summary of calibration and maintenance works.
- Use of contingency plans.
- Surface water and groundwater monitoring reports including water balance.
- ML/ARD updates.
- Discharge volumes and quality.

Additional reporting requirements may be developed as the RRM progresses.

7. EMERGENCY PREPAREDNESS AND RESPONSE PLAN

A detailed Emergency Response and Preparedness Plan (ERPP) is outlined in Part IV of the Manual.

APPENDIX A: Stage Storage Capacity of Ponds

Elevation (m)	Storage Capacity (m³)										
	WMP	MRP	Sediment. Pond 1	Sediment Pond 2	WDP	Sediment Pond 3	SRP	SPD	WCD	Clark	Teeple
339.0											
339.5						76					
340.0						2,787					
340.5						7,733					
341.0				90		14,073					
341.5				192		21,754					
342.0				329		30,942					
342.5				516		41,770					
343.0				13,124		56,363					
343.5				36,359		74,091					
344.0				60,756		93,357					
344.5				86,316		113,765					
345.0				113,318							
345.5				143,756							
346.0				177,153							
346.5				218,692							
347.0				269,319							
347.5				323,362							
348.0				350,775							
348.5											
349.0											
349.5					94						
350.0			6,306		371						
350.5			32,599		804						
351.0		663	60,145		1,755						
351.5		4,036	88,966		4,971						
352.0		10,586	119,937		11,991						
352.5		23,491	153,181		23,611						
353.0		42,784	184,992		40,704						
353.5		70,008			65,885						
354.0		105,271			99,512						
354.5		150,890									
355.0		211,522									
355.5		292,193									
356.0		394,474									
356.5		518,391									
357.0		667,637									
357.5	23,264	843,452							952		
358.0	40,389	1,041,849					13		5,172		
358.5	71,365	1,263,263					59		13,422		
359.0	124,949						310		26,712		
359.5	196,414						1,655		45,327		
360.0	285,178						4,121		72,037		
360.5	387,609						8,046		112,686		
361.0	502,079						19,343		162,507		
361.5	631,392						32,005		221,529		
362.0	777,359						45,991		291,071		
362.5	940,075						61,292		374,901		
363.0	1,126,879						77,862		475,551		
363.5	1,334,825								589,771		
364.0	1,559,191								713,997		
364.5	1,797,627								847,745		
365.0	2,051,970								991,870		
365.5	2,326,151										
366.0	2,617,395										
366.5	2,922,156										
367.0	3,249,568										
367.5	3,595,409										
368.0	3,956,765										
368.5	4,336,009							1,021			
369.0	4,727,224							4,636			
369.5								11,164			
370.0								19,261			
370.5								29,927			
371.0								43,004			
371.5								58,142			
372.0								75,291			
372.5								97,004			
373.0								119,921			
373.5								145,326			
374.0								173,839			
374.5								207,010			
375.0								246,922			
375.5								295,428			
376.0											
376.5										333	1,480
377.0										816	5,962
377.5										3,724	15,286
378.0										7,814	40,184
378.5										13,328	80,587
379.0										27,526	136,842
379.5										58,833	
380.0										216,399	

APPENDIX B: Water Storage Pond Operation Elevations

Water Storage Pond Operation Elevations

<table>
<tr><th rowspan="2">Description</th><th colspan="11">Elevation (m)</th></tr>
<tr><th>WMP</th><th>MRP</th><th>WDP</th><th>SRP</th><th>Sed. Pond 1</th><th>Sed. Pond 2</th><th>Sed. Pond 3</th><th>SPD</th><th>WCD</th><th>Clark</th><th>Teeple</th></tr>
<tr><td>Dam Crest</td><td>371.5</td><td>360.2</td><td>355.2</td><td>363.5</td><td>354.0</td><td>348.2</td><td>345.7</td><td>375.5</td><td>364.9</td><td>380.0</td><td>379.0</td></tr>
<tr><td>IDF (Inflow Design Flood, Maximum Flood Level)</td><td rowspan="2">371.1</td><td>359.0</td><td colspan="2">N/A</td><td rowspan="2">353.99</td><td>N/A</td><td rowspan="2">345.5</td><td rowspan="2">375.0[1]</td><td rowspan="2">364.5</td><td>379.9[2]</td><td>378.7[2]</td></tr>
<tr><td>DSI (Dam Safety Incident Level)</td><td>N/A</td><td colspan="2">TBD</td><td>TBD</td><td colspan="2" rowspan="2">N/A</td></tr>
<tr><td>EIL (Environment Incident Level)</td><td rowspan="4">370.5</td><td rowspan="5">358.9</td><td rowspan="4">354.2</td><td rowspan="4">362.9</td><td rowspan="4">353.7</td><td rowspan="4">348.0</td><td rowspan="4">345.0</td><td colspan="2" rowspan="5">N/A[3]</td></tr>
<tr><td>Sill / Invert of Emergency Spillway</td><td rowspan="4">379.9</td><td rowspan="4">378.7</td></tr>
<tr><td>DSN (Dam Safety Notice Level)</td></tr>
<tr><td>MOWL (Max. Operation Water Level)</td></tr>
<tr><td>Pond Level for the Increased Surveillance (High Pond) [4]</td><td rowspan="3">370.0</td><td rowspan="3">352.5</td><td rowspan="3">360.0</td><td rowspan="3">352.7</td><td rowspan="3">345.9</td><td rowspan="3">340.3</td></tr>
<tr><td>ENL (Environment Notice Level)</td><td rowspan="2">356.7</td><td colspan="4">N/A</td></tr>
<tr><td>NOWL (Normal Operation Water Level)[5]</td><td rowspan="3">372.2</td><td rowspan="3">360.9</td><td rowspan="3">378.75</td><td rowspan="3">378.5</td></tr>
<tr><td>Diversion Channel Inlet Invert Elevation</td><td colspan="7">N/A</td></tr>
<tr><td>Min. Operation Water Level</td><td>363.0</td><td>352.0</td><td colspan="5">As low as possible before winter</td></tr>
</table>

(1) Assumed to be same as Peak Water Level at Spillway, Table 6 in Appendix C2, AMEC, Detail design, Design Brief – Water Management Dams (3098004-RPT-0015 Rev 00)
(2) Designed to be overflowed via overflow swale on crest.
(3) Designed to store PMF and pass-through diversion channel.
(4) For those designed to be overtopped, such as MRP, and freshwater dams, High Pond for SRP is assigned as MOWL/DSN/Spillway Sill. For the rest, High Pond for SRP is assigned as NOWL.
(5) The NOWL were updated based on Rainy River Mine – Review of Water Management Structure Operating Levels (Draft) - December 2024

APPENDIX C: Surveillance Response Plans for Water Dams

C1 – Site Inspection Checklist for High Pond

C2 – Site Inspection Checklist for Post-Earthquake Evaluation

C3 – Site Inspection Checklist for the Increased Seepage

C4 – Site Inspection Checklist for Observation of Deformation

APPENDIX C1: SRP for High Pond

SITE INSPECTOR CHECKLIST

Water Management Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: __________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

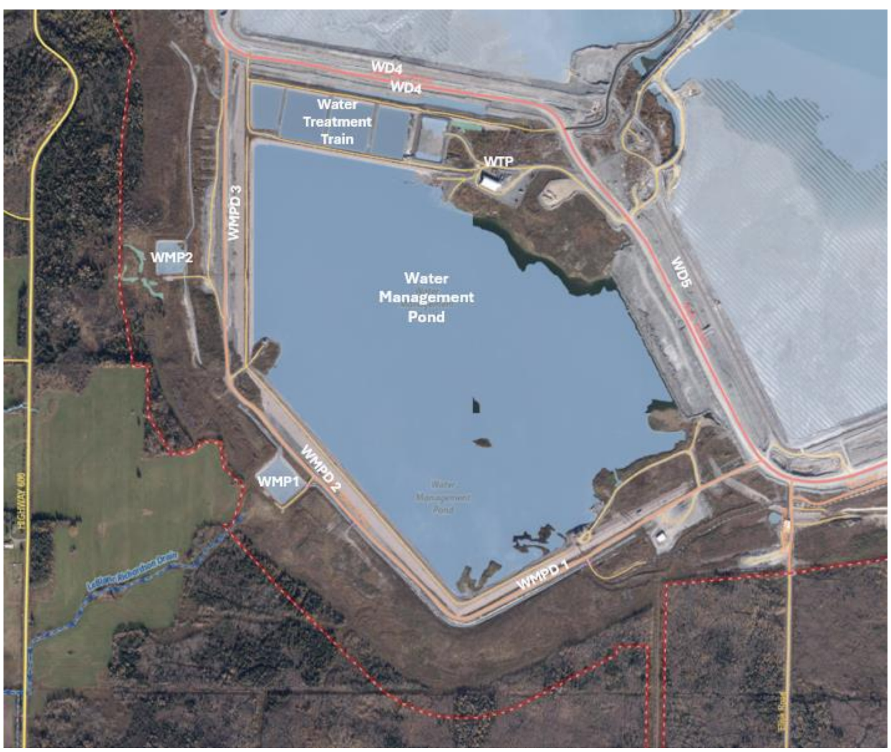


Figure 1. Plan View of Water Management Pond Dams

SITE INSPECTOR CHECKLIST

Mine Rock Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: __________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

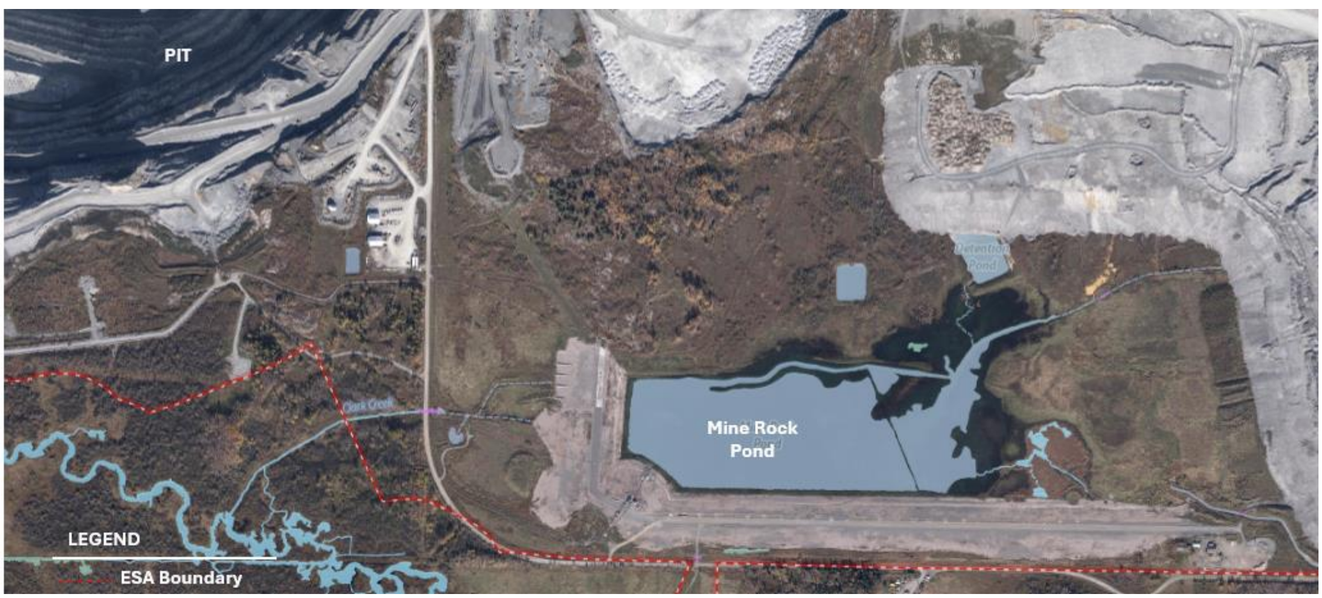


Fig 1. Plan View of Mine Rock Pond Dam

SITE INSPECTOR CHECKLIST

Sediment Ponds - High Pond

Name:____________________

Date: ___________________________Time of arrival: _____________________

Pond # 1, 2, 3: ________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of Sediment Pond Dams

SITE INSPECTOR CHECKLIST

Water Discharge Pond - High Pond

Name:____________________

Date: ___________________________Time of arrival: _____________________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of Water Discharge Pond Dam

SITE INSPECTOR CHECKLIST

Teeple Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: ___

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

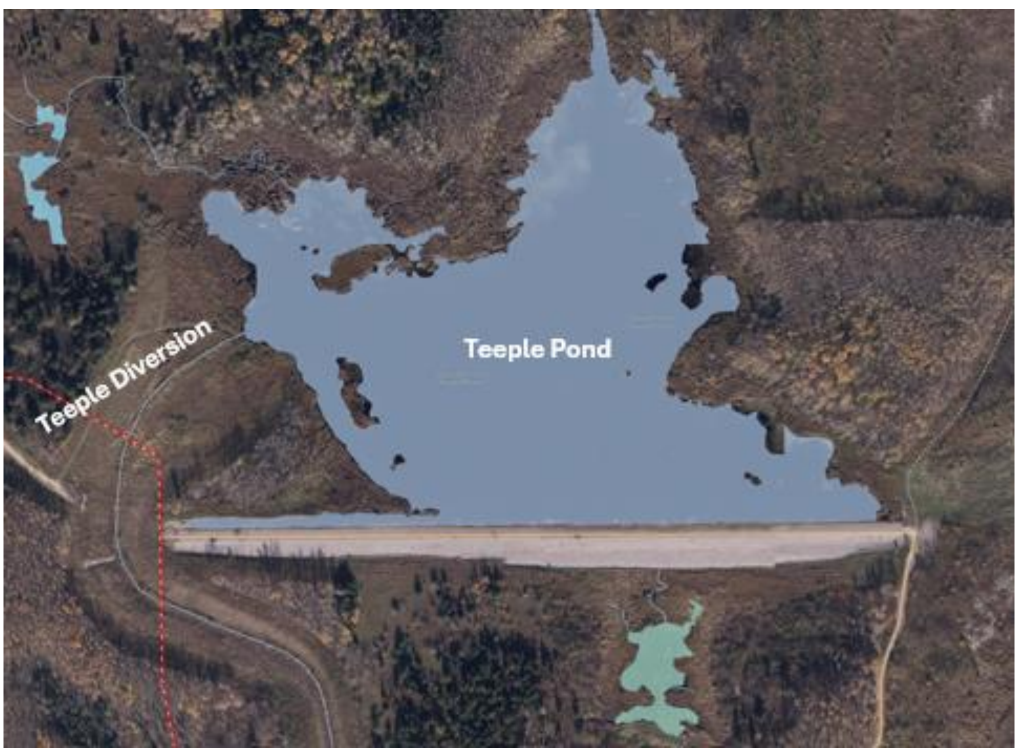


Fig 1. Plan View of Teeple Pond Dam

SITE INSPECTOR CHECKLIST

South Runoff Pond - High Pond

Name:____________________

Date: ___________________________Time of arrival: _____________________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of South Runoff Pond Dam

SITE INSPECTOR CHECKLIST

Clark Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: ___

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
    a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
    a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
    a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of Clark Creek Pond Dam

SITE INSPECTOR CHECKLIST

Stockpile Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: _________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: ____
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
    a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
    a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
    a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of Stockpile Pond Dam

SITE INSPECTOR CHECKLIST

West Creek Pond - High Pond

Name:____________________

Date: ____________________Time of arrival: _________

Inspect the condition of the dams and Spillway

1. From a safe vantage point check that it is safe to approach the dam. Call the Capital Project Manager if the dam is not considered safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_________________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment and depressions? YES NO
   a. If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   a. If yes use seepage checklist to record the details of the observations.
6. Is there damage to the spillway? YES NO
   a. If yes use seepage checklist to record the details of the observations

Fig 1. Plan View of West Creek Pond Dam

APPENDIX C2: SRP for Post-EQ Evaluation

SITE INSPECTOR CHECKLIST
Water Management Pond - Post-Earthquake Evaluation

Name:________________________ Date: ___________

Time of arrival: ___________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

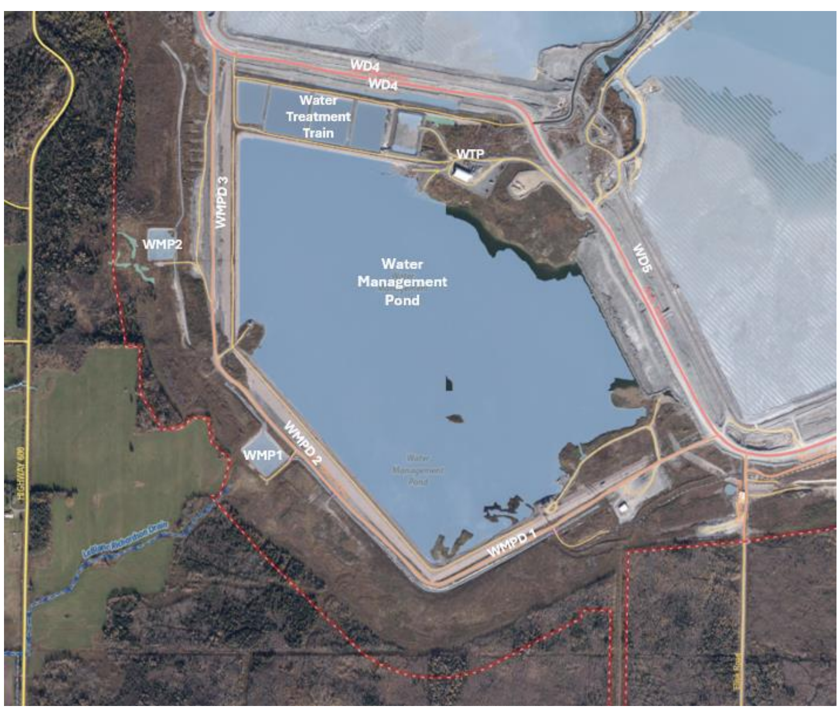


Fig 1. Plan View of Water Management Pond Dams

SITE INSPECTOR CHECKLIST
Mine Rock Pond - Post-Earthquake Evaluation

Name:________________________ Date: ___________

Time of arrival: ___________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

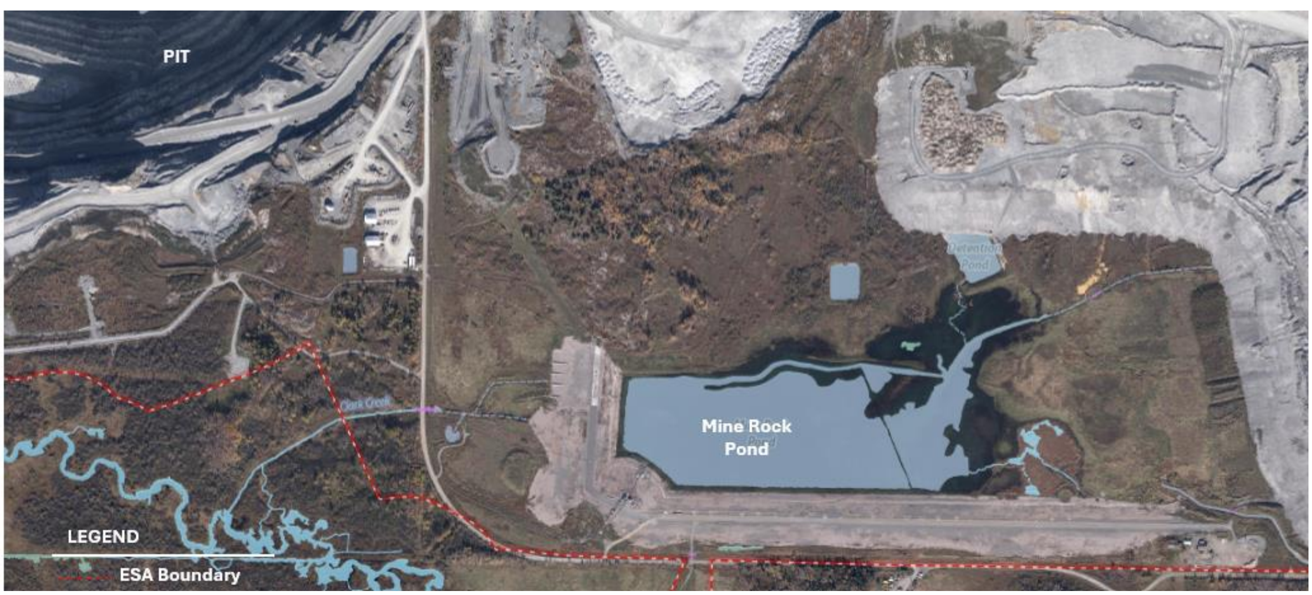


Fig 1. Plan View of Mine Rock Pond Dam

SITE INSPECTOR CHECKLIST
Sediment Ponds - Post-Earthquake Evaluation

Name:________________________

Date: _______________________________Time of arrival: ________________________

Pond # 1, 2, 3: __________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of Sediment Pond Dams

SITE INSPECTOR CHECKLIST

Water Discharge Pond - Post-Earthquake Evaluation

Name:________________________

Date: ______________________________Time of arrival: _______________________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ____________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of Water Discharge Pond Dam

SITE INSPECTOR CHECKLIST

South Runoff Pond - Post-Earthquake Evaluation

Name:________________________

Date: ________________________________Time of arrival: ________________________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of South Runoff Pond Dam

SITE INSPECTOR CHECKLIST
Teeple Pond - Post-Earthquake Evaluation

Name:________________________ Date: ____

Time of arrival: ____________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

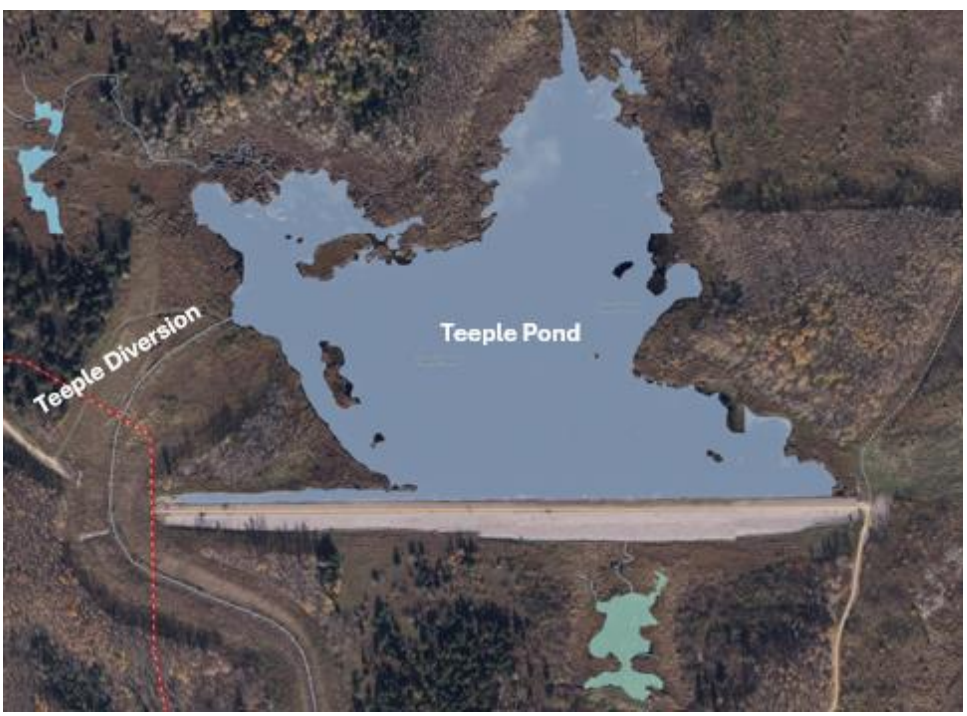


Fig 1. Plan View of Teeple Pond Dam

SITE INSPECTOR CHECKLIST

Clark Creek Pond - Post-Earthquake Evaluation

Name:________________________ Date: ___________

Time of arrival: ___________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: ______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of Clark Creek Pond Dam

SITE INSPECTOR CHECKLIST
Stockpile Pond - Post-Earthquake Evaluation

Name:_______________________ Date: ___________

Time of arrival: ___________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: _____________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damage to the toe? YES NO
8. Is there damage to the side walls? YES NO

Fig 1. Plan View of Stockpile Pond Dam

SITE INSPECTOR CHECKLIST
West Creek Pond - Post-Earthquake Evaluation

Name:________________________ Date: ____

Time of arrival: ____________

Inspect the condition of the dam:

1. From a safe vantage point check that it is safe to approach the dam(s). Call the Capital Project Manager if the dam is not safe to approach.
2. Record weather conditions: _______________________________________
3. Record Pond level_____________
4. Is there any sign of new deformation such as: cracking, slumping, change of alignment (roads, no-post barrier, and fences) and depressions? YES NO
   - If yes use deformation checklist to record details of the observations.
5. Is there any sign of new or increased seepage? YES NO
   - If yes use seepage checklist to record the details of the observations

Inspect the condition of the Spillway:

6. Is there damage to the Sill? YES NO
7. Is there damaged to the toe? YES NO
8. Is there damaged to the side walls? YES NO

Fig 1. Plan View of West Creek Pond Dam

APPENDIX C3: SRP for Increased Seepage

SITE INSPECTOR CHECKLIST

Water Management Pond - Increased Seepage

Name:_____________________ Date: __________

Time of arrival: ________________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is "dirty".
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: _____________________________________
9. Record pond level______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

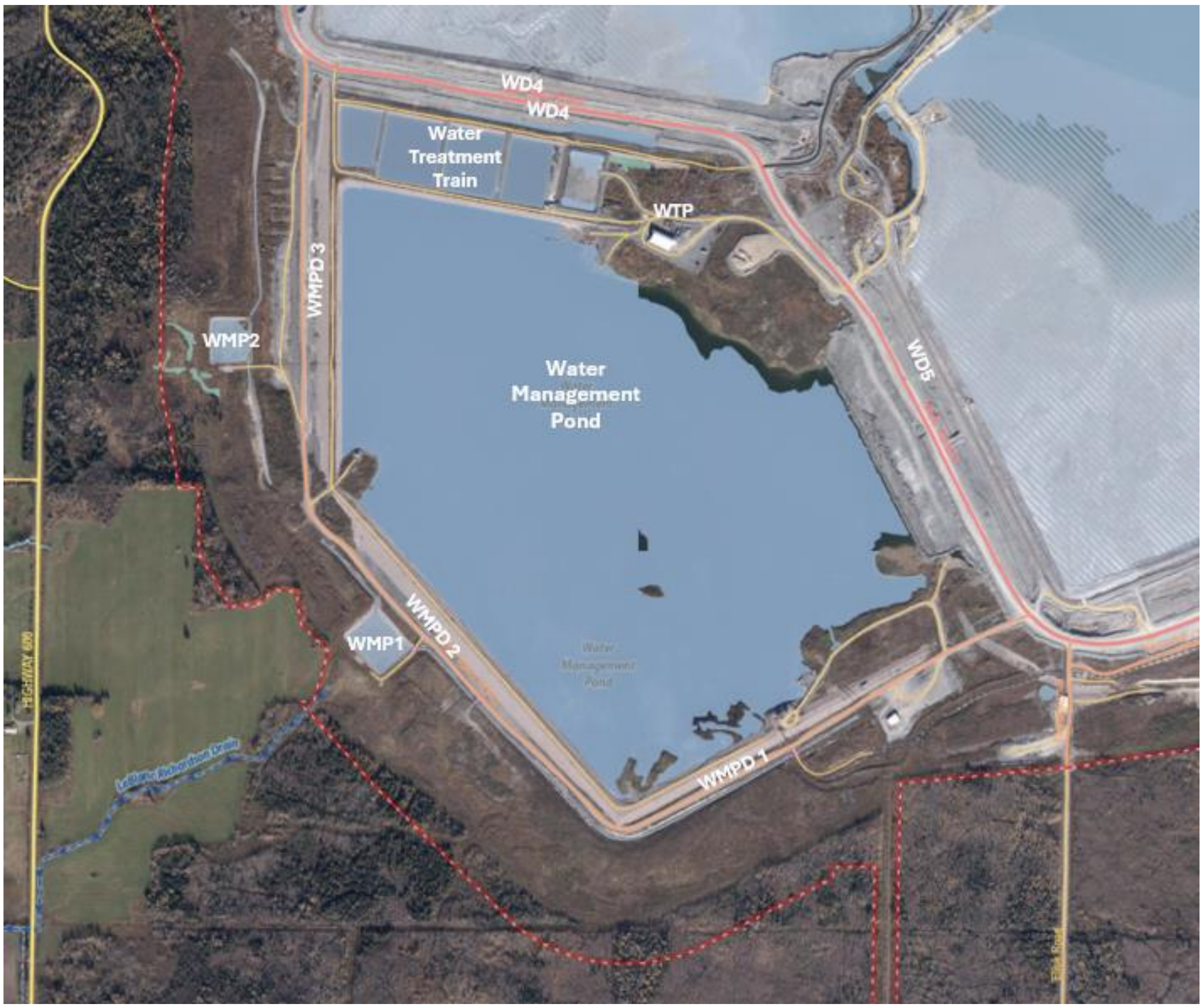


Fig 1. Plan View of Water Management Pond Dams

SITE INSPECTOR CHECKLIST

Mine Rock Pond - Increased Seepage

Name:_________________ Date: _____________

Time of arrival: ________________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ____________________________________
9. Record pond level_____________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

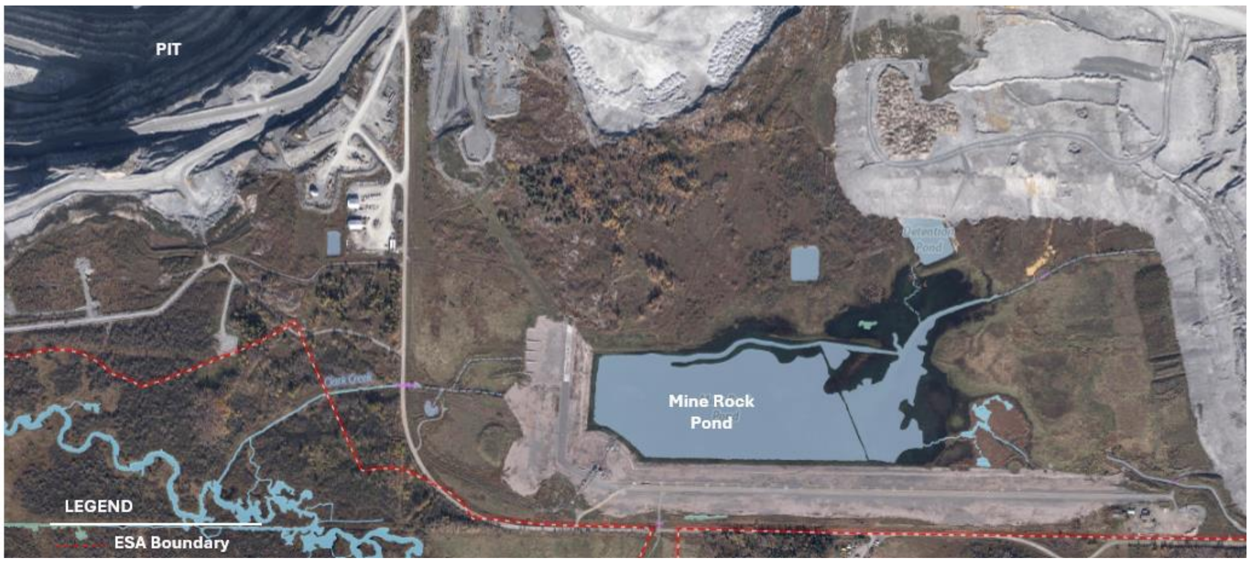


Fig 1. Plan View of Mine Rock Pond Dam

SITE INSPECTOR CHECKLIST

Sediment Ponds - Increased Seepage

Name:_______________________

Date: ______________________________Time of arrival: _______________________

Pond # 1, 2, 3: _________________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: _______________________________________
9. Record pond level______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of Sediment Pond Dams

SITE INSPECTOR CHECKLIST

Water Discharge Pond - Increased Seepage

Name:______________________

Date: _____________________________Time of arrival: ______________________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: _____________________________________
9. Record pond level______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of West Discharge Pond Dam

SITE INSPECTOR CHECKLIST

South Runoff Pond - Increased Seepage

Name:________________________

Date: ________________________________Time of arrival: ________________________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ____
9. Record pond level_______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of South Runoff Pond Dam

SITE INSPECTOR CHECKLIST

Teeple Pond - Increased Seepage

Name:__________________ Date: ______________

Time of arrival: _________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is "dirty".
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ______________________________________
9. Record pond level______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of Teeple Pond Dam

SITE INSPECTOR CHECKLIST

Clark Creek Pond - Increased Seepage

Name:_____________________ Date: _________

Time of arrival: _________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is "dirty".
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ____________________________________
9. Record pond level_____________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of Clark Creek Pond Dam

SITE INSPECTOR CHECKLIST
Stockpile Pond - Increased Seepage

Name:________________ Date: _____________

Time of arrival: _________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: ____________________________________
9. Record pond level_____________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of Stockpile Pond Dam

SITE INSPECTOR CHECKLIST

West Creek Pond - Increased Seepage

Name:______________________ Date: __________

Time of arrival: __________

1. Check that it is safe to approach the seepage area.
2. Record location of seepage below and mark on attached plan drawing.
3. Measure / estimate rate of seepage.
4. Check to see if the seepage water is “dirty”.
5. Stake out and measure area where seepage is exiting the dam.
6. Dimensions of Seepage Zone
7. Check for any erosion or sloughing in area where seepage is exiting the dam.
8. Record weather conditions: _______________________________________
9. Record pond level______________
10. Photograph seepage area
11. Call details back to Capital Project Manager.

If no further direction given by Capital Project Manager/ RTFE, continue with the following:

12. Inspect the rest of the dam using the Routine Weekly Inspection Checklist. Look for signs of deformation such as:
    - Depressions
    - Cracking
    - Sinkholes
    - Changes in the alignment along the crest
13. If anything looks unusual report back to Capital Project Manager immediately.
14. Continue to monitor and record seepage at least every hour and check that there are no changes in the flow or turbidity. Report any changes in the seepage flows to the Capital Project Manager immediately.
15. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
16. Do not leave site until Capital Project Manager instructs you to do so.

Record of Seepage

Time	Flow (L/min)	Dirty (Y or N)	Time	Flow (L/min)	Dirty (Y or N)

Fig 1. Plan View of West Creek Dam

APPENDIX C4: SRP for Observed Deformation

SITE INSPECTOR CHECKLIST

Water Management Pond - Dam Deformation

Name:____________________ Date: _________

Time of arrival: _________

1. Check that it is safe to approach the deformed area.
2. Record Pond level_____________
3. Estimate Freeboard ___________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length___________Width__________of crack
      iii. Vertical offset __________
      iv. Depth of crack ________
   b. Slumping or Slide
      i. Length___________Width___________of slumped area
      ii. Vertical offset at top of slump______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length______________Width _________
      ii. Depth ______________
   d. Other types of deformations describe below:

      ____

      ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)
   - Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

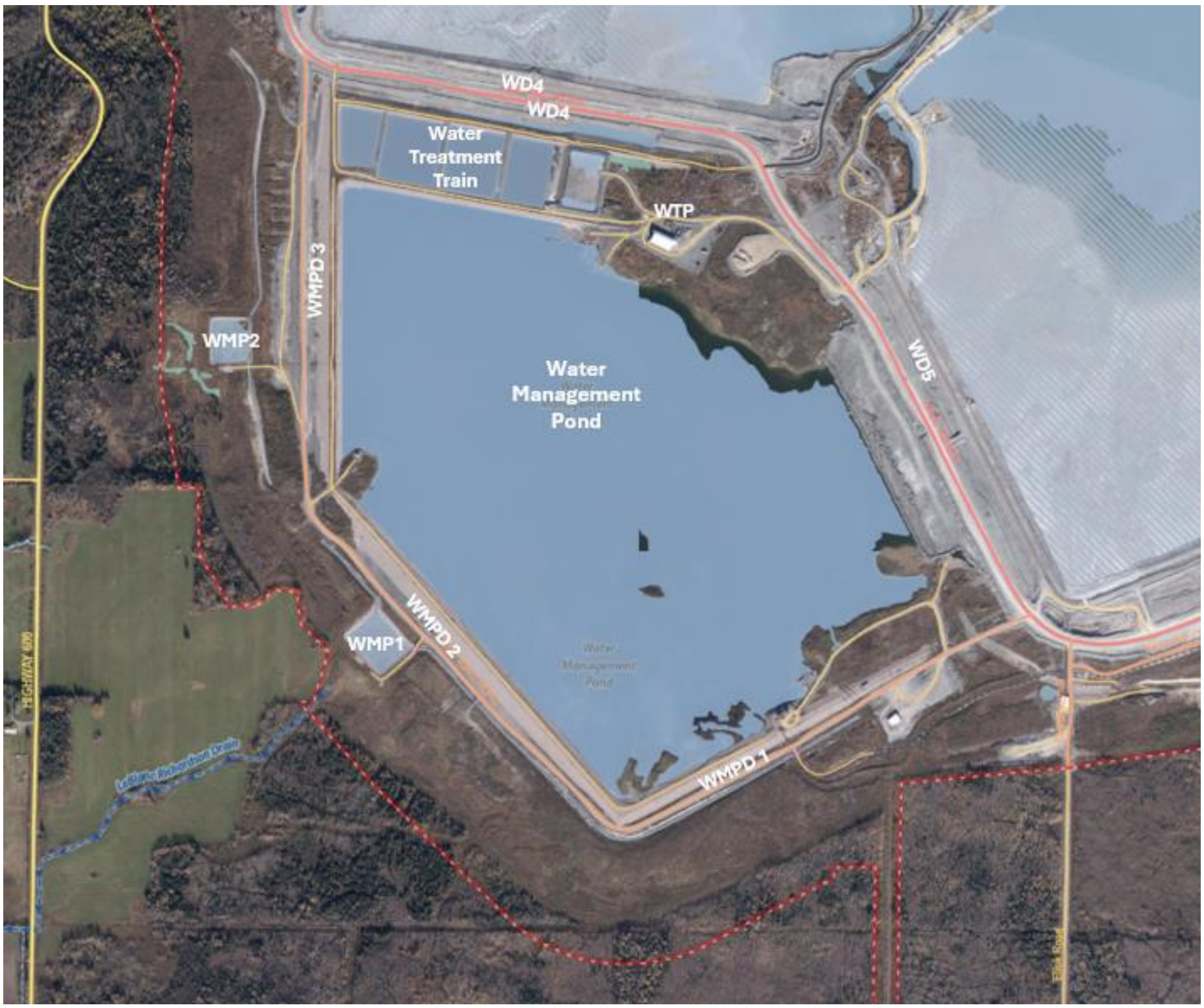


Fig 1. Plan View of Water Management Pond Dams

SITE INSPECTOR CHECKLIST
Mine Rock Pond – Dam Deformation

Name:____________________ Date: _________

Time of arrival: _________

1. Check that it is safe to approach the deformed area.
2. Record Pond level_____________
3. Estimate Freeboard ___________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length___________Width__________of crack
      iii. Vertical offset _________
      iv. Depth of crack ________
   b. Slumping or Slide
      i. Length___________Width___________of slumped area
      ii. Vertical offset at top of slump______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length______________Width _________
      ii. Depth _______________
   d. Other types of deformations describe below:

      ____

      ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)
   - Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

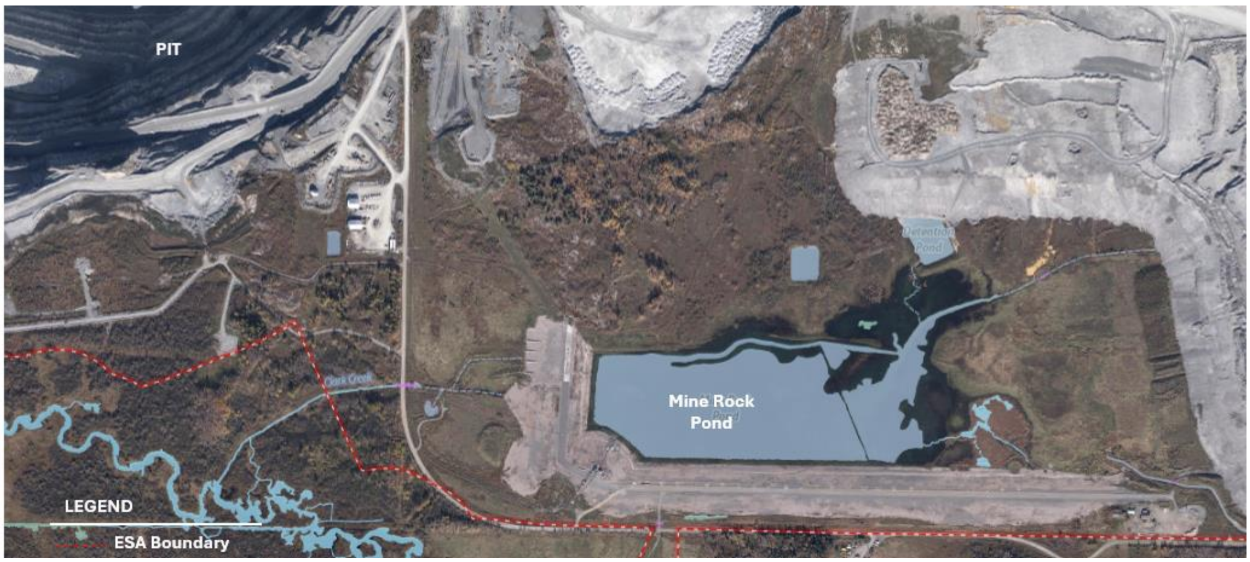


Fig 1. Plan View of Mine Rock Pond Dam

SITE INSPECTOR CHECKLIST

Sediment Ponds - Dam Deformation

Name:______________________

Date: _____________________________Time of arrival: ______________________

Pond # 1, 2, 3: __________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
    a. Cracking or Offset
        i. Along the crest or across the crest
        ii. Length____________Width__________of crack
        iii. Vertical offset __________
        iv. Depth of crack _________
    b. Slumping or Slide
        i. Length____________Width___________of slumped area
        ii. Vertical offset at top of slump_______________
        iii. Estimated Volume
    c. Sinkhole
        i. Length_______________Width _________
        ii. Depth ________________
    d. Other types of deformations describe below:

    ____

    ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

    Look forsigns of deformation such as:

- New or increased seepage (If observed go to the Increased Seepage SRP)
- Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of Sediment Pond Dams

SITE INSPECTOR CHECKLIST

Water Discharge Pond - Dam Deformation

Name:______________________

Date: ____________________________Time of arrival: ______________________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length____________Width__________of crack
      iii. Vertical offset __________
      iv. Depth of crack _________
   b. Slumping or Slide
      i. Length____________Width___________of slumped area
      ii. Vertical offset at top of slump_______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length_______________Width _________
      ii. Depth ________________
   d. Other types of deformations describe below:

   ____

   ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)

- Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of West Creek Pond Dam

SITE INSPECTOR CHECKLIST

South Runoff Pond - Dam Deformation

Name:______________________

Date: _____________________________Time of arrival: ______________________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length____________Width__________of crack
      iii. Vertical offset __________
      iv. Depth of crack _________
   b. Slumping or Slide
      i. Length____________Width___________of slumped area
      ii. Vertical offset at top of slump_______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length_______________Width _________
      ii. Depth ________________
   d. Other types of deformations describe below:

      ____

      ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)
   - Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of South Runoff Pond Dam

SITE INSPECTOR CHECKLIST

Teeple Pond - Dam Deformation

Name:____________________ Date: _________

Time of arrival: _________

1. Check that it is safe to approach the deformed area.
2. Record Pond level_____________
3. Estimate Freeboard ___________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
    a. Cracking or Offset
        i. Along the crest or across the crest
        ii. Length___________Width__________of crack
        iii. Vertical offset _________
        iv. Depth of crack ________
    b. Slumping or Slide
        i. Length___________Width__________of slumped area
        ii. Vertical offset at top of slump______________
        iii. Estimated Volume
    c. Sinkhole
        i. Length______________Width _________
        ii. Depth ______________
    d. Other types of deformations describe below:

    ____

    ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

    Look forsigns of deformation such as:

    - New or increased seepage (If observed go to the Increased Seepage SRP)

- Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

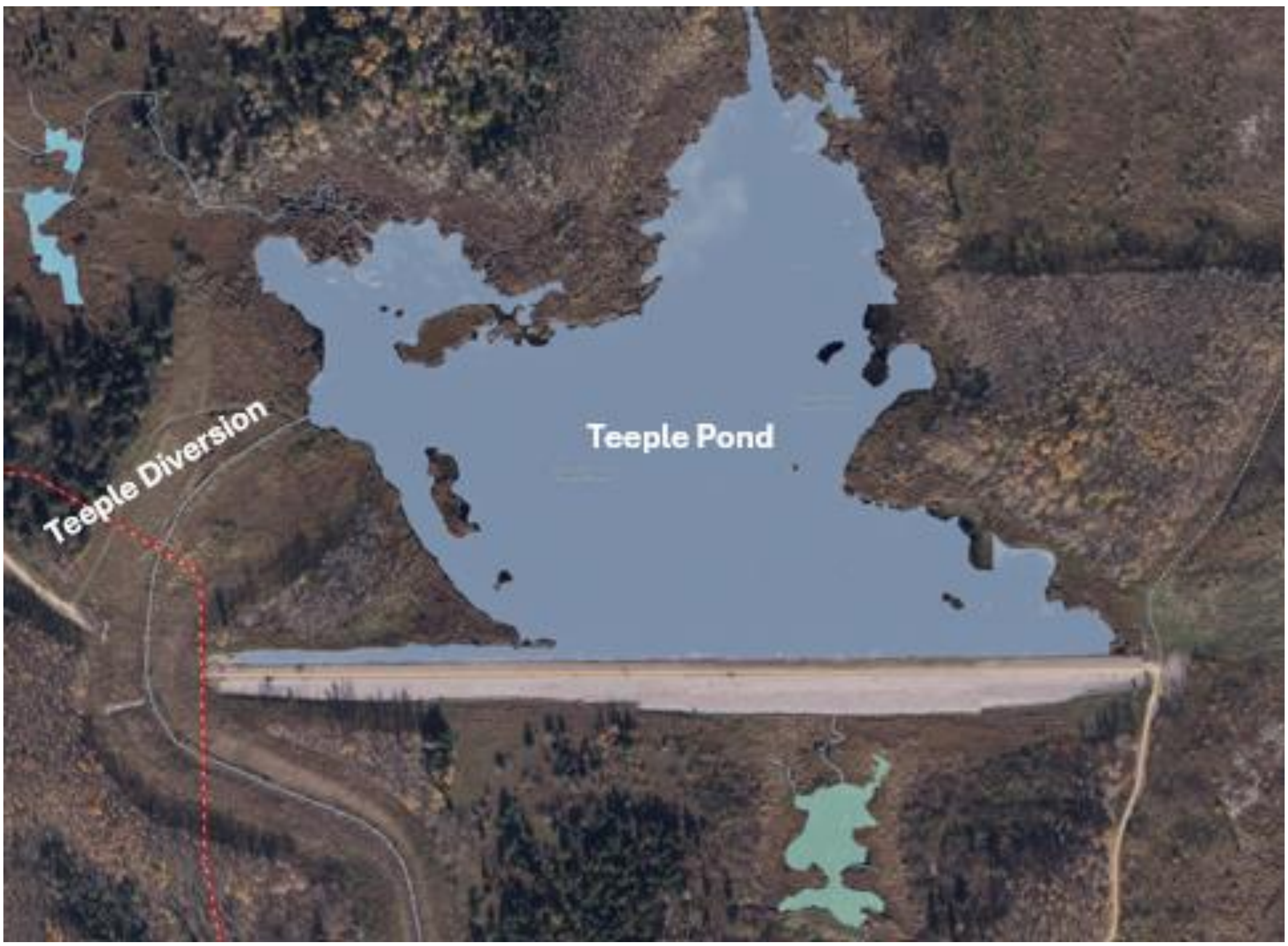


Fig 1. Plan View of Teeple Pond Dam

SITE INSPECTOR CHECKLIST

Clark Creek Pond - Dam Deformation

Name:______________________ Date: __________

Time of arrival: __________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
    a. Cracking or Offset
        i. Along the crest or across the crest
        ii. Length____________Width__________of crack
        iii. Vertical offset __________
        iv. Depth of crack _________
    b. Slumping or Slide
        i. Length____________Width___________of slumped area
        ii. Vertical offset at top of slump_______________
        iii. Estimated Volume
    c. Sinkhole
        i. Length_______________Width __________
        ii. Depth ________________
    d. Other types of deformations describe below:

    ____

    ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

    Look forsigns of deformation such as:

    - New or increased seepage (If observed go to the Increased Seepage SRP)
    - Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of Clark Creek Pond Dam

SITE INSPECTOR CHECKLIST

Stockpile Pond - Dam Deformation

Name:______________________ Date: __________

Time of arrival: _________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length____________Width__________of crack
      iii. Vertical offset __________
      iv. Depth of crack _________
   b. Slumping or Slide
      i. Length____________Width___________of slumped area
      ii. Vertical offset at top of slump_______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length_______________Width _________
      ii. Depth _______________
   d. Other types of deformations describe below:

   ____

   ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)

- Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of Stockpile Pond Dam

SITE INSPECTOR CHECKLIST
West Creek Pond - Dam Deformation

Name:______________________ Date: __________

Time of arrival: _________________

1. Check that it is safe to approach the deformed area.
2. Record Pond level______________
3. Estimate Freeboard ____________________
4. Record location of deformed area below and mark on attached plan drawing.
5. Deformation Type
   a. Cracking or Offset
      i. Along the crest or across the crest
      ii. Length____________Width__________of crack
      iii. Vertical offset __________
      iv. Depth of crack _________
   b. Slumping or Slide
      i. Length____________Width___________of slumped area
      ii. Vertical offset at top of slump_______________
      iii. Estimated Volume
   c. Sinkhole
      i. Length_______________Width _________
      ii. Depth ________________
   d. Other types of deformations describe below:

      ____

      ____

6. Photograph deformed area.
7. Call details back to Capital Project Manager.
8. Once measurements are completed stake area and monitor for further movements.

If no further direction given by Capital Project Manager continue with the following:

9. Inspect the rest of the dam using the Routine Weekly Inspection Checklist.

   Look forsigns of deformation such as:

   - New or increased seepage (If observed go to the Increased Seepage SRP)

- Other areas of deformation

10. If anything looks unusual report back to Capital Project Manager immediately.
11. Continue to measure and record the Length, Width etc. every hour and check that there are no changes. Report any changes in the measurements to the Capital Project Manager immediately.
12. Continue to inspect the entire dam every two hours following the Routine Weekly Inspection Checklist.
13. Do not leave site until manger instructs you to do so.

Fig 1. Plan View of West Creek Pond Dam

RAINY RIVER MINE

OPERATION, MAINTENANCE AND SURVEILLANCE MANUAL

PART IV - EMERGENCY PREPAREDNESS & RESPONSE PLAN (EPRP)

2025 Revision History						
Revision Index	Revision Date	Status	Author	Checker	Approver	Comments
A	2024-Nov-21	Draft	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Issued for Internal and EOR Review
02	2025-Mar-05	Approved	Sam Amiralaei	Jason Bell	Mohammad Taghimohammadi	Final 2025 OMS Manual Update

Change Log Summary		
Section Number	**Section Title**	**Comments**
3.0	ERP Roles and Responsibilities	Updated based on current staffing
3.8, 3.9, and 3.10	Discoverer Communication Plan Command Centre	Addes these sections to the EPRP
3.11	Contact Information	Updated and added the contactor information for COIs
4.1	Figure 1 - Flow Chart of Dam Safety Events	Update based on current ERP
4.8	Job Hazard Analysis and Post Incident Surveillance Plan	Added
4.9.1	Impact Assessment	GISTM items 21 and 31 (EoR Checklist)
4.9.2	Restoration and Reconstruction	GISTM item 36 and 39 (EoR Checklist)
4.10	Emergency Muster Point	Added
Appendix B	Forms and Checklists	Added, moved Tables 8 to 13 to Appendix B
Appendix C	Sample JHA and Surveillance Plan	Added
Part B – Section 1	Table 14 - RRM Dam Features	Updated

Acronyms and Abbreviations	
Term	**Definition**
BCR1	Biochemical Reactor #1
BCR2	Biochemical Reactor #2
CDA	Canadian Dam Association
DSI	Dam Safety Inspection
DSR	Dam Safety Review
ECA	Environmental Compliance Approval
EDF	Environmental Design Flood
EDMS	Electronic Document Management System
EMRS	East Mine Rock Stockpile
EOR	Engineer of Record
EPRP	Emergency Preparedness and Response Plan
FOS	Factor of Safety
GISTM	Global Industry Standard on Tailings Management
IDF	Inflow Design Flood
MASL	Meters Above Sea Level
MECP	Ministry of the Environment, Conservation and Parks
MNDM	Ministry of Northern Development, Mines, Natural Resources and Forestry
MRP	Mine Rock Pond
NAG	Non-Acid Generating
NGI	New Gold Inc.
NOWL	Normal Operating Water Level
OMS	Operation, Maintenance, and Surveillance
PAG	Potential-Acid Generating
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
PTTW	Permits to Take Water
RASCI	Responsible, Accountable, Supportive, Consulting, Informed
RRM	Rainy River Mine
RTFE	Responsible Tailings Dam Engineer
SOP	Standard Operating Procedure
SRK	SRK Consulting Inc. (Canada), Current responsible EOR
TDEIT	Tailings Dam Engineer in Training
TDT	Tailings Dam Technician
TMA	Tailings Management Area
TSM	MAC's Towards Sustainable Mining initiative
TSS	Total Suspended Solids
WDP	Water Discharge Pond
WMP	Water Management Pond
WMRS	West Mine Rock Stockpile
WTP	Water Treatment Plant
WTT	Water Treatment Train
MAC	Mining Association of Canada
MMER	Metal Mining Effluent Regulations
CEAA	Canadian Environmental Assessment Act

Table of Contents

List of Tables

List of Figures

List of Appendices

Part A - Emergency Response Plan

1. Additional Approvals

Title	Name	Signature	Date
Responsible Tailings Facility Engineer	Sam Amiralaei	Signed by: Sam Amiralaei 04566788B4BF47E...	3/11/2025
Capital Projects Manager	Jason Bell	Signed by: Jason Bell FA1E435E313B427...	3/12/2025
Environment Manager	Garnet Cornell	Signed by: Garnet Cornell 3841AC226266429...	3/12/2025
TMA Engineer of Record	Calvin Boese	Signed by: Calvin Boese EC0554BA50964B1...	3/12/2025
WMF Engineer of Record	Michael Dabiri	Signed by: Michael Dabiri 8A9A40ACF59D46E...	3/12/2025
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Health, Safety and Training Manager	Rick Francoeur	Signed by: Rick Francoeur F24DD82FA23D49F...	3/12/2025
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2. Introduction

2.1 Purpose

This Emergency Preparedness and Response Plan (EPRP) defines responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger Rainy River Mine (RRM) dams (tailings dam, water management dam, and water diversion structures) in time to take mitigating actions and to notify the appropriate emergency management authorities of possible, impending, or actual failure of the dams. This EPRP links the operation, maintenance, and surveillance manual (OMS Manual) with the general EPRP that has been developed for the New Gold Inc. (NGI) Rainy River Mine.

The EPRP is designed to include both internal and external stakeholders, ensuring a coordinated and comprehensive approach to dam safety. Internal stakeholders, such as mine personnel, operational teams, and emergency response staff, play key roles in implementing the procedures outlined in the plan. External stakeholders, including local emergency services, regulatory agencies, and community representatives, are also integral to the response efforts. By engaging both internal and external parties, the plan strengthens the overall preparedness and response capabilities for dam-related emergencies at the Rainy River Mine.

This EPRP is only focused on the dam-safety-related emergency preparedness and response plan. Other emergency conditions, such as personnel injury, fire, incident spill, high wind, security, electrical power outage, site access and security etc. are all covered in the RRM site-wide Emergency Preparedness and Response Plan. An independent Environment Risk and Response Plan has also been prepared for dam breach inundation by NG Environment from the environmental perspective.

The EPRP will undergo an annual review and update to ensure its effectiveness in addressing emerging risks, changing operational activities, and lessons learned from previous incidents. In addition to the annual review, the plan will be tested through actual incidents whenever they occur, allowing for immediate evaluation and adjustments if necessary. In the absence of actual emergencies, mock drills will be conducted to simulate various scenarios, ensuring that all stakeholders are familiar with their roles and responsibilities. These drills will provide valuable feedback, helping to refine the plan and satisfy the annual testing requirements, ensuring that the organization is always prepared for unforeseen events.

The EPRP includes two parts.

- Part A: ERP, Emergency Response Plan, for RRM
- Part B: EPP, Emergency Preparedness Plan, for RRM.

2.2 Manual Structure

For improved readability, the OMS Manual has been separated into "Parts", as listed below:

- Part I: General
- Part II: Tailings Management Area (TMA)
- Part III: Water Management Structures
- Part IV: Emergency Preparedness and Response Plan (EPRP)

To simplify and condense the OMS Manual, the site conditions are covered in Part I of the Manual. This part is focused on emergency preparation and response planning for tailings and water management facilities.

3. EPRP Roles and Responsibilities – Contact Information

RRM has an onsite emergency response team (ERT) responsible for side-wide emergencies. This section describes the roles and responsibility of RRM teams specific to the emergency conditions occurring at tailings and water management facilities, referred to as Dam Safety Events throughout this document.

3.1 Accountable Executive Officer (AEO)

The AEO's responsibilities ensure that the organization is well-prepared for any potential emergency, including those related to dam safety, environmental impacts, and personnel safety. The responsibilities of the AEO include:

- Accountable for ensuring that an EPRP is in place and addresses all potential emergencies, including dam safety incidents, tailings breaches, environmental spills, and other high-risk scenarios.
- Provide leadership and strategic direction for the development, implementation, and continuous improvement of the EPRP.
- Ensure that risk reduction strategies are in place for likely emergency scenarios, such as dam failure, tailings dam breaches, or other environmental incidents.
- Ensure that sufficient resources (personnel, equipment, training, and funding) are allocated to support the emergency response plan. This includes the maintenance of emergency response equipment and ensuring that key personnel are trained and ready to respond.
- Ensure that a post-incident review takes place. This review analyzes the effectiveness of the response, identifies areas for improvement, and incorporates those lessons into the next version of the EPRP.

3.2 General Manager

General Manager is the Incident Commander (IC) responsible for overall emergency response and preparedness at the RRM. The IC's responsibilities specific to the Dam Safety Events are the following.

- Ensure that sufficient people, equipment and facilities are available for emergencies.
- Ensure adequate training of all personnel involved in emergency operations.
- Ultimately responsible for providing directions to the Emergency Response Team (ERT).
- Responsible for the funding of all costs related to establishing, equipping, operating and maintaining Mine Rescue apparatus and equipment.
- Ensure roles of the Command Centre (CC) are assigned to competent personnel.
- Activate the Command Centre and declare the Dam Alert and Dam Breach events based on the information provided by RRM managers and engineers, and the EOR.

- Oversee the response actions following the declaration of Dam Alert and Dam Breach events.
- Responsible for working with government agencies and ensuring that RRM's response to Dam Safety Events satisfies legal and regulatory requirements.

3.3 Department Managers

RRM department managers responding to Dam Safety Event are Capital Projects Manager, Environment Manager, Community Manager, and Mill Managers. Given their extensive familiarity with TMA activities, the Capital Projects Manager will take on the responsibility as lead manager. The responsibilities of the RRM department managers include:

- Support the implementation of the Emergency Response Plan.
- Participate as members of the CC as delegated by the General Manager.
- Lead the assessment of the Dam Safety Events together with IC, RTFE, water management engineer and EOR.
- Provide suggestions to IC to classify Dam Safety Events.
- Asist the IC and ERT in the response actions following declaration of Dam Alert and Dam Breach events.
- Responsible for notifying COIs.
- Participate in training supporting the Emergency Response Plan.
- Evaluate and review hazards in their responsible areas for potential risk.

3.4 Responsible Tailings Facility Engineer

During the preparation or execution of the EPRP, the responsibilities of a RTFE and RPs include:

- Ensure that an EPRP is developed and maintained for TMA and WMFs.
- Continuously monitor the condition of the tailings and water management dams in accordance with the inspections frequencies described in Part II and Part III of the Manual for any signs of instability, seepage, or other failures.
- Ensure all monitoring equipment is functional and report any deviations from normal conditions.
- Collaborate with the Emergency Response Team to develop, maintain and test an Emergency Response Plan specific to the tailings facility.
- In the event of an emergency, the RTFE will be a member of the CC and will provide technical expertise on the tailings facility's condition and safety measures.
- Provide real-time advice to the response team regarding structural issues, safety risks, and potential impacts on the environment and surrounding communities.
- When the RTFE is off site, this responsibility falls to the TDEIT and Capital Projects Manager or the designated representative.
- RTFE lead the TARP assessment and Dam Safety Events evaluation with the assistance of RRM managers and EOR.
- After an emergency, conduct a thorough investigation into the root cause of the event and develop a report to ensure that lessons learned are integrated into future emergency preparedness and risk management activities.
- Implement preventive actions to improve safety, stability, and response measures.

3.5 Water Resource Engineer

- Water Resource Engineer/ representative will be responsible to responds to unusual conditions and abnormal performance observed at all the RRM ponds.
- In the event of an emergency, the WRE will be a member of the CC and will provide technical expertise on the tailings or water management facility's condition and safety measures.

3.6 Surveying Team (Capital Projects)

The responsibilities of the surveying lead include:

- Ensure surveying team will be able to deploy quickly to assess the impacted areas.
- Ensure all necessary surveying equipment (e.g. GPS, drones, and other surveying tools) will be readily available and in working order, so there is no delay in data collection.
- Ensure the surveying team will have redundant personnel, trained professionals who can be called in if the primary team is overwhelmed, unavailable, or unable to access certain areas.
- Implement recommendations from RRM engineers and EOR, such as:
    - Conduct a comprehensive post-incident survey to assess the damage to infrastructure and tailings.
    - Provide surveying data to guide repair efforts and design of stabilization measures.
    - Monitor and track the tailings facility's stability after repairs to ensure long-term safety.
    - Document survey results, report findings, and support the post-incident investigation and regulatory reporting.
- Provide real-time survey data with the CC and relevant authorities to help inform decision-making regarding evacuation, risk mitigation, and resource deployment.

3.7 Engineers of Record

The responsibilities of the Engineers of Record include:

- Participate in training sessions and emergency response drills to ensure readiness in the event of an emergency.
- Provide guidance to emergency responders and mine personnel about tailings dam safety during emergencies.
- In the event of an emergency, the EOR must be available to assess the situation and provide critical technical support to the Incident Commander and Emergency Response Team.
- Provide real-time assessments of the structural integrity of the dams, advising on immediate actions to prevent further damage or failure.
- Offer expert advice on the potential impacts of the emergency on the dam structures, the surrounding environment, and the safety of personnel.
- Assist in determining the best course of action to mitigate the impacts of the emergency and provide guidance on remedial actions (e.g., reinforcing the structure, controlling water levels).
- Provide EOR support to the RRM engineers and managers to select the appropriate category for the identified Dam Safety Event.
- Asist the IC and ERT in the response actions following declaration of Dam Alert and Dam Breach events. Support and advise on any temporary or permanent remedial measures undertaken during or after the emergency, ensuring they are carried out effectively and safely.
- Confirm that repairs or mitigation measures align with the original safety standards or improved designs, as required.

3.8 Emergency Response Team Manager

The responsibilities of the ERT Manager include:

- Facilitate the distribution of internal and external notifications once a Dam Alert or Dam Breach event is declared.
- Responsible for the response actions following declaration of Dam Alert and Dam Breach events.
- Coordinates response team activities.
- Develop a training plan for ERT & Mine Rescue personnel in accordance with industry best practices.
- Ensure that ERT & Mine Rescue personnel are adequately trained and equipped to deal with emergencies as mandated by the Mine Manager.
- Advise the General Manager of deficiencies pertaining to emergency response and making recommendations for addressing those deficiencies.

3.9 Discoverer

The Discoverer is the site person who first discovers the need for emergency response. The responsibilities of the Discoverer are to:

- Ensure personal safety and the safety of others; this may require erecting barricades, warning indicators or posting guards to prevent or control access and record observations.
- Simultaneously, responsible for reporting all hazards to their supervisors or their designates, providing details of the observed condition. Supervisors are then responsible for reporting these hazards in accordance with the Communication Plan described in Section 3.10.
- Responsible to report all hazards to their supervisors or guides without delay.
- Remain at or near the location, if safe to do so, providing timely information until the supervisor arrives.
- Document all communications, observations, events, and arrival/departure of personnel at location, chronologically.
- For a situation that poses an immediate danger to human health or the environment, the Discoverer must follow the site-wide emergency reporting procedure as defined in (SAF-ERT-SOP-0001 – Emergency Call-out Procedure).

3.10 Emergency Communication Plan

The emergency communication flow diagram is shown in Figure 1. Upon identification of a potentially hazardous condition, the Discoverer must immediately report the observation to their supervisor. The supervisor is responsible for promptly taking the following actions to notify both internal and external parties involved with tailings and water management at RRM:

- Notify the Capital Projects Manager or delegate by phone, and
- Report the situation via the following centralized email address:
    - Rainy.River.TMA-Incident@newgold.com

The RRM engineers and EOR will review relevant data, such as inspection reports and geotechnical hazard monitoring information, to assess the severity of the situation (Dam Breach, Dam Alert, or Dam Notice). Once the situation is assessed and the Dam Safety Event is classified, it will be communicated to the appropriate individuals according to the steps outlined in the Communication Flowchart shown in Figure 1.

3.11 Command Centre

The CC will serve as the central location for all personnel to gather, share information, and coordinate actions during an emergency. It will provide essential information, including maps, equipment availability, contact details, and specific emergency procedures. The centre will be fully equipped with the necessary communication tools to ensure a prompt and effective response.

The CC will be located in the Makwa and Mooz Meeting Room, on the second floor of the Admin Building at RRM. Physical copies of the EPRP, OMS Manual, the latest design report for TMA, and latest inundation study will be stored in the Management Incident Cabinet, located outside the Makwa and Mooz Meeting Room. The list of CC roles and responsibilities is provided in Table 1.

Table 1: Command Centre Roles and Responsibilities

Command Centre Role	Name	Organization	Responsibilities
Incident Commander/General Manager	Gord Simms	New Gold - RRM	• Ensure that emergency protocols and procedures are followed, including activating evacuation plans, notifying relevant personnel, and managing communication channels. • Lead the implementation of evacuation and safety measures as required, ensuring the safety of personnel and the surrounding community. • Assess the emergency situation and declare the appropriate level of response (Dam Breach/Dam Alert).

			• Prioritize emergency response actions based on the severity of the situation and immediate needs. • Delegate responsibilities to the appropriate personnel, ensuring clear communication and accountability within the response team. • Develop and implement a continuity plan for the response team, ensuring there are backup personnel available in case of shifts or personnel unavailability. • Instruct ERT and Community Manager to initiate notifications to COIs
RRM Manager: Capital Project Manager Environment Manager Mill Manager Community Manager	Jason Bell Garnet Cornell Mohammad Taghimohammadi Alex Rick	New Gold - RRM	• Coordinate with government agencies, regulatory bodies and local authorities to ensure proper reporting and compliance. • Provide updates and information to external agencies and support the activation of any required government-level response protocols. • Mobilize and deploy construction personnel and equipment as needed to address immediate hazards or reinforce tailings infrastructure. • Ensure that construction teams are ready to respond to critical tasks such as dam reinforcement, excavation, or diversion of water. • Ensure that all emergency actions comply with environmental regulations, permits, and industry best practices. • Work with local authorities, regulatory bodies (e.g., environmental agencies), COIs, and external stakeholders to report on environmental risks and actions taken. • Keep the CC informed of the status of construction activities and any immediate threats or failures within construction zones.
Emergency Response Team Manager	Richard Francoeur	New Gold - RRM	• Take charge of the emergency response efforts in the CC, ensuring all actions align with the EPRP. • Oversee the coordination of all response activities, ensuring that all teams are working efficiently and safely to address the emergency. • Continuously monitor the progress of the emergency response, assessing the effectiveness of actions being taken. • Collaborate with the IC and other department managers to gather real-time information on the status of the emergency. • Prioritize the safety of response personnel, ensuring all team members are following established safety protocols and procedures. • Ensure all actions, decisions, and communications are documented clearly and accurately in line with emergency response procedures. • Ensure that key documents (e.g., EPRP, OMS Manual, Design Reports, and Inundation Study) are available and accessible to the response team. • Ensure the dam safety incidents are entered in NGI's INX database.
RRM Engineers	Sam Amiralaei Emily O'Hara Karien Scheepers	New Gold RRM	• Continuously monitor the structural integrity of tailings and water management facilities and assess risks in real-time. • Provide technical assessments and recommend actions to the IC based on the severity of the situation. • Work closely with the Emergency Response Team and provide engineering expertise to guide response actions. • Assist in the recovery and remediation of the tailings facility post-incident, ensuring that necessary repairs and preventive measures are implemented.

Engineers of Record	Calvin Boese Michael Dabiri	SRK Consulting	• Assess the structural integrity of the tailings and water management facilities, including dams, embankments, and other critical infrastructure, and evaluating the potential failure mechanisms. • Provide expert technical guidance to the Emergency Response Team and the CC regarding the potential impacts of the emergency on the dam system. This includes determining risks of dam breaches, instability, and other geotechnical issues. • Recommend immediate engineering actions to stabilize the tailings facility, such as reinforcing embankments, reducing water levels, installing additional monitoring devices, or halting tailings deposition.

3.12 Contact Information

The following summary tables contain the contact information for key personnel and agencies. This information will be reviewed and updated on an annual basis.

Table 2: New Gold Staff Contact Information

Position		Name	Contact Information	Alternate
Incident Commander/ General Manager		Gordon Simms	(M) (807) 707-5308 Gord.Simms@newgold.com	See Site Duty Manager Schedule
RRM Managers	Capital Projects Manager	Jason Bell	(M) (807) 707-4237 Jason.Bell@newgold.com	Brent McFarlane (M) (807) 707-6314 Also See Site Duty Manager Schedule
	Mill Manager	Mohammad Taghimohammadi	(M) (807) 707-1050 Mohammad.Taghimohammadi@newgold.com	Michael Jelencic – (807) 708-1172
				Jody Roussy – (807) 707-7341
	Environment Manager	Garnet Cornell	(M) (807) 276-0106 Garnet.Cornell@newgold.com	See Site Duty Manager Schedule
ERT	Operations Sector	ERT Captain	Radio	See Response Capability Schedule
	Safety Officer	Richard Francoeur	(M) (807) 708-2524 Richard.Francoeur@newgold.com	See Site Duty Manager Schedule
	Emergency Services Coordinator	Jarid Sandelovich	(M) (807) 708-4852 Jarid.Sandelovich@newgold.com	See Response Capability Schedule
Responsible Tailings Facility Engineer		Sam Amiralaei	(M) (604) 562-0991 Sam.Amiralaei@newgold.com	Taha Nadeem (M) (780) 660-8380
Acting Water Management Engineers		Emily O'Hara	(M) (778) 694-2423 Emily.O'Hara@newgold.com	Garnet Cornell (M) (807) 276-0106
		Karien Scheepers	(M) (403) 554-2280 Karien.Scheepers@newgold.com	
Community Manager		Alex Bruyere	(M) (807) 276-5497 alex.bruyere@newgold.com	Anne Marie Rousseau (M) (807) 708-3844

Table 3: Engineer of Record (SRK) Contact Information

Position	Name	Contact Information	Alternate
Engineer of Record (TMA)	Calvin Boese	(M) (306) 370-0549 cboese@srk.com	Kyle Scale (M) (306) 715-2549 kscale@srk.com
Engineer of Record (WMS)	Michael Dabiri	(M) (604) 868-9953 mdabiri@srk.com	Samantha Barnes (M) (778) 866-7022

			sbarnes@srk.com
Internal Review Board	Erik Ketilson (geotechnical)	(M) (303) 887-2966 eketilson@srk.com	N/A
	David Hoekstra (water management)	(M) (306) 612-1772 dhoekstra@ srk.com	
	Daryl Hockley	(604) 681-4196 dhockley@srk.com	
	Arcesio Lizcano	(604) 681-4196 alizcano@srk.com	

Table 4: Regulatory Agencies Contact Information

Regulatory Agency	Contact Information
Police/Ambulance/Fire	911
Forest Fire Response	310-3473
Ontario Provincial Police	(888) 310-1122
CANUTEC	(888) 226-8832
Chapple Municipal Office	(807) 487-2100
Tyrell Griffith – Chapple Fire Chief	(807) 271-0111
Ontario Ministry of Labour Hotline	(877) 202-0008
Ontario Ministry of Natural Resources Hotline	(877) 847-7667
Ontario Spills Action Center/MOE	(800) 268-6060

Table 5: First Nations Contact Information

First Nation	Contact Person	Contact Information
Couchiching First Nation	Chief Brian Perrault	(807) 274-3228
Mitaanjigamiing First Nation	Chief Madeline Henderson	(807) 274-2188
Naicatchewenin First Nation	Chief Wayne Smith	(807) 486-3407
Rainy River First Nation	Chief Marcel Medicine-Horton	(807) 274-3228
Seine River First Nation	Chief John Kabatay	(807) 599-2224

4. Emergency Response Process and Procedure

4.1 Emergency Response Plan

This document is to be read in conjunction with the RRM Emergency Response Plan (SAF-ERT-PLN-0001) which provides further details on site emergency response processes and procedures including crisis management and communication procedures.

4.2 Dam Safety Hazards and Failure Modes

Dam safety hazards include external and internal hazards. External hazards originate outside the boundary of the dam and reservoir system and are beyond the control of the dam owner. Those specific to tailings and water management dams are:

- Meteorological events, such as floods, intense rainstorms (causing water level rise, local erosion or landslides), temperature extremes, ice, lightning strikes, and windstorms.
- Seismic events, either natural, or caused by economic activity such as mining.
- Vandalism and security threats.

Internal hazards may arise from the ageing process or from errors and omissions in the design, construction, operation, and maintenance of the dam and water structures. Those specific to tailings and water management dams can be subdivided by source:

- Human-related failure:

    - omissions and errors in design, construction, and operation of the dams, spillway and or culverts.
    - omissions and errors in plans, such as OMS strategies and procedures, emergency plans, inflow forecasts, water balance model etc.
- Failure of infrastructure such as mechanical, electrical, and control subsystems, access road, bridges, and instruments.

A failure mode describes how a component failure occurs to cause loss of the system function. In any analysis, the failure characteristics, including extent and rate of development, should be determined to an appropriate level of detail. At a general level, there are two dam failure modes resulted from overtopping or stability failure:

- Overtopping – Inadequate freeboard leading to the flow of water over the crest of the dams in a manner not intended or provided for in the design, construction, maintenance, and operation of the dams.
- Collapse – Inadequate internal resistance to the hydraulic, seismic, and other forces applied to the dams, foundations and abutments while being hydraulically operated in accordance with the design intent.

NGI conducted a PFMA (potential failure mode analysis) for the tailings and water management dams in 2023 (described in Part II of the Manual).

4.3 Incident Detection and TARPs

Incidents are the unusual condition or abnormal performance of dam. After an unusual condition or incident is detected and confirmed, RRM staff will utilize the TARPs to categorize the severity of incident into one of the established risk levels.

A trigger action response plan (TARP) defining trigger levels for performance indicators has been developed according to MAC (2021) as shown in Appendix A.

A series of escalating qualitative risk levels assessed for each performance indicator. For each performance indicator and each risk level there are pre-defined risk management actions. The number of risk levels are dependent upon the performance indicator, the risk management plan, and the associated critical control.

Surveillance response plans (SRPs) corresponding to the performance indicators are the following:

- SRP for High Pond:
    - Rainfall
    - Tailings Facility Freeboard
    - Water Facility Freeboard
- SRP for Increase Seepage through Dam
    - Sinkhole in Dam Crest or DS Slope if seepage is observed.
    - Internal Erosion
    - Seepage through Dam
    - Standing Water at DS Toe
- SRP for Observation of Dam Deformation
    - Displacement, Sloughing, Crack, Bulging of Crest or DS Slope
    - Sinkhole in Dam Crest or DS Slope if dam deformation is observed.
    - Surface Erosion
- SRP for Post-EQ
    - Earthquake
- SRP for Special Event
    - Snowmelt
- Instrument Threshold Exceedance Responsibilities Workflow
    - Slope Indicator
    - Piezometers
    - Dam Settlement
- SRP for Non-Dam Infrastructures

- Displacement, Sloughing, and Crack
- Seepage and Internal Erosion

SRPs are the enhanced surveillance plans. See Appendix B in Part II and III for the details of SRPs applicable to TMA and water management facilities.

4.4 Emergency Assessment

Once an emergency is identified and communicated to the Project Team (NGI and Consultants) via the predefined distribution list (Rainy.River.TMA-Indicent@newgold.com), a meeting will be organized by RTFE or CP Manager to assess the situation. During this meeting the identified dam safety event will be classified in accordance with the following categories:

Incident

- An abnormal condition or performance of the dam with the potential to jeopardize the safety of the dam but that, at the present time, is not expected to lead to a breach of the dam.
- It is not considered an emergency.

Alert

- An abnormal condition or performance of the dam that, without swift and effective intervention, could further degenerate with time and lead to a breach of the dam.

Breach

- An actual breach or abnormal condition or performance of the dam that has a significant probability of leading to a breach of the dam.

The EOR, with discussion with RTFE, RP, and Capital Projects Manager, will assess the safety status of the dams and, in coordination with the RRM Managers, General Manager, ERT, will declare the category of the identified Dam Safety Event.

Pond water level exceeding the NOWL (Normal Operating Water Level) is considered a High Pond. Exceeding MOWL (Max. Operating Water Level), i.e., overspill through spillway of TMA pond or water management facilities except for WMP, and freshwater diversions and ponds, is an environmental emergency, but not a dam safety emergency. However, if water level is at the Inflow Design Flood Level) or higher, it is considered a dam safety emergency, triggering an Alert or Breach event, depending on the development of the situation.

After the Dam Safety Event is declared, the following steps shown in Figure 1 will be followed as described in the following sections.

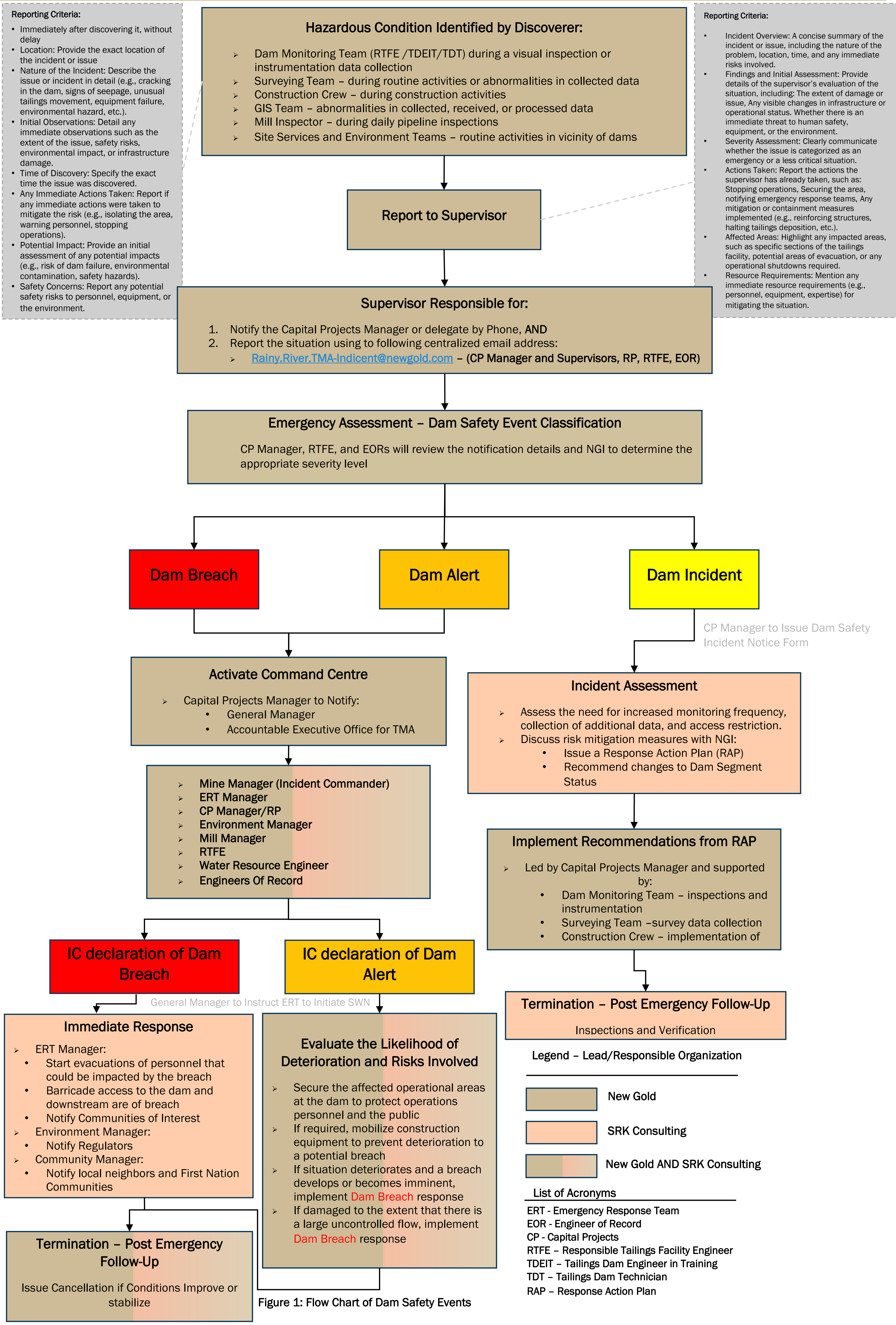

Figure 1: Flow Chart of Dam Safety Events

4.5 Notification and Responsibility

4.5.1 Dam Incident Notification

If a dam incident condition is identified, notifications must be issued by the Capital Project Manager or delegate. This notification will follow the initial notification from the supervisor of the Discoverer and will include additional details as described in the Dam Incident notification form (Table 9, Appendix B).

In the event of a Dam Alert or Dam Breach situation, it is the responsibility of the General Manager (IC, or his delegate) to instruct ERT to initiate notifications through Send Word Now (SWN), RRM's mass notification tool (**to be developed**, template is shown in Table 9 and Table 11). SWN notifications are sent to internal personnel, government agencies, consultants, and COI, etc. in the forms of telephone, email, and text. Recipients are asked to confirm receipt of the message. All deliveries and confirmations are logged in SWN.

Additional alerts and Cancellation alerts are continued to issue notifications every 12 hours until the condition stops, at which time issue a cancellation notification.

4.5.2 Notification Flowchart and Responsibility

The Notification Chart as shown in Figure 2 includes appropriate contact information such as names, positions, and telephone numbers.

Dam incident is not an emergency. The notification of dam incident is generally limited to RRM staff, EOR, and depending on the situation to the regulators. The Notification chart applies to Dam Alert and Dam Breach event.

IC declares the dam safety event as shown in Figure 1. After the declaration, the notification should be sent out by RRM to all stakeholders as shown in Figure 2.

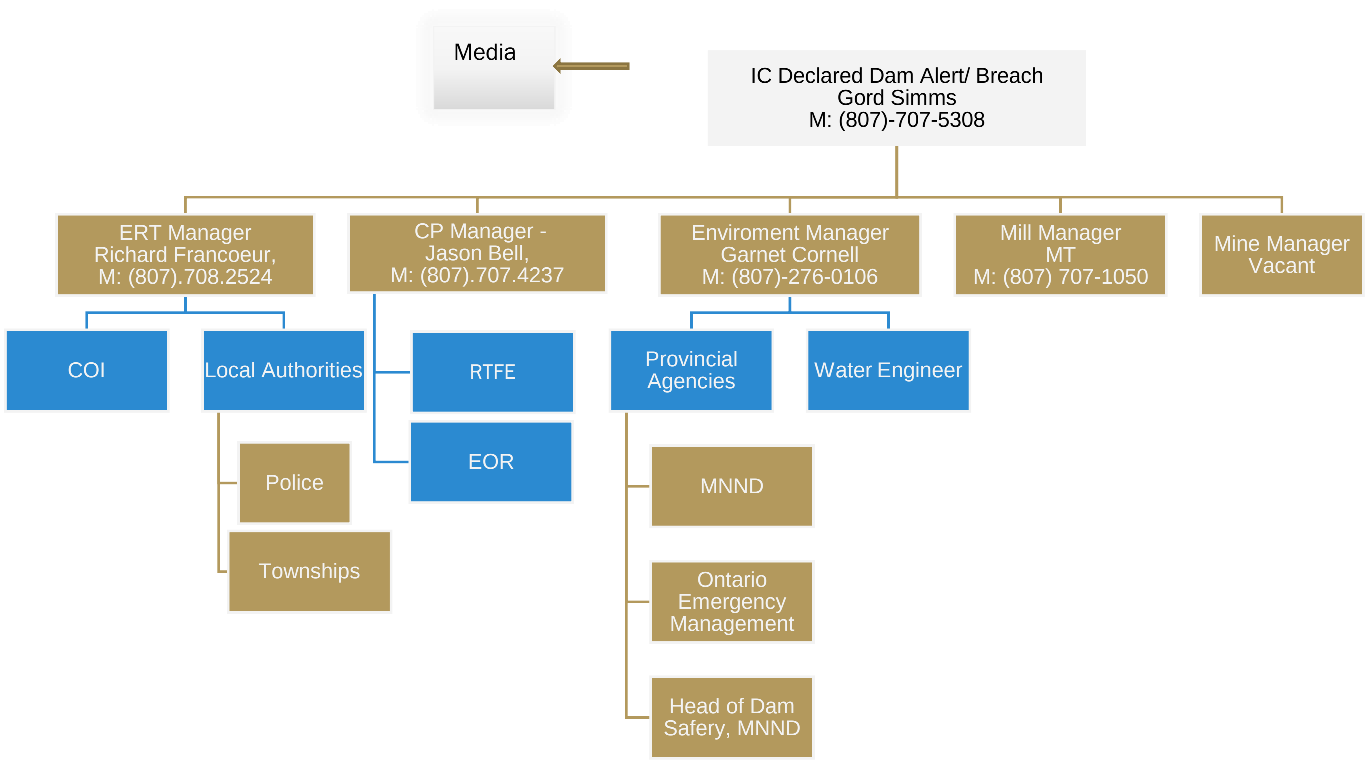

Figure 2: Dam Alert and Dam Breach Notification Flow Chart

4.6 Emergency Actions

After the initial notifications have been made, NGI will continue acting to save the dam and minimize impacts to life, property, and the environment by taking following actions,

- Assess the status of the situation as shown in Figure 1,
- Keep others informed through communication channels established during the initial notifications as shown in Figure 2.
- Secure the affected operational areas at the dam to protect operations personnel and the public.

4.7 Job Hazard Analysis and Post Incident Surveillance Plan

The Job Hazard Analysis (JHA) and Surveillance Plan are essential components in the preparation and safe implementation of remedial actions following the identification of an emergency. The purpose of the Job Hazard Analysis is to systematically assess potential risks associated with each task involved in the remedial process. By identifying hazards beforehand, such as structural instability, or unsafe working conditions, the JHA ensures that proper safety measures, controls, and personal protective equipment (PPE) are in place to protect workers and minimize the risk of further incidents.

The Surveillance Plan outlines the procedures and monitoring systems required to track the progress and effectiveness of remedial actions. It ensures that continuous observations, measurements, and assessments are conducted during the implementation phase to identify any emerging issues or deviations from safety protocols. Together, the JHA and Surveillance Plan enable the emergency response team to carry out corrective actions in a controlled, safe manner, while ensuring ongoing oversight and risk mitigation throughout the recovery process.

In 2024, following the slope failure that occurred at North Borrow at TMA, the NGI Construction Team (Capital Projects), in collaboration with the Health & Safety, and the Environment teams, successfully completed a JHA and a Surveillance Plan prior to the implementation of the buttress construction. The mentioned documents are compiled in Appendix C and should be used as a reference to expedite the process in any potential future emergency situation.

4.8 Termination and Post-Emergency Follow-up

The Environment Manager and ERT Manager, on behalf of IC, are responsible for notifying the authorities that the condition of the dam has been stabilized. Government officials are responsible for declaring an end to the public emergency response. Examples are shown in Table 9 and Table 11.

Following the termination of an incident, NGI, in coordination with emergency management authorities, would conduct an evaluation that includes all affected participants. At a minimum, the following should be discussed and evaluated in an after-action review:

- Events or conditions leading up to, during, and following the incident.
- Significant actions taken by each participant and improvements for future emergencies.
- All strengths and deficiencies found in the incident management process, materials, equipment, staffing levels, and leadership.
- Corrective actions identified and a planned course of action to implement recommendations.

The results of the after-action review should be documented and used as a basis for revising the ERP.

All dam safety events should be logged in Table 13.

4.9 Post-Incident Analysis

TMA nonconformances, un-anticipated upset conditions, or an emergency are followed up with a post-incident analysis, as soon as possible after the incident. The post-incident analysis captures and considers the following:

- Methodologies are in place to mitigate similar incidents from happening in the future.
- Were mistakes made that led to the incident, or in responding to the incident? Provide guidance to avoid mistakes in the future.
- What can be done to improve the response if similar incident occurs in the future?

- Any recommendations for change within the TMA or OMS manual as an outcome of the post-incident analysis?

Post-incident analysis is conducted by the RTFE with consult from the EoR. Results of the analysis should be documented and reported to the Capital Projects Manager, Accountable Executive Officer, and Board of Directors, as appropriate.

4.9.1 Impact Assessment

The aim of the impact assessment will be to evaluate and examine the social, environmental, and local economic impacts associated with the failure. A designated team will be tasked with assessing the immediate repercussions. This team will consist of the GM, Safety Manager, Community Manager, Environment Manager and any additional personnel deemed necessary by the team. The evaluations conducted by this team will encompass, among other things:

- **Social Impact Assessment** to evaluate the effects on local communities. This involves evaluating health and safety hazards, the need for psychosocial support, and strain on social networks and community support structures.

- **Environmental Impact Assessment** to evaluate the extent of environmental damage to the area. This will include but is not limited to soil and water contamination, loss of wildlife habitat, and potential impacts on biodiversity of the area, sediment and erosion into river morphology, and aquatic life impacts. This assessment should also account for long-term environmental degradation and efforts required to restore ecosystem health.

- **Economic Impact Assessment** to evaluate array or direct and indirect financial repercussions. These include but are not limited to immediate infrastructure repair costs, relocation, and housing for affected communities, environmental mitigation, and adaptation strategies, impacts on supply chain and business, increased demand for social services, penalties and legal settlements.

4.9.2 Restoration and Reconstruction

In the event of a catastrophic failure, the subsequent post-incident analysis must include a comprehensive restoration and reconstruction plan. It is essential to actively engage affected communities, ensuring their involvement in all aspects of the restoration process through transparent and open communication. The plan should prioritize the safety and health of all affected individuals, potentially encompassing the cleanup of contaminants, restoration of critical infrastructure, public services, economic recovery, and financial assistance for the community. The restoration plan requires a collaborative effort, involving stakeholders, community representatives, and any parties impacted by the failure. This strategy should not only address immediate needs but also lay the groundwork for long-term social, financial, and environmental sustainability.

4.10 Emergency Muster Point

There are two main muster stations within the TMA:

- Muster Point K – Located at Marr Site (Figure 3).
- Muster Point I – Located on the east side of Water Management Pond (Figure 3).

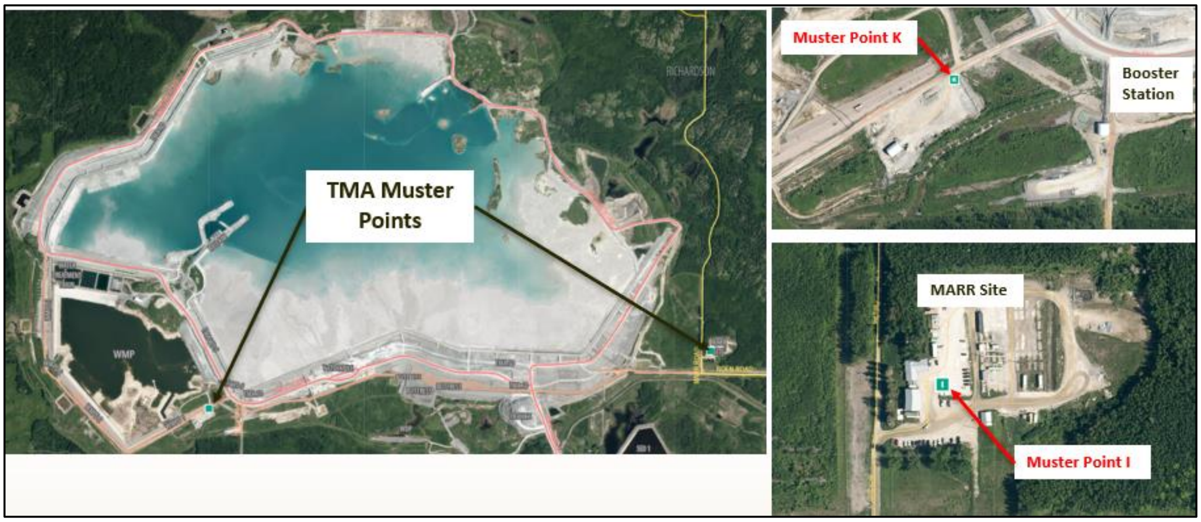

Figure 3: Location of Muster Points Within TMA

5. Maintenance, Training and Testing of Dam Emergency Plan

5.1 Maintenance

EPRP for tailings and water management facilities has been developed and maintained by RTFE with assistance from various RRM teams and the EOR. The EPRP is scheduled to be updated annually and/or following any major changes to RRM's operations.

5.2 Training, Exercise and Drills

The ERP training is conducted annually, as shown in Table 6, and will include the following:

- RTFE and Capital Projects Manager are jointly responsible for ensuring that all personnel involved in the emergency response are thoroughly trained on the ERP. This includes familiarizing them with the plan's elements and their specific responsibilities and duties.
- Community Manager and ERT are jointly responsible for training the COI in preparing emergency preparedness plan, and evacuation actions.

Training records are maintained separately by the Capital Projects team and ERT for internal and external training. An example is provided in Table 7.

Table 6: Types of Training, Drills and Exercises

Exercise Type	Frequency	Description	Participants
Internal Training and Annual Refresher	Annual Change in 50% of key personnel, or replaced by an actual event	Understand the contents and procedures.	• Capital Project Team • ERT • Mill, Environment managers and supervisors
External Awareness	Every two years	• Prepare the emergency preparedness plan • Evacuation process	• COI • ERT • Community
Send Word Now Test Alert (external)	When the system is activated	Send Word Now Test Alert for all externals listed in plan	• COI • ERT • Community
Drill	At least once every 5 years (in between DSR's) or sooner	• Understand the contents, and • Practice the procedures.	• Capital Project Team • ERT • Mill, Environment managers and supervisors

Table 7: Training Log

EXERCISE TYPE	DATE	PARTICIPANTS	DESCRIPTION
OMS and EPRP Annual Refresh	May 2, 2022	CP, Environnent, Site Service, Mill	First OMS online training introducing the new OMS manual, dam inspection and EPRP
TMA Mock	Nov. 25, 2022	CP, ERT	Internal exercise of a presumed borrow pit berm failure.
OMS and EPRP Annual Refresh	May 16, 2023	CP, Environnent, Site Service, Mill	Online training revising OMS manual, dam inspection, and EPRP
OMS and EPRP Annual Refresh	Nov. 19, 2023	CP, Environnent, Site Service, Mill	In-person training revising OMS manual, dam inspection and EPRP to all SS, CP, and Mill Crews
OMS and EPRP Annual Refresh	Sep. 26, 2024	CP Construction Team	In-person training revising OMS manual, dam inspection and EPRP to all SS, CP, and Mill Crews

Appendix A: TARPS

Hazard	Indicator	Risk Level	Action to be Taken
Rainfall	Rainfall < a 5-day-70 mm Event	Acceptable	Surveillance activities and frequencies according to the OMS manual
	EDF> Rainfall > a 5-day-70 mm Event EDF: • For TMA, MRP, WMP: 320 mm in 30 days • For SED 1, 2 and 3, 110 mm in 24 hours without pumping, or 24 mm in 30 days with pumping. • For WDP and freshwater diversion dams, no EDF was defined	Low Risk	• Initiate SRP for High Pond if needed. • Surveillance results to be provided to EoR for review. • EoR to visit site to assess the situation when necessary. • Document location, photograph, and survey area of concern • Take appropriate mitigation measures with engineering review
	IDF>Rainfall>EDF IDF: • For TMA: 476 mm in 24 Hours (PMP) • For MRP and WMP: 476 mm in 24 Hours (PMP) • For Clark Diversion and SED: 127 mm in 24 hours (Rainfall) • For West Creek Diversion: 476 mm in 24 Hours (PMP) • For other facilities: Not specified	Moderate Risk	• Initiate SRP for High Pond • Surveillance results to be immediately provided to EoR for review. • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Take appropriate mitigation measures with engineering review. • Suspend activities in area of concern. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	> IDF (Rainfall, or PMP)	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP & EPP
Snowmelt	• Snowpack is less than 170 cm (i.e., 120% normal snowfall at Barwick). • Rainfall is less than 53 mm in 24 hours which is equal to a 1:2-year, 24-hour, 53 mm rainfall	Acceptable	Surveillance activities and frequencies according to the OMS manual
	• Extreme cumulative snowpack (greater than 170cm). • Rapid snowmelt and/or heavy rainstorms exceeding a 1:2-year, 24-hour rainfall, or • A combination of 42 cm snowpack plus forecasted temperature of below freezing to above 18°C within the next two weeks	Low Risk	• Initiate SRP for High Pond if pond level is high (DSN/MOWL) • Surveillance results to be provided to EOR for review. • EoR to visit site to assess the situation when necessary. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
Earthquake (BGC Dam Classification, to be updated according to SRK Dam Classification)	For TMA perimeter dams, SPD, WCD, MRP, and WMP: • M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km or farther (Correspond to Dam Class: Low). • Displacement criteria unclear. For Clark Creek Dam, Teeple Pond Dam, WDP and SRP Dam: • No earthquake activity, or • M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km or farther Greater magnitude EQ is unlikely to occur and not considered. Table 4-2 in BGC-4910-DT00-RPT-0004.001	Acceptable	Surveillance activities and frequencies according to the OMS manual
	For TMA perimeter dams, SPD, WCD, MRP, and WMP: • M 6.0 for the design earthquake at a site-to-source distance of approximately 126 km or closer (Correspond to Dam Class: Significant). • Displacement criteria unclear. Table 4-2 in BGC-4910-DT00-RPT-0004.001	Low Risk	• Initiate SRP for EQ • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	For TMA perimeter dams, SPD, WCD, MRP, and WMP: • M 6.0 for the design earthquake at a site-to-source distance of approximately 86 km or closer (Correspond to Dam Class: High and Very High). • Displacement criteria unclear. Table 4-2 in BGC-4910-DT00-RPT-0004.001 or • Earthquake resulted in visible damage to the dam or appurtenances	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	For TMA perimeter dams, SPD, WCD, MRP, and WMP: • M 6.0 for the design earthquake at a site-to-source distance of approximately 50 km or closer. (Correspond to Dam Class: Extreme) • The maximum allowable permanent seismic displacement: 0.3 m.	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP and EPP

Hazard	Indicator	Risk Level	Action to be Taken
	For Clark Creek Dam, Teeple Pond Dam, WDP and SRP Dam • M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km or closer (Correspond to Dam Class: Low), or • Displacement criteria unclear. Table 4-2 in BGC-4910-DT00-RPT-0004.001 or • Earthquake resulted in uncontrolled release of water from the dam		
Tailings Facility Freeboard	Water level stable and below normal operating level (NOWL). Stage 6 NOWL: 376.1 m.	Acceptable	Surveillance activities and frequencies according to the OMS manual
	Spillway invert (MOWL) > Water level > NOWL Stage 6 MOWL: 376.6 m	Low Risk	• Initiate SRP for High Pond when needed. • Surveillance results to be provided to EoR for review. • EoR to visit site to assess the situation when necessary. • Document location, photograph, and survey area of concern • Implement engineering review. • Take appropriate mitigation measures with engineering review.
	IDFL > Water level > MOWL It is already an Environment Incident (exceeds EIL). See Spillway Flow as well. Stage 6 IDFL: 377.35 m	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Water levels exceed or expected to exceed the IDF level. See Spillway Flow as well	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP and EPP
Water Facility Freeboard (1,2,3)	Water level stable and below NOWL. See Table 9 in Part 3	Acceptable	Surveillance activities and frequencies according to the OMS manual
	Water level exceeds NOWL but below spillway invert (MOWL). See Table 9 in Part 3	Low Risk	• Initiate SRP for High Pond • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	Water level exceeds the spillway Invert (MOWL) but below IDF level (IDFL). It is already an Environment Incident (exceeds EIL). See Table 9 in Part 3 See Spillway Flow as well	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Water levels exceed or expected to exceed the IDF level. See Table 8 in Part 1 See Spillway Flow as well	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP &EPP

(1) Excluding MRP Dam, Clark Creek Dam, and Teeple Pond Dam. Those are designed for overtopping.

(2) IDFL not specified for WDP, SED 2 and South Runoff Pond, Stockpile Pond Dam.

(3) MOWL, if different from spill invert, not specified for the four freshwater dams.

Hazard	Indicator	Risk Level	Action to be Taken
Spillway Flow	Reservoir water surface elevation at spillway crest or spillway is flowing with no active erosion	Acceptable	Surveillance activities and frequencies according to the OMS manual
	Spillway flowing with active gully erosion	Low Risk	• Initiate SRP for High Pond when needed. • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	Spillway flow that could result in flood of people downstream if the reservoir level continues to rise	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Spillway flowing with an advancing head cut that is threatening the control section	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP and possibly EPP
Displacement – Sloughing, – Crack, – Bulging – Alignment – Depressions	• Surveillance results within design limits and range of historic trends, Nonvisible.	Acceptable	Surveillance activities and frequencies according to the OMS manual

	• Visible displacement
	• Condition new, but no sign of continued progression or worsening condition.
		Low Risk	• Initiate SRP for Dam Deformation when needed.
			• Surveillance results to be immediately provided to EoR for review.
			• EoR to visit site to assess the situation when necessary.
			• Document location, photograph, and survey area of concern.
			• Implement engineering review.
			• Take appropriate mitigation/monitoring measures with engineering review, such as.
			  ○ Conduct frequent survey.
			  ○ Place buttress.
			  ○ Place sandbags as necessary around crack area to divert any storm water runoff from flowing into crack(s).

	• Signs of continued progression or worsening condition (crack elongating, scarp height increasing, new scarps forming, dam crest settling, downstream slope or toe area bulging). • loss of freeboard (crest dropped). • Surveillance results continuously increasing from range of historic results.	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	• Toe displacement related to sloughing >3 m from original location. • Bulging of downstream slope >2 m in height	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Sinkhole	Observation of new sinkhole in reservoir area or on embankment. See Seepage and Internal Erosion as well	Moderate Risk	• Initiate SRP for Increase Seepage through Dam • Suspend activities in area of concern. • Carefully observe dam for signs of depressions, seepage, sinkholes, cracking, or movement. • Stockpile additional fill. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items

Hazard	Indicator	Risk Level	Action to be Taken
	Rapidly enlarging sinkhole	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Internal Erosion	• No visible seepage, No wet spots at downstream dam toe	Acceptable	Surveillance activities and frequencies according to the OMS manual
	• Seepage is clear. • Seepage rate not increasing. • New appearance of wet or soft areas on dam's toe area	Low Risk	• Initiate SRP for Increase Seepage through Dam • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	• Seepage water cloudy or turbid. • Seepage rate increasing • No visible whirlpool in pond • Boils with deposits of fines appear in downstream toe area • Sinkholes/settlement appear on dam surface or toe area but not visibly enlarging (requires engineering assessment)	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	• Emerging water is muddy with significant amount of material being displaced or washed away. • Rate of flow is increasing. • Whirlpool visible in pond. • Sinkholes/settlement visibly enlarging on dam surface or toe area. • Boils with deposits of fines growing in downstream toe area	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Overtopping (1,2)	For central core dam, TMA dams, MRP, SPD, WCD, and homogenous clay fill dams: Teeple and Clark Dam • Pond water levels rising and will exceed dam crest elevation, • Wind-generated waves are running over and eroding dam crest so that pond water level will exceed eroded crest level.	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	For homogenous clay fill dams: WMP, WDP, SRP, Sediment 2, • Pond water levels rising and will exceed dam crest elevation, • Wind-generated waves are running over and eroding dam crest so that pond water level will exceed eroded crest level.	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP and EPP

(1) IDFL not specified for WDP, SED 2 and South Runoff Pond, Stockpile Pond Dam.

(2) MOWL, if different from spill invert, not specified for the four freshwater dams.

Hazard	Indicator	Risk Level	Action to be Taken
Seepage through Dam	• Seepage is clear. • Seepage in location of historic locations. • Seepage rate is within design limits and range of historic trends	Acceptable	Surveillance activities and frequencies according to the OMS manual
	• Seepage is turbid. • Seepage is new area relative to historic performance. • Seepage rate is higher than historic trends.	Low Risk	• Initiate SRP for Increase Seepage through Dam • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	Same as previous situation plus • Ongoing increased seepage rate from historic trends. • Sand boils observed in downstream toes area. See Internal Erosion.	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Same as previous situation plus • Whirlpool visible in the pond, See Internal Erosion	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Standing Water at Dam Toe	• Small volume • No increasing volume or area • If it is from rainfall or snowmelt • No signs of sand boiling at dam toe • Water is clear	Acceptable	Surveillance activities and frequencies according to the OMS manual
	If it is seepage through dam, see Seepage	Low Risk	• Initiate SRP for Increase Seepage through Dam if it is • Surveillance results to be immediately provided to EoR for review • EoR to visit site to assess the situation. • Document location, photograph, and survey area of concern • Implement engineering review • Take appropriate mitigation measures with engineering review
	• Water is muddy. • Sand boiling observed. • If it is caused by internal erosion, see Internal Erosion	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
Surface/ External Erosion	Surface material removed by snow ploughing, intensive rainfall, wave action.	Low Risk	• Initiate SRP for Dam Deformation • Surveillance results to be immediately provided to EoR for review • Document location, photograph, and survey area of concern • Take appropriate mitigation measures with engineering review
	Core or underlying material exposed and being eroded.	Moderate Risk	All items from previous situation plus: • EoR to visit site to assess the situation.

			• Implement engineering review • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
Tailings Line Leak/Rupture	Tailings is contained in pipeline ditch or TMA	Low Risk	• Document location, photograph, and survey area of concern • Take appropriate mitigation measures with engineering review
	• Tailings spilled out of pipeline ditch or TMA. • Spilled tailings slurry erodes the dam. • Leaked tailings reported to WDP, WMP, and SED 1	Moderate Risk	All items from previous situation plus: • EoR to visit site to assess the situation • Suspend activities in area of concern • Implement engineering review • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Same as previous situation plus • Leaked tailings reported to freshwater diversions. • Leaked tailings reported to Pinewood River	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Tailings near Dam Crest Elevation	Tailings elevation below Max. Elevation,	Acceptable	Surveillance activities and frequencies according to the OMS manual
	Tailings elevation exceeds Max. Elevation but below Dam Crest	Low Risk	• Document location, photograph, and survey area of concern • Take appropriate mitigation measures with engineering review
	Tailings elevation exceeds Dam Crest and spill out of TMA.	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
Dam Settlement	• Annual (TMA) or total (settlement of dam crest, and spillway invert < 0.10 m. • Reduction of a crest to invert vertical elevation difference < 0.05 m. See Table 5-1 and 5-2 in Stage 6 Threshold Report (CRW3295-4910-DT00-MEM-0008.001) for details	Acceptable	Surveillance activities and frequencies according to the OMS manual
	• Annual settlement of dam crest, and spillway invert > 0.10 m but <0.2 m • Reduction of a crest to invert vertical elevation difference > 0.05 m but less than 0.1 m.	Low Risk	• Document location, photograph, and survey area of concern • Implement engineering review
	• Annual settlement of dam crest, and spillway invert > 0.2 m • Reduction of a crest to invert vertical elevation difference > 0.1 m.	Moderate Risk	All items from previous situation plus: • Suspend activities in area of concern • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items • Take appropriate mitigation measures with engineering review
	Same as previous situation plus • Pond elevation reaches IDFL	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Slope Inclinometer / Shape	Rates of displacement < 0.2 mm/day measured in a discrete deformation zone.	Acceptable	• Surveillance activities and frequencies according to the OMS manual

Accelerometer Array	Rates of displacement > 0.2 mm/day measured in a discrete deformation zone.	Low Risk	• Document location, photograph, and survey area of concern • Implement engineering review. • Take appropriate mitigation measures with engineering review
	One or more SI's or SAA's • Accelerating rates of displacement > 0.2 mm/day, or blockage of the slope inclinometer casing. • Evidence of movement continuation between slope inclinometers. • Unusual visual observations, including toe bulging, cracks, or other signs of instability.	Moderate Risk	All items from previous situation plus: • EoR to visit site to assess the situation. • Suspend activities in area of concern. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Same as previous situation plus • Nearby VWPs exceed the alert level. • Nearby SI's or SAA's exceed alert level.	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Piezometers	• Measured PWP below TMA Stage 6 design PWP at tip location (PWP below PWP corresponding to design FOS) • TMA Ultimate Pre-loading Design Trigger: measured PWP below TMA Ultimate Pre-loading design PWP at tip location (PWP below PWP corresponding to design FOS) • Water Management Dams Trigger: measured PWP below maximum fill elevation at tip location. See Table A-1 in Stage 6 Threshold Report (CRW3295-4910-DT00-MEM-0008.001) for details.	Acceptable	• Surveillance activities and frequencies according to the OMS manual
	• Measured PWP exceeds TMA Stage 6 design PWP at tip location (PWP exceeds PWP corresponding to design FOS) • TMA Ultimate Pre-loading Design Trigger: measured PWP exceeds TMA Ultimate Pre-loading design PWP at tip location (PWP exceeds PWP corresponding to design FOS) • Water Management Dams Trigger: measured PWP exceeds maximum fill elevation at tip location. See Table A-1 in Stage 6 Threshold Report (CRW3295-4910-DT00-MEM-0008.001) for details.	Low Risk	• Document location, photograph, and survey area of concern • Implement engineering review. • Take appropriate mitigation measures with engineering review
	• Significantly exceeds TMA Stage 6 design PWP at tip location (PWP exceeds PWP corresponding to FOS of 1.3 or lower) for WML and BRE CH. See Table A-1 in Stage 6 Threshold Report (CRW3295-4910-DT00-MEM-0008.001) for details.	Moderate Risk	All items from previous situation plus: • EoR to visit site to assess the situation. • Suspend activities in area of concern. • Reassess thresholds and conditions for high-risk situation considering the observed conditions and interactions of various items
	Same as previous situation plus • Nearby VWPs exceed the alert level. • Nearby SI's exceed alert level	High Risk	All items from previous situation plus: • Temporary evacuation of non-essential personnel from the facilities • Prepare to initialize the ERP
Weeds, Plants, Shrubs	• Sparse and low • Shrubs < 1 m tall.	Acceptable	• Surveillance activities and frequencies according to the OMS manual
	• Dense and tall • Invisible ground due to weeds coverage • Shrubs >1.0 m tall	Low Risk	• Document location, photograph, and survey area of concern • Implement engineering review. • Take appropriate mitigation measures with engineering review

Green – Acceptable	• Performance is in line with performance objectives.

Yellow – Minor Risk	• There may be a pre-defined risk management action that can be taken, or • the pre-defined action may be to increase the frequency of surveillance and analysis. • Other surveillance activities may be undertaken. • Surveillance results and corresponding actions are documented and reported.
Orange – Moderate Risk	• Pre-defined risk management actions are implemented. • Surveillance activities may be intensified to monitor the performance indicator in question. • Related performance criteria, and the effectiveness of the risk management action implemented. • Expert advice may be sought as appropriate, including from the EOR. Risk management actions are implemented, and results of follow-up surveillance activities are documented and reported. • The accumulation or combination of moderate risk situations could lead to a high-risk situation and threshold values will need to be assessed accordingly.
Red – High Risk	• An imminent loss of control or a loss of control has occurred. • Depending on the potential consequence, this may trigger a significant pre-defined risk management action (e.g., ceasing ore processing operations) or it may trigger the implementation of the ERP. • The accumulation or combination of moderate risk situations could lead to a high-risk situation and threshold values will need to be assessed accordingly.

Appendix B: Forms and Checklists

Table 8 : Dam Safety Incident Notice Form

NAME OF DAM: ____________________________

Date: ____________________________ Time: ____________________________	**Distribution** To: Capital Projects Manager, RTFE, Environment Manager, Mill Manager, General Manager. Optional: EOR, and related government agencies
A DAM INCIDENT is an abnormal condition or performance of the dam that has the potential to jeopardize the safety of the dam, but that is NOT expected to lead to a breach of the dam. **THIS IS NOT AN EMERGENCY SITUATION**	
Description of condition and events:	
Outlook for the next 24 hours Present conditions are favorable, and flows are expected to decrease. Discharge may increase if conditions worsen.	
Signed:	Position/Title
Date:	Time:

Table 9: Dam Safety Alert Notice Form

Distribution <u>To</u>: Capital Projects Manager, RTFE, Environment Manager, Mill Manager, General Manager, Accountable Executive Officer, EOR, ITRB and related federal and provincial government agencies, local township, police, and COI
DAM ALERT INITIATION
SUBJECT: INITIATION - RRM EMERGENCY NOTIFICATION - DAM ALERT
This is an emergency notification from RRM. This is Alert # RRM_XX A dam alert is being issued for the RRM. RRM has observed an abnormal condition at the XXX Dam and is actively investigating the situation. As a precaution, local agencies may need to activate emergency response procedures. Please check the attached inundation map in case evacuation is needed. This RRM Dam Alert is in effect and resent every 12 hours until rescinded. Did you receive this Alert?

Table 10: Cancellation of Dam Alert Notification

Distribution To: Capital Projects Manager, RTFE, Environment Manager, Mill Manager, General Manager, Accountable Executive Officer, EOR, ITRB and related federal and provincial government agencies, local township, police, and COI
DAM ALERT CANCELLATION
SUBJECT: CANCELLATION - RRM EMERGENCY NOTIFICATION - DAM ALERT
This is a cancellation of the emergency notification from RRM. This is Alert # RRM_XX The previously declared Dam Alert # RRM_XX in effect for the XXX Dam has been rescinded. Did you receive this Alert?

Table 11: Dam Safety Breach Notice Form

Distribution To: Capital Projects Manager, RTFE, Environment Manager, Mill Manager, General Manager, Accountable Executive Officer, EOR, ITRB and related federal and provincial government agencies, local township, police, and COI
DAM BREACH INITIATION
SUBJECT: INITIATION - RRM EMERGENCY NOTIFICATION - DAM BREACH
This is an emergency notification from RRM. This is Alert # **RRM_XX** The XXX Dam has failed. Implement your emergency evacuation plan immediately. This RRM Dam Alert is in effect and resent every 12 hours until rescinded. Did you receive this Alert?

Table 12: Cancellation of Dam Breach Notification

Distribution To: Capital Projects Manager, RTFE, Environment Manager, Mill Manager, General Manager, Accountable Executive Officer, EOR, ITRB and related federal and provincial government agencies, local township, police, and COI
DAM BREACH CANCELLATION
SUBJECT: CANCELLATION - RRM EMERGENCY NOTIFICATION - DAM BREACH
This is a cancellation of the emergency notification from RRM. This is Alert # RRM_XX The previously declared Dam Breach # RRM_XX at XXX Dam has been rescinded. Did you receive this Alert?

Table 13: Dam Emergency Event Log

DATE	TIME	EVENT #	Category	DESCRIPTION	ACTION TAKEN	ACTION OWNER	REMARKS
1/1/2 022		1	Incident	Stage 2 tailings discharge exceeding the Max. elevation at Sta....	Immediately ceased discharge at those stations and moved to east of Y junction	Site Service	Report to regulator

Appendix C: Sample JHA and Surveillance Plan

Date: September 23, 2024	**Location of Job: North Borrow Pit**	**Supervisor of the Job (print): Andrew Angus**
Department: Construction	**Start Date: September 23, 2024**	**Projected End Date: TBD**
Description of the job to be being performed:	New Gold Construction will be constructing a buttress at the toe of the borrow pit berm to mitigate movement of the slope. This JHA covers the scope of work that will be completed on night shift	

Possible Energy Sources:

X Chemical X Stored ☐ Radiation ☐ Electrical ☐ Mechanical X Potential ☐ Thermal X Gravitational

☐ Other (Specify): Unsupported ground

Hazard Assessment – Check all that apply

X Congested Work Area ☐ Housekeeping X Working Around Open Water ☐ Radiation ☐ Dust

X Illumination ☐ Working at Heights ☐ Repetitive Motions ☐ Equipment/Tools Condition ☐ Manual Material Handling

☐ Working Near High walls ☐ Suspended Load ☐ Explosives/Gases ☐ Misfires ☐ Falling Objects

☐ Overhead Power Lines ☐ Noise ☐ Hazardous Atmospheres X Ground Conditions ☐ Pinch Points

☐ Hazardous Chemicals X Heavy Equipment X Slips/Trips/Falls ☐ High/Low Temp

X Others(Specify):Open cracks, Unstable Ground adjacent to work area,

Safe Work Permit Required? X No

If Yes ☐ Confined Space ☐ Excavation ☐Hot Work ☐ Limits of Approach ☐ Fire Protection System Interruption ☐ Critical Lift

☐ Others (Specify):____

Required PPE ☐ Face-shield ☐ Fall Protection Equipment x Protective Clothing x Gloves ☐ Respirator x Safety Glasses x Hard Hat x Safety Footwear ☐Other (Specify): Head Lamp
Precautionary Measures: X Barricades X Signage X Advise Other Areas ☐ Gas Testing X Spotter X Rescue Plan X Other (Specify): two-way radios with designated channel, designated muster point, set frequency of monitoring, a sufficient amount of light plants to illuminate work area, ERT has been notified that this work will be taking place on night shift

TASK DESCRIPTION (a job is made up of multiple tasks)	HAZARDS IDENTIFIED (what can go wrong)	HAZARD CONTROL (what we can do to stop it)	Residual Risk (after controls put into place)		
			Likelihood	Consequence	Risk Rating
Install ground monitoring instruments	Manual material handling, slips/trips/falls, uneven ground	PPE, take your time, proper lifting techniques, tandem lifting if required	E	3	20 (M)
Spotting/Monitoring (visual and instrument)	Slips/Trips/Falls, uneven ground, Work environment	PPE, be aware of surroundings, inspect path of travel	E	3	20 (M)
	Visibility	illuminate area to be visually inspected with light plants	E	3	20 (M)
Pushing in access road to allow for buttress placement	Unstable ground adjacent	Spotter, extensometers, maintain open radio communication on separate channel with LV radio, continuous monitoring of ground movement. Maintain clear exit route, all trucks to back down road when dumping	E	1	11 (H)
	Unstable ground underneath	Same as above in addition to; All placement to be completed with wiggles to minimize punching out ramp	E	1	11 (H)

TASK DESCRIPTION (a job is made up of multiple tasks)	HAZARDS IDENTIFIED (what can go wrong)	HAZARD CONTROL (what we can do to stop it)	Residual Risk (after controls put into place)		
			Likelihood	Consequence	Risk Rating
Placement of rock buttress in bottom of borrow pit	Unstable ground adjacent	Spotter, extensometers, maintain open radio communication on separate channel with LV radio, continuous monitoring of ground movement. Maintain clear exit route, all trucks to back down road when dumping. All rock placement to be done with wiggles to minimize punching out road	E	1	11 (H)
Placement of second lift of rock buttress in borrow pit	Potentially unstable ground adjacent	Spotter, extensometers, maintain open radio communication on separate channel with LV radio, continuous monitoring of ground movement. Maintain clear exit route, all trucks to back down road when dumping, dozer must exit pit on all breaks, dozer must wait at base of ramp while waiting for trucks to stag. All rock placement to be done with wiggles to minimize punching out road	E	1	11 (H)

Pre Job Hazard Assessment Team

Name (print)	Position/Company	Signature	Date
Matthew Brunette	NG/Coordinator		September 23, 2024
Phillip Webb	NG/HSE Advisor		September 23, 2024
Frank Ngenzi	NG/Geotech EIT/JHSC tech rep.		September 23, 2024
Corey McClure	NG/JHSC Labour Co-Chair		September 23, 2024
Hannah Marcotte	NG/Training		September 23, 2024
Les Abraham	NG/Equipment Operator		September 23, 2024

Pre Job Meeting Acknowledgment

I have had the opportunity to review this pre job hazard assessment and understand the steps that need to be taken to perform this job safely.

Name (print)	Position/Company	Signature	Date

Note: Once completed, this document along with any safe work permit and/or supporting procedures (i.e. lockout procedure) needs to be kept at the work site for reference while the job is taking place. At any time, should the job scope change, the job will stop and this assessment will be repeated.

This document must be retained by the department for future use. This JHA can be used to create a procedure should this job need to be repeated in the future.

Residual Risk Rating

The purpose of performing a residual risk rating is to assess the likelihood and consequence of performing a certain task **after** the hazard controls have been implemented. This assessment provides the user(s) of the JHA, a quantifiable (number) way to view the risk of a task. The following is how to incorporate the 'residual risk ranking' into the JHA:

- A job is made up of multiple tasks. Document the tasks, the identified hazards and the controls that need to be put into place to control the hazards.
- Review each task, hazards and controls. Look at the 'likelihood' chart below and ask yourself 'what is the likelihood of an undesirable event happening while performing the task **with the hazard controls** implemented'. Select from 'rare to almost certain'. Take the letter and put it in the 'likelihood' column on the JHA.
- Now do the same exercise while using the 'consequence/severity' chart. Ask yourself 'what is the consequence of an undesirable event occurring **with the hazard controls** implemented'. Select from 'low to catastrophic' and place the number in the 'consequence' column on the JHA.
- Do this for all the tasks that are part of the JHA.
- Once the step above is complete, take the number and letter for each task, and using the 'consequence/severity & likelihood' chart below, determine the residual risk ranking.
- That number will give you an idea about how hazardous a task is based on the following:
    - 1-5 Extreme High Risk Task
    - 6-13 High Risk Task
    - 14-20 Medium Risk Task
    - 21-25 Low Risk Task
- Should any task score 'extreme high risk', the job needs to be revaluated to determine a safer way to complete the job.
- 'High risk' tasks should be avoided unless all other options have been exhausted.
- The vast majority of jobs need to be in the lower half of the 'medium risk' and 'low risk categories.
- This process will help the users lower the hazards of performing the job to as low as reasonably achievable.

New Gold Likelihood & Consequence Risk Ranking System

Rank	Consequence	People	Consequence / Severity (C) Damage / Loss	Environment	Business	Reputation
1	**Catastrophic**	Fatality(s).	Extreme financial loss (> US$1,500,000)	Irreparable Damage, very serious long term impairment of eco-systems	> 48 hours production delay	Major damage to reputation receiving national or international negative media OR production to cease as a result of statutory body concerns.
2	**Major**	Permanent and total disability	Major financial loss (US$0.75m - $1.5 m)	Major Impact, serious medium term environmental impact affecting whole ecosystem	24 hr to 48 hr production delay	Major damage to reputation receiving state wide negative media OR Non-compliance with statutory requirements resulting in major fine.
3	**Moderate**	Lost Time Injury	Moderate financial loss (US$100 - 750k)	Minor Impact Moderate short term effects affecting part but not affecting whole of eco-system	12 to 24 hr production delay	Moderate damage to reputation localised to the regional media OR Non-compliance with statutory requirements resulting in minor fine.
4	**Minor**	Disabling Injury	Minor financial loss (US$20 - 100k)	Minor impact on biological or physical environment	6 to 12 hr production delay.	Minor impact to reputation localised to community near mine OR technical divergence that **may** attract attention from statutory authorities.
5	**Low**	First Aid / Medical Treatment injury with no time lost or change of duties	Low financial loss (<$20k)	Limited damage to minimal area of low significance or previously disturbed areas.	< 6 hour production delay	No impact on stakeholders or reputation

Likelihood (L)		
A	Almost Certain	Will occur at least once each year
B	Likely	Will occur once every other year
C	Possible	Will occur every 2-5 years
D	Unlikely	Will occur every 5-20 years
E	Rare	Will occur every 20 years

		Consequence / Severity (C)				
Likelihood (L)		1	2	3	4	5
		Catastrophic	Major	Moderate	Minor	Low
A	Almost Certain	1 (Ex)	2 (Ex)	6 (H)	10 (H)	15 (M)
B	Likely	3 (Ex)	5 (Ex)	9 (H)	14 (M)	19 (M)
C	Possible	4 (Ex)	8 (H)	13 (H)	18 (M)	22 (L)
D	Unlikely	7 (H)	12 (H)	17 (M)	21 (L)	24 (L)
E	Rare	11 (H)	16 (M)	20 (M)	23 (L)	25 (L)

Surveillance Plan

Monitoring Tools Implemented

Immediate Measures:

- **Hourly Drone Photos:** Conducted for visual monitoring of the site. Frequency was reduced to 3-4 times daily based on EOR recommendations.
- **Drone Survey:** Once daily frequency during buttress construction
- **Total Station Prism Monitoring:**
  - Prisms were installed in a safely accessible area along the top of the sliding mass.
  - Measurements were taken at hourly intervals until the Engineer of Record (EOR) confirmed a reduction in the movement rate.
  - Measurement intervals were adjusted based on the EOR's recommendations.
- **Wire Extensometer:**
  - A tripod was placed on pseudo-stationary ground, with the anchor on the sliding mass.
  - The extensometer included an alarm and a flashing beacon to serve as visual and audio warnings for operators in case of movement exceeding a predetermined threshold.
  - Although the extensometer was only able to measure magnitude of movement, it served as an immediate warning to the operators working below the sliding mass
  - Readings were taken hourly during construction of the buttress and 4x during night shift when no rock placement was taking place.
  - Readings were plotted to track displacements with time
- **Visual Monitoring of tailings beach upstream while were operators below**
  - Spotters were implemented to ensure that tailings pond was not moving downstream towards failure point.

Long-Term Measures: (following completion of buttress)

- **Survey Monuments:**
  - Installed on the slope for monitoring with an RTK rover.
  - Measurement intervals were adjusted based on data trends.
- **Frequent Visual Monitoring:**
  - Regular inspections for signs of movement, such as tension cracks, boils, or heaving, were conducted.

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Part B - Emergency Preparedness Plan

1. General

The purpose of the emergency preparedness plan is to:

- Describe the RRM's emergency management system and roles/responsibilities.
- Provide details of dams located within the RRM.
- Define conditions as they relate to RRM dam operations and describes the notification processes that RRM will follow during a dam safety event.
- Provides contact information for individuals involved in tailings and water management, maintenance activities, and distribution methodology of this Plan.
- Provide inundation maps from the Inundation and Dam Breach Study that was completed in 2019.

Upon receipt of this Plan, we recommend that you take the following actions:

- Review the Plan with those in your organization involved in emergency management for RRM.
    - Advise RRM ERT of any changes in your agency or organization that may impact information presented in this Plan.
- Use the information to inform your emergency planning, ensuring that it:
    - Reflects the hazards identified in this Plan.
    - Aligns with/relates to roles and responsibilities defined in this Plan.
    - Identifies notifications that could be issued, their importance, and the appropriate response.
    - Links, or refers to inundation maps.
- Provide training and ensure that personnel are prepared to respond to notifications issued by RRM.
- Contact RRM to clarify any information. We are available to provide additional information and discuss ways to improve the emergency planning and response.

2. Facility Description

RRM currently operates 17 dams enclosing 12 ponds as shown in Figure 4. Four out of 17 dams are freshwater dams; six are sediment control dams, four tailings dams, and the remaining three are treated- water dams. The details of these dam are summarized in Table 14.

The tailings dams are raised annually, and the construction of the other 13 dams enclosing 11 ponds were completed several years ago. The tailings dams along with Water Management Pond dams, West Creek Pond dam, Stockpile Pond dam, and South Runoff Pond have been classified as having an Extreme/Very High consequence of failure (shown in purple in Figure 4). The remaining dams have a Low consequence of failure, as shown in green in Figure 4.

RRM is committed to the safe operation of the mine and protection of local communities. RRM is therefore working together with the communities and local authorities to develop an effective emergency preparedness plan to guide those who may be impacted in the event of an emergency.

Figure 4: RRM Dams and Ponds

Table 14: RRM Dam Features

Purpose & Facility	Dam Name	Type of Dam	Construction Stage	Max. Dam Height (m)	Dam Length (m)
Tailings Dams	North Dam	Central Core + Rockfill	Stage 6 - Completed	20.9	2,450
	South Dam		Stage 6 - Completed	26.0	3,580
	West Dam 4		Stage 6 - Completed	19.5	910
	West Dam 5		Stage 6 - Completed	17.9	695
Process Water Dams	WMP Dam 1	Clay Fill	Final	4.2	850
	WMP Dam 2			9.5	800
	WMP Dam 3			13.3	750
	Mine Rock Pond Dam	Central Core + Rockfill	Final	13.0	1,655
	Water Discharge Pond Dam	Clay Fill	Final	2.2	350
Sediment Control Dams	Sediment Pond #1 Dam	Central Core + Rockfill	Final	3.8	1,750
	Sediment Pond #2 Dam	Clay Fill	Final	5.2	1,460
	Sediment Pond #3 Dam	Central Core + Rockfill	Final	1.0	344
	South Runoff Pond Dam	Clay Fill	Final	6.5	420
Freshwater Dams	Clark Creek Dam	Clay Fill	Final	4.0	285
	Teeple Road Dam	Clay Fill	Final	7.0	465
	Stockpile Pond Dam	Central Core + Rockfill	Final	9.8	380
	West Creek Dam	Central Core + Rockfill	Final	8.9	750

3. RRM Emergency Management

RRM's typical procedure of handling dam safety incidents/ events are the following.

- Detection of an abnormal condition at the dam(s).
- Decision-making and actions within RRM teams and EOR regarding the severity of the problem and appropriate response to the situation.
- Notification by RRM ERT to agencies responsible for public emergencies and safety, given the nature and potential effects of the situation.
- Coordinated response with government agencies and stakeholders.

Most incidents and emergency events will be addressed through regular points of contact for routine operations, community relations and emergency management. When necessary, RRM will activate our response structure to manage and support the response to an emergency.

For the conditions identified in this Plan, we will issue initial notifications following the process described. Further response coordination and liaison between all parties impacted will be determined at the onset of the event and depend on the nature of the event and response.

4. Inundation Study and Maps

Extensive and intensive rainfall could cause flood situations to the community nearby RRM. The area flooding situation is managed by local authorities.

Hydrodynamic modelling of inundation scenarios for the RRM dams was conducted in 2019 (SRK-STY-0001) and inundation maps were prepared to show the results of the modeling. Those maps show the approximate area(s) impacted, and details such as water arrival locations and times.

The following scenarios were modelled:

- Dam breach at WMP Dam 2 associated with TMA dam failure.
- Dam breach at WMP Dam 1 associated with TMA dam failure, and
- Dam breach at MRP Dam.

Other structures are expected to remain contained within the site.

The modelling considered a sunny day case. The results of the analysis showed the results presented in the following sections.

4.1.1 TMA and WMP Facility

- The inundation mapping shows that there are in the order of 10 farms and approximately 5 km of highway (over 5 segments) within the inundation zone. Approximately 16 km of local roads may also be inundated (Figure 5 to Figure 7).
- The breach flood wave is contained within natural riverbanks by the time it reaches Rainy River (approximately 30 km downstream).
- It is expected that a plume of fine sediments will continue to be carried downstream by Rainy River toward Lake of the Woods. It is estimated that the plume will reach the mouth 1 to 2 days once it enters the river (or 2 to 3 days post-failure).
- The flood arrival time to the farms and highway segments ranges from less than half hours to over five hours as shown in Figure 5 to Figure 7.

4.1.2 MRP

- The inundation mapping shows that there are in the order of 3 farms and approximately 0.3 km of highway (over 1 segment) within the inundation zone. Approximately 3 km of local roads may also be inundated.

- The breach flood wave is fully contained within the natural riverbanks of Pinewood River well before it reaches the confluence with Rainy River.
- The flood arrival time to the farms and highway segments ranges from a few minutes to one hour (incorrect data between the table and figures in the report) as shown in Figure 5 to Figure 7.

Among the 12 farms, three of them (labelled 1, 2 and 3) are owned by NG. NG's Health and Safety team keeps the civic address, owner's name, and phone number of the farms for emergency contact.

RRM plans to update the inundation study in late 2023 to account for the ultimate dam design and closure plan.

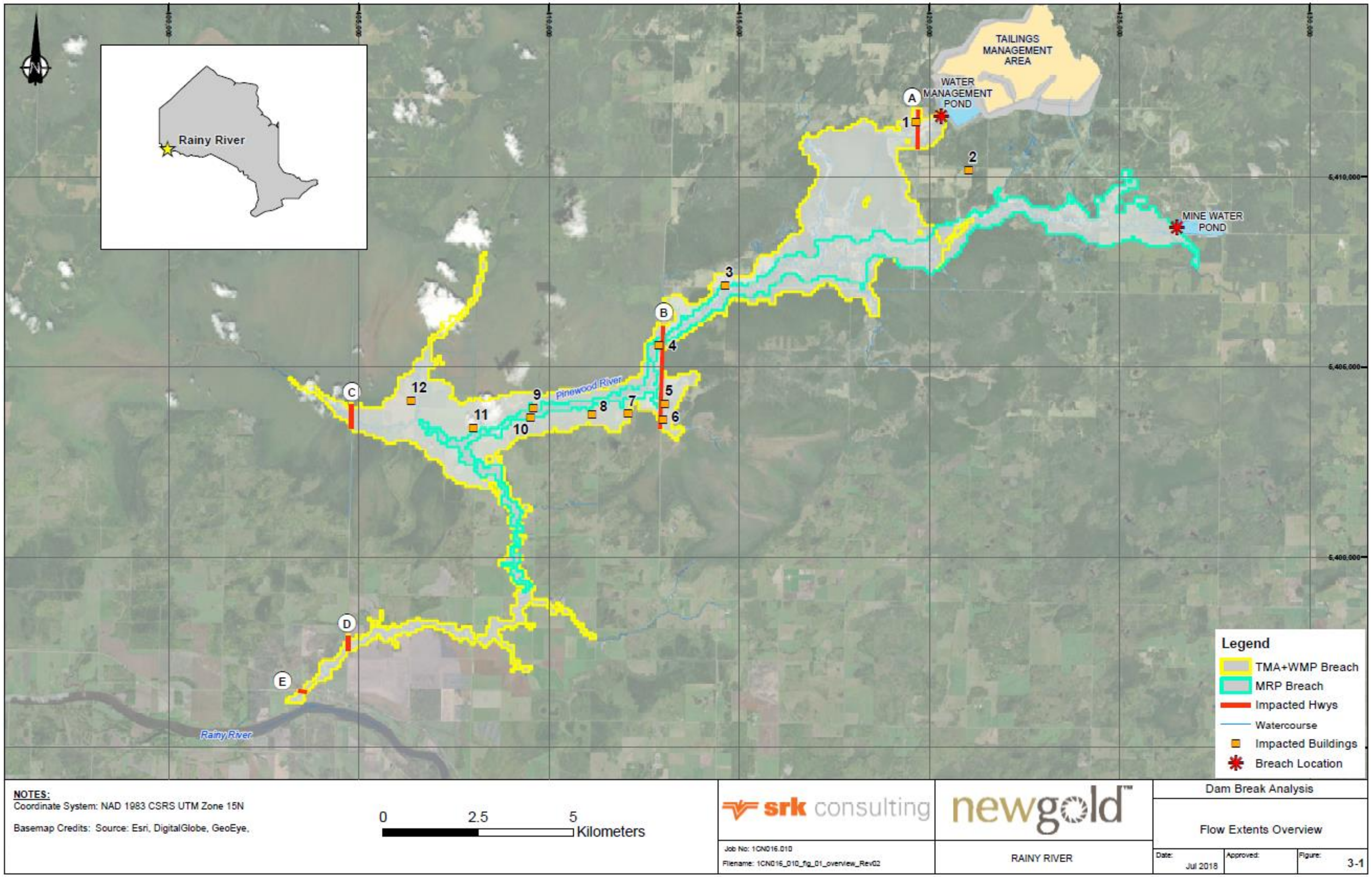

Figure 5: Inundation Map

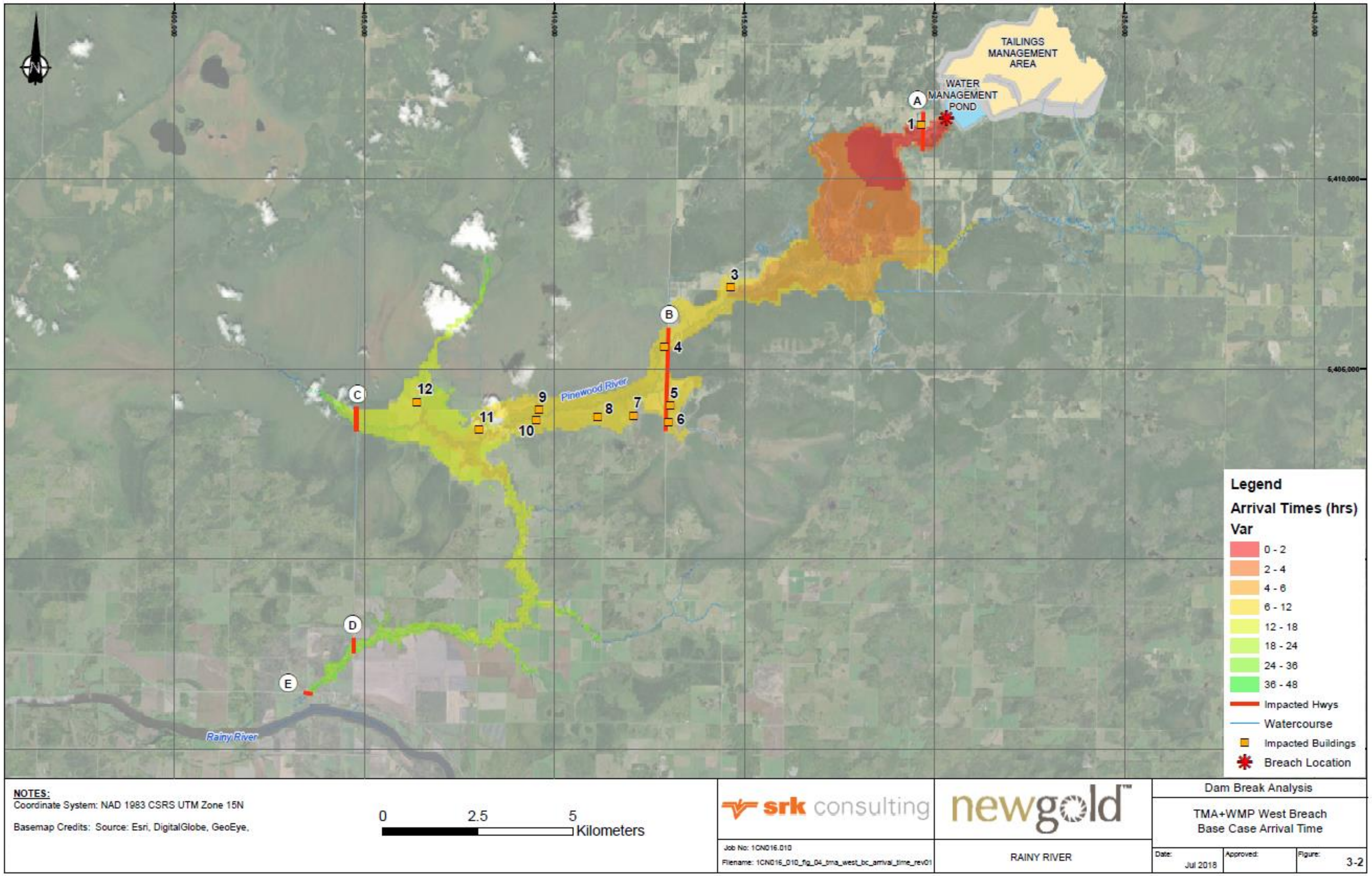

Figure 6: Arrival Time of TMA and WMP Breach

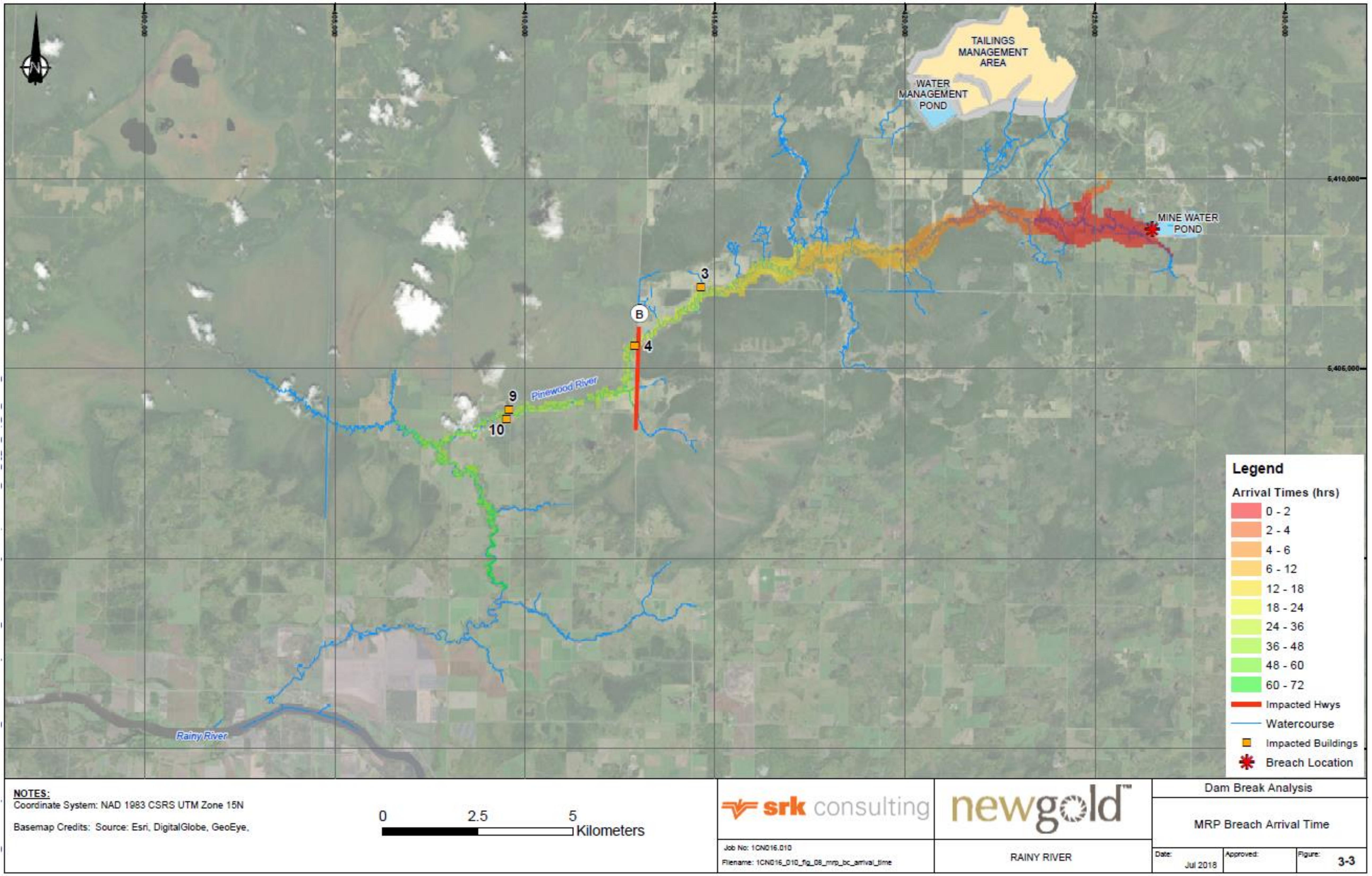

Figure 7: Arrival Time of MRP Breach

5. Emergency Notification and Procedures

5.1 Notification

All RRM dams have dam safety and water management programs that are aligned and integrated with our communications and emergency management. Under the following two specific operating conditions, RRM will issue notifications to describe the situation:

<u>Dam Alert</u>

An abnormal condition is observed at the dams, or the dam performs abnormally, and, without swift and effective intervention, the condition could deteriorate and lead to failure of the dam.

<u>Dam Breach</u>

The dam has breached or is visibly breaching.

5.2 Notification Processes

If a dam alert/breach condition exists or is forecast at the dam covered in this Plan, RRM will take the following actions.

- An emergency notification will be issued through Send Word Now, RRM's mass notification tool (currently under development).
- Notifications will be sent on three communication channels to government agencies, COI, and external stakeholders. Communication channels that messages will be sent on are:
    - Telephone
    - Email
    - Text
- The receiver of the message will be asked to confirm receipt of the message, and all message delivery and confirmations will be logged.

Examples of typical messaging are provided in Table 9 and Table 11 in Section 3 ERP.

5.3 SWN Frequently Asked Questions

What is Send Word Now?

- Send Word Now is RRM's emergency communications tool. It will be used to alert you to an emergency condition.
- Alerts will be sent to the contact details provided to us (email and phone numbers, including mobile phones where provided). This means you will receive alerts via:
    - Phone call
    - Email
    - Text Message
- Send Word Now allows for two-way communication. Upon receiving an alert, you may be prompted to reply.

How can I reply to Send Word Now alerts?

The alert may ask you to reply to a question and pre-defined responses will be given. To reply, enter the exact corresponding number of your response on the keypad of your phone or your keyboard. Do not reply to the voicemail as a response cannot be made from the voicemail message. To reply, refer to your email or text.

- Important: enter only the number from the options given.
- Do not type in anything other than the number given. If you enter additional text, your reply will not get registered in Send Word Now.

- Do not call or text the phone number associated with the alert.
- Emails or texts that are forwarded cannot be responded to. Only the intended recipient of the message can reply with a response.
- Call this name, number, and email for questions.
- You only need to send a reply from one device.

The instructions on how to reply will be supplied in the alert.

Who administers Send Word Now?

RRM ERT manages and administers Send Word Now.

I already got a lot of emails. How often will I get RRM alerts through Send Word Now?

You will only get an RRM alert under those conditions described in this Emergency Preparedness Plan. RRM may arrange practice drills and will notify you in advance.

How will I know that Send Word Now has my correct contact information and is working? What if I want to update my contact information?

Send Word Now is currently loaded with the contact information in our ERT. Please update your contact information by email. XXX@NewGold.com.

Is my personal contact information safe and private?

RRM evaluated Send Word Now's information security measures and polices and ensured they met our Protection of Privacy requirements. If you have concerns, please contact XXX@newgold.com.

Why is sending emergency alerts through Send Word Now important for RRM and what are the benefits?

- Currently, you may receive emergency information from RRM either by email, or telephones call or text message you IF you are registered in the system. By using Send Word Now timing to issue emergency notifications will be reduced and we will be able to communicate information to multiple parties instantaneously.
- You will receive information more quickly and reliably from us during an emergency.
- You will receive information instantaneously on your email and phone(s) (as provided). If your mobile phone number is in the system, you will be alerted via text message.
- You will be able to reply to alerts and let us know you received it.
- Alerts can be customized based on the impact, type, and location of the emergency.
- Emergency contact information will be kept in one place and be easier to manage.