



July 10, 2017

## ICMI RECERTIFICATION SUMMARY REPORT

# Goldcorp – Red Lake Gold Mines, Ontario, Canada

**Submitted to:**  
International Cyanide Management Institute  
1400 I Street, NW, Suite 550  
Washington, DC 20005 USA

Goldcorp - Red Lake Gold Mines  
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Balmertown, Ontario  
POV 1CO Canada

REPORT

**Report Number:** 1648331-002-R-Rev0

Distribution:

1 Copy - Goldcorp Canada Ltd.  
1 Copy - ICMI  
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**1.0 SUMMARY AUDIT REPORT FOR GOLD MINING OPERATIONS**

**Name of Mine:** Red Lake Gold Mines  
**Name of Mine Owner:** Goldcorp Inc.  
**Name of Mine Operator:** Goldcorp Canada Ltd.  
**Name of Responsible Manager:** Bill Gascon, Mine General Manager  
**Address:** 17 Mine Road, Bag 2000  
Balmertown, Ontario  
POV 1CO  
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## 2.0 LOCATION DETAIL AND DESCRIPTION OF OPERATION

### 2.1 Mine Location

Red Lake Gold Mines (RLGM) is located in Balmertown, Ontario, Canada (Figure 1). Mining is conducted using three main underground mining methods - underground overhand cut and fill, underhand cut and fill, and longhole. The operation is supported by two mill processing facilities; the Red Lake Complex (RLC, currently in care and maintenance) and the Campbell Complex (CC), providing a total milling capacity of 3,000 tons per day, including crushing, processing, and pastefill plants.



Figure 1: Location Map of the Red Lake Gold Mines

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## 2.2 Red Lake Complex Mineral Processing

At the time of the Recertification Audit, RLC had been placed into care and maintenance since January 19, 2017, with the exception of the Paste Plant operations, which accepts CC tailings and returns reclaimed water to CC.

During operations, RLC has the capability to process 1,150 tons per day. The processing facilities consist of crushing, processing, and paste preparation. The crushing circuit is a two-stage process, which reduces underground ore from approximately 12 inches to 3/8 inch. The ore is fed into the jaw crusher and is classified using a sizing screen. Oversized material larger than 3/8 inch is further crushed using the cone crusher. The oversized ore then reports back to the screen for further classification, whereas the undersized ore is conveyed to the processing stages.

The processing stages consists of grinding, gravity concentrating, leaching with cyanide solution, carbon-in-pulp (CIP), carbon elution and reactivation, electrowinning, bullion smelting/refining, cyanide destruction, flotation, and concentrate handling.

The grinding circuit consisted of a 1,200 HP ball mill in closed circuit with sizing cyclones, with the secondary cyclone underflow feeding a 400 HP vertimill. Coarse gold is recovered from grinding using three Knelson Concentrators. This gold is upgraded on a shaker table and smelted into bullion at the RLC refinery.

The overflow from the secondary cyclone is thickened and pumped into four leach tanks where gold is dissolved using a weak cyanide solution. The dissolved gold and slurry mixture then flows to eight CIP tanks that contained granular activated carbon particles that adsorbed the gold in solution. The adsorbed gold is stripped from the carbon using a heated mild caustic solution that is pumped to two electrowinning cells. Dore is then produced in the refinery at the RLC.

After exiting the CIP tanks, all remaining cyanide in solution is destroyed via the Inco SO<sub>2</sub>/Air treatment process, which oxidized the cyanide component of the slurry and precipitates heavy metals. After the cyanide is destroyed, the slurry flows to the flotation circuit. This slurry has a concentrate of sulphides, which encapsulates the remaining recoverable gold and is separated from the rest of the gangue minerals. In the flotation circuit, chemicals are added to help the gold bearing sulphide minerals adhere to tiny bubbles of air that are added in small agitated tanks. The bubbles rise to the surface and collect in a froth layer which is removed from the surface with paddles. The concentrate is collected and any excess water is removed in the concentrate thickener. The concentrate is transferred at around 70 percent solids through a connecting pipeline, but if required it could be filtered to remove moisture and trucked to the concentrate



storage area, until reclaimed back into the process later. This concentrate is then processed in the CC pressure oxidation circuit (autoclave).

The tailings from the flotation circuit are directed to the Paste Plant from where the slurry is either discharged to the RLC Tailings Management Facility or prepared to be used as backfill underground. The tailings that are used underground are filtered using a disc filter to remove excess water. The filtered tailings are then mixed with cement, fly ash, and water to form a paste. Once the proper consistency is achieved, the paste is sent underground to the desired stope. Tailings sent to the RLC Tailings Management Facility are discharged via spigot at the Tailings Area 1. Water is decanted to Tailings Area 2, followed by the primary and secondary ponds. Lastly, water is pumped from the secondary pond to the treatment plant to remove metals before the water is discharged into Balmer Lake or returned to the RLC for reuse as process water.

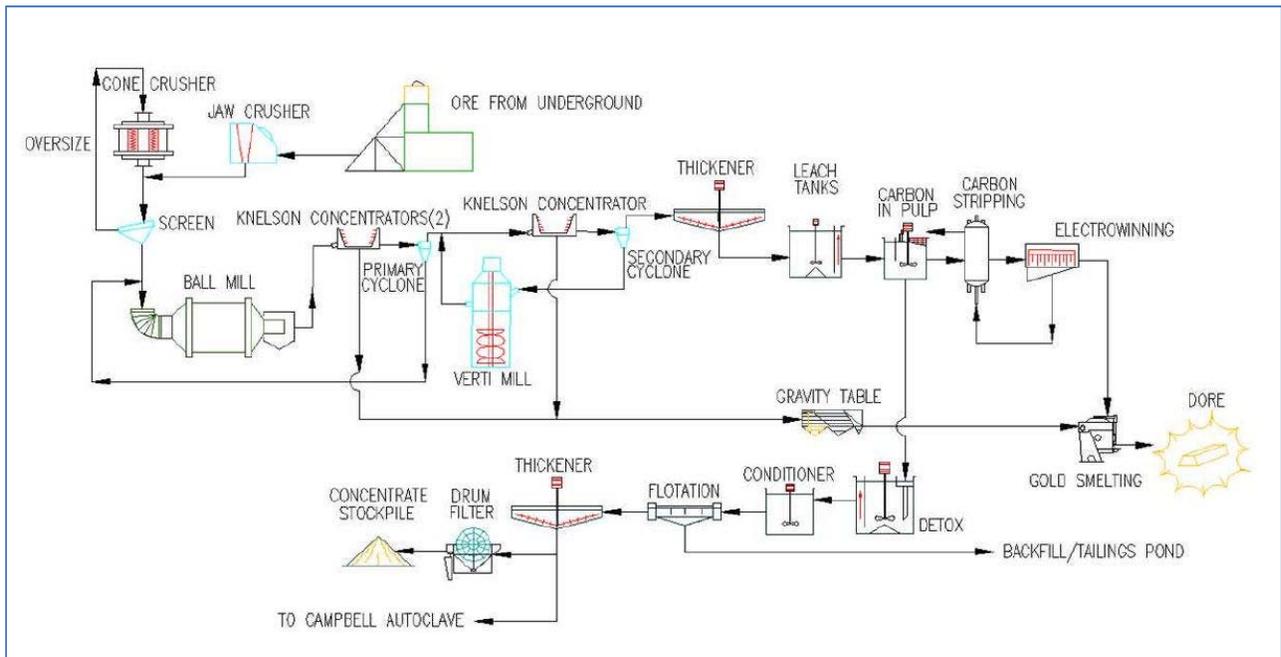


Figure 2: Process Flowchart at Red Lake Complex

## 2.3 Campbell Complex Mineral Processing

The CC mill has the capability to process 1,850 tonnes per day. Processing facilities consist of crushing, grinding, gravity recovery, flotation, pressure oxidation, cyanide leach, carbon-in-leach (CIL), CIP recovery and paste preparation.



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The crushing plant is a three-stage process which reduces underground ore size to approximately ½ inch in size. The ore is fed into a jaw crusher, which reports to a standard cone crusher. The ore is then classified using a double deck screen. Oversized ore is fed into a short head cone crusher to be crushed to the desired size and reports back to the screen for additional classification, whereas the crushed undersize ore is conveyed to the grinding circuit to be reduced further in size.

The grinding circuit is a two-stage process with an open circuit rod mill and a closed circuit ball mill with sizing cyclones. The coarse gold is recovered from the grinding circuit using two Knelson Concentrators. The gold is concentrated on a shaker table and sent to the refinery at the RLC where it is smelted into bullion.

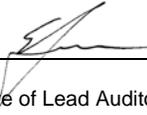
Following grinding, the slurry is fed to the flotation circuit where a sulphide concentrate is produced. In the flotation circuit, chemicals are added to help the gold bearing sulphide minerals adhere to tiny bubbles of air that are added to the bottom of small agitated tanks. The bubbles rise to the surface and collect in a froth layer, which is removed from the surface with paddles. The concentrate is collected and any excess water is removed with concentrate thickener. This concentrate is then mixed with concentrate from RLC and passes into the pressure oxidation circuit (autoclave). The flotation tails pass on to the cyanide leach circuit for additional gold recovery.

In the pressure oxidation circuit, thickened flotation concentrate is contacted with weak acidic solution to convert any hydrocarbons into CO<sub>2</sub>. This process takes place in five continuous stirred reactor tanks to ensure that this reaction is complete. It is very important that all CO<sub>2</sub> is removed as the CO<sub>2</sub> will rob the oxygen's partial pressure, ultimately resulting in low autoclave kinetics. Once treated, the slurry is then pumped into a carbon steel, lead and acid brick lined autoclave where the concentrate will be exposed to extreme pressures (305 PSI) and high temperatures (varying depending on compartments). Under these conditions, the oxidation process converts the sulphides to sulphates and the arsenopyrite to scorodite (ferric arsenate). The oxidized slurry is pH adjusted using lime prior to being leached in the CIL circuit. The acidic tailings solution from the oxidation process is sent to the waste treatment circuit where it is first neutralized with final mill tailings, and then further with lime.

The oxide product from the autoclave circuit and the flotation tailings are leached in a weak cyanide solution for approximately 72 hours. Carbon is added to CIP 6 and transferred co-currently with the flow of slurry right up to CIL 1. The gold in solution is adsorbed onto the carbon and the loaded carbon is separated from the slurry using a screen. The gold is stripped from the carbon using a caustic solution. The carbon is then

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acid washed to remove calcium in the pores of the carbon, before being reactivated in a rotary kiln and recycled.

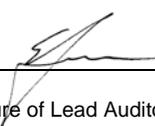
The leached tailings are then treated using the Inco SO<sub>2</sub>/Air process which oxidizes the cyanide component of the slurry and precipitates heavy metals. After the cyanide is destroyed, the slurry is either discharged to the CC Tailings Management Facility, or sent underground for use as backfill. Slurry that is to be sent underground is filtered before adding cement, fly ash and water to form a paste. Once the proper consistency is achieved, the paste is discharged underground by gravity to the desired stope. Otherwise, the combined tailings stream (flotation tailings plus oxide tailings) is mixed with the acidic solution from the pressure oxidation circuit and treated with lime at the waste treatment plant to precipitate metals and increase the pH prior to discharge to the main tailings pond.

In December 2016, a 2-kilometer bi-directional pipeline was constructed that transfers CC tailings to the RLC Paste Plant, and returns reclaimed water from the RLC Paste Plant to CC.

All water that has accumulated in the main tailings pond is treated by pumping into the effluent treatment system from May through October. Once the water reaches effluent treatment, lime is added to adjust the pH further to ensure the removal of metals. From the effluent treatment system, the treated effluent is pumped to the settling pond. The settling pond also receives inflow of water from the primary clear water pond. In turn, runoff is received from the closed Balmer Tailings and seepage from the Main Tailings Pond. From the settling pond, water is filtered as it travels through a membrane to the polishing pond. Next, the polishing pond water is gravity filtered to the wetlands. The wetlands consist of various cells with cattails which attenuate metals in the water and remove nutrients. The remediated water is eventually discharged into Balmer Lake.

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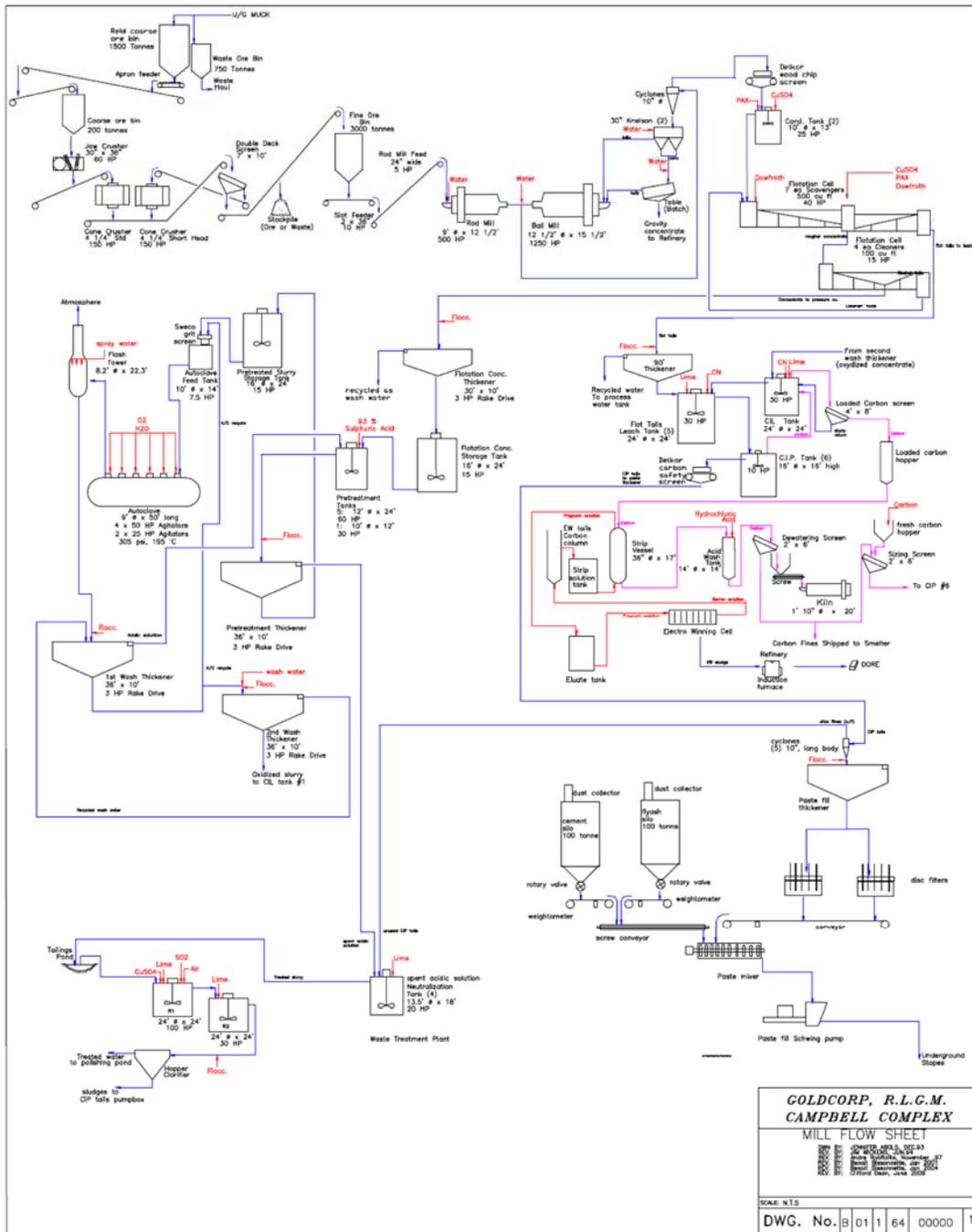


Figure 3: Process Flowchart at Campbell Complex

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## SUMMARY AUDIT REPORT

### Auditors Findings

RLGM is:  in full compliance with **The International Cyanide Management Code**  
 in substantial compliance with  
 not in compliance with

No significant cyanide incidents or cyanide exposure incidents were noted as occurring during the recertification period.

**Audit Company:** Golder Associates Ltd.  
**Audit Team Leader:** Evan Jones, Lead Auditor  
**Email:** evanjones@golder.com

### Name of Other Auditors

Name, Position	Signature
Ivon Aguinaga, Mining Technical Specialist	

### Dates of Audit

The Recertification Audit was undertaken over four days from February 27 to March 2, 2017.

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 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 International Cyanide Management Code Verification Protocol for Cyanide Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

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PRINCIPLE 1 – PRODUCTION

Encourage Responsible Cyanide Manufacturing by Purchasing from Manufacturers that 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

in full compliance with

The operation is  in substantial compliance with Standard of Practice 1.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 1.1, requiring the operation 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.

RLGM exclusively purchases its sodium cyanide from Chemours (formerly E.I DuPont de Nemours) under a Supply Agreement which requires cyanide to be produced at a facility that has been certified as being in compliance with the Code. Chemours, the cyanide producer, was recertified as fully compliant on July 15, 2016. Independent cyanide distributors were not used.

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PRINCIPLE 2 – TRANSPORTATION

Protect Communities and the Environment during Cyanide Transport

Standard 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.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 2.1, requiring that the operation establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

The Supply Agreement with Chemours clearly states Code responsibilities between producers and transporters. The Supply Agreement extends to any subcontractors and carriers that may be used by Chemours.

Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 2.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 2.2, requiring that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

The Supply Agreement notes the transportation of cyanide to RLGM is the responsibility of Chemours and that transportation is to be conducted by Code certified transporters.

Miller transports cyanide to the operation and was re-certified to the Code on June 26, 2014.

Chain of custody records indicated that only Miller was used to transport cyanide during the Recertification Audit period.



PRINCIPLE 3 – HANDLING AND STORAGE

Protect Workers and the Environment during Cyanide Handling and Storage

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 3.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 3.1, requiring that cyanide handling and storage facilities are designed and constructed consistent with sound, accepted engineering practices, quality assurance/quality control (QA/QC) procedures, spill prevention and spill containment measures.

The mixing and distribution tanks at the RLC Mill are located within the mill which has been under care and maintenance (not running) since January 19, 2017 and therefore no cyanide mixing events have occurred at RLC since that date.

Facilities for unloading, storing and mixing cyanide have been designed and constructed in accordance with cyanide producers' guidelines, applicable jurisdictional rules and/or other sound and accepted engineering practices. No changes in the cyanide storage and mixing facilities have occurred since the previous Recertification Audit, except for replacement of the cyanide mixing tank in 2015 with a new similar tank (equipped with an agitator) because the original tank was approaching the end of its life. An inspection of the facilities in 2015 by the cyanide producer did not identify any improvements or corrective works.

Unloading and storage areas of solid cyanide are located away from people and surface waters. Cyanide is not transported, stored or unloaded in solution.

The cyanide mixing and distribution tanks at the RLC Mill have level sensors and high level alarm indicators (lights and a siren) to warn of possible overfilling. There is also a system with automatic shut off valves that prevents overfilling of the mixing tank.

The mixing and distribution tanks at the CC Mill also have level sensors and high level alarm indicators (lights and a siren) to warn of possible overfilling. The systems to prevent overfilling are maintained.

Cyanide mixing and storage tanks are located on a concrete surface that can prevent seepage to the subsurface.

The secondary containments for the mixing and distribution tanks at both the RLC Mill and the CC Mill are constructed of reinforced concrete that provides a competent barrier to leakage.

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The cyanide is stored with adequate ventilation to prevent the build-up of HCN gas, under a roof and off the ground. The central storage area and reagent mixing facilities are in secure areas where public access is prohibited and employee access is restricted. The cyanide is stored separately from incompatible materials through packaging and secondary containments which prevent mixing.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 3.2**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Practice 3.2 requiring that cyanide handling and storage facilities are operated using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

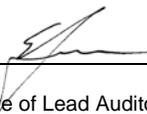
RLGM has develop procedures with respect to empty cyanide containers. Cyanide is received, stored and handled in dedicated flo-bins which are returned to the manufacturer for reuse. The procedure for Cyanide Handling-Delivery requires that flo-bins are not stacked.

The operation has implemented procedures to prevent releases and exposures during cyanide unloading, transfer, and mixing. The procedures describe the steps for mixing solid cyanide including emptying of the mixing tank, pre-mix preparation and mixing the cyanide into solution. The operation of the valves and the requirement to wash connection points are included in the procedures. The procedures are accompanied by checklists.

The operation has also developed procedures to be followed in case of a cyanide spillage during cyanide offloading and transfer activities, or in response to spills of cyanide during mixing activities, including the timely clean-up of cyanide spills.

The procedures describe the required PPE for mixing, and control room operators observe mixing events via video camera. RLGM also requires a second observer either in the mix room or in the control room.

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## PRINCIPLE 4 – OPERATIONS

### Manage Cyanide Process Solutions and Waste Streams to Protect Human Health and the Environment

**Standard of Practice 4.1:** Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventative maintenance procedures.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.1**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.1, requiring that the operation implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

RLGM has developed and implemented written management plans and procedures describing the standard of practice necessary for the safe and environmentally sound operation of the cyanide facilities, including:

- Cyanide unloading, storage and mixing areas
- Secondary containments
- Leach tanks
- CIP tanks
- Cyanide destruction plants
- Paste plants
- Unloading station for paste trucking
- Effluent treatment plant
- Tailings pipelines and reclaim lines
- Tailings dams and associated ponds

The procedures and plans have been updated, as needed, to reflect operational changes during the recertification period.

The operation has plans and procedures that identify the assumptions and parameters on which the facility design was based and any applicable regulatory requirements as necessary to prevent or control cyanide releases and exposures consistent with applicable requirements. The CC and RLC Tailings Management Facility – Operation, Maintenance and Surveillance (OMS) Manuals and Emergency Planning and Response (EPPs) describe the freeboard required for safe operation of the tailings impoundments and ponds as well as their maximum operating levels and storage volumes. Specific WAD cyanide concentration allowed in the tailings and in the effluent discharges into the ponds are also considered. The procedures for the CC Effluent Treatment Plant Operation, the CC Detox Operation and the RLC Detox

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Operation detail cyanide concentrations. The operating procedures for both mills cover the operational requirements for all tanks, valves, pipes and other equipment with regard to elements such as tonnages, densities, pH and cyanide concentrations.

The plans and procedures describe the standard of practice necessary for the safe and environmentally sound operation of the cyanide facilities, including the specific measures needed for compliance with the Code. RLGM has developed and implemented inspection and preventive maintenance programs for all the cyanide facilities including: cyanide unloading, mixing and storage facilities; the mills; the cyanide destruction plants; the paste plants; the effluent plant; and the Tailings Management Areas (TMAs) (including all ponds and wetlands).

RLGM has a written procedure for evaluating changes to cyanide facilities and to the current processes of safe management and handling of cyanide. This procedure requires sign-off by the process, safety, maintenance, and environmental managers, as well as other department managers if relevant to the proposed change. Seven changes, including one pre-construction Hazop analysis, were assessed during the audit period.

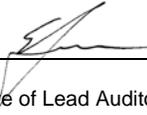
RLGM has various procedures and plans to address contingency actions for various scenarios related to cyanide, including: leaks and/or tank ruptures inside the mills; spills of solid cyanide during transportation; fires inside the mills; pipe/valve ruptures; cyanide destruct system failure; power outages; detoxification process upsets and failure; overtopping of TMAs and ponds; and, temporary closure or cessation of operations.

Inspections of the cyanide facilities are conducted on a shift, daily, weekly, monthly and annually basis at CC and RLC. These inspections are sufficient to assure and document that the cyanide facilities are functioning within the design parameters. Inspections are documented on operator reports and inspection forms. The documentation includes the name of the inspector, date and observed deficiencies.

RLGM has implemented a maintenance program via the SAP software that includes both preventative (scheduled) maintenance and corrective (unscheduled) maintenance to ensure that equipment and devices function as necessary for safe cyanide management.

RLGM receives electrical power via a single line from the Ear Falls hydropower plant. In the event of disruptions to this source, RLGM has provided emergency generators at the CC and the RLC. There are two 1 MW generators for the CC that will run critical equipment in the mill and paste plant. There are also two generators for the RLC that will run critical equipment in the mill (0.5 MW) and the paste plant (0.25 MW).

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**Standard of Practice 4.2:** Introduce management and operating systems to minimise cyanide use, thereby limiting concentrations of cyanide in mill tailings.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.2**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.2, requiring that the operation limit the use of cyanide to that optimal for economic recovery of gold so that the waste tailings material has as low a cyanide concentration as practical.

RLGM conducted an initial evaluation of cyanide addition rates at the CC Mill and the RLC Mill in 2010, and updated that initial study in 2013. RLGM conducted a study to evaluate the optimization of leaching parameters in terms of gold recovery including cyanide consumption and pH in August 2016. The study served to confirm or adjust the cyanide targets being used at the mills at the time of the evaluation.

RLGM has evaluated and implemented control strategies for cyanide additions and currently implements both a manual and an automatically strategy at both mills. The manual strategy consists of conducting titration tests every four hours at the mills. In addition, leach assays are completed by the internal laboratory every 12 hours at RLC, and every 24 hours at CC. Since 2016, RLGM installed automatic titrators at both mills that record NaCN values every 15 minutes.

**Standard of Practice 4.3:** Implement a comprehensive water management programme to protect against unintentional releases.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.3**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.3, requiring the operation to implement a comprehensive water management program to protect against unintentional releases.

The operation has developed a comprehensive, probabilistic water balance. The model is comprehensive in that they include: tailings deposition rates; available storage volume based on annual bathymetric surveys; precipitation and evaporation; undiverted run-on; spring snowmelt; treatment systems; and losses to seepage. The model does not include power outages because the effects would be negligible given that the pumped inflow and outflow would simply stop and, in any case, those rates are low relative to the large solution storage volumes available (i.e., these tailings ponds are unlike heap leach pads that naturally continue to drain when there is a power outage).

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The model is probabilistic in that it can be run using measured and average precipitation as well as extreme dry and/or wet scenarios for multiple return periods. In addition, selected extreme events are included.

Operating procedures incorporate inspection and monitoring activities to implement water balance and prevent overtopping of the impoundments and ponds. RLGM conducts inspections of the pond water levels, run-on diversions, and dam conditions daily to implement the water balance.

The design freeboard is specified in the CC and RLC OMS Manuals and EPPs for each TMA. The required freeboard varies from 0.6 to 1.5 m depending on the pond.

The operation measures precipitation, compare results to design assumptions and revises operating practices as necessary. RLGM installed a weather station near the Polishing Pond at the CC TMA in 2010. This station is operated only during the summer months. Due to this and the short period of data available on site, data from the Red Lake Airport station was used for the 2015 update of the water balance model. RLGM conducts periodic reviews of the precipitation collected onsite against the precipitation data collected at the Red Lake Airport station in order to identify any possible reading errors and/or significant differences in data.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.4**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.4, requiring the operation implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

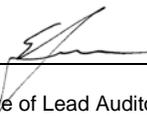
RLGM has implemented cyanide neutralization as a primary means to maintain WAD cyanide concentrations below 50 mg/L in open waters at the CC and RLC TMAs. In addition, RLGM has also installed fencing to limit wildlife access in certain areas of the TMAs. WAD cyanide in open waters at the CC and RLC TMAs are well below 50 mg/L.

Analytical data for the cyanide facilities (open water and discharge points) at the CC and RLC TMAs indicated that WAD cyanide concentrations in these facilities did not exceed 50 mg/L during the Recertification Audit.

RLGM inspects daily for wildlife mortality at the CC and RLC TMAs and data indicates that no cyanide related wildlife mortalities have occurred during the recertification period.

RLGM does not have a heap leach facility.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.5**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.5, requiring the operation implement measures to protect fish and wildlife from direct or indirect discharges of cyanide process solutions to surface water.

RLGM discharges seasonally from May to October directly to Balmer Lake from the wetlands at the CC TMA (at "Wetout") and from the water treatment plant at the RLC TMA. WAD cyanide levels for both direct discharges were less than 0.5 mg/L throughout the recertification period.

Regulatory authorities have established mixing zones for the direct discharges from the CC and RLC TMAs to Balmer Lake. Free cyanide levels at the compliance points for both mixing zones were below 0.022 mg/L.

RLGM has the potential for indirect discharges to surface water from the CC and RLC TMAs. Due to a groundwater divide underlying the Main Tailings Pond, the CC TMA may indirectly discharge to the northeast to Balmer Lake and to the southwest to the McNeely Bay of Red Lake. The RLC Tailings Management Facility may indirectly discharge to Balmer Lake from the adjacent Secondary Pond. Analytical data that indicated that free cyanide at all monitoring locations were less than 0.022 mg/L.

RLGM is not engaged in any remedial action no evidence was observed to indicate cyanide concentrations in surface water have risen above levels protective of a designated beneficial use for aquatic life.

**Standard of Practice 4.6:** Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.6**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.6, requiring the operation implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of groundwater.

RLGM has constructed its tailings dams at both the CC and RLC TMAs with low permeability, compacted clay cores, and installed tailings pipelines in secondary containment. In addition, RLGM has installed

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several monitoring well immediately downgradient of the CC and RLC process facilities in order to monitor groundwater and detect potential impacts from cyanide.

The beneficial use of groundwater has been identified by the operation as "drinking water". The Province of Ontario has not established groundwater protection levels for any cyanide species for the RLC TMA. However, the Province of Ontario has established an alert level of 0.025 mg/L for free cyanide in groundwater for the CC TMA. If this protective level is exceeded in more than 50% of the sentinel wells in more than 50% of the samples in 3 consecutive monitoring events, a biological risk assessment is recommended by the Province of Ontario (as indicated in the 2005 Groundwater Monitoring Plan and Leachate Contingency Plan).

As indicated in Question 4.6.1, the Province of Ontario has established an alert level of 0.025 mg/L for free cyanide in groundwater for the CC TMA. If this protective level is exceeded in more than 50% of the sentinel wells in more than 50% of the samples in 3 consecutive monitoring events, a biological risk assessment is recommended by the Province of Ontario (as indicated in the 2005 Groundwater Monitoring Plan and Leachate Contingency Plan). Monitoring results for the recertification period did not trigger this requirement.

RLGM uses paste backfill from the CC and RLC Paste Plants for backfill in the underground workings and the potential impacts to worker health and beneficial uses of groundwater have been evaluated and measures have been implemented as necessary to address them. Given that RLGM reduces cyanide to low levels via their SO<sub>2</sub>/Air cyanide destruct circuits at both mills before the tailings arrive at their respective paste plants, the levels of cyanide in the backfill are also low. Nonetheless, RLGM performed sampling in the underground workings from sumps and areas where workers are pouring, or recently have poured, backfill. Sampling was conducted for WAD cyanide and HCN gas several times a year during the recertification period to evaluate potential impacts to workers and to groundwater. Results obtained are protective of workers and groundwater.

RLGM has not caused cyanide concentrations in groundwater to exceed the applicable standards, nor is RLGM engaged in remediation of cyanide in groundwater.

**Standard of Practice 4.7:** Provide spill prevention or containment measures for process tanks and pipelines.

in full compliance with

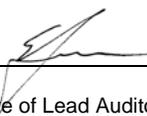
**The operation is**  in substantial compliance with **Standard of Practice 4.7**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.7 requiring that the operation provide spill prevention or containment measures for process tanks and pipelines.

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RLGM has spill containment measures for all mixing, distribution, and process solution tanks at the CC Mill and the RLC Mill as well as past facilities at the Far East Zone Unloading Station. The containments are sized to hold a volume greater than 110% of the largest tank within the containment. The operation does not have any cyanide process tanks without secondary containment.

RLGM has implemented procedures to prevent discharge to the environment of any cyanide solution or cyanide-contaminated water that is collected in the secondary containment area. The mixing and distribution tanks at both mills have their own sumps with pumps to return any spills of reagent grade solution to the tanks. All other process tanks at both mills have sumps and/or flow-through capability with ultimate containment provided by the mill floors. The sump pumps for the cyanide storage and distribution tanks as well as for process tanks at both mills have level sensors to automatically operate the pumps, which in turn are monitored from the control rooms.

RLGM has constructed all cyanide process solution pipelines and tailings pipelines as pipe-in-pipe or within concrete secondary containment or geomembrane-lined ditches as secondary containment systems.

Areas where cyanide pipelines present a risk to surface water have been evaluated for special protection needs. The tailings pipeline from the RLC paste plant to the RLC TMA crosses over Balmer Creek, a perennial watercourse. This pipeline segment was replaced by a pipe in pipe system during this recertification period.

All cyanide-related tanks and pipelines are constructed of materials compatible with cyanide and high pH, such as mild steel, stainless steel, and HDPE.

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

in full compliance with

**The operation is**  in substantial compliance with **Standard of Practice 4.8**

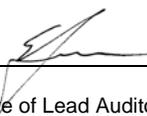
not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.8 requiring that operations implement QA/QC procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

RLGM provided evidence of construction quality assurance / quality control (QA/QC) programs during the 2014 Recertification Audit for the cyanide facilities existing at that time. These records were available on site. There have been two new construction projects at cyanide facilities since the previous Recertification Audit:

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**Bi-directional Tailings Line:** This 2-kilometer line system was constructed to transfer CC tailings to the RLC Paste Plant and return reclaimed water from the RLC Paste Plant to CC. This facility was constructed in December 2016. The QA/QC Report on the bi-directional project was signed by a licensed professional engineer of the Province of Ontario. The report included QA/QC testing results and photos as evidence of compliance with this Standard of Practice.

**Far East Zone Unloading Station:** An incomplete set of QA/QC records related to the construction of the Far East Zone Unloading Station and the load out station at RLC Paste Plant were available at the time of the site visit. To demonstrate that the Far East Zone Unloading Station and the load out station at RLC Paste Plant were constructed according to the design and implementing the corresponding QA/QC programs, RGLM retained the designer of the facilities to conduct an inspection. The inspection concluded that the engineer was “satisfied that the construction and materials used are in compliance with the intended design” and that the facilities are “compliant with the International Cyanide Code”. The report was signed by a licensed professional engineer of the Province of Ontario.

**Standard of Practice 4.9:** Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 4.9**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 4.9 requiring that operations implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and groundwater quality.

RLGM has developed written procedures for monitoring activities including surface water, groundwater and wildlife. The procedures were developed by qualified RLGM staff with environmental science backgrounds and appropriate levels of experience.

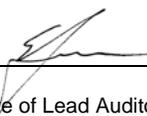
The monitoring procedures specify the details of where, how, and when samples should be taken, sample preservation techniques, shipping instructions, chain of custody procedures and cyanide species to be analysed. The RLGM Surface Water Sampling Procedure and the Groundwater Sampling Procedure contain step-by-step instructions for sampling procedures including photos. RLGM uses laboratories accredited by the Canadian Association for Laboratory Accreditation throughout the recertification period for analysis of free, WAD, and total cyanide.

RLGM sampling staff note sampling conditions during groundwater and surface water sampling activities.

RLGM monitors for cyanide in discharges to surface water and in surface and groundwater downgradient of the operation. Groundwater is monitored at numerous wells around the site.

RLGM monitors wildlife daily throughout the year.

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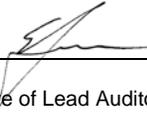
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Groundwater and surface water monitoring are completed at frequencies adequate to characterize each medium. Groundwater is monitored quarterly, while surface water is monitored at variable frequencies from weekly to monthly depending on the location. Wildlife activities and mortalities are inspected as part of the daily tailings inspection conducted on open waters at the TMAs.

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PRINCIPLE 5 – DECOMMISSIONING

Protect Communities and the Environment from Cyanide through Development and Implementation of Decommissioning Plans for Cyanide Facilities.

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

[X] in full compliance with

The operation is [ ] in substantial compliance with Standard of Practice 5.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 5.1 requiring that the site plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

The operation has developed written procedures to decommission cyanide facilities at the cessation of operations. RLGM commissioned consultants to prepare a mine-wide closure plan that covers both the RLC and CC. A December 2013 revision of the closure plan incorporates comments from the Northern Development and Mines (MNDN).

The plan includes an implementation schedule for decommissioning activities.

RLGM reviewed its decommissioning procedures for cyanide facilities in 2011 and 2013. . The next update to the closure plan is to be completed by 2018.

Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

[X] in full compliance with

The operation is [ ] in substantial compliance with Standard of Practice 5.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with the Standard of Practice 5.2 requiring that the site establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

The operation has developed an estimate of the cost to fully fund third party implementation of the cyanide-related decommissioning measures as identified in its Plan. The Asset Retirement Obligation (ARO) spreadsheet contained in the Plan provided the basis for the costs. The ARO spreadsheet was developed



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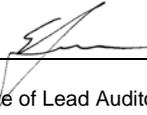
based on quotations for the closure work received in 2011 and 2013 from a specialist hazardous waste management contractor.

The operation reviews and updates the cost estimate at least every five years and when revisions to the plan are made that affect cyanide-related decommissioning activities. RLGGM provided 2011 and 2013 versions of the closure plan as evidence that the decommissioning and demolition costs are periodically reviewed and revised. In addition, RLGGM updates the ARO spreadsheet annually according to Goldcorp's policy.

The applicable regulatory agency (MNDM) has accepted a letter of credit issued by the Bank of Nova Scotia on behalf of RLGGM. The letter of credit amount exceeds the estimates for decommissioning of mill equipment at both complexes, as well as estimates for complete demolition of the mill complexes.

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3.0 PRINCIPLE 6 – WORKER SAFETY

Protect Workers’ Health and Safety from Exposure to Cyanide

Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminated, reduce and control them.

in full compliance with

The operation is  in substantial compliance with Standard of Practice 6.1

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The site is in full compliance with Standard of Practice 6.1 requiring that the site identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

RLGM has developed standard operating procedures (SOPs) that describe how cyanide-related tasks are to be performed to minimize worker exposure. The SOPs describe related hazards, minimum PPE requirements, operator responsibilities, procedures for using and handling cyanide, and documentation. In addition, work orders for maintenance activities include details of cyanide safety instructions and requirements. RLGM has also posted signage for PPE requirements located at the entrances of process areas.

Pre-work inspections are undertaken before every shift using a 5-point card, which prompts the completion of a field-level risk assessment based on the task and a workplace inspection.

RLGM has implemented a Management of Change procedure to evaluate any proposed change or modification to any part of the cyanide process flow and/or any changes or modifications to any of the cyanide management controls.

RLGM solicits worker input in developing and evaluating health and safety procedures via direct communication with supervisors and workers during safety meetings. An Occupational Health & Safety representative who is a worker representative is involved in all reviews of SOPs. The representative and supervisors ask for worker input during safety meetings, and in the performance of JTO’s.

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

in full compliance with

The operation is  in substantial compliance with Standard of Practice 6.2

not in compliance with



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Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 6.2 requiring that the site operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

RLGM has determined the appropriate pH for limiting the evolution of HCN gas during mixing and production activities. At CC and RLC, the pH is maintained at least at 12.5 for mixing activities, diminishing to 10.5 to 10.8 throughout the production processes.

RLGM has identified areas and activities where workers may be exposed to cyanide and has developed PPE requirements for each relevant procedure. Some procedures also require the use of a portable HCN meter during the task. RLGM has also installed fixed HCN monitors in areas where the potential exists for cyanide exposure.

The fixed HCN meters have visual and audible alarms that alert at 2.5 ppm HCN and at 4.7 ppm HCN. At 2.5 ppm, an alarm and amber light are activated in the work area and the control room. At 4.7 ppm, a red light and alarm are activated, and evacuation is required. HCN monitoring equipment is maintained, tested and calibrated as directed by the manufacturer, and the records are retained for at least one year.

Warning signs prohibiting smoking, food and drink are posted at the entrance to all cyanide facilities, and areas where cyanide is present. At RLC, these signs are in place but access to the entire facility has also been restricted while in care and maintenance.

Safety showers, low-pressure eye wash stations and dry chemical fire extinguishers are located at strategic locations throughout RLGM and are maintained, inspected and tested on a regular basis. All piping and tanks containing cyanide process solutions, including unloading, storage, mixing and process tanks and pipes, are marked as containing cyanide and, in the case of accessible tanks and pipes, are painted with purple paint. Pipe labeling indicates the direction of solution flow. SDSs for liquid and solid sodium cyanide are maintained in an online SDS system, and cyanide emergency response procedures have been posted at several locations in the work place.

RLGM has implemented a procedure throughout the recertification period to investigate and evaluate potential cyanide exposure incidents to determine the adequacy of the operation's programs and procedures to protect worker health and safety, and to respond to cyanide exposures.

**Standard of Practice 6.3:** Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

in full compliance with

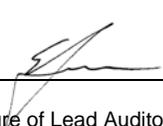
**The operation is**

in substantial compliance with

**Standard of Practice 6.3**

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 6.3 which requires that the site develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

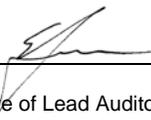
RLGM has water, oxygen, resuscitators, cyanide antidote kits (Cyanokits), radios, and telephones at key locations to be available for use in the event of emergencies. The Cyanokits must be administered by either the Site nurse, or a responding paramedic, all of whom have received training in the administration of Cyanokits arranged by RLGM. Oxygen cylinders are available for deployment by first responders before the Cyanokit is deployed. RLGM has nursing stations in CC and Balmer Complex, with three nurses providing coverage on overlapping shifts during weekdays, and on call during weekends. The operation has developed procedures for responding to and transporting workers exposed to cyanide to Red Lake Hospital.

The operation inspects its first aid equipment regularly to ensure that it is available when needed, and that materials are stored and/or tested as directed by their manufacturer and replaced on a schedule to ensure that they will be effective when needed.

RLGM has developed specific written emergency response plans and procedures to respond to cyanide exposures. These procedures describe emergency response actions including the location of emergency response equipment, cyanide exposure treatment, directions for decontamination, and emergency communication protocols. RLGM conducts mock drill events for cyanide spills and exposures, including tabletop exercises and full mock drills in the field. The drills cover cyanide exposure and environmental release scenarios.

First aid responders are trained in the administration of oxygen to exposure victims. Oxygen tanks are available in the mill control room, as well as at all security gates, and would be brought to the location of an emergency by security, nurses, and/or mill operators. RLGM has a formalised agreement with the local hospital, Red Lake Hospital, that acknowledges the presence of cyanide at RLGM and states the hospital's preparedness to treat cyanide exposure victims.

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PRINCIPLE 7 – EMERGENCY RESPONSE

Protect Communities and the Environment through the Development of Emergency Response Strategies and Capabilities

Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 7.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 7.1 which requires that the site prepare detailed emergency response plans for potential cyanide releases.

RLGM has developed several plans and procedures that address cyanide exposures and releases including potential cyanide failure scenarios relevant to RLGM such as spills (solid and liquid), fires, power outages, system failures, overtopping of ponds, pipes/valves/tank ruptures, and transportation events. The RLGM plans and procedures describe appropriate preparedness, response, evacuation and decontamination procedures for the relevant scenarios.

Responsibility for cyanide rests with Chemours and the transporters (Miller) until it is unloaded into the cyanide warehouse. Miller is certified as fully compliant with the Code and has met with the requirements associated with this Standard of Practice to obtain their certification. Mock drills conducted at RLGM have included transportation related scenarios such as dropping of flo-bins during unloading.

Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 7.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 7.2 which requires that the site involve site personnel and stakeholders in the planning process.

RLGM solicits worker input in developing and evaluating emergency response procedures via direct communication to supervisors and during pre-shift safety meetings and monthly safety meetings. An Occupational Health & Safety representative who is a worker representative is involved in all reviews of procedures.



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A 2015 email from the Red Lake District Fire Chief was reviewed that confirmed he was provided with and reviewed a copy of the Surface Spill Response Plan. The Fire Chief is the emergency response coordinator for the community and communicates on emergency preparedness matters with the community, through public town council meetings. Several members of the RLGM emergency response team are also members of the community emergency response teams.

RLGM maintains an ongoing dialogue with the Red Lake Hospital in regard to cyanide emergency response preparedness. Representatives from RLGM have visited the nearest school and spoken about the Emergency Response Plan and the actions to be taken in the event of an evacuation.

RLGM regularly, and at least annually on a formal basis, consults with the Red Lake Fire Chief about emergency response planning and preparedness.

**Standard of Practice 7.3:** Designate appropriate personnel and commit necessary equipment and resources for emergency response.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.3**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 7.3 which requires that the site designate appropriate personnel and commit necessary equipment and resources for emergency response.

RLGM has developed plans and procedures that describe the authorities and responsibilities for emergency response, as well as specific duties for implementing cyanide response. An incident Control Group is described in the Surface Spill Response Plan, and RLGM has also identified minimum representation required on the emergency response Team, with current team member names and contact information. Training for emergency responders includes coverage of all cyanide-related emergency procedures. The role of outside responders is described, including the fire department, paramedics, police officers, and the hospital. Reference is also made to the Municipality of Red Lake Emergency Plan.

Emergency response equipment is identified in the Cyanide Related Emergencies procedures. Inspection procedures for this and other emergency equipment is conducted in accordance with several procedures and checklists.

**Standard of Practice 7.4:** Develop procedures for internal and external emergency notification and reporting.

in full compliance with

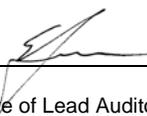
**The operation is**

in substantial compliance with

**Standard of Practice 7.4**

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 7.4 which requires that the site develop procedures for internal and external emergency notification and reporting.

The Surface Spill Response Plan and Sodium Cyanide Emergency Response document includes procedures and contact information for notifying Goldcorp management, the ERT, Government Agencies, Municipal Fire Department, the ambulance and hospital, local police, Chemours and community representatives, including First Nations contacts. . The Plans also make reference to the Red Lake Municipal Emergency Plan, with contact information and notification procedures for all other community response agencies and procedures for communicating with the media.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.5**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 7.5 which requires that the site incorporate in response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

The Surface Spill Response Plan has specific remediation measures for the cyanide release scenarios, including affected soils, standing water, recovery of spilled solid cyanide, and treatment of residuals following remediation. The Plan permits the use of lime or sodium carbonate to treat liquid or solid residuals, but prohibits the use of sodium hypochlorite, ferrous sulphate, or hydrogen peroxide for releases to water. Recovered residuals are to be placed in the TMA. Bottled water is to be supplied in the event of cyanide contamination of drinking water supplies, although pathways from the potable water supply (at Cochenour, upgradient of RLGM) are unlikely. The Plan also requires that contaminated water and/or soils are monitored as necessary after a cyanide spill, and provides detailed procedures for water and soil sampling and possible sampling locations.

**Standard of Practice 7.6:** Periodically evaluate response procedures and capabilities and revise them as needed.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 7.6**

not in compliance with

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Summarize the basis for this finding/deficiencies identified:

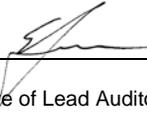
The operation is in full compliance with Standard of Practice 7.6, which requires that the site periodically evaluate response procedures and capabilities and revise them as needed.

The Surface Spill Response Plan is reviewed and revised annually or more frequently if required, with the most recent revisions being completed in September 2016. A revision table included in the front of the Plan indicates that the Plan was reviewed and revised on four occasions during the recertification period.

RLGM conducts mock drill events for cyanide spills and exposures, including tabletop exercises and full mock drills in the field. Records of the mock drill events showed that corrective or preventive actions had been identified as a result of learnings from the drill events.

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PRINCIPLE 8 – TRAINING

Train Workers and Emergency Response Personnel to Manage Cyanide in a Safe and Environmentally Protective Manner

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 8.1

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 8.1 which requires that the site train workers to understand the hazards associated with cyanide use.

RLGM provides training to all personnel who may encounter cyanide. General Orientation Training is provided to all employees, visitors, and contractors upon first arrival at the site. This training includes cyanide awareness, identification, colouring and signage, points of use, and exposure routes and risks. General emergency response information is reviewed. Information on the Code is also provided. Mill Induction Training is given to all mill, tailings and maintenance employees except Maintenance electrical workers. All mill employees also receive training during an annual Mill Safety Day that includes the Mill Induction cyanide training presentation as refresher training.

RLGM retains employee training records in an electronic system using the SAP platform.

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

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 8.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 8.2 which requires that the site train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

RLGM ensures personnel receive general and specialized training for all cyanide-related standard operating procedures, as required for their role. Training elements for each specific job are identified in the training modules developed for each specific process area. The training material includes objectives, safety



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measures, process descriptions, equipment location and recognition, PPE, hazardous materials, tools and emergency procedures.

Training is supported by Job Task Observations (JTOs) that allow the trainee operator, trainer and manager to review the performance of each task together both allowing the operator to operate the circuit.

Training at RLGGM is provided by qualified trainers, including senior mill or safety personnel with many years of experience conducting the tasks that the training pertains to. Train-the-trainer program training has been provided to RGLM's supervisors who are responsible for training operators.

All employees, contractors and temporary employees (such as summer students) receive orientation training prior to working onsite. This training includes general information about cyanide hazards, control measures, and exposure response protocols. Additional mill induction training is provided to those who work in the mill, with or around cyanide. This includes first aid, exposure response and similar training, as well as detailed training to operate the mill circuits.

Mill operators are trained on a circuit but are not permitted to undertake the job by themselves until they successfully undertake a JTO for the specific circuit together with a trainer and supervisor.

RLGGM provides all employees and contractors with an annual mandatory safety and training day, in which cyanide awareness refresher training is included.

RLGGM evaluates the effectiveness of cyanide training by worker testing and observation. Training programs, including General Awareness training and Mill Induction training, are concluded with tests to verify comprehension of the materials. RLGGM retains employee training records in an electronic system using the SAP platform.

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

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 8.3**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 8.3 which requires that the site train appropriate workers and personnel to respond to exposures and environmental releases of cyanide.

RLGGM personnel responsible for unloading, mixing, production, and maintenance receive the Mill Orientation Training, which covers, in part, the emergency procedures to be followed in the case of a cyanide release. This includes recognition of exposure symptoms, first aid / first response, and decontamination procedures. Monthly safety meetings are used to reinforce training. Annual Mill Day refresher training cyanide components includes training in first aid and decontamination procedures.



## ICMC RECERTIFICATION SUMMARY AUDIT REPORT

RLGM maintains an ongoing dialogue with the Red Lake Hospital in regard to cyanide emergency response preparedness, and the role of the hospital in response to cyanide emergencies.

RLGM conducts mock drill events for cyanide spills and exposures, including tabletop exercises and full mock drills in the field. The drills included response and treatment to worker exposures, as well as environmental remediation following a spill event.

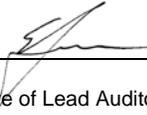
Training provided to the Surface Spill Response Team includes a field component that allows the team to apply and test their cyanide release and exposure response procedures. A total of 24 training events have been held during the recertification period.

Cyanide emergency drills are evaluated from a training perspective to determine if personnel have the knowledge and skills required for effective response. The training procedures are revised if deficiencies are identified. In the action plans from the various mock drills, there was evidence observed of incorporation of the lessons learned into the response procedures and plans.

RLGM retains employee training records in an electronic system using the SAP platform.

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Red Lake Gold Mines  
Name of Facility

  
\_\_\_\_\_  
Signature of Lead Auditor

July 10, 2017  
Date





PRINCIPLE 9 – DIALOGUE

Engage in Public Consultation and Disclosure

Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.1

[ ] not in compliance with

Summarise the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 9.1 which requires that the site Provide stakeholders the opportunity to communicate issues of concern.

RLGM provides the opportunity for stakeholders to communicate issues of concerns in a number of ways, from email accounts and hotlines established to receive concerns, to regularly scheduled community and First Nations meetings at which concerns are raised by these stakeholders. The Community Connections Meetings and First Nations meetings target a broad range of stakeholder interests, but any concerned party may contact RLGM through the hotline or website / email accounts.

Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

[X] in full compliance with

The operation is

[ ] in substantial compliance with

Standard of Practice 9.2

[ ] not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 9.2 which requires that the site initiate dialogue describing cyanide management procedures and actively address identified concerns.

RLGM hosts Community Connections Meetings every second month, or minimum quarterly, with a number of chosen representatives from a broad range of local business, government and community interests. The goal is for RLGM to hear and understand any community concerns. The meetings also provide RLGM with an opportunity educate representatives about the use and management of cyanide. Previous meetings have discussed the implications of RLGM being a signatory to the Code.

RLGM maintains a ledger of community and stakeholder meetings attended, including municipal council meetings, CCDC meetings, Chamber of Commerce meetings, Community Connection meetings, First Nations meetings, tours, volunteer days, media events, and special events such as tree planting. Over 60 such events are recorded for 2016.



## ICMC RECERTIFICATION SUMMARY AUDIT REPORT

**Standard of Practice 9.3:** Make appropriate operational and environmental information regarding cyanide available to stakeholders.

in full compliance with

**The operation is**

in substantial compliance with

**Standard of Practice 9.3**

not in compliance with

Summarize the basis for this finding/deficiencies identified:

The operation is in full compliance with Standard of Practice 9.3 which requires that the site make appropriate operational and environmental information regarding cyanide available to stakeholders.

RLGM has produced written descriptions of the mine processes and use of cyanide. RLGM provides documented information on cyanide as well as verbal information during meetings with stakeholders. The population is generally literate and English is the prevalent common language in the community.

RLGM has not had any reportable release or exposure of cyanide on or off-site since the previous recertification audit in 2013, including worker exposures, releases offsite, releases resulting in significant adverse impacts, or releases causing cyanide limits to be exceeded. Should a cyanide exposure or release occur, the Surface Spill Response Plan provides procedures for notification of regulatory agencies, if required.

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Red Lake Gold Mines  
Name of Facility

\_\_\_\_\_  
Signature of Lead Auditor

July 10, 2017  
Date



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