UPPER BEAVER

PROJECT

Upper Beaver Gold Project Impact Statement

Section 13: Effects of Potential Accidents and Malfunctions

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Acronyms and Abbreviations

Agnico Eagle	Agnico Eagle Mines Limited
CDA	Canadian Dam Association
C	Construction phase
Cl	Decommissioning and closure phase
O	Operations phase
PA	Project Area
Project	Upper Beaver Gold Project
TSF	Tailings Storage Facility
TSS	Total suspended solids

13.0 Effects of Potential Accidents and Malfunctions

13.1 Introduction and Approach

The Upper Beaver Gold Project (Project) has been designed to meet or exceed applicable safety and environmental regulations and incorporate best management practices. Professional engineering designs and mitigation controls have been integrated into the Project from the earliest stages of planning to reduce the likelihood of accidents and malfunctions.

Accidents and malfunctions may arise from equipment or infrastructure failures, operational upsets, human error, or external events. Consideration of these scenarios provides an important means of evaluating the robustness of Project design, operational controls, and mitigation measures. The Project has been developed in accordance with accepted engineering standards and with consideration of site-specific environmental conditions. Appropriate design criteria, safety factors, contingency measures, and provisions for extreme events have been incorporated to enhance Project resilience and reduce the potential for adverse environmental effects. The likelihood and potential consequences of credible accidents and malfunctions are further reduced through the application of sound engineering practices, performance monitoring, inspection programs, and adaptive management.

As part of the impact assessment process and in accordance with the Tailored Impact Statement Guidelines (Appendix A-1), this section identifies and evaluates potential accidents and malfunctions that could occur during all phases of the Project, including those arising from equipment failure, human error, and external events such as credible natural hazards and extreme environmental conditions that could lead to accidents or malfunctions. The assessment considers credible hazards and events that have a reasonable probability of occurrence, as well as low-probability, high-consequence scenarios that, without careful management, could result in major adverse environmental, health, social, and economic effects, including potential effects on Indigenous Peoples.

The assessment of accidents and malfunctions was developed in a stepwise manner, as follows:

- Proposed design contingency, operational safeguards and mitigation measures are described briefly to eliminate or reduce potential effects
- Potential environmental effects are assessed after mitigation
- Residual risk for each malfunction and accident is determined, considering likelihood and consequence (Section 13.17).

For each credible accident and malfunction scenario, the potential effects to the environment (biophysical and human environment) were assessed based on a reasonable worst-case scenario. Events that are not reasonably foreseeable or have a negligible likelihood of occurrence were not carried forward for detailed assessment. In most scenarios assessed, potential effects are predicted to be contained within the Project Area (PA). Broad-scale social effects are not expected for most credible scenarios, except where specifically identified. Potential effects outside the PA are specifically identified where applicable.

13.2 Spatial and Temporal Boundaries

The majority of the potential accidents and malfunctions assessed in this section would occur and have a potential effect only within the PA (Section 7.4). The PA is the Project footprint including all temporary and permanent areas associated with the mine site development, as well as an outside buffer to allow flexibility for design optimizations prior to construction and over the mine life (Figure 7.4-1). The area of potential effect is described with the potential accident or malfunction.

The same temporal boundaries are applied as used throughout the Impact Statement:

- Construction phase:
    - Years -2 to -1
    - Representing the construction period for the Project
- Operations phase:
    - Years 1 to 14
    - During Year 1, the Project will transition from construction into operations and will not be at full capacity
    - Open pit mining will be completed in about four years
    - Underground mine and ore processing will occur over the entire phase
- Decommissioning and closure phase:
    - Decommissioning period: Years 15 to 16, when the majority of the decommissioning and reclamation of the PA is completed, including the filling of the mine workings with water, and excess water is treated until acceptable for passive release to the environment in accordance with applicable regulatory requirements
    - Final closure period: less than one year in length after the open pit is filled with water, and site waters are acceptable for passive release to the environment, when water treatment infrastructure is removed in accordance with applicable regulatory requirements.

13.3 Project Setting

The Project will consist of an open pit, underground mining activities, an onsite ore process plant, and associated operations and administrative activities. The location and scale of key Project facilities are illustrated in Figure 4.1-1 and Figure 4.3-1.

The environmental setting of the PA is typical of northern Ontario, and the area is characterized by a number of named and unnamed watercourses and waterbodies. Section 2 provides a summary of the environmental setting by environmental discipline. Further detail is provided in the environmental baseline reports included as appendices to the Impact Statement.

13.3.1 Influence of Engagement with Indigenous Nations, Government Agencies and the Public

Engagement input was incorporated into the accident and malfunctions section consistent with the Tailored Impact Statement Guidelines. Key comments provided by Indigenous Nations, government agencies and the public are summarized below. Additional information regarding engagement activities is provided in Sections 5 and 6.

Spill Prevention and Emergency Response Planning

A member of the public requested clarification on how spills would be prevented and managed, along with a description of the immediate response procedures and site-specific repair and maintenance measures. Consistent with standard practice in Ontario, detailed spill response planning will be completed as part of the applicable provincial permitting and approval processes prior to Project construction and operation. As described in Section 13.15, a spill prevention and response plan will include an assessment of credible risks, prevention measures and site-specific teams that would be in place to respond to incidents. Minor spills are not included in the assessment as these are expected to occur infrequently, be addressed through established spill prevention and response measures, and would not be expected to result in measurable changes to valued components following implementation of standard response procedures. Preliminary management approaches for potential other accidents and malfunctions will be developed in the emergency response plan.

Tailings Storage Facility Design

Matachewan First Nation and a member of the public identified risks with the tailings storage facility (TSF) design. Section 13.6.1 describes that the tailings will be placed in a dry stack configuration with limited water to be managed, and therefore the TSF will not have an internal pond. The TSF will be designed and operated in accordance with applicable industry-wide safety and stability requirements, including consideration for applicable principles of the Global Industry Standard on Tailings Management and the Canadian Dam Association guidelines (CDA 2013; CDA 2019). In addition, the Project will have a qualified person dedicated to the design, supervision and safe construction and operation of the TSF. The slope stability of the TSF will be regularly monitored and visually inspected by site personnel during operations.

Diversion Dyke Flood Design Criteria

Temagami First Nation requested clarification on the flood event considered in the design of the diversion dykes. As described in Section 13.7.1, the recommended inflow design flood during operations is based on the dam classification under the Canadian Dam Association guidelines (CDA 2013, 2019), identified as 2/3 between a 1:1,000-year flood and the probable maximum flood.

Crown Pillar Stability and Mine Design

The Impact Assessment Agency of Canada identified crown pillar failure as a potential scenario in Section 11.1 of the Tailored Impact Statement Guidelines to be included in the assessment of accidents and malfunctions.

Geotechnical investigations completed to support Project design identified that the historical crown pillar beneath York Lake and the associated historical workings was not suitable to support future underground mining. As a result, the selected mine design includes development of an open pit that will remove the historical crown pillar and associated unstable rock mass.

Consequently, failure of the historical crown pillar is not considered a credible accident or malfunction during Project operations because the feature will be removed as part of mine development.

Crown pillars developed as part of the underground mine will be purpose-designed by qualified geotechnical engineers based on site-specific geological, geotechnical, hydrogeological, and operational conditions and integrated into the overall underground mine layout. These crown pillars will be designed to meet applicable stability criteria and factors of safety and will be managed through standard geotechnical design, ground control, inspection, and monitoring programs, as required.

Accordingly, crown pillar failure was considered during the identification and screening of potential accidents and malfunction scenarios. Given that the historical crown pillar hazard is eliminated through Project design and that future underground crown pillars will be engineered and managed as part of the mine design, crown pillar failure was not considered a credible accident and malfunction scenario and was not carried forward for detailed assessment.

13.4 Identification of Malfunctions and Accidents

Specific and important malfunctions and accidents that could have a material environmental effect, and that have a reasonable probability of occurring during the life of the Project were considered. Where appropriate, other topics that have been raised during engagement or are expected to be of interest, are also covered. Medical and similar emergencies, while important are unlikely to have an environmental effect and will be addressed through a Project emergency response plan. Consistent with applicable regulatory requirements, a Project-specific emergency response plan will be developed and maintained to provide clear procedures for responding to accidents, malfunctions, spills, and other emergency events. It is anticipated that the plan will define response actions, notification protocols, responsibilities, training requirements, and recovery measures intended to minimize potential effects on people and the environment. Additional discussion of emergency planning is provided in Section 13.18.

The following potential malfunctions and accidents were identified for effects assessment based on the requirements of the Tailored Impact Statement Guidelines, feedback gained through engagement and professional experience:

- Structural failures and malfunctions:
  - Open pit slope
  - TSF slope
  - Misema River diversion stability
  - Contact water pond overtopping water
  - Ditch or diversion feature overtopping water
  - Pipeline (fresh water, contact water and tailings) failure
  - Ore stockpile slope
  - Overburden stockpile slope
- Accidents:

- Explosives
- Materials release from vehicular accident
- Chemical release from storage or dispensing areas
- Fires (Project-related).

None of the credible accident and malfunction scenarios is expected to result in a large source of greenhouse gas emissions. For each topic, the subsection heading indicates which Project phase the subsection refers to as per the following:

- Construction phase (C)
- Operations phase (O)
- Decommissioning and closure phase (Cl).

13.5 Open Pit Slope Stability (C, O)

The open pit will be excavated through the existing overburden and into the native bedrock where the ore is located. The stability of the rock and overburden in the open pit area has been assessed by geotechnical investigations, and this information was used by qualified geotechnical engineers to develop safe side slopes for the overburden and rock in the open pit. Potential failure of the open pit slopes is considered for the construction and operations phase. At closure, the open pit will be filled with water, and this failure mode is not considered for that Project phase.

13.5.1 Design and Operational Safeguards

Design of the open pit will be continuously reviewed and refined by qualified geotechnical engineers and mine planning personnel throughout construction, operations and closure planning. Open pit side slopes, including overburden and bedrock pit walls, will be designed based on site-specific geotechnical investigations and stability assessments. Slope geometries will be established to maintain long-term stability during operations and closure while accounting for site conditions, materials characteristics, and applicable engineering standards. A slope stability management program will be implemented throughout pit development and operations. The program will include ongoing geological and geotechnical assessments, rock mass characterization, structural mapping, and monitoring of pit wall performance to verify design assumptions and identify changing ground conditions. Pit wall monitoring may include visual inspections, survey monitoring, radar systems, geotechnical instrumentation, and other methods, as appropriate to site conditions and geotechnical risk. Operational controls, including controlled blasting practices, scaling of loose rock where required, groundwater management measures, and adherence to approved bench and slope geometries, will be implemented to maintain pit wall stability. Slope designs and operational controls will be periodically reviewed and refined by qualified geotechnical engineers based on monitoring results and observed ground conditions to maintain acceptable factors of safety and protect worker safety throughout the life of the Project.

During closure, the open pit walls and associated benches will be assessed and, where required, regraded or otherwise stabilized in accordance with the Ontario Mine Rehabilitation Code closure plan requirements. Final pit wall configurations will be designed to achieve long-term geotechnical stability and minimize potential safety risks associated with rockfall, erosion, or slope failure following closure.

13.5.2 Contingency Planning and Mitigation

The bedrock pit wall angles have been established based on geotechnical drilling investigations and designs by qualified geotechnical persons. Geotechnical monitoring will be established to identify potential instabilities in the open pit and mitigation measures will be put in place before an issue arises. Monitoring of the open pit wall stability, including using equipment as appropriate, will be directed by qualified persons. Prism-based surveying and slope stability radar, or similar, will be implemented to monitor for changes in position to identify potential areas of instability and ground movements.

In the unlikely event of a slope failure, work will cease and workers will be evacuated from open pit in accordance with the emergency response plan, until mitigation can be implemented.

Depending on the scale of the issue, once the failure area is secured, remediation measures will be employed as needed to allow stability measures to be implemented and monitoring and mining to continue safely. Minor remediation efforts may include re-sloping of the pit walls and provision of additional slope support (such as mesh). Failure material will be relocated to the appropriate stockpile if mining is planned to progress. A setback is present around the pit perimeter for safety purposes. However, nearby infrastructure that could potentially be affected by a slope failure includes roads, ditching and sumps, and other dewatering infrastructure. Affected infrastructure will be repaired or replaced as appropriate. Once the area is remediated and safe to return to mining, extraction of ore from the open pit will recommence.

13.5.3 Potential Effects

During operations, two primary slope failure modes for the open pit were considered as part of the accidents and malfunctions assessment:

- Slope failure in overburden soils (i.e., gravitational failure, liquefaction or erosion)
- Rock slope failure resulting from adverse geologic conditions, structural discontinuities, groundwater conditions, or unexpected operational factors.

Open pit slope failures could range from localized rockfalls and sloughing to larger failures involving portions of the overburden slopes or bedrock pit walls. A larger failure could result in localized expansion of open pit footprint through the displacement of overburden or rock material beyond the designed pit crest. In some circumstances, remediation activities such as regrading or recontouring of the pit slopes may be required to restore acceptable stability conditions.

Slope failures could generate rock, overburden, and sediment that may accumulate within pit sumps, dewatering infrastructure, haul roads, or contact water management features. This could temporarily reduce the effectiveness of water management systems and require cleanup, maintenance, or modifications to dewatering operations. Erosion-related failures may result from surface runoff or extreme precipitation events and could temporarily increase sediment loading within pit water management systems.

Although the nearest surface water features are located outside the anticipated extent of a pit slope failure, erosion and sediment transport associated with a large failure could temporarily affect runoff quality if sediment-laden water were to enter dewatering systems, drainage infrastructure, or diversion system components. The Misema River diversion system is located adjacent to portions of the open pit and a large slope failure occurring near the diversion dykes could increase loading on nearby dyke structures or affect access for inspection and maintenance activities. However, the diversion dykes have been specifically designed to account for adjacent open pit conditions and are subject to separate design, monitoring, and contingency measures as described in Section 13.7.2.

Environmental effects associated with a slope failure are expected to be localized and largely confined to the open pit area and surrounding disturbed lands. Effects on terrestrial vegetation and wildlife habitat would be limited in extent and primarily restricted to areas already disturbed by mining activities.

Operational effects may include temporary suspension of mining activities in the affected area, loss of access to working faces, haul roads, dewatering infrastructure, or benches, and implementation of slope stabilization and remediation measures before normal mining operations can resume.

Worker safety represents the primary potential consequence of a substantial slope instability event. However, ongoing geotechnical investigations, pit wall monitoring systems, controlled blasting practices, groundwater management measures, and emergency response procedures are intended to identify instability indicators in advance of failure and allow workers to be evacuated from affected areas where necessary.

With implementation of the proposed design safeguards, geotechnical monitoring program, and contingency measures, residual adverse effects associated with open pit slope failures are expected to be low in magnitude, localized, temporary, and reversible. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.6 Tailings Storage Facility Stability (O, Cl)

The TSF will be a single-cell facility with an ultimate footprint of approximately 134 ha, providing capacity for the approximately 13 Mt of tailings and 7 Mm^3 of mine rock which that will require surface storage. The facility has been designed to have capacity for an additional 17 million tonnes of tailings. Approximately 40 to 50% of tailings produced are expected to be directed to the backfill plant for re-use in backfill underground and will not be stored on surface. The remaining tailings not used for backfill (approximately 11 Mt) will be filtered at the process plant to approximately 85% solids by weight and deposited within the TSF.

Filtered tailings and mine rock will be trucked to the TSF using mine haul trucks and placed using equipment within the TSF. Development of the TSF is proposed to take place in two main phases, with the central portion of the area being established first, followed by the western portions of the area. Approximately 4% of the material stored in the facility will consist of potentially acid generating mine rock. This material will be encapsulated by non-potentially acid generating tailings and mine rock, reducing the exposure of it to oxygen and inhibiting the onset of acidic drainage (KP 2026).

Perimeter ditching will collect surface runoff from the dry stack tailings facility for direction to one or more collection ponds for further management as part of the integrated water management system. A system of underdrains will also be constructed within the footprint of the facility to collect seepage and direct it to the ditching system and Retention Pond 2.

Progressive reclamation of completed areas of the TSF may be undertaken during operations, where practical, to promote erosion control, dust suppression, and the establishment of vegetative cover. During closure, an overburden cover will be placed over the TSF flats that have not already been reclaimed, and disturbed areas will be seeded as appropriate to establish long-term vegetation cover. Once runoff water quality from the TSF is demonstrated to be suitable for discharge without treatment, surface drainage may be regraded such that runoff from the TSF is directed to Unnamed Stream 4 and Unnamed Stream 5 and through Retention Pond 2 to Unnamed Stream 6.

13.6.1 Design and Operational Safeguards

Geotechnical investigations have been completed at the proposed TSF location between 2019 and 2025, including boreholes and test pits near the proposed TSF. In 2019, investigations included in a program of 37 test pits and 21 boreholes, followed by 24 test pits, 9 boreholes, 4 monitoring wells and 9 shallow piezometers in 2020. These programs were supplemented by additional geotechnical investigations in 2024 and 2025 that included test pits, drilling, sampling, and Cone Penetration Testing. The investigations identified five dominant overburden units, including near-surface sand, silty clay, brittle silt, silt, and sand overlying competent bedrock. Bedrock occurs at shallow depths across much of the TSF footprint, although overburden thickness varies locally and is greater than 5 m in some areas.

The TSF and associated appurtenances will be designed, constructed, operated and closed in accordance with applicable industry-wide safety and stability requirements, including the principles of the Global Industry Standard on Tailings Management and the Canadian Dam Association guidelines (CDA 2013; CDA 2019). The TSF will store filtered tailings in a compacted dry stack configuration with process water largely removed prior to placement. As a result, water management within the TSF is expected to be limited primarily to direct precipitation, snowmelt, and surface runoff, and the TSF will not be designed to include an internal pond. The facility will be developed in phases and will ultimately comprise a compacted tailings stack surrounded by a structural mine rock shell. The final TSF crest elevation is anticipated to be between 350 and 358 masl, with portions of the initial phase of the facility designed with surplus capacity to elevation 370 m. The facility will have a maximum height of approximately 40 to 65 m depending on location and development phase. Outer mine rock shell slopes will generally range from 2H:1V to 3H:1V, while upper exposed tailings slopes will be constructed at approximately 9H:1V. A foundation drainage system and perimeter ditching will collect runoff and seepage for management within the integrated water management system. The tailings will be placed in compacted lifts to achieve the required density and low permeability, and surfaces will be graded to promote runoff and minimize infiltration. Closure measures will include placement of mine rock, fine rockfill, soil cover, revegetation, and erosion control features, including riprap-lined channels where required, to support the long-term physical and ecological stability of the facility.

The Project will have a qualified person dedicated to the design, supervision and safe construction, operation and monitoring of the TSF. In addition, a third-party Independent Review Board is anticipated to be established to provide independent technical review of the design, construction, operation, performance and closure planning of the TSF throughout the life of the Project.

Inspection and monitoring programs will be implemented throughout construction, operation, and closure of the TSF to verify facility performance. TSF slopes and associated infrastructure will be routinely inspected by qualified personnel. The following design and operational safeguards will be implemented to reduce the potential for TSF slope instability (KP 2026):

- Vibrating wire piezometers installed at selected locations within the TSF foundation, foundation drainage system, and tailings stack to monitor pore pressures and confirm that the tailings remain drained and partially saturated
- Settlement plates installed to measure potential displacement or settlement of the TSF
- Soil moisture sensors installed within the tailings stack to monitor moisture content and saturation conditions.
- Density monitoring, including densometer testing and supporting quality control measures, to verify that tailings are being compacted to the required design specifications
- Regular surveys and inspections to monitor construction progress, settlement, deformation, seepage, erosion, cracking, sloughing, and other indicators of instability
- Perimeter monitoring wells to monitor groundwater quality and identify potential seepage from the TSF
- Tailings geochemical monitoring to confirm metal leaching and acid rock drainage predictions and support implementation of the metal leaching / acid rock drainage management plan
- Dust monitoring to evaluate the extent and effects of fugitive dust emissions from the TSF.

Importantly, the TSF design will include a foundation drainage system, internal seepage containment berms, and a structural mine rock shell designed to maintain stable, drained conditions within the facility and achieve the required factors of safety under static and seismic loading conditions.

13.6.2 Contingency Planning and Mitigation

An undeveloped area surrounding portions of the TSF and the associated perimeter drainage infrastructure will provide operational access for inspection, monitoring, maintenance, and water management activities. A system of foundation underdrains and perimeter drainage features will collect and manage seepage and runoff, assist in maintaining drained conditions within the compacted tailings and support long-term stability of the facility. Routine inspections and monitoring will be conducted to identify signs of erosion, sloughing, settlement, seepage, or instability, and corrective measures, including grading, erosion control and maintenance activities will be implemented as required to maintain stable slope conditions.

Where required, temporary berms, diversion channels, pumping, sediment controls, or additional containment measures may be implemented to prevent displaced material or affected runoff from reaching waterbodies.

13.6.3 Potential Effects

The filtered tailings stored within the TSF will be placed in a compacted dry-stack configuration and maintained in a drained condition through the use of a foundation underdrain system for seepage collection. Filtered tailings are deposited at a low moisture content in a compacted and unsaturated condition and are contained within an engineered mine rock shell rather than by a conventional water-retaining embankment. Therefore, a breach-type release involving the rapid, uncontrolled discharge of large volumes of liquefied tailings is not considered a credible failure mechanism for the Project TSF. Instead, credible TSF instability scenarios may include:

- Localized instability of the outer mine rock shell slope due to erosion and sloughing
- More extensive slope failure affecting a discrete portion of the facility.

Localized Instability

Localized instability events would generally be expected to remain within or immediately adjacent to the TSF footprint. Potential effects could include displacement of tailings or mine rock, localized erosion, sediment generation, damage to perimeter drainage features and temporary disruption of seepage collection and runoff management systems. Where displaced material entered perimeter ditches, underdrains, collection ponds, or Retention Pond 2, temporary increases in total suspended solids (TSS), turbidity, and associated mine-related constituents could occur within the contact water management system until cleanup and repairs are completed.

The potential for localized instability is reduced through the use of a compacted dry-stack tailings configuration, a structurally engineered mine rock shell, engineered slope geometries, foundation underdrain systems, perimeter drainage controls, progressive reclamation, and routine inspection and monitoring programs. These measures are intended to maintain drained conditions, control seepage, minimize erosion, and support long-term slope stability. Due to the relatively low moisture content and reduced mobility of the filtered tailings, displaced materials associated with localized failures would be expected to remain concentrated near the point of failure. Following implementation of response and remediation measures, residual adverse effects associated with localized failures are expected to be low in magnitude, localized in extent, temporary, and reversible.

Slope Failure

Under extreme conditions, such as an intense precipitation event occurring concurrently with a slope failure, displaced tailings, mine rock, or sediment-laden runoff could extend beyond the immediate failure area. In a more extensive slope failure scenario, material or sediment-laden runoff could migrate beyond the TSF footprint and potentially reach nearby waterbodies through existing drainage pathways. Beaverhouse Lake represents the nearest receiving waterbody that could potentially be affected under such circumstances.

If material were to reach local waterbodies, adverse environmental effects could include localized sediment deposition, increases in TSS and turbidity, and short-term changes in surface water quality. Particulate-bound metals and other mine-related constituents associated with tailings or mine rock could also be transported with suspended sediments. The magnitude and duration of effects would depend on the quantity of released material, transport pathways, hydrologic conditions, season, location of affected habitat, and the effectiveness and timeliness of response measures.

Potential effects on fish and fish habitat could include temporary degradation of water quality, localized sediment deposition within aquatic habitat, and short-term disruption of fish habitat. The extent of effects would depend on the volume of material released, the proximity of the release to aquatic habitat, and the effectiveness of containment and recovery efforts.

Potential terrestrial effects could include localized disturbance of vegetation, alteration of surface drainage patterns, temporary disturbance of wildlife habitat, and the creation of exposed tailings or mine rock surfaces that may contribute to fugitive dust generation until stabilized. Remediation activities could also result in short-term disturbance to wildlife through increased equipment activity within the affected area. These effects are expected to be localized to the vicinity of the failure and temporary in duration.

A more extensive slope failure could also result in operational disruptions, including temporary suspension or modification of tailings placement activities, restricted access to portions of the TSF, increased water management requirements, and repair or reconstruction of affected containment and drainage infrastructure.

In the event of a more extensive slope failure, the affected area would be secured and access restricted until conditions are determined to be safe. Response measures may include geotechnical assessment of the failure, stabilization and regrading of affected slopes, repair of erosion protection and drainage features, recovery and relocation of displaced materials to the TSF, and restoration of disturbed areas through placement of cover materials and revegetation, as appropriate. Where material has migrated to drainage ditches, roads, waterbodies, or other disturbed areas, it would be removed to the extent practicable and affected infrastructure or habitat restored, as appropriate.

In the event that the limited amount of potentially acid generating mine rock in the TSF is exposed or displaced as a result of a more extensive slope failure, additional management measures may be required to limit oxidation and prevent the development of acidic drainage or metal leaching. Long-term exposure of potentially acid generating material could result in localized deterioration of runoff or seepage quality if the material is not promptly stabilized, recovered, re-encapsulated, or otherwise managed in accordance with the Project's metal leaching / acid rock drainage management measures. Implementation of these measures would reduce the potential for long-term water quality effects.

Although a more extensive slope failure could result in more substantial environmental effects if material were to reach nearby waterbodies, the likelihood of such an event is reduced through the dry-stack tailings design, engineered mine rock shell, drainage and seepage controls, progressive reclamation measures, instrumentation, routine inspections, and contingency response procedures. Following implementation of mitigation and remediation measures, residual environmental effects associated with credible TSF instability scenarios are expected to be low to moderate in magnitude, localized in extent, temporary to short-term in duration, and largely reversible.

Summary

The assessment of TSF instability was undertaken using conservative assumptions regarding material displacement, receiving environment conditions, and response implementation to appropriately characterize the range of reasonably foreseeable effects associated with credible TSF instability scenarios.

Given the filtered tailings dry-stack design, reduced tailings mobility, engineered mine rock shell, drainage and seepage controls, monitoring programs and available response measures, significant adverse environmental, health, social, economic or Indigenous rights and interests effects are not anticipated as a result of credible TSF instability events.

13.7 Misema River Dykes and Diversion System (C, O, Cl)

During the first year of the construction phase, a diversion system consisting of three dykes and two diversion channels will be constructed to isolate a portion of the Misema River system affected by the planned open pit area and allow pit dewatering. Subject to detailed engineering, the northernmost dyke will terminate flow from Ava Lake, the middle dyke will block flow from Unnamed Lake, and the southernmost dyke will prevent backflow from York Lake. The diversion channels will be excavated in bedrock, with one channel (approximately 21 m long) conveying flow from Ava Lake to Unnamed Lake and a second channel (approximately 108 m long) conveying flow from Unnamed Lake to York Lake. The diversion system is intended to reroute flows around the open pit while maintaining connectivity within the Misema River system (KP 2024).

13.7.1 Design and Operational Safeguards

The dykes will be designed to prevent water from entering the open pit area. The dykes have been designed and positioned to meet the following requirements:

- Establish a hydraulic barrier between Ava Lake (upstream) and the Misema River (downstream) and the open pit basin area following controlled dewatering
- Provide sufficient freeboard above the lake level for protection during storm events for worker safety, along with protection from ice heaving that may occur in the winter
- Maintain stability during and following open pit basin development (meeting or above regulatory factor of safety requirements), as well as after controlled refilling with water at the end of mine life
- Account for lakebed geotechnical foundation conditions
- Provide for a safe open pit work area.

The dykes are designed with crest elevations that provide approximately 1.5 m of freeboard above historical high-water level of adjacent lakes to prevent flooding in the open pit basin during storm events (KP 2024). Ongoing monitoring of water levels in Ava Lake using in situ monitoring stations will continue during all phases of the Project to validate hydrologic assumptions and support future refinement of diversion system design parameters. Monitoring data will be used, together with future hydrologic and hydraulic assessments, to confirm the adequacy of dyke crest elevations and determine whether modifications or raises are required.

The dykes are designed to satisfy applicable dam safety criteria required by guidelines and regulations such as the Canadian Dam Association (2013, 2019) Dam Safety Guidelines and supporting technical bulletins and the *Lakes and Rivers Improvement Act* (RSO 1990, c. L.3). Design criteria include minimum factors of safety for end-of-construction, long-term, inflow design flood, pseudo-static, and post-earthquake loading conditions. The diversion system dykes have been assigned a Very High dam consequence classification and the inflow design flood criterion is based on the Canadian Dam Association guidelines (CDA 2013, 2019) for this classification (i.e. two-thirds of the way between the 1:1,000-year flood and the probable maximum flood). For the pre-feasibility design, a peak discharge design flow of 100 m^3/s was adopted pending completion of a detailed hydrologic assessment. The dykes will be constructed using engineered embankment slopes ranging approximately from 2H:1V to 2.5H:1V, depending on structure-specific design requirements (KP 2024).

Operational safeguards will include implementation of a dam Operations, Maintenance and Surveillance program incorporating routine visual inspections and geotechnical monitoring. Geotechnical instrumentation will be installed to monitor geotechnical performance of the dykes, and will include:

- Vibrating wire piezometers to assess pore pressure conditions within dyke foundations and embankment materials
- Slope inclinometers and survey monuments to monitor slope movement or deformation
- Geotechnical inspections and monitoring will be conducted in accordance with the Operations, Maintenance and Surveillance program, applicable regulatory requirements and relevant dam safety guidance.

The diversion channels will provide the new path for water to flow from Ava Lake to the Misema River. They will be designed to mimic natural hydrologic conditions, handle necessary water flows and support fish passage through the inclusion of a wetted thalweg and other fish passage measures that will be refined during subsequent design phases. The channels will be constructed as engineered, bedrock-cut features using drill and blast methods, resulting in unlined, trapezoidal sections with shallow side slopes (2.5H:1V) to support hydraulic stability and allow for wildlife passage. Reinforced concrete V-notch weirs will be incorporated to maintain existing lake water levels under low-flow conditions, and channel bottoms will include a wetted thalweg to support fish passage. A detailed hydrological assessment will be conducted during subsequent design phases to confirm design flows, water levels, and final channel dimensions (KP 2024).

13.7.2 Contingency Planning and Mitigation

The initial response of any malfunction or imminent malfunction will be to protect worker health and safety. The emergency response plan will be implemented, which may include temporary containment and repair measures using available onsite equipment and construction materials. In such an event, water is expected to be contained within the open pit and management or discharge of water would be subject to applicable regulatory and water quality requirements.

The diversion channels will be inspected periodically to confirm that flow is maintained. In the event of localized obstruction or reduced capacity, maintenance activities, such as removal of debris, would be undertaken using on-site equipment.

13.7.3 Potential Effects

While the likelihood of diversion system failure is expected to be low due to the application of conservative engineering design criteria, dam safety requirements, monitoring programs, routine inspections, and emergency response procedures, the following credible scenarios have been assessed:

- Loss of containment at the upstream dyke

- Loss of containment at the downstream dyke
- Reduced diversion channel capacity.

Loss of Containment at the Upstream Dyke

Hydraulic and topographic conditions indicate that the loss of containment at the upstream dyke separating Ava Lake from the open pit area would be expected to result in water flowing toward and into the open pit. The open pit would provide substantial storage capacity relative to the size of the isolated waterbodies; consequently, environmental effects would be expected to be primarily localized to the breached structure, the open pit area, and hydraulically connected portions of the aquatic environment.

Such an event could cause erosion of dyke materials, shoreline sediments, and exposed soils, resulting in elevated suspended sediment concentrations and temporary deterioration of water quality in the vicinity of the breach. Water entering the open pit could come into contact with pit walls, exposed geologic materials, and equipment present within the pit, potentially resulting in temporary changes in water chemistry within the pit area. Water accumulated within the pit following the incident would be managed in accordance with site water management procedures prior to discharge back to the natural environment.

The loss of containment could temporarily alter water levels and flow distribution within the immediate area of the Misema River system. However, upstream water levels are influenced by a natural bedrock control and the larger Beaverhouse Lake system, which would limit the extent of drawdown associated with a breach. Consequently, substantial and widespread reductions in water levels within Beaverhouse Lake and upstream reaches are not anticipated. Temporary changes in flow conditions within Ava Lake and the diversion system could occur until repairs are completed.

Following implementation of corrective actions, stabilization of disturbed areas, and restoration of diversion functionality, suspended sediment concentrations would be expected to decline through settling and dilution processes. Given the temporary nature of the disturbance, the limited geographic extent of the affected area, and the availability of unaffected habitat within the surrounding watershed, fish populations and aquatic communities are expected to recolonize affected areas.

Loss of Containment at the Downstream Dyke

During operations, the open pit would remain largely dewatered and would provide substantial storage capacity. Consequently, loss of hydraulic containment at the downstream end of the isolated open pit area is not expected to result in downstream water releases to the Misema River system, and there would be limited potential for water to flow upstream into the open pit. Instead, potential effects from such an event would primarily include localized erosion, sediment mobilization, temporary increases in suspended sediment concentrations, and short-term effects on downstream aquatic habitat.

During closure, as the open pit is refilled, the loss of hydraulic containment would result in the release of a greater volume of water than would be possible during operations. Potential effects could include temporary increases in downstream flows and water levels, localized erosion, elevated suspended sediment concentrations, and temporary reductions in aquatic habitat quality. The magnitude of effects would depend on the timing of the breach, water levels within the isolated basin, seasonal conditions, and downstream seasonal habitat sensitivity.

Emergency response measures and repairs would be implemented to restore hydraulic control and minimize environmental effects. Following implementation of corrective actions, water quality and aquatic habitat conditions would be expected to recover through natural settling, dilution, stabilization, and recolonization processes.

Once pit filling is complete and water quality within the pit lake meets applicable regulatory requirements, the pit lake would be reconnected to the Misema River system as part of closure. At that stage, hydraulic isolation would no longer be required and the downstream dyke would cease to serve a containment function, eliminating the potential for environmental effects associated with a downstream dyke breach.

Reduced Diversion Channel Capacity

Reduced diversion channel capacity resulting from debris accumulation, sediment deposition, beaver activity, ice formation, erosion, or other blockages could increase upstream water levels and hydraulic loading on diversion infrastructure. Under extreme conditions, overtopping of diversion channel banks or localized failure of diversion channel components could occur. The diversion channel has been designed to convey substantial flow volumes and, therefore, exceedance of channel capacity would be expected to occur only under unusual circumstances involving substantial blockage, loss of channel integrity, or extreme flow conditions.

Potential environmental effects would include localized flooding adjacent to the diversion channel, erosion of channel banks and surrounding soils, temporary increases in suspended sediment concentrations, and minor disturbances to adjacent aquatic and terrestrial habitats. As flow remains confined to natural drainage pathways and consists of non-contact water, adverse effects on water quality would be expected to be limited.

A substantial diversion channel failure could temporarily reduce the volume of water conveyed around the open pit area, potentially altering flow conditions in downstream reaches of the Misema River system until corrective actions are implemented. Such changes could result in short-term alterations to aquatic habitat conditions and temporary effects on aquatic organisms. Given the relatively small size of Ava Lake and York Lake in comparison with the broader watershed, and the ability of the diversion system to maintain flow continuity under normal operating conditions, the adverse effects are anticipated to be localized and of short duration.

Routine inspections, monitoring, maintenance programs, sediment management measures, wildlife control measures where appropriate, and implementation of emergency response procedures would reduce both the likelihood of diversion channel failure and the magnitude of associated environmental effects.

Summary

In the event of a dyke breach or diversion channel failure, environmental effects would be expected to consist primarily of temporary increases in suspended sediment concentrations, localized erosion, temporary changes in water levels and flow conditions, and short-term effects on fish and fish habitat. Effects would be greatest near the failure location and would decrease with distance from the source area.

Operational consequences could include temporary interruption of mining activities, emergency response actions, and repair of damaged infrastructure. Following implementation of corrective measures and natural recovery processes, affected environments are expected to recover through restoration of hydraulic conditions, sediment stabilization, and recolonization from adjacent unaffected habitats.

Residual adverse effects associated with diversion system failure scenarios are predicted to be low to moderate in magnitude, localized in extent, short-term in duration, infrequent in occurrence, and reversible. Considering the low likelihood of occurrence, the hydraulic constraints within the upstream system, the storage capacity of the open pit, and the proposed mitigation, monitoring, and emergency response measures, significant adverse residual environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.8 Integrated Water Management System (Ponds) (C, O)

A robust integrated water management system has been developed for the Project, as described in Section 4.11. Contact water will be collected using ditches, sumps, several collection ponds and retention ponds during the construction and operations phases. The current design includes the following primary contact water ponds:

- Retention Pond 1
- Retention Pond 2
- Nine contact water ponds.

All water management ponds will be designed with sufficient capacity to support contact water management. Contact water in the integrated site water management system will be collected for containment, re-use, treatment and discharge to the environment in accordance with applicable regulatory requirements, as needed.

Retention Pond 1 will receive underground dewatering inflows, selected pumped flows from Contact Water Pond 1 and will serve as the process water pond for the process plant (WSP 2026). As an isolated pond, it also will provide for contingency storage to manage potential cyanide upsets within the milling process, thereby reducing the potential for the release of cyanide-bearing water to the broader site water management system.

Retention Pond 2 is the primary contact water storage basin for the site and will be developed using non-acid generating mine rock from the initial mining activities, with berms constructed along the south side of the facility to provide additional storage capacity. Retention Pond 2 receives runoff from the mine footprint, including sumps, underground workings, roads and the open pit during extreme events.

Other contact water ponds swill be sited to reduce dam requirements; where practical the ponds will be excavated, however, several small dams and berms may be required to support water management.

During the decommissioning and closure phase of the Project, dams will be breached and no longer retain water. As such, malfunctions and accidents for other dams and berms were not considered for the decommissioning and closure phase.

13.8.1 Design and Operational Safeguards

Dam designs will be developed according to industry standard and best management practices. Additionally, dams at the Project will have an inspection and monitoring program including instrumentation to monitor for signs of a potential slope stability or overtopping issue.

The Project will have inspection and monitoring requirements associated with water-retaining dams to provide security and safeguard measures. Dams will be regularly supervised and visually inspected by site personnel during day-to-day operations. Monitoring activities may include the following:

- Surveying dam crests, exposed slopes, and toes to measure the extent of movements that may occur
- Piezometers installed at selected strategic locations within the foundations of the dams, stockpiles, and open pit slopes to monitor pore pressures during and following loading
- Inclinometers installed at selected strategic locations through the dam and dam foundations, at stockpile toes and through open pit slopes to monitor deformations during and following loading
- Settlement plates installed to measure vertical deformation or settlement of the dam foundation
- Monitoring wells installed downstream of the dams and stockpiles to measure the phreatic surface level and obtain samples to observe trends in the groundwater chemistry
- Water levels in reservoirs will be monitored with staff gauges or equivalent.

Retention Pond 1 has been designed to provide capacity for two consecutive 1:100-year, 24-hour precipitation events and the daily average snowmelt under the Advanced Exploration Program conditions. The pond includes a lined system with groundwater control measures to limit seepage and contain contact water. Water levels will be actively managed during operations, and design features such as freeboard and spillway are included to safely manage overflow, reduce the potential for overtopping under extreme inflow conditions, and prevent failure of the associated dams (Norinfra 2025).

Retention Pond 2 has been designed to accommodate a 1:100-year, 24-hour precipitation event across the entire site, including runoff from mine facilities and pumped inflows from sumps and the open pit. Additional storage capacity is incorporated to provide an additional 7 m of headroom to accommodate the Inflow Design Flood event as well as wave run-up and wind set-up. Operational measures such as maintaining available storage through managed drawdown will support performance during high inflow periods (WSP 2026).

In addition to storage capacity, contact water ponds and associated berms will be designed to maintain stable embankment conditions and manage water levels under normal and extreme operating conditions. Design considerations include maintaining appropriate freeboard, controlled inflow and outflow, and integration with the site drainage system to reduce the potential for overtopping and erosion.

13.8.2 Contingency Planning and Mitigation

In the event of a failure of a contact water containing pond dam, an emergency repair will occur immediately. Appropriate spill control equipment will be stored at the Project at all times. Silt fences, temporary earth or snow dams, and other erosion and sediment control measures will be deployed as needed to prevent contact water and sediments from entering a natural waterbody. Affected areas will be stabilized as required following an incident to restore containment and reduce the potential for continued erosion or sediment transport.

Where feasible, pumping and diversion measures will be implemented to manage water levels and redirect flows to other components of the integrated water management system, including Retention Pond 2. Operational controls will be used to maintain or restore available storage capacity within the system to limit further releases.

13.8.3 Potential Effects

Contact water may be released to the environment in an uncontrolled manner from the following potential failure modes:

- Stability failure of a dam
- Blockage of the spillway or a storm event exceeding the design criteria resulting in overtopping of the dam.

In the event of a breach or overtopping of the retention ponds or contact water ponds, released water would flow to adjacent low-lying areas within the site. Depending on the location and site grading, flows may be partially contained by surrounding infrastructure or natural topography, with any uncontrolled discharge limited to areas within or immediately adjacent to the PA.

Potential environmental effects would be expected to be localized and may include erosion of disturbed areas, sediment deposition, and temporary reductions in surface water quality associated with the release of contact water containing suspended solids, metals, or other mine-related constituents. Depending on the source pond and operating conditions, releases from Retention Pond 1 could also contain process-related water and cyanides. If released water were to reach downstream drainage features, temporary effects on aquatic habitat could occur through sedimentation and short-term changes in water quality.

Because the ponds function as components of an integrated water management system, a breach or overtopping event could temporarily reduce available storage capacity, increase hydraulic loading on other water management facilities, and disrupt water treatment and mill water supply operations. In the case of Retention Pond 1, a failure event could affect the availability of contingency storage used to manage cyanide upset events until repairs and operational controls are implemented.

Operational effects may include temporary interruption of site activities, pond repairs, re-establishment of containment measures, and restoration of affected infrastructure. Following an event, monitoring and remediation measures would be implemented to verify the effectiveness of corrective actions and identify any residual environmental effects.

With implementation of the design safeguards, inspection program and contingency measures described above, residual adverse effects on water quality, fish and fish habitat are expected to be low in magnitude, localized and temporary. Given the limited spatial extent of a potential failure and the capacity for timely response and remediation, significant adverse health, social, economic or Indigenous rights and interests effects are not anticipated.

13.9 Integrated Water Management System (Ditches and Diversions) (C, O, Cl)

The integrated water management system includes gravity drainage ditches that are expected to be used during construction, operations and closure as the primary means to passively convey contact water across the Project site. In addition, diversion berms or channels will be constructed to divert non-contact water away from the Project, specifically near the TSF and ore stockpile. During closure, the ditches and diversion features will be progressively reclaimed in parallel with the associated facilities and areas.

The system is expected to include the following primary contact water collection ditch network and non-contact water diversion features:

- TSF ditching (contact water)
- Ore stockpile ditching (contact water)
- Overburden stockpile ditching (contact water)
- Advanced exploration mine rock stockpile ditching (contact water)
- Process plant ditching (contact water)
- TSF and ore stockpile diversion berms or channels (non-contact water)
- Misema River diversion system (non-contact water; Section 13.7).

13.9.1 Design and Operational Safeguards

The integrated water management system (ditches and diversion features) is designed for an Environmental Design Flood, defined as the 100-year return period event during the operations and closure phases. A 1:100 return period refers to a flooding event with a likelihood of being exceeded occurring once in a 100-year period. The design event also takes into consideration projected climate change effects. These are typical water management design criteria in the mining industry.

Design and operational safeguards will include appropriate sizing of conveyance features, erosion protection (e.g., channel armouring), and regular inspection and maintenance to maintain channel capacity and function. Ditches and diversion features will be maintained to convey flows as designed and to reduce the potential for blockages, erosion, or overtopping.

13.9.2 Contingency Planning and Mitigation

Ditches and diversion features will be inspected and in the event of a disruption, an emergency repairs will be initiated immediately. Appropriate equipment to repair the component and spill control equipment will be kept at the Project at all times. Silt fences, temporary earth or snow dams, and other erosion and sediment control measures will be deployed as needed to prevent contact water and/or sediments from entering a waterbody.

The ditches and diversion features will be inspected periodically to confirm that flow is maintained. In the event of localized obstruction or reduced capacity, maintenance activities, such as removal of debris, would be undertaken using on-site equipment.

13.9.3 Potential Effects

Potential accidents and malfunctions associated Misema River diversion system are discussed in Section 13.7.

Blockage, erosion, or structural failure of a collection ditch or diversion feature during a storm event could result in overtopping, localized flooding, and the release of contact water to the adjacent areas within the Project site. Although the collection ditches and diversion features have been designed to convey the Environmental Design Flood (1:100-year event) and include erosion protection measures, exceedance of design capacity, debris accumulation, or localized damage could result in temporary loss of conveyance capacity.

Overtopping or failure of a contact water collection ditch could result in localized release of contact water containing elevated concentrations of suspended solids, metals, or other mine-related constituents to surrounding lands. Such releases could cause localized erosion, sediment deposition, and short-term deterioration in water quality. Failure of non-contact water diversion features at the TSF and ore stockpile area could result in additional runoff entering the contact water management system, potentially increasing flows to downstream collection and storage facilities and reducing available operational storage capacity.

Because the water management system operates as an integrated network, disruptions to ditching and diversion infrastructure could increase hydraulic loading on downstream contact water management facilities, including Retention Pond 2. Retention Pond 1 has been repurposed as the process water pond for the mill and serves as an isolated contingency storage facility for managing cyanide upset events. Consequently, maintaining conveyance capacity throughout the water management system is important in preserving operational storage and contingency management functions.

Potential environmental effects would be expected to be localized and of short duration due to the availability of emergency response procedures, on-site repair equipment, spill-control materials, and implementation of erosion and sediment control measures. Water quality and aquatic environment monitoring would be conducted, as appropriate, following a failure event to verify the effectiveness of mitigation measures and identify any necessary corrective actions.

With the implementation of the design safeguards, inspection program, and contingency measures described above, residual adverse effects on water quality, fish and fish habitat are expected to be low and localized. Given the limited spatial extent of a potential failure and the capacity for timely response and remediation, significant adverse health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.10 Integrated Water Management System (Pipelines) (C, O, Cl)

Freshwater, contact water and paste backfill tailings are anticipated to be transferred within the Project site during operations via a series of pipelines including:

- Ava Lake to process plant (freshwater; construction, operations and closure)
- Underground dewatering to Retention Pond 1 (contact water; construction and operations)
- Paste plant to underground (paste backfill tailings; operations)
- Retention Pond 1 to process plant (contact water; operations)

- Contact water ponds to Retention Pond 2 (contact water; construction and operations)
- Retention Pond 1 to the WTP (contact water; operations)
- WTP to Misema River (treated effluent; construction)
- WTP to Beaverhouse Lake (treated effluent; operations and closure).

Most pipelines are located within the main site area and are bounded by site roads and ditches that provide passive secondary containment even where designed secondary containment is not present.

13.10.1 Design and Operational Safeguards

Prior to construction, Agnico Eagle will develop a pipeline safety and surveillance plan. This is proposed to include regular inspection of active paste backfill tailings and contact water pipelines, along with incidental inspections. Visual inspections are important to identify minor leaks that cannot be identified remotely.

Leak detection systems are expected to be designed and installed for the paste backfill tailings pipeline that will conform to or exceed the industry standards and practices. This may include remote monitored flow in and out, and pressure differential measurements. Secondary containment is anticipated to be provided at and near watercourse crossings for contact water pipelines. The site has been designed to minimize pipeline crossings of watercourses.

13.10.2 Contingency Planning and Mitigation

A spill prevention and response plan will be developed to address potential onsite spill scenarios including from pipelines. The spill prevention and response plan will consider potential onsite spill scenarios, including prevention, contingency planning and reporting practices for a timely and effective response.

13.10.3 Potential Effects

A major leak or rupture from a freshwater, contact water, treated effluent, or paste backfill pipeline could result in localized pooling of material at the release location, erosion of disturbed areas, and short-term sediment transport. Potential effects would depend on the material being conveyed and the location of the release.

A rupture of a contact water or treated effluent pipeline could result in the localized release of water containing suspended solids, metals, or other mine-related constituents. Depending on the volume and location of the release, temporary and localized effects on soil, surface water quality, or groundwater quality could occur prior to implementation of response measures. Although watercourse crossings have been minimized and secondary containment will be provided at selected crossing locations, releases occurring near drainage features could reach receiving waters before containment measures are implemented.

A rupture of the paste backfill tailings pipeline could result in the localized deposition of tailings material and associated process water. As the pipeline is located within the main site area bounded by site roads and ditches that provide passive secondary containment, releases are expected to remain localized and would primarily require cleanup and restoration activities. Temporary disruption to underground paste backfill placement and associated mining activities could also occur.

Failure of pipelines associated with the integrated water management system could temporarily affect water transfers between Retention Pond 1, Retention Pond 2, the mill, and the water treatment plant, resulting in operational disruptions until repairs are completed.

With implementation of the pipeline inspection program, leak detection systems, spill prevention and response measures, and secondary containment where appropriate, residual adverse effects are expected to be localized, temporary, and low in magnitude. As a result, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.11 Ore Stockpile Slope Stability (C, O)

During construction and operations, ore will be extracted from the underground and open pit. Ore will be stored in the ore stockpile which was sited close to the open pit and process plant. The ore will be processed during operations and is not expected to remain at closure.

13.11.1 Design and Operational Safeguards

The ore stockpile will be designed by a qualified person using suitable safety factors for short-term and long-term stability. The design for the ore stockpile will consider foundation materials to support the development of the side slopes and heights of the stockpile. The ore stockpile is expected to have a maximum height of approximately 30 m. Final stockpile dimensions and configuration will be confirmed during detailed engineering design.

13.11.2 Contingency Planning and Mitigation

An appropriate setback around the stockpile is anticipated to be left undeveloped to accommodate minor slumping or sloughing that typically occurs during stockpile management. Any additional overrun is expected to be captured in the perimeter ditching which will be periodically cleared as necessary to maintain ditch conveyance capacity.

13.11.3 Potential Effects

The ore stockpile is anticipated to contain relatively coarse and dry material; therefore, the most likely failure mechanism would be localized sloughing or slumping of stockpile slopes. Due to the relatively coarse and unsaturated nature of the ore, the moderate stockpile height, and the presence of perimeter setbacks and collection ditching, any instability is expected to remain confined to the immediate vicinity of the stockpile.

Localized slope failure could result in the displacement of ore onto adjacent disturbed areas, haul roads, or perimeter collection ditches. If material entered the ditching system, localized increases in sediment loading and temporary reductions in ditch conveyance capacity could occur until cleanup and maintenance activities are completed. The release of fine-grained material could also result in temporary increases in suspended solids within contact water management features. In the event of a failure, the area of the failure will be secured and when safe to do so, remediation measures will be implemented. Remediation of the failed stockpile is anticipated to include recontouring of the stockpile to safe side slopes, or re-arrangement of ditching to surround the expanded stockpile area if more appropriate. Disturbed material will likely be relocated to the stockpile. Other potential remediation measures may include excavating material that may have reached ditches, roads or collection water ponds.

Operational effects may include temporary disruptions to ore handling activities and stockpile management until stabilization measures are completed.

Given the localized nature of the anticipated failure mechanism, the availability of containment and remediation measures, and the absence of pathways for widespread environmental effects, residual adverse effects are expected to be low in magnitude, localized and temporary. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.12 Overburden Stockpile Slope Stability (C, O)

During the construction phase, where practicable, overburden material and organics will be collected and stockpiled southwest of the open pit. Small temporary overburden stockpiles may also be maintained within the TSF footprint to provide readily accessible reclamation materials for progressive rehabilitation of completed areas of the TSF and for final closure activities. Agnico Eagle proposes to utilize the overburden and organic materials stored in the surficial stockpiles on site to support revegetation and reclamation efforts progressively during operation and during closure. Stockpiled organics will be fully utilized during reclamation activities.

13.12.1 Design and Operational Safeguards

The overburden stockpile, including the smaller stockpiles in the TSF footprint, will be designed by a qualified person using suitable safety factors for short-term and long-term stability. The design for the overburden stockpiles will take into consideration foundation materials to support the development of the final side slope and height. The design of the overburden stockpile located southwest of the open pit includes an overall slope of 5H:1V and a height of approximately 30 m, subject to detailed engineering design.

13.12.2 Contingency Planning and Mitigation

The overburden stockpile is anticipated to be more susceptible to erosion compared to the ore stockpile given the finer nature of the material.
This is anticipated to be mitigated by the designed shallower side slopes and periodic seeding. The overburden stockpile will be monitored on a regular basis, and materials will be available at the Project to manage evidence of erosion or small slope failures. This may include recontouring and seeding as needed.

13.12.3 Potential Effects

The overburden stockpile is expected to remain stable based on its design, operational controls, and monitoring program. Should instability occur, it would likely be limited to localized sloughing or slumping of stockpiled materials.

Released material would be expected to remain within the immediate vicinity of the stockpile, although some material could enter adjacent perimeter ditches, causing localized sediment deposition, temporary increases in suspended solids within contact water, or partial obstruction of ditch flows. Any such effects would be contained within the Project's contact water management system and managed through inspection, maintenance, and sediment removal activities. Potential effects associated with ditch blockage are discussed in Section 13.9.

Environmental effects would be limited to localized expansion of the stockpile footprint, sediment accumulation within drainage features, and temporary disruption of surface water conveyance. Released material would remain within the Project footprint; therefore, effects on fish and fish habitat, wildlife and wildlife habitat, Indigenous land and resource use, and other valued components beyond the immediate area are not anticipated.

Following a slope failure, work in the affected area would cease until the area is stabilized. Accumulated material would be removed as necessary, and the affected slope would be recontoured, stabilized, and revegetated. Given the localized nature of the event, containment within the Project footprint and water management system, and the implementation of corrective measures, adverse environmental, health, social, economic, and Indigenous rights and interests effects are expected to be low in magnitude, local in extent, short-term, and reversible. Therefore, significant adverse effects are not anticipated.

13.13 Explosives Accident (C, O)

Bulk emulsion, emulsion cartridge explosives, and, if required, ammonium nitrate fuel oil explosives may be used for mine construction and operations. Explosive products will be selected based on operational requirements, ground conditions, and applicable safety and regulatory requirements. The explosive components are not individually reactive and will only react if mixed in appropriate proportions, placed under certain confined conditions and detonated with an external device. Explosives for open pit mining and initial underground mining will be stored in an above-ground explosives magazine built at a safe distance away from other facilities and public access, in compliance with the *Explosives Act* and other regulatory guidance. Underground explosives will be stored in underground magazines once sufficient space is available and the above-ground explosives magazine will be decommissioned and rehabilitated. Pre-packaged explosives may be used at times and will be managed in accordance with regulations.

13.13.1 Design and Operational Safeguards

Explosives at the Project will be stored, handled, transported and manufactured in accordance with applicable regulatory requirements, including the Explosives Regulations, 2013 (SOR/2013-211) or as amended. The onsite explosives manufacturing area and storage magazines will be in accordance with the Explosives Regulations and guidelines including the National Standard of Canada Standard CAN/BNQ 2910-510/2015 (Bureau de Normalisation du Québec 2015).

The Project will use an explosives company that is well versed in the *Explosives Act* requirements and associated regulatory instruments. The transportation of explosives is controlled by the Explosives Regulatory Division of Natural Resources of Canada and the Transportation of Dangerous Goods Regulations from Transport Canada. Companies that transport explosives materials for the Project are required to comply with the requirements of these agencies.

Personnel who handle explosives for the Project will have appropriate training and other individuals will be restricted from accessing the explosive storage facility and explosives magazine areas. A blast and vibration management plan will be developed that will include management considerations, offset distances, clearing procedure and specifics for both open pit and underground operations. Destruction of explosives (such as those unfit for use) and misfire procedures will be according to applicable regulatory requirements and guidance and undertaken by qualified personnel.

13.13.2 Contingency Planning and Mitigation

Improper handling of explosives could result in serious injury or fatality.. By contracting an experienced explosives firm, following the regulatory requirements and ensuring good housekeeping in general, explosives will be well managed with minimal likelihood of inadvertent detonation or other accidents.

Damage to facilities and infrastructure could be possible but would generally only occur in association with use during open pit and underground mining. Part of the safety prevention protocols includes evacuation of workers and equipment from areas that could be potentially affected by blasting activities (fly rock, blast gases and dust). The mine site emergency response team will be trained in response measures associated with the use of explosives.

13.13.3 Potential Effects

Explosives require an external detonation device and are designed to remain stable during normal storage, handling, and transportation activities. Blasting will be a routine component of both open pit and underground mining activities during the construction and operations phases. An uncontrolled explosion, though highly unlikely due to the extensive regulatory requirements and operational safeguards in place, could occur due to improper management, unauthorized access, equipment malfunction, and/or inadvertent detonation.

The primary consequences of an uncontrolled explosion would be potential injury to personnel, damage to equipment and infrastructure, and operational disruption within the affected area. The potential environmental effects from an uncontrolled explosion could include elevated noise and vibration levels, flyrock, dust generation, and blast gas emissions exceeding those associated with a planned blast event. Localized disturbance to vegetation, wildlife, or disturbed land surfaces could occur if blast effects extend beyond the intended blast area.

Depending on the location and magnitude of the event, damage to nearby infrastructure, including roads, pipelines, water management features, buildings, or other mine facilities, could occur and may result in secondary accidents or malfunctions requiring additional response measures. However, the effects of such an event would be expected to be localized and of short duration.

Following an uncontrolled explosion, the affected area would be secured, damaged infrastructure would be inspected and repaired as necessary, and corrective actions would be implemented to prevent recurrence.

Given the stringent regulatory requirements governing the storage, handling, transportation, and use of explosives, the use of qualified explosives contractors, implementation of a blast and vibration management plan, established exclusion zones, and emergency response procedures, residual adverse effects are expected to be low in magnitude, localized, and temporary. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated. Ongoing adverse effects are not anticipated unless the uncontrolled explosion results in damage to other Project infrastructure and triggers a secondary malfunction or accident.

13.14 Vehicular Accident (materials release) (C, O, Cl)

Materials required to construct, operate and close the Project are expected to be transported to the Project via Highway 66 and Beaverhouse Road to the main access road. Once on site, vehicles transporting materials are expected to generally avoid haul roads, which will be designed for the movement of ore, mine rock and overburden in large haul trucks. This will include shipment of fuel, process chemicals (including reagents such as cyanide), and other hazardous and non-hazardous materials.

There is anticipated to be limited shipment off site, but it would include domestic and industrial waste materials in highway vehicles.

13.14.1 Design and Operational Safeguards

To minimize the potential for vehicular accidents on the trucking routes for the Project, the following operational procedures are anticipated to be incorporated into contracts where appropriate for shipments of both hazardous and non-hazardous materials:

- Regular maintenance of trucks
- Strict adherence to speed limits, including Project speed limits
- Strict adherence to national trucking hour limits and other applicable requirements
- Requirements for drivers to meet applicable regulatory training requirements, be trained in spill response procedures for materials they transport, and carry the appropriate safety data sheets
- Requirements for vehicles transporting materials to the Project to maintain a supply of emergency response equipment, including communication equipment, first aid materials and fire extinguishers
- Penalties for infractions.

Hazardous materials are commonly shipped with secondary containment or in a format that is environmentally protective which provide an additional safeguard. For example, cyanide will be delivered to the Project by truck in the form of sodium cyanide and will be transported in solid briquettes in sealed ISO tank containers. In addition, shipments to and from the Project will follow regulatory requirements, including the *Transportation of Dangerous Goods Act* and associated regulations. The need for compliance with this Act and other regulatory requirements will be reinforced in applicable contracts and vendor agreements.

Additional requirements that are expected to be applied for shipments carrying hazardous goods will include as applicable:

- Complying with applicable regulatory requirements for the transportation of dangerous goods
- Confirming vehicles and drivers are licensed and trained in the transportation of dangerous goods
- Confirming appropriate transportation containers are used by transport companies
- Regularly reviewing local shipment operations and reporting incidents, including near misses

- Establishing communications with drivers, which could include tracking during transportation of cyanide and/or check-ins, particularly if transportation occurs during poor weather conditions.

13.14.2 Contingency Planning and Mitigation

Emergency and spill response procedures will be established in accordance with applicable regulatory requirements, including, where applicable, Ontario Regulation 224/07 (Spill Prevention and Contingency Plans) under the *Environmental Protection Act*, and are expected to include the following: medical response, notification, containment of spill, removal of spill, treatment of affected environment, environment monitoring and lessons learned from the incident.

Companies contracted to transport hazardous materials for the Project will be required to have an emergency response plan or equivalent for the materials being carried, and a protocol for managing spills in the unlikely event of a vehicular accident resulting in a spill. In the event of a hazardous materials spill from a vehicular accident, the Project team will support the transport company as needed with the implementation of their recovery plan.

The primary goal in any collision will be to support public and worker health and safety. Potential ignition sources will be removed in the event of a spill of flammable or combustible materials if possible, and the spill will be stopped or slowed using available equipment. Appropriate corporate and external personnel will be notified in accordance with site procedures and applicable regulatory reporting requirements, including those established under Ontario Regulation 224/07 and other relevant legislation, and an assessment will be conducted to determine the best means to prevent immediate environmental effects. Spill countermeasures may include the use of absorbent materials, establishment of a collection trench and setting containment booms on ponded water. Contained materials will be disposed of in an approved facility.

The affected environment will be rehabilitated as needed. Clean-up and remediation will support restoration of the affected area. After any major spill or accident, a review will be conducted to confirm that the required design changes, procedures and appropriate monitoring measures are in place so that the incident will not be repeated.

13.14.3 Potential Effects

Despite the implementation of reasonable safeguards, accidents involving Project-related vehicles could occur due to collisions, mechanical failures, poor weather conditions, wildlife interactions, or other unforeseen circumstances. Such incidents could result in localized releases of transported materials, which could affect environmental media in the immediate vicinity of the incident depending on the nature and scale of the release. The magnitude and extent of the effects would depend on the type and quantity of material released, the location of the incident, environmental conditions, and the effectiveness of response measures.

Spills of non-hazardous materials would be expected to result in localized and temporary effects that could be readily addressed through cleanup and rehabilitation measures. Spills of hazardous materials, including fuels, process reagents, or other dangerous goods, could result in localized reductions in soil, surface water, or groundwater quality prior to implementation of containment and recovery measures.

A credible worst-case transportation-related scenario would involve the release of diesel fuel or other vehicle fluids from a collision or mechanical failure, resulting in localized and temporary effects on nearby environmental media. A less likely but potentially higher-consequence scenario would involve a vehicle accident near a watercourse resulting in damage to a hazardous materials container. Sodium cyanide would be transported as solid briquettes in sealed ISO tank containers designed for dangerous goods transport; therefore, a release would require a severe incident involving failure of multiple containment barriers. Should a transportation-related release of either material occur, localized and short-term effects on water quality and aquatic resources could occur prior to implementation of emergency response, containment, and remediation measures. Where an incident occurs along Beaverhouse Road or near a watercourse crossing, response measures would prioritize public and worker safety, containment before mobilization to surface water, notification consistent with applicable regulatory requirements, and environmental monitoring where there is a pathway to fish or fish habitat. Given transportation regulations, driver training, vehicle maintenance requirements, and engineered containment systems, the likelihood of such a release is considered low.

Depending on the location and severity of an incident, temporary disruptions to transportation access and localized land use activities could occur until response and cleanup activities are completed.

Following a spill, containment, recovery, remediation, and environmental monitoring measures would be implemented to restore affected areas and verify the effectiveness of corrective actions. Given the extensive transportation safeguards, emergency response planning, regulatory requirements, and anticipated effectiveness of mitigation measures, residual adverse effects are expected to be localized, temporary, and low in magnitude. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.15 Chemical Release from Containment or Dispensing Facilities (C, O, Cl)

The bulk of the liquid fuel used at the Project is anticipated to be diesel needed for the heavy equipment fleet. A fuelling station will be established at the service and administration complex outside the blast radius of the open pit, but readily accessible by heavy equipment, particularly haul trucks. Storage tanks will be sized for ongoing operational needs and to allow for transport disruptions (currently anticipated as five days total storage).

Lower volumes of gasoline are also anticipated and are expected to be stored in a double-walled Enviro tank or equivalent at the Project for use by small vehicles, all-terrain vehicles, snowmobiles, boats and gas-powered tools. Propane will also be stored onsite properly designed containers, stored in cages or protected from collision.

Reagents that will be used in ore processing and for water treatment at the site are typical of Ontario gold mines. Process reagents will be stored according to supplier and safety guidance, including in separated and contained areas as applicable, either within buildings or in designated exterior yards.

13.15.1 Design and Operational Safeguards

Chemicals will be transported, stored and handled in accordance with applicable regulations and good management practice. Tanks will be protected against possible vehicular collisions as appropriate and secondary containment will be provided as applicable. Care will be taken that incompatible materials are not stored in proximity within the warehouse or other areas. Chemicals will not be stored near watercourses and waterbodies, and high-traffic areas. Where storage near vehicle movement cannot be avoided, bollards or other protection will be provided to prevent collision and potential spills.

Chemicals including fuel and liquid and solid reagents which pose a potential risk to the environment will be stored, and as practical, used within contained areas, with sealed floors and sumps or drains reporting to facilities which will provide for retrieval of the spilled materials. Secondary containment will be provided at storage and dispensing areas.

Reagent mixing systems will be stored in the process plant within containment areas, designed to contain any upsets and prevent incompatible reagents from mixing. Storage tanks will be equipped with level indicators, instrumentation and alarms. Chemicals will be handled and stored according to applicable regulatory requirements.

13.15.2 Contingency Planning and Mitigation

Copies of the safety data sheets used on the Project site will be maintained in accessible locations, to comply with health and safety best practices in the industry, and to provide relevant regulatory standards for the safe use of these materials. Measures related to chemicals used at the Project will be periodically reviewed and updated, as appropriate, to reflect regulatory requirements, operational experience, and industry best practices and will form part of the health and safety training of site personnel.

Proposed operational procedures to minimize the potential of accidents or malfunctions will be incorporated into the environmental management system. Spill prevention and response procedures and plans will be developed, implemented, and updated as required for the chemicals present on the Project site.

Tanks will allow for expansion due to temperature changes. Chemical storage facilities will be monitored using appropriate inspection, measurement, and inventory management practices designed to support the identification of potential leaks or other operational issues. Measurements different from anticipated volumes will immediately be investigated to support identification of low-level leaks. Operational controls may include, but are not limited to:

- Restrictions on ignition sources in designated chemical storage and dispensing facilities
- Routine inspections and monitoring of chemical storage, transfer and dispensing facilities
- Periodic formal inspections using site-specific procedures or checklists
- Review and update of procedures through the environmental management system and health and safety management processes
- Training of personnel involved in the handling, storage, and transfer of chemicals.

Appropriate spill kits containing spill response equipment and absorbent materials will be stored on site at strategic locations across the Project. If a chemical is released to the environment, the spill prevention and response plan will be employed, with an initial primary focus on ensuring human health and safety. Response actions will be implemented based on the nature and magnitude of the release and may include securing the area, eliminating potential hazards, containing and recovering released material, deploying absorbent or containment materials, notifying appropriate personnel and regulatory agencies, and managing recovered materials in accordance with applicable regulatory requirements.

13.15.3 Potential Effects

A breach of a chemical storage, transfer, mixing, or dispensing facility could result in the release of fuels, reagents, or water treatment chemicals to the surrounding environment if containment systems fail or are exceeded. Potential effects would vary by material type, with fuels primarily affecting soil and water through hydrocarbon contamination, soluble reagents affecting water quality if released beyond containment, and process-related chemicals requiring material-specific response measures based on safety data sheets and spill response procedures. Depending on the type and quantity of material released, localized effects on soil, groundwater, surface water, contact water management facilities, or aquatic resources could occur.

Chemicals will be stored within engineered containment systems equipped with secondary containment, monitoring systems, and spill response measures designed to limit the extent of any release. Should a spill occur, containment, recovery, remediation, and environmental monitoring measures would be implemented, and affected operations may be temporarily interrupted until corrective actions are completed.

Given the multiple layers of containment, operational controls, inspection and monitoring programs, and spill prevention and response procedures that will be implemented, residual adverse effects are expected to be localized, temporary, and low in magnitude. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.16 Project Related Fires (C, O, Cl)

Fires can result from either natural causes (e.g., lightning) or anthropogenic causes (e.g., operator error, equipment malfunctions or accidents). Natural fires (wildfires) are considered in Section 14.4.

13.16.1 Design and Operational Safeguards

The Project is being designed to meet applicable fire protection system requirements and codes. This includes the presence of sufficient water supplies, fire detection and suppression systems, sprinkler systems, fire extinguishers and other firefighting equipment. Remote buildings will be equipped with portable extinguishers as required. A fire pumper truck will be present at the Project and equipped with a foam generation system for use as required.

Appropriate buffer areas have been established around facilities to prevent the spread of any fires, recognizing the overall intent to maintain a compact footprint to minimize environmental disturbance.

13.16.2 Contingency Planning and Mitigation

Regular fire drills will occur to confirm that workers are familiar with fire response procedures, as dictated within the environmental management system. Workers and visitors at the Project will receive an orientation which includes fire reporting and response procedures.

Emergency response measures will also be in place for a timely and effective response to fires.

Where practicable, fire response would include measures to contain firefighting runoff and prevent mobilization of combustion by-products, fuels or chemicals to the contact water management system or receiving environment. Post-fire inspection would be completed for affected fuel, chemical, pipeline and water management infrastructure before returning affected facilities to service.

13.16.3 Potential Effects

Fires present a hazard to health and property, with the extent of concern dependent on the location of the fire, nearby facilities and its severity. Environmental effects could include localized reductions in air quality from smoke and combustion emissions, disturbance or loss of vegetation and wildlife habitat, and temporary displacement of wildlife. Depending on the location and severity of the incident, combustion by-products, damaged fuel or chemical storage systems, or fire fighting runoff could result in localized effects on soil, contact water management facilities, surface water, fish, or fish habitat.

Priorities for fire response will be to protect human health and to keep the fire from spreading. Fire protection systems, emergency response procedures, and facility separation distances would limit the extent of such effects and reduce the potential for secondary accidents or malfunctions. A trained Project fire response crew will provide the initial fire fighting response, with assistance from local municipal fire fighting services potentially being requested.

Following a fire, affected areas would be repaired as necessary and any affected materials requiring remediation would be managed through appropriate remediation measures. Given the fire prevention and suppression systems incorporated into Project design, trained emergency response personnel, and established emergency response procedures, residual adverse effects are expected to be localized, temporary, and low in magnitude. Therefore, significant adverse environmental, health, social, economic, or Indigenous rights and interests effects are not anticipated.

13.17 Risk Assessment

Each credible malfunction and accident discussed above was assessed according to the likelihood of occurrence and consequence of occurrence. The credible malfunctions and accidents were given a ranking of their likelihood and consequence of occurrence of failure, with the ranking referring to a row or column to identify a cell within the risk matrix as shown in Table 13-1. As shown in the risk matrix, increased risk is associated with malfunctions and accidents having a greater likelihood of occurrence and increased level of consequence.

To be intuitive to the reader, a qualitative approach has been applied to the risk assessment. The likelihood of occurrence has been defined as:

- Rare: not expected to occur over the life of the mine (less than 1/10,000 events per year)
- Unlikely: limited potential to occur over the life of the mine (1/1,000 to 1/10,000 events per year)
- Possible: may occur over the life of the mine (1/100 to 1/1,000 events per year)
- Likely: expected to occur over the life of the mine (1/10 to 1/100 events per year)
- Almost certain: almost certain to occur over the life of the mine (1 to 1/10 events per year).

The consequences of the occurrence are important from the environment, social, health, economic and effects on Indigenous Peoples perspective. Due to the differing nature of these effects and the variability in sensitivity across these perspectives, consequence types are not directly comparable using a single conventional ranking system. To enable a consistent evaluation across these perspectives, consequence severity is characterized using a unified framework based on three common attributes: duration, spatial extent, and ease of remediation (including associated effort or cost). These attributes provide a consistent basis for assessing the overall magnitude of effects, regardless of the perspective.

Using this approach, a standardized consequence scale was developed to represent the relative severity of potential effects across environmental, social, economic, and Indigenous perspectives. The resulting consequence ranking was defined as:

- Insignificant:
  - Scale: localized effect (within the PA)
  - Effects and recovery: negligible to minimal environmental effects, as may be observed within the natural variation of the surrounding PA and anticipated recovery within weeks
  - Remediation: very low remediation costs in the $10,000s range
- Minor:
  - Scale: localized effect (within the PA)
  - Effects and recovery: short-term environmental effects with anticipated recovery less than two years
  - Remediation: low remediation costs in the $100,000s range
- Moderate:
  - Scale: PA and immediate vicinity
  - Effects and recovery: medium-term environmental effects with anticipated recovery within the life of the Project between 2 to 18 years
  - Remediation: moderate remediation costs in the $1,000,000s range
- High:
  - Scale: regional and recoverable
  - Effects and recovery: long-term environmental effects with anticipated recovery greater than the life of the Project (i.e., greater than 18 years)
  - Remediation: high remediation costs in the $10,000,000s range
- Catastrophic:
  - Scale: regional and unrecoverable
  - Effects and recovery: unlikely to be completely remediated with very long-term environmental effects anticipated to be more than the life of the Project (i.e., greater than 18 years)

- Remediation: very high remediation costs in the $100,000,000s range.

Where a range of risk ratings could be variable, a conservative approach whereby the highest risk ranking associated with the credible occurrence was used. Residual effects describe the predicted consequences after mitigation. Residual risk combines the likelihood of the accident or malfunction with the consequence of the residual effect. Therefore, an event may have a moderate consequence but a very low residual risk where the likelihood is rare.

A summary of the residual ranking is presented in Table 13-2 and the results of the risk assessment are provided in Table 13-3. The results of the risk assessment indicate that due to the Project design and response measures, the residual risk of a malfunction or accident was generally found to be very low or low.

Table 13-1: Malfunctions and Accidents Risk Matrix

Index		Likelihood				
		Rare	**Unlikely**	**Possible**	**Likely**	**Almost Certain**
Consequences	**Catastrophic**	Low	Moderate	High	Extreme	Extreme
	High	Low	Moderate	Moderate	High	Extreme
	Moderate	Very Low	Low	Moderate	High	High
	Minor	Very Low	Low	Low	Moderate	Moderate
	Insignificant	Very Low	Very Low	Low	Low	Low

Table 13-2: Residual Risk Ranking

Legend	Description
Very Low	Risks are considered negligible (i.e., effect would be within the natural variation of the environment and economics) and can be effectively managed through application of engineering standards and standard mitigation (e.g., best practices and management activities).
Low	Risks are low and considered acceptable (e.g., below thresholds and guidelines). Risk can be effectively managed through application of engineering standard and standard mitigation (e.g., best practices and management activities).
Moderate	Risks may be acceptable depending on the circumstances / nature of the risks. Additional appropriate risk mitigation may need to be implemented to reduce the risk.
High	Risks are high and likely unacceptable. Appropriate risk mitigation will be implemented to reduce the risk.
Extreme	Risk to the environment is imminent and unacceptable. Mitigation needs to be applied, and a long-term risk reduction plan developed and implemented.

Table 13-3: Assessment of Risks from Credible Accidents and Malfunctions

Malfunction / Accident	Primary Issue of Concern and Planned Mitigation Measures	Project Phase	Risk Ranking		
			Likelihood	Consequence	Ranking
Open pit slope failure	An uncontrolled release of rock and/or overburden to the open pit floor resulting in an increase in the open pit footprint. Design and operational safeguards will include engineering design to support safe slope and stability of the open pit and geotechnical monitoring of the pit walls.	Construction and Operations	Rare	Moderate	Very Low
TSF slope failure	Failure of the TSF slope could result in the localized release of filtered tailings and mine rock, to the surrounding environment with potential effects on terrestrial habitat, fish habitat, aquatic life, and nearby waterbodies, including Beaverhouse Lake, if not effectively contained. However, the dry-stack filtered tailings design and low moisture content of the stored tailings are expected to limit the mobility and extent of any released material to primarily within the TSF footprint. Design and operational safeguards will include best practice engineering designs, compliance with regulatory requirements and geotechnical monitoring to maintain TSF stability.	Operations and Closure	Rare	Moderate	Very Low
Misema River diversion system	Loss of hydraulic containment at the upstream dyke could result in rapid inflow from Ava Lake and hydraulically connected portions of the Misema River system into the open pit area, with localized erosion, sediment mobilization, temporary changes in water levels and short-term effects on aquatic habitat. Lake bed disruption and mixing of the degraded water quality within the Misema River could have an effect on the aquatic life and habitat. Operational safeguards will be in place to mitigate the risk of a dyke failure and will include the following: best practices for dam designs, compliance with regulatory requirements and geotechnical monitoring. Diversion channels will be maintained to convey flows as designed and to prevent erosion, blockages, or overtopping. Geotechnical and dyke safety inspections will be completed annually to confirm the dykes are maintained in a safe condition.	Construction, Operations and Closure	Unlikely	Moderate	Low

Malfunction / Accident	Primary Issue of Concern and Planned Mitigation Measures	Project Phase	Risk Ranking		
			Likelihood	Consequence	Ranking
Integrated Water Management (Pond failure)	Failure of a contact water pond dam or berm may result in flooding, localized erosion and the potential release of contact water that could affect the surrounding terrestrial environment, as well as pose a risk to worker safety in the area. Retention Pond 1, which provides contingency storage for cyanide upset events, will be designed and operated with dedicated containment and monitoring measures to minimize the potential for release of cyanide-affected water. Design and operational safeguards will include best management practices and the implementation of monitoring programs to identify potential stability or overtopping risks.	Construction and Operations	Rare	Moderate	Very Low
Integrated Water Management (Ditch and diversion feature failure)	Failure of a channel or ditch resulting in flooding, localized erosion and the potential release of sediments or contact water that could affect the surrounding terrestrial and aquatic environments. Project ditches and ponds will be designed for best management practices.	Construction, Operations and Closure	Rare	Minor	Very Low
Integrated Water Management (Pipeline failure)	In the event of a leak / rupture of the paste backfill tailings pipeline, the release of tailings is anticipated to be small as the pipeline will be equipped with automatic shutdown in the event of a pipeline failure and alarm systems and the spill is anticipated to remain within the mine site area. Design and operational safeguards will include best management practices, automatic shutoff, secondary containment and visual inspections.	Construction, Operations and Closure	Unlikely	Insignificant	Very Low
Ore stockpile slope failure	Failure of the ore stockpile is anticipated to be small and include sloughing and / or slumping. Effects are anticipated to be limited to the PA. Design and operational safeguards for the ore stockpile will include best practices, engineering designs and monitoring.	Construction and Operations	Rare	Insignificant	Very Low

Malfunction / Accident	Primary Issue of Concern and Planned Mitigation Measures	Project Phase	Risk Ranking		
			Likelihood	Consequence	Ranking
Overburden stockpile slope failure	Uncontrolled erosion from the overburden stockpile may release additional soils to the perimeter ditches or minor sloughing of side slopes. Effects are anticipated to be limited to the PA. Design and operational safeguards for the overburden stockpile will include best practices, engineering design and monitoring.	Construction and Operations	Unlikely	Insignificant	Very Low
Explosives accident	Inadvertent detonation of explosives could result in injury to personnel, damage to equipment or infrastructure, operational disruption, and localized noise, vibration, dust, flyrock, and blast gas effects. The storage, handling, transportation and use of explosives will be supported by an independent contractor that is well versed in the Canadian explosives regulatory framework. Project staff will be appropriately trained prior to working with explosives. Access controls, blast management procedures, and emergency response measures will be implemented to minimize the likelihood and consequences of an unplanned event.	Construction and Operations	Rare	Minor	Very Low
Vehicular accident (hazardous or non-hazardous materials release)	A vehicular accident involving transportation of fuel or chemicals that report to a waterbody resulting in effects to the environment. Shipments to the Project will be compliant with regulatory requirements and training, vehicles will be maintained regularly, speed limits will be posted on site and adhered to and vehicles transporting materials will carry appropriate safety data sheets and basic emergency response equipment.	Construction, Operations and Closure	Rare	Minor	Very Low
Chemical release from containment or dispensing facility	If a breach of the containment and/or dispensing goes undetected by the monitoring system or dual storage facility, surrounding soils could be affected. Chemicals will be transported, stored and handled in accordance with regulatory requirements. Best management practices will include using chemicals in contained areas and secondary containment systems	Construction, Operations and Closure	Rare	Moderate	Very Low
Project-related fires	A major fire at the Project could result in serious health safety risk, damage of property, and operating interruptions. To mitigate the risk of Project fires, facilities will be designed to meet the applicable fire protection system requirements.	Construction, Operations and Closure	Unlikely	Insignificant	Very Low

13.18 Emergency Planning

Emergency planning was described for each credible accident and malfunction considered. Agnico Eagle has developed an emergency response plan for current site activities associated with advanced exploration activities, and will update it prior to Project construction to address accidents and malfunctions.

The emergency response plan will provide a reference for Project staff to support their actions and responses to a Project emergency.

The emergency response plan includes:

- Identification of emergency planning procedures and documentation requirements to facilitate rapid responses in the event of an emergency including:
  - Identification of emergency zones and evacuation measures and areas
  - Spill response plan
  - Emergency details for shelter in place and evacuation
  - Routes for evacuation
  - Waste management plan and potential accidents and malfunction related to waste management
- Outline of clear actions and responsibilities for Project staff, this may include potential training requirements
- Communication of plans and contact numbers for Project staff, corporate staff regulatory contacts, local Indigenous Nations and communities, as may be required for each type of accident and malfunction. This will include immediate urgent contact list and will incorporate:
  - Document modes of communication (e.g., phone, website)
  - Document longer-term communication plans
- Documentation of any staff training required to support the emergency response plan
- Identification of potential remediation efforts, contingency measures, materials and equipment that may be used to support an emergency response
- Identification of reporting requirements in alignment with corporate policies and regulatory requirements, as required.

13.19 References

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