

# SUMMARY AUDIT REPORT

for the June 2018  
International Cyanide Management Code Recertification Audit



**Prepared for:**

Agnico Eagle Mines Limited  
Meadowbank Mine

**Submitted to:**

International Cyanide Management Institute  
1400 "I" Street NW, Suite 550  
Washington, D.C. 20005

**FINAL**

4 January 2019



**Ramboll Canada Inc.**

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## SUMMARY AUDIT REPORT

**Name of Mine:** Meadowbank Mine

**Name of Mine Owner:** Agnico Eagle Mines Limited

**Name of Mine Operator:** Agnico Eagle Mines Limited

**Name of Responsible Manager:** Luc Chouinard, General Mine Manager

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### **Location detail and description of operation:**

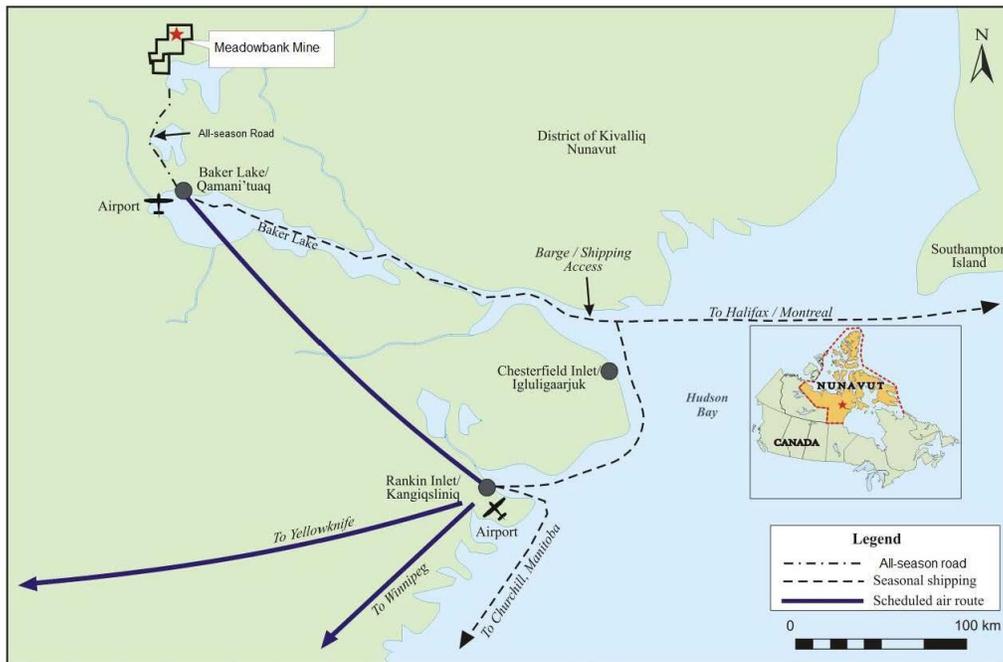
The Meadowbank mine is located in the Kivalliq region of Nunavut, about 300 km west of Hudson Bay and 110 km by road north of Baker Lake, the nearest community. Agnico-Eagle Mining Limited, Meadowbank (AEM) conducts surface mining from a series of three pits all within 7 km of the processing plant. Mine commissioning and first gold production began in early 2010 and life of mine was projected to extend into 2019. Meadowbank produced 352,500 ounces of gold in 2017 and is forecast to produce 220,000 ounces gold in 2018. With the expected start of operations of the Amaruq mine in third quarter 2019 the life of the Meadowbank operation is predicted to extend for another seven years.

The 11,000 t/day gold processing plant at Meadowbank uses conventional technology adjusted to the Arctic climate. Ore is crushed and milled to 80% passing 60µm to 80µm. The ball mill operates in a closed circuit with cyclones. About 30% of the cyclone underflow reports via a gravity concentrator to an intensive cyanidation unit (ICU) in which the gravity recovered gold is intensively leached in a concentrated cyanide solution. Gold in pregnant solution from this process is recovered by electrowinning and smelted into doré bars. The cyclone overflow is thickened prior to flowing into a pre-aeration and leaching circuit consisting of three pre-aeration tanks and six cyanide leach tanks. The leached slurry is directed to a carbon-in-pulp circuit of seven tanks in series. The recovered gold in solution is stripped by electrowinning, followed by smelting and the production of doré bars.

The carbon-in-pulp (CIP) tailings are thickened to recover cyanide from the process solution, and then treated using the standard SO<sub>2</sub>/air process or sodium metabisulphite to destroy

residual cyanide. The tailings are pumped to the permanent tailings storage facility (TSF), which is designed for zero discharge. The water is reclaimed for re-use in the mill. The TSF consists of a North Cell and a South Cell. Tailings were deposited in the North Cell until late 2014 when construction of the Stage 3 of the Central Dike was completed. Deposition then switched to the South Cell. The Central Dike and Saddle Dams 3, 4 and 5 that make up the containment dams for the South Cell were raised in three stages between 2015 and 2017 to their current elevation of 145 m (metres above sea level). These structures are designed to be raised to a maximum elevation of 150 m.

**Figure 1: Location of Meadowbank Mine, Nunavut Territory, Canada**



The general site area consists of low, rolling hills with numerous lakes. The topography in the immediate vicinity is generally flat, with relief on the order of 10 m to 12 m near the main deposit areas, and as high as 60 m locally. Elevations vary from about 133 m along the lake shorelines to about 200 m. The mine location is in the tundra region of the central sub-Arctic and is considered to have an arid arctic climate with temperatures generally ranging from +5°C to -40°C in the winter (from October to May) and from -5°C to +25°C in the summer (from June to September). The area is sparsely populated with the Hamlet of Baker Lake located approximately 70 km from the mine, and with a population of about 1,100, being the nearest community. AEM depends on the annual, warm-weather sealift from the Port of Bécancour, in Montreal, Quebec for transportation of bulk supplies and heavy equipment. The shipping route is by Ocean vessel to Chesterfield Inlet and the tug barge to Baker Lake. An all-weather road links Baker Lake to the mine site. An on-site airstrip is used for shipping food and goods and for transporting employees, who work on a fly-in, fly-out basis.

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## *Auditors' Finding*

**The operation is:**

- in full compliance
- in substantial compliance
- not in compliance

with the *International Cyanide Management Code*.

The Meadowbank Mine has not experienced any ICMC compliance issues during the previous three-year audit cycle.

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John Lambert  
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**Date(s) of Audit:** 21 June to 28 June 2018

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the *International Cyanide Management Institute* for Code Verification Auditors. I attest that this Summary Audit Report (SAR) accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the latest version of the *International Cyanide Management Code Verification Protocol for Gold Mine Operations* and using standard and accepted practices for health, safety and environmental audits.

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## **1. PRODUCTION Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.**

### ***Standard of Practice***

#### **1.1 Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 1.1

*Summarize the basis for this Finding/Deficiencies Identified:*

AEM purchases cyanide only from the Chemours Canada Company FC LLC. (Chemours) as set out in the First Amendment to Sales Agreement (Supply Contract between AEM and E.I DuPont Canada Company (DuPont), dated 1 January 2014). Amendment primarily transfers the name of the supplier from DuPont to Chemours, modifies cyanide demand and pricing and extends the term of the contact to December 2018. All other terms and conditions in the original contract remain in place.

Chemours manufactures cyanide at its production plant located in Memphis, Tennessee. Based on information posted on the International Cyanide Management Institute website, this operation is certified to the Code and was last recertified on 16 September 2016.

## **2. TRANSPORTATION Protect communities and the environment during cyanide transport.**

### ***Standards of Practice***

#### **2.1 Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 2.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

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Chemours is responsible for transport and delivery of the cyanide from their production plant in Memphis to the Port of Bécancour. This transportation route is certified to the Code and was last recertified under the *Chemours Canada Cyanide Supply Chain Transportation Recertification Audit*, dated 30 June 2017, and posted on the ICMI web site 11 August 2016.

The Cyanide Supply Contract states that Chemours releases title on delivery of the cyanide at the Port of Bécancour. Chemours supplies cyanide as solid briquettes packed bag-in-box in one-ton plywood Intermodal Bulk Containers (IBC) loaded into sealed shipping containers (C-Cans), 18 boxes per container. Chemours is responsible for ensuring that the packaging and labeling meets all shipping requirements.

AEM takes possession of the cyanide and manages the transport of the Agnico-Eagle Meadow Bank Supply Chain (AEMSC) to the Mine site and continues to use the following contracting services:

- Stevedoring services at the Port of Bécancour is contracted to Terminaux Portuaires du Quebec (TPQ)
- The marine shipping portion of the route between the Port of Bécancour, Quebec, and Baker Lake, Nunavut is contracted to Nunavut Sealink & Supply Inc. /Désagagnes Transarctik Inc. (NSSI/DTI).
- The road transport between Baker Lake and Meadowbank Mine is contracted to Arctic Fuel Services (AFS).

The AEMSC supply chain was certified to the ICMC on 25 May 2015. The AEMSC supply chain recertification audit was ongoing at the same time as this mine recertification audit.

NSSI/DTI is responsible for selecting the marine route based on weather and other potential hazards and for abiding by the requirements pertaining to the Nunavut Impact Review Board (NIRB) conditions of shipping along the inlet between Chesterfield Inlet and Baker Lake. Route selection between Baker Lake and the Mine is limited to a 110 km long All Weather Access Road (AWAR).

AEM uses TPQ for stevedoring services, including unloading trucks, vessel loading, and any interim storage needs at the Port of Bécancour. NSSI/DTI is responsible for lightering cargo between the ship and tug barge near the mouth of Chesterfield Inlet and for unloading cargo from the tug barge at the Baker Lake Marshalling Yard. AFS is responsible for loading of trucks and transport of goods between Baker Lake and the Mine. Unloading at the mine is undertaken by AEM staff using AEM equipment.

The NSSI/DTI and AFS contracts stipulate that carriers will comply with all applicable laws, regulations and standards and that systems are in place for ensuring health, safety security and the environment, and equipment is maintained and have an emergency response plan. The AFS contract also includes requirements for complying with AEM's procedures on general mine safety, and for use of the use of the AWAR between Baker Lake and the mine. Where

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the contracts permit use of subcontractors the designated responsibilities extending to any subcontractors is clearly addressed.

**2.2 Require that cyanide transporters implement appropriate emergency response plans and capabilities, and employ adequate measures for cyanide management.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 2.2.

*Summarize the basis for this Finding/Deficiencies Identified*

The transportation of cyanide between the Chemours production plant and the mine site is undertaken within two ICMC certified supply chains; the Chemours supply route between the Memphis plant and the Port of Bécancour which is certified within the Chemours *Canada Cyanide Supply Chain*, and the AEMSC supply chain between the Port of Bécancour and the mine site. The cyanide Supply Contract requires that Chemours only engage Code certified distributors and contract transporters. Cyanide is transported in intermodal shipping containers by Groupe Roberts, a trucking company certified within the Canada Cyanide Supply Chain. AEM takes possession of the cyanide when it is unloaded at the Port of Bécancour. The AEMSC supply chain contracts TPQ for stevedoring services, NSSI/DSI for the marine shipping, and AFS for road transport.

The Supply Contract stipulates that the cyanide will be packaged and shipped in compliance with applicable international and country specific regulations and Code requirements. The NSSI/DTI contract stipulates that the carrier will comply with all applicable laws, regulations and standards. They are responsible for emergency response while the cyanide is in their possession. AEM is responsible for transport and emergency response between Baker Lake and the mine site.

Chemours provides TPQ with a manifest for the cyanide transport to the Port of Bécancour. The manifest includes the C-Can container number, Chemours seal number, Purchase Order number, and weight of the C-Can. TPQ generates an Inventory of Dangerous Cargo which includes the NSSI/DTI vessel name and the details presented on the Chemours Manifest. In addition, TPQ provides a Bar Code reference for each container which is used by AEM to track containers between the Port of Bécancour and the Mine site. TPQ prepares the International Marine Organization's (IMO) Dangerous Goods (DG) dangerous cargo documentation for the marine shipment.

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**3. HANDLING AND STORAGE Protect workers and the environment during cyanide handling and storage.**

***Standards of Practice***

**3.1 Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices and quality control and quality assurance procedures, spill prevention and spill containment measures.**

The operation is:   ■ in full compliance  
                          in substantial compliance  
                          not in compliance...with Standard of Practice 3.1.

***Discuss the basis for this Finding/Deficiencies Identified:***

The cyanide mixing/storage facility consists of a mixing tank and storage tank situated within a concrete containment. After deficiencies in capacity and integrity of the mixing tank and holding tank containment basins were identified during the 2014 ICMC verification audit, AEM made repairs and modifications to the containment basins. Verification reports were prepared, signed and stamped by Registered Professional Engineers on completion of the repairs and modifications stating that the structures meet the 110% capacity requirements of the ICMC and are fit to continue operating safely with cyanide, as per cyanide code criteria of the ICMC. The containments have been retained in good condition.

Cyanide is delivered as solid briquettes packed in one tonne IBC plywood boxes in sealed C-Cans; 18 boxes per container. The C-Cans are stored in a dedicated area for the warehouse compound referred to as the "Overpad" that is located several hundred metres south of workshops, camp areas, offices and other locations where people congregate. The access road to the storage area is gated and signs are posted to restrict access and personnel are prohibited entry to the pad without authorization. The C-Cans are stored door to door to prevent unauthorized entry to the containers.

The nearest surface water body is Third Portage Lake, located approximately 300 m south. The potential for impacting the lake is considered low as the cyanide is stored in sealed containers that are located on a raised permeable pad that is designed to prevent puddling and surface run-off. The storage area is also bounded by an earth berm and underlain by permafrost that would inhibit the potential for migration of potentially impacted water.

The cyanide mixing and storage tanks are fitted with high level alarms that activate in the control room; and a strobe alarm light in the mix plant to alert operators directly in the event of a potential overflow. The strobe and high-level alarms are on a 6-month preventative maintenance schedule. The tank levels can be monitored in the control room and procedures also require close communication between the control room and mix operator during a mix.

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A loaded cyanide C-Can is moved to the mill as cyanide is needed for the process. After opening the doors, the C-Can is allowed to ventilate for 15 to 30 minutes to dissipate any hydrogen cyanide gas prior to emptying.

The unloaded IBC boxes are stacked on dedicated metal shelving inside the mill next to the mixing/storage plant; separate from incompatible materials. The racks are located close to the mill door in an area of good ventilation and are rated to carry to load. There is also an extraction fan that is run during mixing operations to prevent the build-up of hydrogen cyanide gas. There is an hydrogen cyanide (HCN) detector located in this area of the mill.

**3.2 Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 3.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

Procedure requires the bags to be triple-rinsed using an automatic spray device in the interior of the mixing hopper, prior to disposal. The rinse water is entirely contained and drains into the mixing tank. The waste packaging, empty plywood boxes, strapping and used coveralls are burnt in a dedicated area on the westside of the Tailings North Cell. The burn pad is signed with "authorized persons only", "cyanide warning" and instruction for personal protective equipment (PPE), hygiene and cyanide first aid. The plywood boxes are not permitted to be used for other purposes and are not returned to the vendor.

A mixing procedure has been developed to prevent exposures and releases during cyanide unloading and mixing activities. The mixing procedure details required PPE, and the steps to be performed during the procedure including pre-inspection; potential risks associated with the procedure; and photographs illustrating the various tasks. The IBC boxes are stored on wooden pallets allowing them to be moved by forklift between the shelving and mix plant with minimum potential for rupture or puncture. The procedure specifies the use of leather gloves during removal of the plywood box covers; use of a chemical and water proof suit and use of a full-face respirator. Rhodamine dye is added during each batch mixed to allow the mill operators to detect cyanide leaks more easily. Signage beside the mix plant requires new respirator cartridges be donned for each mix. After a mix, the operators wash down the plant to remove possible residual dust. A video camera placed near the mix area allows the control room to remotely monitor a mix. The mix operators are in contact with the control room via radio.

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**4. OPERATIONS Manage cyanide process solutions and waste streams to protect human health and the environment.**

***Standards of Practice***

**4.1 Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

The active cyanide facilities at the AEM operation include the cyanide storage area; grind circuit; intensive cyanidation unit (ICU); reagent cyanide mix and storage tanks; 2 pre-aeration tanks; 7 leach tanks; 7 CIP tanks; pregnant and barren solutions tanks; cyanide recovery thickener; cyanide destruction circuit (2 tanks); tailings pump box; reclaim water tank; tailings storage facility (TSF); tailings delivery, distribution, and reclaim water pipelines; and associated pumps, piping and secondary containments.

The design and operation of the mine is regulated under the terms and conditions of the *Nunavut Water Board Type A Water Licence – No. 2AM-MEA1525, dated 23 July 2015 and Amendment No.1, dated 6 June 2016*. The Licence supercedes original Water Licence *No.2AM-MEA0815*. The Licence sets out requirements for construction and operation of mine site facilities, including the tailing storage facility (TSF), and for water and waste management, and effluent discharge quality. The Licence has requirements for implementation of operating plans, periodic recalibration of the water balance, provision of financial security and schedules for various required site monitoring and regulatory reporting.

AEM has written management and operating plans and procedures for the cyanide facilities. The operating plans and procedures developed and implemented by AEM cover safe operation and management of the facilities. The primary plans for design and operation of the facility include: Tailings Deposition Plan; Water Management Plan; Tailings Storage Facility Operation, Maintenance and Surveillance Manual (Tailings Manual); and control plans for operation of the mill. Over the three-year period since the last ICMC verification audit these plans and procedures have been modified as needed to account for changes in facilities and operation.

The Tailings Depositional Plan and TSF Manual provide design and operating criteria for operation of the TSF. The Water Management Plan design criteria and assumptions for water management and the water balance. The mill control plans provide criteria for airflow and oxygen concentrations in the pre-aeration tanks, pH and cyanide concentration limits through the leach circuit, and pH and reagent addition in the destruct plant to achieve less than 15

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mg/L weak acid dissociable (WAD) cyanide concentration in tailings discharged to the TSF, to ensure protection of wildlife and meet Licence requirements.

At the time of the 2014 initial ICMI verification audit the management of change process was informal and AEM was in the process of developing a documented procedure. This procedure was finalized late 2015 and managers and supervisors were trained in the procedure in late 2015, early 2016. The new procedure rolled out in March 2016 and has continued to evolve with the current procedure dated January 2018. In the last three years, two management of changes were completed, and several have been initiated and are in progress. The procedure requires all departments possibly affected by the change review and approve the change or at minimum be notified of the change. The Health, Safety and Security (HSS); Environment, and Community Affairs departments are always to be notified of the change, so they can provide input as needed.

Contingency plans are in place to address non-standard operating situations or emergencies. These include, action plans for responding to various levels of abnormal situations at the TSF including seepage, slope instability, internal erosion, cracking, settlement and sinks and overtopping; and control plans for addressing process upsets in the mill. There is also an action plan for temporary shutdown and long-term temporary cessation of operations.

Daily shift inspections are undertaken for each area of the plant and recorded on online "eReports". Work Cards are also completed daily by workers. The Work Card procedure requires a detailed work area inspection to be undertaken prior to performing a task. These inspections are supplemented by planned inspections by the Health and Safety department. The TSF Manual includes requirements for inspections of tailings facilities, monitoring of instrumentation, and monitoring of water levels.

Inspection records include the date of the inspection, name of the inspector and any observed deficiencies. The Work Card checklist includes the same information as well as the task to be completed, identified hazards, signature of the supervisor and time task was completed. Corrective actions required by inspections in the process plant typically result in a preventative maintenance (PM) work order, which documents the individual requesting the PM action, date requested, a discussion of the work required, and status. Work orders are entered into the JD Edwards PM system and record copies of specific actions can be generated as required. Inspection records are maintained online either on the "eReports" in the case of daily inspections or completed inspection forms in the case of health and safety area inspections.

Daily inspections are undertaken of active deposition areas of the TSF and tailings line, and monthly or bimonthly inspections are undertaken of non-deposition areas. Documented inspections are also undertaken after unusual events such as heavy rain, rapid snowmelt, anomalous instrumentation readings or significant seismic events. Annual integrity inspections of earthwork structures are also performed by an external geotechnical engineer. Instrumentation monitoring is undertaken to monitor stability and deformation of earthwork structures. Bathymetric surveys are also undertaken in July and September each year.

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Although tailings discharges are maintained well below 50 mg/L WAD cyanide, AEM maintains a wildlife mortality inspection and reporting program, which is a responsibility of all employees. No wildlife mortalities contributed to cyanide have been reported in the last three years.

During the audit house-keeping was generally observed to be good, no corrosion, leaks or salt buildup was evident, lock-outs were in place on critical valves, and containment areas were free of equipment, debris and slurry that could compromise containment capacity. These observations were generally indicative of an effective inspection and maintenance program. However; two exceptions were identified: a section of tailing pipeline between the mill and the pigging was buried under rock, debris and an earthen construction platform, and a culvert conveying the pipeline under a road was blocked; and the lower tank wall of the ICU pregnant tank was observed to be heavily corroded and appeared to be in poor condition. These occurrences probably resulted from unclear delegation of department responsibility.

Subsequent to the audit, corrective actions were completed to clear debris from around the tailings pipeline to reestablish visual monitoring of the pipeline for leakage, and to conduct non-destructive testing (NDT) to check the ICU pregnant tank wall thickness. The results of the testing showed the integrity of the tank was still good, so a work order was issued to sand-blast the corroded area of the tank wall and repaint the tank. In addition, a weekly tailing pipeline inspection program, and annual maintenance inspection program and three-year NDT program was established for the reagent cyanide, ICU pregnant tank, and pre-aeration tank #1 and CIP tank #1.

It is the auditor's professional opinion based on the general condition of the facilities observed during the audit and review of inspection records over the past three years that the operation has conducted operational inspections of the cyanide facilities on an established frequency sufficient to assure and document that they are functioning within design parameters. The two exceptions noted appeared to be an oversight that have now been corrected. Neither exception was identified to have led to the cyanide facilities not functioning as designed.

The Maintenance Department has a PM program for all critical equipment. Maintenance is planned through work orders and work orders are tracked using J.D Edwards software. Equipment is inspected and maintained based on hours of equipment usage. The program includes a prioritized system for corrective maintenance in which emergency and critical equipment is given highest priority. Confined space entry, hot work and decontamination procedures are in place and job hazard assessments are completed for all non-normal maintenance tasks.

Power at the mine site is supplied by six 3616 Caterpillar, and one C175 Caterpillar diesel generators that provide a total output of 29 Mega-Watt electric power. These generators are supplied by a 5.4 Mega-Litre capacity diesel tank farm and two 50,000 L day tanks. In normal operation, the power plant uses four generators. With six generators available (one generally on maintenance at any one time), the plant provides sufficient power and back-up that loss of power for critical equipment is not considered an issue. The sump pumps at the tailings

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facility are either operated by diesel generator or are on main power and are also provided with a backup diesel generator. The generators are on a preventative maintenance program as with all other equipment at the site.

**4.2 Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

Because of Meadowbank's remote location optimization of cyanide use is critical and addition rates are subject to continuous monitoring and adjustment. Ore is blended between the two pits currently in operation to normalize feed to the plant and thereby minimize the use of cyanide. When the ore composition changes, cyanide addition rates are modified to optimize gold recovery. Cyanide addition is controlled automatically using a Titrolyzer ADI 2016 cyanide controller. The application rates are monitored in the control room and adjusted manually as needed. Samples are collected manually every four hours from tanks TK-003, TK-004, TK-005; TK-006 and TK-009 for titration tests to check with the automatic analysis readings and to ensure that the cyanide concentrations are maintained within established set points. During the 2014, ICMC verification audit AEM indicated that the automatic cyanide controller installed in 2012 effectively reduced cyanide use from 0.6 kg/t to less than 0.5 kg/t, a saving of over 8%, while improving gold recovery.

The feed from CIP circuit passes through a tails thickener which separates water (overflow) from the tail slurry prior to the cyanide destruct plant. Cyanide addition is therefore minimized by recycling unused cyanide present in thickener overflow back into the process as reclaim water.

Over the past three years AEM has been looking at other opportunities to control cyanide addition. With the reduction in the percentage of reactive (magnetite/ pyrrhotite) ore from the Portage pit AEM has been investigating the opportunity to reduce the quantity of cyanide in the ICU batch leaching process. Bottle leach testing undertaken in 2016 indicated that cyanide addition could be reduced from 1,200 kg to 800 kg per batch without a significant increase in residual gold at the tails. As the percentage of reactive ore has decreased further because a higher percent of less reactive ore from the Vault pit is used in the blend, AEM has been able to reduce the quantity of cyanide down to between 650 and 550 kg per batch through 2017. In 2017 this has resulted in an estimated reduction of about 20 Tons of cyanide over the year.

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### 4.3 Implement a comprehensive water management program to protect against unintentional releases.

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.3.

*Summarize the basis for this Finding/Deficiencies Identified:*

The Meadowbank Mine is required, as a condition of the *Nunavut Water Board Type A Licence* to maintain and periodically (a minimum of every year as part of the Water Management Plan) update the water balance and water quality model. A probabilistic and modular water balance model that allows testing different scenarios by adjusting water flows, volumes and environmental site conditions was developed for the site in 2012 using Goldsim software. The water balance model determines the demand and storage requirements of water over the life of the mine including operation and management of the tailings management facility, pit flooding activities and post closure. It also computes runoff values for the different mine drainage areas and performs flow routing computations through the system.

The water balance model is updated monthly using data inputs of flow measurements, pond elevations, and precipitation records. The model considers the rate at which tailings are delivered; addition of fresh water pumped for use in the process; precipitation; the accumulation of snow and ice during the winter months and its release during the spring freshet which occurs in June; and run-on generated by precipitation within the capture area of the TSF. The assumptions on tailings dry density and ice/porewater entrapment ratio are adjusted based on bathymetric survey data. An annual evapotranspiration of 80 mm is used. The TSF is operated as a closed system with zero discharge. The dam and dike structures were designed to limit seepage and permafrost beneath the TSF limits infiltration. With exception of evaporation, which occurs during a few months in the summer water removal from the TSF is assumed to be limited to reclaim water pumped back to the mill.

The water balance model does not consider the effects of potential power outages or pump and other equipment failures. In the event of a power failure, the milling and process circuits cease, and water inputs stop. Pumping of tailings from the plant to the TSF also ceases; therefore, no additional tailings enter the TSF.

AEM performs comprehensive inspections of the TSF. In addition to routine daily inspections of active deposition areas and tailings line, detailed inspections of the TSF and perimeter containment structures and water control structures are undertaken at least monthly (biweekly in the summer months) and after unusual climate events or seismic. The TSF inspections cover (amongst other items), reclaim water elevation, tailing deposition, reclaim barge, reclaim road condition; reclaim water location, wildlife; beach levels. The perimeter containment structures and water control structures inspections cover structure integrity of downstream slopes, downstream berms, upstream berms, crest surfaces, dike/dam instrumentation for seepage; liner damage, snow and ice, instrumentation damage etc.

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The TSF is designed and operated to accommodate the runoff from a spring flood or freshet (corresponding to a June melt of a 1:100yr snowfall and rainfall accumulated over the basin from the period October to May) in excess of the maximum operating volume, while maintaining a 2m freeboard before the possibility of a spill to the receiving environment.

The initial water balance model was calibrated using 61 years of meteorological data collected at Baker Lake A station between 1946 and 2011. This station is located approximately 70 km from Meadowbank mine which is subject to a similar Arctic climate. In 2013 Meadowbank installed a weather station at the mine site close to the Main Gate that automatically records temperature, windspeed, and wind direction. There is also a rain gauge to monitor precipitation and snowfall. The data collected from this station is used to reconcile pond elevations against predicted elevations and to adjustment the water balance model as needed.

**4.4 Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.4.

*Summarize the basis for this Finding/Deficiencies Identified:*

There are no open water ponds, ditches or impoundments at Meadowbank in which WAD cyanide is greater than 50 mg/L. Tailings are thickened to recover cyanide from the process solution, and then treated using the standard SO<sub>2</sub>/air process or sodium metabisulfite to destroy residual cyanide prior to discharge to the TSF. The cyanide destruct plant is operated to obtain a WAD cyanide concentration of 15 mg/L in tailings discharge from the plant.

Except for infrequent excursions, tailings discharge concentrations have been maintained below 5 mg/L WAD cyanide. Daily discharge records between January 2016 and June 2018 show only seven occurrences when discharge concentrations exceeded 5 mg/L. The maximum reported concentration during one of these occurrences was 97 mg/L with the other upsets ranging between 40 mg/L and 58 mg/L. These upsets are quickly addressed. The causes of these spikes were reviewed and mainly resulted from an unpredicted ore composition change. Systems are in place including careful monitoring of ore quality, cyanide consumption in the leach circuit, and HCN exhaust from the destruct plant, to predict and adjust to changes in the destruct reaction process to prevent upsets. On the few occasions upsets occurred over the last three years they were immediately addressed and quickly brought under control. AEM is in the process of purchasing an automatic WAD analysis to further improve response in the operation of the cyanide destruct plant. Based on the data reviewed and the infrequency of the upset events, the auditor considers that discharges across the tailings beaches are adequately maintained below the 50 mg/L WAD cyanide limit for protection of wildlife.

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Although WAD Cyanide is maintained below 50 mg/L in the TSF and there are no other open surface water process ponds or ditches that contain cyanide solutions, AEM maintains a wildlife monitoring program. All employees are trained as part of general induction to monitor wildlife and report mortalities to security or environment. Wildlife sighting is also included as an item on the TSF inspection checklists. There have been no wildlife mortalities associated with cyanide reported since operations began.

**4.5 Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.5.

*Summarize the basis for this Finding/Deficiencies Identified:*

AEM's TSF is designed and operated to have zero discharge to the environment. AEM therefore does not directly discharge any cyanide process solutions to surface water. However, there have been a number of incidents where seepage has been observed and control measures were applied to prevent seepage impacting the environment.

A coloured seepage was observed in July 2013 on the northwest side of the Portage Waste Rock Storage Facility seeping through a road perimeter into Lake NP-2, a natural fish-bearing water body. The results of analysis on samples taken of the seep revealed detectable concentrations of cyanide which suggested that the seep could be originating from the supernatant tailings water. This was later proven to be the case. To avoid further impact to Lake NP-2 a till plug was constructed to prevent further seepage from discharging to NP-2. and a sump was installed to allow collection and pumping of seepage to the TSF. A surface water monitoring program was initiated to monitor for total, WAD and free cyanide. Analysis results show average WAD cyanide concentrations of 0.007 mg/L, 0.003 mg/L and 0.0528 mg/L, respectively for the years 2015, 2016 and 2017. Free and WAD cyanide concentrations were at or below detection levels of 0.005 mg/L in NP-1, NP-2 and Dogleg lakes. The results show that free cyanide has not exceeded the 0.022 mg/L discharge concentration to surface water over the last three years.

In 2013 seepage was observed coming through the road embankment in front of the Assay Laboratory. An assessment program conducted indicated that the seepage resulted from poor joint seals in the CIP tank secondary containment basin (primary source) as well as other containment structures. This containment system has since been repaired. Investigation and remedial work was conducted in 2014 to delineate the extent of soil and groundwater and construct an interceptor trench to prevent migration of the residual cyanide plume toward Third Portage Lake. Monthly sampling has been undertaken in the summer months when the seepage is not frozen. Samples are collected from Third Portage Lake and monitoring wells installed between the interceptor trench and Third Portage Lake. The results have shown that total cyanide and free cyanide concentrations have remained below 0.005 mg/L since 2014.

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Each year during the freshet AEM pumps intercepted seepage water back to the mill. The analysis results show that the interceptor trench has successfully prevented cyanide and other contaminants reaching Third Portage Lake.

In 2015, soon after deposition began in the South Cell seepage was noted at the downstream toe of the Central Dike. Investigations revealed that the seepage was occurring through voids in the rock foundation beneath the dam and did not impact the dam stability, and that the seepage source was from the South Cell reclaim pond. A permanent winterized pumping system was installed in November 2015 to manage and track water volumes. The seepage, which has been stable between 400 m<sup>3</sup>/h and 600 m<sup>3</sup>/h, is pumped back to the South Cell. Recently flows have been on the decline suggesting that the voids are gradually silting up. The seepage is sampled monthly and analysis results show maximum WAD cyanide and free cyanide concentrations of 0.725 mg/L and 0.107 mg/L, respectively, between January 2015 and May 2018. The seepage is located within the mining footprint and confined directly downstream of the Central Dike by the Portage Pit so there is no pathway for possible seepage not captured and returned to the South Cell to enter the environment.

Possible seepage or run-off water periodically occurs at the downslope toe of Saddle Dam 2. The results of analysis over the past three years show WAD cyanide and free cyanide to be less than 0.005 mg/L, except in July 2017 when WAD cyanide was 0.021 mg/L. The potential for seepage at Saddle Dam 2 in the future is unlikely as the North Cell is now closed and under reclamation.

These seepage areas were investigated, engineering controls put in place and monitoring programs implemented. Monitoring results to date indicate that cyanide has not impacted beneficial use for aquatic life of surface water bodies.

**4.6 Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.6.

*Summarize the basis for this Finding/Deficiencies Identified:*

AEM protects groundwater through a combination of containment of process water and groundwater monitoring to ensure zero discharge is maintained. The TSF dam structures are designed with a compacted till blanket extending upstream of the toe and an impervious liner on the upstream side of the rock fill structure to limit seepage through the dam. Permafrost below the TSF limits infiltration.

The potential impact to groundwater is considered minimal because the site is underlain by permafrost at a depth of approximately 1.5 m. Shallow groundwater flow may occur above

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the permafrost during the short summer season. When there is a potential that groundwater has been impacted AEM has conducted groundwater investigations.

AEM has a groundwater monitoring program as a requirement of the Water Licence. The monitoring wells are located primarily to predict chemistry of water accumulating in open pits. However, because of the harsh Arctic conditions, the monitoring wells have been difficult to keep operable and frozen wells have obstructed sampling. Several wells were installed in between 2006 and 2014 which are now inoperable because of frost damage. A monitoring well located at the toe of the Central Dike was replaced in November 2016. This new well is heat traced to assist with sampling in these harsh conditions. The well was sampled in July and September 2017 and the results show WAD cyanide concentrations of 0.009 mg/L and 0.006 mg/L, respectively.

There is no designated groundwater use established by the Government of Nunavut. In the vicinity of the site there is no beneficial groundwater use primarily because the existence of shallow permafrost which precludes the extraction of groundwater. All water resource is provided by the many lakes present in the region. Monitoring results to date indicate that cyanide has not impacted the beneficial use for aquatic life in Third Portage Lake.

**4.7 Provide spill prevention or containment measures for process tanks and pipelines.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.7.

*Summarize the basis for this Finding/Deficiencies Identified:*

The number and location of cyanide tanks and vessels has not changed since the 2014 verification audit. Within the mill all tanks and process vessels are located within bunded concrete basins. The containment areas are constructed with concrete sumps that have dedicated pumps to permit spills to be pumped immediately back into the process. The pre-leach and leach tanks are located outside of the mill in a dedicated bunded concrete containment. This containment is served by two sumps which are not fitted with dedicated pumps. These sumps are pumped using a mobile pump as and when needed.

Work was undertaken in 2014 to repair the joint seals for the containments and raise the concrete basin walls and/or reconfigured the basins as needed to provide the 110% volume of the largest tank within a containment. The work was inspected, approved and signed off by a professional engineer.

Process solution is not permitted to be discharged to the environment. All solutions collected in containment basins are pumped back into the process including any precipitation that collects in the leach tank basin. Inside the process plant containment sumps are fitted with automatic pumps. The leach tank containment is served by two sumps which are not fitted

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with dedicated pumps; however, procedures are in place to install portable pumps as needed to remove precipitation and minor spills and maintain sufficient capacity in the basin to contain a release from a major tank failure.

All process lines are above-ground and located over containment basins to capture any leaks and prevent releases into the environment and impact of surface waters. To minimize the potential of leakage, the reagent strength cyanide lines are welded lines with no threaded joints. The corridor for the tailings and reclaim water pipelines between the mill and the TSF is not lined. As discussed in Section 4.1, the sections of the pipeline corridor were observed buried and culvert for the pipeline was blocked. After the field component of the audit AEM removed the earthen platform and rock debris from around the tailings line and culvert, to allow the pipelines to be inspected and monitored. Plans were also completed to place the tailings and reclaim lines within a culvert installed along the south side of the leach containment. Photographic evidence of the exposed line and the newly constructed culvert were provided to the auditors. In addition, AEM initiated a documented weekly inspection program of the tailings line between the process plant and the pigging station and an annual NDT program to monitor the wall thickness of the pipeline.

Cyanide mixing, storage and process solution tanks are constructed materials compatible with cyanide and high pH conditions. Cyanide tanks are constructed of carbon steel; process pipelines are typically constructed of carbon steel or high-density polyethylene (HDPE); the tailings and reclaim pipelines are constructed of HDPE.

**4.8 Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.**

- The operation is:
- in full compliance
  - in substantial compliance
  - not in compliance...with Standard of Practice 4.8.

*Summarize the basis for this Finding/Deficiencies Identified:*

The TSF is supported by detailed design reports and as-built construction reports that document construction activities. The reports document the sequence of construction activities, summarize the as-built construction quality assurance and quality control (QA/QC) program during construction, and provide as-built drawing to detail any changes from the original design. At the time of the 2014 ICMC verification audit the construction of the Stormwater Dike, Saddle Dams and the first three stages of the Central Dike had been completed, and deposition into the North Cell was being terminated as tailings discharge was being transferred to the South Cell. Construction since the 2014 audit has included construction of Saddle Dams 3, 4 and 5 and raising these and the Central Dike to an elevation of 145 m.

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Although at the time of the 2014 ICMC verification audit AEM had design drawings on file for the Mill, no as-built drawings or QA/QC records had been retained by AEM. To supplement the original QA/QC documentation available, AEM commissioned GCM Consultants to conduct inspections of the cyanide facilities at the Mill to ensure that the facilities could be operated safely, efficiently, and in accordance with the design intent and generally accepted good practice. Design drawings are on file for the Mill. These are supplemented by engineering reviews for the cyanide process plant at the mill.

QA/QC documentation records were on file in electronic form of all stages of the TSF except for the construction of Stage 2 of the Central Dike. AEM reported that hard copies of records for Stage 2 construction were archived but were not made available for review during the audit. As an alternate AEM provided the auditors with a signed statement from the Owner Representative describing the QA/QC program and progress reports showing the nature of the program. The Owner Representative for AEM is a geotechnical engineer registered in NWT/Nunavut who has responsibility to ensure that the construction work and associated quality programs are performed by qualified people and constructed as per design.

With the exception of report entitled: *Construction Summary Report Stage 3 – Central Dike 2014*, all design and construction reports were signed by a registered professional engineer. The Stage 3 – Central Dike report appeared to be a final draft and had not been signed; however, all supporting QA/QC documentation (as-built drawings, construction observations, field and laboratory geotechnical and synthetic liner testing, photographic records etc) that formed appendices to the report were final and signed and dated.

**4.9 Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 4.9.

*Summarize the basis for this Finding/Deficiencies Identified:*

AEM has implemented a *Water Quality and Flow Monitoring Plan* in accordance with the requirements of the Water Licence. The Plan summarizes the monitoring locations, sampling frequency, monitored parameters, compliance discharge criteria and an adaptive management plan for water quality. The plan has been divided into two levels of investigation to characterize the range of impacts between the sources of contact water in the individual mine facilities and the point of discharge or release of contact water to the receiving environment. The two levels of monitoring include: 1) compliance monitoring; and 2) event monitoring, i.e., monitoring of unexpected events such as spills, accidents, and malfunctions. The program does not include discharge monitoring as there are no discharges of process water to surface water.

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AEM has also developed monitoring and sampling procedures to execute the monitoring plan. These procedures were developed by experienced AEM environmental personnel using industrially established sampling and analytical procedures for soil, surface water, groundwater and aquatic life assessment and monitoring, adapted to account for the Arctic conditions within which the sampling program is conducted. These procedures specify sampling methods, sample preservation techniques, sample labelling and quality assurance/quality control, chain-of-custody and shipping instructions. AEM utilizes a field checklist for recording sampling events. Information collected the form includes sample I.D. and location; sampling crew names, date and time of sampling; field measurements (temperature, conductivity, dissolved oxygen, pH and turbidity) depth of water; depth sample collected; volume of sample; weather conditions, and other observations.

Compliance monitoring samples are submitted to accredited third party laboratories. AEM's onsite laboratory conducts WAD cyanide analyses of the tailings discharge and reclaim pond water. This laboratory is operated by a qualified chemist using the standard picric acid method of analysis.

The potential for wildlife impact by cyanide is low because the reclaim pond is frozen over for several months of the years and WAD cyanide concentrations in tailings being discharged to the TSF is well below 50 mg/L. Wildlife mortality monitoring is nevertheless conducted informally throughout the year as a responsibility of all employees. Monitoring is also formally documented on the *TSF Detailed Field Inspection Form*. The reporting of wildlife sightings and mortalities by employees is incorporated into the site induction program for new employees and the importance of the program is emphasized during periodic presentations delivered representatives of the Environmental Department at least once a year. Wildlife mortalities are reported and investigated through the Incident Reporting Procedure and summarized in an annual report submitted to the regulator as a requirement of the Water Licence.

**5. DECOMMISSIONING Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.**

***Standards of Practice***

**5.1 Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.**

- The operation is:
- in full compliance
  - in substantial compliance
  - not in compliance...with Standard of 5.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

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An *Interim Closure and Reclamation Plan* was developed as a requirement of *Nunavut Water Board Type A Water license # 2AM-MEA0815*. This plan includes an updated estimate of closure and reclamation costs. The Plan is used to establish closure and reclamation costs for the mine and setting appropriate financial security with the Minister.

To more specifically address decommissioning and closure of cyanide facilities AEM prepared a draft plan entitled *Cyanide Management Decommissioning Overview (CMDO)*, dated October 2014. This plan forms an integral component and appendix of the *Interim Closure and Reclamation Plan*. The CMDO provides a generic list of steps necessary to decommission equipment and areas that have contained cyanide during the operation of the Meadowbank mine. The CMDO describes the steps required to decommission cyanide facilities including health and safety precautions, environmental considerations, cyanide stock reduction, disposal of unused stock, decontamination of piping and equipment, contaminated site remediation, waste disposal and post closure monitoring, if required.

The *Interim Closure and Reclamation Plan* was updated in 2012, and in January 2014. AEM is in the final stages of updating this Plan that extends the mine life to 2022 as a result of the Amaruq pit which is currently under development and coming into production. AEM is required to submit a Final Closure and Remediation Plan at least 12 months prior to the expected mine closure. The CMDO contains a conceptual schedule for cyanide decommissioning. The schedule will be reviewed and updated to incorporate the extended mine life and be modified as needed as closure approaches.

**5.2 Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 5.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

Closure cost estimates for the Meadowbank are computed using the INAC RECLAIM reclamation Cost Estimating Model (v.7) as required by the Water Licence. This cost estimating procedure assumes third party contractor rates. The closure and reclamation cost estimate prepared in 2014 in association with the *Interim Closure and Reclamation Plan*, was revised in 2016 when the Water Licence was amended to incorporate the road to the Amaruq pit. This revised estimate was \$86,519,614 and was used to set the required security for the amended licence.

The CMDO, dated October 2014, specifically addresses the closure and decommissioning of cyanide facilities. AEM estimated the cost for closure and decommissioning of all cyanide facilities to be \$4,362,329. This cost is based on a third-party contractor undertaking the work. The estimate includes many items that are not considered by the Cyanide Code, e.g., site contouring, post closure water quality monitoring and dike stability monitoring.

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Nevertheless, the estimate is well within the financial security requirements set up for the Meadowbank Project.

AEM reviews and updates the cost estimate at least every five years as required by regulation and more frequently as needed to incorporate changes in the operation. AEM was in the process of finalizing a revised closure and reclamation plan and cost estimate for submission in 2018.

As required AEM currently maintains a total global security amount of \$86,519,614 (50% held by Indian and Northern Affairs Canada (INAC) under the Water Licence and 50% by the Kivalliq Inuit Association (KIA) under Commercial Lease KVPL08D280) to fully cover the decommissioning and closure of the mine, including cyanide facilities.

## **6. WORKER SAFETY Protect workers' health and safety from exposure to cyanide.**

### ***Standards of Practice***

#### **6.1 Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 6.1.

#### *Summarize the basis for this Finding/Deficiencies Identified:*

Operating procedures are in place that cover sodium cyanide unloading, mixing, plant operations, maintenance and onsite packaging material destruction. In the auditor's judgement, the level of cyanide related safety-oriented information found in the procedures is commensurate to the risk involved for the task. The procedure template used has several sections; one of the first presents health and safety (H&S) measures specific to the task (PPE, mandatory training, prerequisite verification and task sequence). Standard operating procedures with a cyanide interface have a comprehensive section on PPE requirements, PPE handling after the task is completed and cyanide related H&S training requirement. As cyanide-related tasks are conducted by specifically trained employees, the procedures may refer to a particular employee designation, for example the mixing procedure is addressed to a reagent operator. In addition to following operating procedures, operators are required to complete a "Work Card" on each work shift. The Work Card process is designed to identify all hazards related to a task and presents the controls to mitigate the inherent risks. The Work Card also reminds operators to perform the pre-work inspections when necessary. The Work Card is completed and discussed by both operator and supervisor prior to commencing the planned task.

In 2015, an initial Management of Change (MOC) procedure was established to formalize the need to react and improve the operations following incidents or changes to operations.

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Throughout 2017, the MOC process was further refined and given a site wide scope. The revised procedure has been effective since September 2017. The mine site has a Joint Health and Safety Committee as required by regulation (North West Territories Mine Health and Safety Act and Regulations). The Joint Health and Safety Committee is composed of both employer and employee representatives. The committee meets regularly, and discussion focus mainly on H&S programs and improvements. This represents the main platform for employee input on H&S improvements. The Work Card process on daily task (work shift) to be completed by employee is another opportunity for employees to provide feedback regarding the safety or hazard of an activity. Safety meetings (monthly and weekly), tool box meetings (daily) also provide opportunities for employee input about H&S related to cyanide handling and management.

**6.2 Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 6.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

To prevent the build-up of hydrogen cyanide, procedures require pH to be set at 12 for the preparation of the cyanide solution and be maintained above 10.5 in the leaching process. The pH is monitored in the leach tanks through automated control loop systems and adjusted addition of lime. The pH is managed during the mix process through addition of caustic. The plant has an operational toxic gas alarm system. The HCN detectors are fitted with aural/visual alarms that trigger at 2.5 ppm (pre-alarm) requiring operators to investigate the source of the HCN; 4.7 ppm (alarm) requiring evacuation of personal from the area of the alarm; and 10 ppm (high alarm) requiring evacuation of the process plant.

The mill is currently equipped with 19 fixed Dräger HCN monitors. In addition, seven GasBadgePro individual HCN gas monitors as well as eight MX-6 multiple gas monitors are available for operators to perform their work safely. The fixed monitors are installed at critical areas of the mill including the cyanide mixing area, the Gekko ICU, Leach Gallery tanks, CIP Tails Safety Screen, cyanide destruction area, Semi-Autogenous Grinding (SAG) Mill, refinery and assay laboratory. The maintenance on the fixed HCN monitors is performed through a JD Edwards preventive maintenance work order system. The PM has been performed since the first monitors were installed back in 2010. The maintenance is performed quarterly by onsite electro-mechanical technicians and records are kept for reference.

The cyanide dust may be generated when cyanide briquette containing supersack is split over the hopper during preparation of the cyanide solution in the mixing tank. The mixing procedure includes a triple cyanide bag rinse step to remove residual cyanide dust.

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Access to the mill by operators, supervisors, contractors or visitors triggers the need to wear all required PPE including half-mask for respiratory protection purpose. Non-routine work in the mill is carried out through a Job Hazard Analysis (JHA) process. The JHA process evaluates if additional H&S considerations need to be implemented to control potential cyanide exposure. The risk of direct cyanide exposure during maintenance or repair of mill equipment is identified and controlled through procedures to inspect for cyanide leaks and cleanup spills and remove cyanide salt deposits.

Cyanide warning signage is posted on mill entrance doors, specific cyanide equipment and cyanide entry points (e.g., feedline at SAG Mill). Signage was also displayed at the dedicated cyanide C-Can storage pad, as well as at the cyanide waste burning ground. Signage at the mill, burn area and cyanide C-Can storage include requirement for no smoking, eating or drinking. The mandatory chemical awareness training also provides all employees, contractors and visitors with the necessary information about the need to avoid eating, drinking, smoking and use of open flame near cyanide. Sanolin Rhodamine B 02 dye continues to be added at the mixing stage to help identify cyanide leaks. The dye has been used since 2016.

The JD Edwards preventive maintenance software generates work orders for inspections of showers, eye wash stations and extinguishers (non-acidic and sodium bicarbonate). The work orders are sent by email to departmental owners identified as accountable for carrying on the inspection and / or testing process. Process tanks and pipes containing cyanide are labelled to identify their contents. Reagent cyanide lines were painted orange, with exception to a few locations where cyanide piping had been replaced since the 2014 ICMC verification audit. Subsequent to the audit photographic evidence was provided showing that these sections of line were painted and labelled to identify flow direction.

Safety Data Sheets (SDS) are managed through an online database accessible through the site intranet. An SDS for sodium cyanide is present near the mixing station as well as accessible from the computer station located in the area where reagent operators don their Tychem® suit and other PPE (i.e. glove, face shield etc.). The SDS contains first aid information. Accidents or incidents involving workers, assets or the environment must be investigated and reported to the regulator. Procedures are in place to investigate accidents and near misses and report as required to the Nunavut authority.

A procedure is in place to investigate and evaluate cyanide exposure and other incidents. In the last three years, two incidents related to worker exposure to cyanide occurred, neither had serious consequences. One incident occurred on 26 November 2017 when a piece of solid sodium cyanide was projected towards the operator and lodged itself inside the worn Tychem® suit through the neck area, as a result of the operator using a chisel to break up frozen briquettes during a mix operation. The results of an investigation found that the operator's PPE suit was not fully zipped at the neck. AEM modified the mix procedure and train workers to ensure "no skin showing" around the neck when donning PPE. AEM also purchased a conditioning unit for cyanide bags to ensure that briquettes are not frozen and therefore do not require chiseling to separate them during a mix.

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The other incident occurred on 31 January 2018 during the inspection and repair of a blocked cyanide reagent line. A contracted operator was splashed with a small quantity of liquid. The exposed employee went to the nearest shower with colleagues, proceeded with the decontamination procedure before going to the medical clinic where he remained under observation until getting his release soon after the event. The investigation concluded that the controls in place were adequate to prevent exposure to the employee. The investigation triggered a review of the steps regarding unplugging cyanide lines, a non-routine activity.

### **6.3 Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 6.3.

#### *Summarize the basis for this Finding/Deficiencies Identified:*

At least 14 shower/eyewash stations are installed in areas including the cyanide mixing plant, the ICU Plant, CIP and leach sectors, and carbon strip plant. Oxygen administration kits and defibrillators are available in the mixing area, the leach gallery and control room on the third floor of the Mill. AEM keeps a supply of hydroxocobalamin antidote (Cyanokit®) at the health clinic located in the Service Building, which is physically connected to the Mill. All floor operators and production supervisors are equipped with two-way radios. The reagent, crushing, grinding and relief operators and supervisors are trained in oxygen administration. The Mill is equipped with an elaborate alarm system to inform in an audible and visual manner all mill employees of the presence of HCN concentrations at the 2.5, 4.7 and 10-ppm levels. The use of emergency showers/eyewash stations automatically sends a message to the control room operator who can determine which shower is being used. Many of the showers are visible from monitoring cameras located strategically around the mill and that report to TV screens located in the control room.

The site provides health and first aid services on a continuous basis. Two nurses deliver the necessary health care in the context of a remote arctic mine site. The nurses are supported by a contracted physician located in the province of Quebec for guidance. AEM has a well furnished ambulance and trained Emergency Response Team. The health clinic staff has access to the critical equipment to treat cyanide exposure (i.e., medical oxygen, heart monitoring equipment, Cyanokit® etc.). Cyanokits had an expiry date of 1 April 2020 and were stored within temperature range as recommended by manufacturer and inside their original packaging. Meadowbank is located approximately 4-hours by flight from the nearest significant urban center which is Winnipeg (approximately 1,700 km distance). The Meadowbank health clinic has a well-developed medical evacuation procedure. The medical decision process to medivac an exposed worker relies on the communication and coordination between site nurses, the Quebec province-based physician, the Nunavut Health Services, the Winnipeg-Alberta hospital and the medical air services providing transportation.

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Emergency Response Councilors organize training practices every Sunday for available emergency response team (ERT) members. The full day of training is dedicated to equipment verification, or mock emergency drill. For legal reasons, ERT members must complete a minimum number of training hours a year to be considered apt to respond. The ERT councilors keep records of training attendance by ERT members. On 8 October 2015, a mock emergency drill was conducted on the AWAR involving a cyanide exposed truck driver. Six (6) opportunities for improvement were identified following the mock drill conducted 30 km from the mine site which involved the decontamination of the injured and exposed truck driver. The post mortem identified a 9-month timeline to implement the proposed the corrective measures. The improvement measures identified involved the management of an exposure event like having four ERT members for each convoy as well as the use of additional equipment like a portable decontamination unit and the use of two emergency vehicle to escort a cyanide convoy.

As part of weekly ERT trainings, mill mock drill emergencies involving HCN poisoning were conducted at the mill on 12 February 2017 and 26 March 2017. These drills involved ERT team members donning their respiratory protection equipment, exercising first aid response, worker decontamination, and transport of the exposed workers to the health clinic.

A real spill event involving a hazardous chemical occurred on 9 August 2017; not with sodium cyanide but caustic. Solid caustic was released from two containers when a truck rolled over on the AWAR at Km 23 from Baker Lake. The incident involved a two-day recovery operation during which the several ERT members involved wore full PPE equipment (half mask, Tyvek® overall, gloves, hard hat etc.) in warm summer weather. The post mortem of the spill event captured the need to use Tychem® suits rather than Tyvek® for this type of scenario under this specific context. Other realizations refer to prolonged spill clean-up efforts in summer conditions; the period when most process chemicals are transported to the mine from Baker Lake. This real spill event provided valuable lessons which can also be applied to a potential solid sodium cyanide spill response situation.

**7. EMERGENCY RESPONSE Protect communities and the environment through the development of emergency response strategies and capabilities.**

***Standards of Practice***

**7.1 Prepare detailed emergency response plans for potential cyanide releases.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 7.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

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Meadowbank continues to maintain, review annually and periodically update their Site Emergency Response Plan (ERP). The latest version is dated January 2018. The document is 63 pages long and broken down into six sections plus 13 appendices. Appendix B of the ERP is entirely dedicated to cyanide release. The appendix includes an HCN release scenario from cyanide storage and intervention measures in case of HCN release in the mill or specifically from mixing operations. Each section of the appendix provides a link to additional documentation for detailed intervention measures.

As cyanide transport occurs during a very short period of the summer, specific transport protocols are implemented to ensure safe transport of the reagent. At the mine site, normal traffic is stopped within the perimeter between the gatehouse and the storage pad when trucks are delivering cyanide C-Cans. As such, Meadowbank's safety procedures applicable for the AWAR between Baker Lake and the mine site are extended to the short distance between the gatehouse and the dedicated cyanide storage pad.

Section 4.5 of the ERP discusses response actions to be taken in the event of HCN release. This section also refers to the procedure *general alarm evacuation* when the site needs to be cleared of site personnel from an area of exposure. Appendix I is a Spill Contingency Plan that provides information on how to address a cyanide spill situation. The appendix presents the rationale for hazard recognition, the need to inform supervisor and Emergency Response team, wearing of PPE, containment to prevent impact on waterways, recovery of spilled material, neutralization and disposal of PPE.

## **7.2 Involve site personnel and stakeholders in the planning process.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 7.2.

### *Summarize the basis for this Finding/Deficiencies Identified:*

Because of the remoteness of the mine the ERP is designed so that the site is entirely self-reliant when it comes to responding to a cyanide related incident or accident. As stated in the ERP no outside personnel are involved in a response. The ERT members accompany cyanide transports from Baker Lake and additional members can be deployed along the AWAR to respond to a cyanide or other dangerous good spill as needed. The ERP has been presented to the Baker Lake authorities but neither the local Fire Department or the Royal Canadian Mounted Police (RCMP) are involved in the implementation of the Plan and have no specific hands on responsibility. During the period when cyanide C-Cans are handled in the marshalling area at Baker Lake and transported to the Meadowbank mine, special radio announcements and Facebook posts are used to inform local residents about these activities and associated restrictions that apply to hamlet residents with regard to usage of the access road.

Medical evacuation and treatment is the only emergency response process involving outside organizations. Medical evacuation requires the involvement of the Nunavut Health Services

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and Keewatin Air (contracted air line for Nunavut government) as well as the Winnipeg Hospital in Manitoba province to organize medivac. The ERP refers to Keewatin Air Ambulance and Baker Lake Health Services while the Winnipeg Hospital contact number is found in the AEM medical clinic protocol for medical evacuation.

The Baker Lake Community Liaison Officer is responsible for communication with community about cyanide transportation and other social investment issues and is mandated to continually liaise with Baker Lake representatives and report back to Meadowbank's IIBA (Inuit Impact Benefit Agreement) coordinator.

**7.3 Designate appropriate personnel and commit necessary equipment and resources for emergency response.**

- The operation is:
- in full compliance
  - in substantial compliance
  - not in compliance...with Standard of Practice 7.3.

*Summarize the basis for this Finding/Deficiencies Identified:*

The ERP includes a flow diagram that presents the decision process to manage an emergency. The diagram lists the responsible persons involved in the decision processes. In the Meadowbank Mine ERP, these responsible persons are known as Incident Commanders. For rotation purposes, there are two (2) incident commanders at the mine and one is always present on site. Various ERT training attendance files (MS xls.) for 2016 and 2017 refer to a group of 53 ERT members. The ERP specifies that ERT members will be trained individuals as per the Nunavut Mine Act requirement. The surface mine rescue manual requires ERT members to attend weekly inspection/training sessions coordinated by ERT Coordinators. The ERT members are officially liberated from their normal duties to follow the 12 hours planned training session on a two-month period. Responder required training is defined in the Mine Act and the Workers' Safety Compensation Commission of Nunavut. A minimum of 48 hours of practice per year (not real events) is necessary to maintain status. The Spill Contingency Plan identifies the equipment available to respond to an emergency from a containment and remediation perspective. This includes mobile equipment (light and heavy), confinement equipment in case of wet spill, and emergency transportation equipment (i.e., medivac, tundra buggy, snow mobile, 4x4 light truck vehicles, boats etc.). The ERP provides rational on emergency response equipment as pertaining to fire water pumps, fire extinguishers, air monitors, self-contained breathing apparatus (SCBA) and other personal protective equipment.

The inspection of emergency response equipment is a regulatory compliance obligation. All ERT vehicles undergo regular maintenance that is scheduled and tracked through the preventive maintenance software. The mobile equipment is operated and tested by ERT members as part of their ongoing training. Some emergency response equipment including the CO (carbon monoxide) detector associated to the ERT's compressed air bottles filling machine is inspected by a qualified Meadowbank electro-mechanic; the same team of

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technicians that calibrate the HCN monitors in the Mill. Meadowbank Mine does not rely on any Baker Lake organizations to provide assistance in case of an emergency response.

**7.4 Develop procedures for internal and external emergency notification and reporting.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 7.4.

*Summarize the basis for this Finding/Deficiencies Identified:*

The ERP provides a table of key external agency contact information (41 phone numbers) for emergency response related purposes. It should be noted that not all external organizations listed have a direct role in the implementation of the ERP. The AEM's Intalex software sends reminder emails every 6 months to Emergency Response Coordinators to verify contact information. The system to ensure accuracy of contact information appears robust. The contact information for community communication purposes is also tabled in the ERP. Contact list contains the most important Baker Lake community stakeholder phone numbers. This includes RCMP, Health Services, Fire Department, and Hamlet office, among others. The Crisis Management Plan provides a notification protocol as well as a stakeholder wheel determining the priorities in terms of who to inform under particular circumstances.

**7.5 Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 7.5.

*Summarize the basis for this Finding/Deficiencies Identified:*

Procedure are in place to address recovery of spilled cyanide solution and solid form cyanide. Should a liquid or solid spill occur in the mill, the liquid or solid would be washed down and directed to a sump to be recovered in the process. There is also a Sodium Cyanide Sampling Plan that provides guidance on sampling soil to determine when remediation efforts have been adequately completed. The Plan provides a list of baseline sampling locations that were established based on a risk assessment of potential flow paths of a release of sodium cyanide. These locations provide a baseline from which to measure remediation efforts in the event of a cyanide release. The Plan provides guidance on how to perform sampling, sampling frequency, sample analysis, clean-up and closure criteria, and which laboratories should be contacted for chemical analyses purposes.

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The Spill Contingency Plan addresses solid cyanide spills on land or water, and provides guidance for spill recovery, neutralization, and disposal of recovered waste and soiled PPE.

The Plan states that: "it is strictly prohibited to add any chemicals or neutralizing agents to a sodium cyanide spill near a drainage system or near or in a water body."

Finally, the *Sodium Cyanide Sampling Plan* confirms the existence of a contingency plan to ensure an alternate drinking water supply should a spill of cyanide reach the Third Portage lake, the main water body where potable water is drawn for the Meadowbank mine staff.

**7.6 Periodically evaluate response procedures and capabilities and revise them as needed.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 7.6.

*Summarize the basis for this Finding/Deficiencies Identified:*

The ERP is a comprehensive document aimed at covering various operational risks including a cyanide release or worker exposure event. The ERP is reviewed annually, or more frequently, if needed, to ensure compliance with applicable regulations, to evaluate its effectiveness and improve its procedures. The January 2018 revision entailed the removal of the Amaruk road construction project reference following completion of that development project. The ERP contains provisions to review the plan following a cyanide related event that would trigger its implementation.

The ERT Coordinators organize emergency response equipment inspection workshops, mock drills, or other emergency response related activities every Sunday to ensure ERT members have a minimum 48 hours a year emergency response practical experience as required by Nunavut regulation. On 8 October 2015, a mock drill was executed at Km 30 on the AWAR. The mock cyanide emergency scenario involved a release and an injured truck driver and occurred when temperatures were approximately -5.5 Celsius. The mock drill focused on responding to the injured driver but also involved assessing the accident scene, donning full PPE equipment (Tychem® suit, SCBA etc.), decontaminating the driver, and administering oxygen before transportation to the mine's medical clinic. Other mock drills were performed in the following years which covered elements of a cyanide spill event inside the mill or outdoors. According to interview, no cyanide release involving the mobilization of the ERT occurred at the mine site, on the AWAR, or the Baker Lake marshalling area in the last three years.

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**8. TRAINING Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.**

**Standards of Practice**

**8.1 Train workers to understand the hazards associated with cyanide use.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 8.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

Since the Fall of 2015, the Chemical Awareness training is performed online. Although the training is about chemical substances found at the mine site, a substantial part of the training addresses cyanide exposure risk as per ICMC requirements. The 30 minutes online presentation covers hazard recognition, health effects, symptoms of exposure, and response to exposure and includes an online exam. A section of the training is entitled Cyanide and Safety and includes topics regarding Inspections and Monitoring; Cyanide additional points; Cyanide properties; Checkpoints and Cyanide Transportation among others. Chemical Awareness training is mandatory for every employee working at the mine site and a refresher training is provided every three years. As such the personnel that receive Chemical Awareness training include but are not limited to mill, TSF, warehouse, and environment department staff; ERT, maintenance, AFS truck drivers etc. The training is offered in English as it is the official language at the site. The presentation is also offered with sub-titles in French and Inuktitut (closed-captioning). The Chemical Awareness refresher training is mandatory every three years for all workers on the mine site which includes contractors, consultants and visitors. The Training Department's records have moved into an electronic format and managed through the Training Management System (TMS). Cyanide recognition training records are now retained on this system under the "Employee File" menu.

**8.2 Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 8.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

With exception of bringing cyanide containers from storage pad to the mill entrance and burning cyanide waste (i.e., wood box, plastic bags etc.), all tasks involving cyanide handling are performed by mill operators. Meadowbank Mill operations adopted a "Process Plant Career Path" system to manage employment related training needs and opportunities. Employees must work through each level of responsibility for a determined period before being considered

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for the next level. For example, an employee must work as a Mill Helper, a Utility Man or a Crushing Operator before being permitted to become a Reagent Operator. The levels above the Reagent Operator are the Grinding Operator followed by the Leach/CIP Operator and finally the Control Room Operator; a position requiring experience in the entire mill process. The theoretical and practical sessions cover all seven (7) stages of the Mill process. The training is designed to review in detail the various mill operating procedures. All procedures are structured in a similar fashion. First, a section provides training requirements, safety and PPE prerequisites. This is followed by a list of equipment needed to perform the task safely. Finally, there is a step-by-step description of the task to be performed. Consequently, it is understood that cyanide related handling is performed based on task specific training and is vetted for effectiveness through supervisor task observation.

The training department has two Mill Process trainers. Trainers are hired based on their technical experience. These trainers provide in-depth, accurate and up to date task training on Mill operations, including operations where cyanide is a recognized hazard. The task-oriented training courses include a theoretical element and a practical element. The performance review of trainers is completed once a year, in January normally. The trainer performance review process looks at training delivery aspects like attitude, answering questions, speech tone of voice, handling difficult trainees etc.

Other than the Chemical Awareness, the technical training (depending on the career path process) also has a 36-month refresher training requirement. This technical refresher training was a recommendation from the Health and Safety Inspector of Nunavut. The refresher training includes both theoretical and a job observation verification. Immediately after theoretical in-class training, the trainer and trainee move to the mill to practice. The end of the 84-hour training for a specific position is concluded with the theoretical exam and the Operator Safety Certification. All training records are saved in the employee file in the online training management system (TMS IT). Trainings records in an employee file are split into current and valid training and training history.

**8.3 Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 8.3.

*Summarize the basis for this Finding/Deficiencies Identified:*

Meadowbank’s training courses on Chemical Awareness; Mill Induction; Mixing & Distribution Reagent; Oxygen Administration; First Aid; Self-Contained Breathing Apparatus (SCBA), and Confined Space all address to varying degree the measures to be taken by concerned employees should there be a cyanide or by-product release and exposure. In terms of cyanide management for ERT members, the Hazmat training consists formal theoretical and practical learning, including use of video training aids. The Canadian training course for Surface Mine

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Rescue (32 hours course) is also provided by site certified personnel to all ERT members. This Mine Rescue training covers, among other things, the topic of oxygen therapy (administration) and use of SCBA. Other training on equipment use for cyanide response measures includes PPE and decontamination.

No outside agencies or organizations have a direct role in an emergency response involving a cyanide spill or worker exposure. Meadowbank does not rely on any Baker Lake organizations to provide assistance in case of an emergency response. The Baker Lake Health Clinic staff is not expected to participate in a cyanide treatment for a Meadowbank exposed employee or one of its subcontractor.

ERT Coordinators organize emergency response equipment inspection workshops, mock drills, or other emergency response related activities every Sunday to ensure ERT members maintain the minimum 48 hours a year emergency response practical experience required by the Nunavut regulation. The 8 October 2015 mock drill involving a cyanide release on the AWAR and an exposed truck driver was conducted in sub-zero temperatures. The use of water to decontaminate the driver represented a challenge and possibly an additional threat to an affected driver due to possible hypothermia. According to the Emergency Measures Coordinators, in this instance, the approach to decontamination was revisited to find an equivalent measure without the risk of incurring an additional health threat to the affected driver from hypothermia. The ERT training records are maintained by the ERT Coordinators.

## **9. DIALOGUE Engage in public consultation and disclosure.**

### ***Standards of Practice***

#### **9.1 Provide stakeholders the opportunity to communicate issues of concern.**

The operation is:                   ■ in full compliance  
  in substantial compliance  
  not in compliance...with Standard of Practice 9.1.

*Summarize the basis for this Finding/Deficiencies Identified:*

The conditions in the "Project Certificate" issued by Nunavut Impact Review Board (NIRB) include engagement requirements with the community and stakeholders. As the engagement process generated several commitments over the years, Meadowbank acquired a specialized software (from Borealis) to manage these engagement commitments and communications. Another engagement mechanism is the annual AWAR meeting and presentation on cyanide transport. In 2017, a new grievance mechanism was established to formalize engagement through various means: email, post mail, voicemail, online form etc. This mechanism is known as Tusaajugut and reaches Nunavut Communities at large established or impacted by the project (Baker Lake, Chesterfield Inlet and other Kivalliq communities (Whale Cove, Rankin Inlet, Coral Cove, Naujaat, Arviat).

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**9.2 Initiate dialogue describing cyanide management procedures and responsively address identified concerns.**

The operation is:           ■ in full compliance  
                                  in substantial compliance  
                                  not in compliance...with Standard of Practice 9.2.

*Summarize the basis for this Finding/Deficiencies Identified:*

The annual AWAR meeting is the main venue for the mine operator to interact with local stakeholders on cyanide transportation issues. As the mine site is within about 110 km from Baker Lake, cyanide transportation related risks and potential direct and indirect impacts on wildlife is an important topic for the community. The Meadowbank Mine IIBA Coordinator indicated that the Kivaliq Inuit Association (KIA) and the Hunter and Trappers Association are also contacted for cyanide related issues, especially the management of transportation of cyanide C-Cans and the closure of the road for a few days in the summer season when cyanide transportation occurs.

A 2016 AWAR meeting presentation was held to discuss road closure issues when cyanide transportation occurs. The meeting was held in Baker Lake on 14 December 2016 as there was no cyanide transportation to the mine in the summer months of 2016. In 2017, only five containers of cyanide were purchased and transported from Baker Lake to the mine site because of a large inventory that had accumulated over the years at the mine.

**9.3 Make appropriate operational and environmental information regarding cyanide available to stakeholders.**

The operation is:           ■ in full compliance  
                                  in substantial compliance  
                                  not in compliance...with Standard of Practice 9.3.

*Summarize the basis for this Finding/Deficiencies Identified:*

A cyanide pamphlet was produced in August 2015 for local community information purposes. The pamphlet is available in Inuktitut and English at the mine site as well as at the Baker Lake office, although, at the time of the auditor’s visit to the Baker Lake office, the Inuktitut pamphlet was out of print. Following discussion with the Community Relations coordinator, a new version of the pamphlet is in the process of being prepared. The Community Liaison Committee (CLC) was established in 2005 and remains the local organization that represents several community-based interest groups. A minimum of two (2) meetings a year are conducted with the CLC. The agenda for these meetings are presented ahead of time. Because of the oral tradition of the community and the participation of hamlet elders, the face to face meetings are important means to communicate information including as necessary

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cyanide related information. Community meetings occur in Baker Lake and at the mine site. The last meeting was held on 11 October 2017.

Spills are required to be reported under the conditions set in the Nunavut Water Board Licence 2AM-MEA1525, Part H, Item 8b, pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act as well as the Government of Nunavut's, Environmental Protection Act paragraph 5.1(a). According to Meadowbank mine health and safety records reviewed, no spills, fatality nor hospitalization related to cyanide exposure occurred for the period of 2015 to 2018.

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