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INTERNATIONAL CYANIDE MANAGEMENT CODE
GOLD MINING OPERATION RECERTIFICATION AUDIT
MUSSELWHITE MINE, ONTARIO, CANADA

SUMMARY AUDIT REPORT

Submitted to:

Goldcorp Canada Ltd.
Musselwhite Mine
PO Box 7500
Thunder Bay, Ontario

and

International Cyanide Management Institute
0 1400 I Street, NW, Suite 550
Washington, D.C. 20005, USA

Submitted by:

Environmental Resources Management (ERM)
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Greenwood Village, Colorado 80111

April 2013

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1. INTRODUCTION, SUMMARY, AND ATTESTATION

This summary report has been prepared to meet the requirements and intentions of the International Cyanide Management Institute (ICMI) to demonstrate that following named project has met the obligations in implementing the International Cyanide Management Code (Code).

Name of Project:	Musselwhite Mine
Project Owner / Operator:	Goldcorp Canada Ltd., a wholly owned subsidiary of Goldcorp
Name of Responsible Manager:	Gil Lawson, Mine General Manager
Address and Contact Information:	Musselwhite Mine PO Box 7500 Thunder Bay, Ontario Telephone: 807-928-2200 Ext. 6205 Fax: 807-928-2067
Audit Company:	Environmental Resources Management (ERM)
Audit Team:	
Lead Auditor:	Glenn Keays, MSc, EP(CEA) E-mail: glenn.keays@erm.com
Gold Mining Technical Expert Auditor:	Brent C. Bailey, P.E., CEA Email: brent.bailey@erm.com
Date of Audit:	This recertification audit was conducted January 14-18, 2013.

Auditors Findings:

Musselwhite Mine is	☒	**in full compliance with**	**International Cyanide Management Code**
	☐	in substantial compliance with	
	☐	not in compliance with	

This operation has not experienced compliance problems during previous three-year audit cycle.

Musselwhite Mine		April 4, 2013
Name of Facility	Signature Lead Auditor	Date

Attestation:

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 Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Glenn Keays		April 4, 2013
Name of Auditor	Signature of Lead Auditor	Date

Name and Signature of Other Auditors:

Brent C. Bailey		March 5, 2013
Name of Auditor	Signature Auditor	Date

2. LOCATION AND DESCRIPTION OF MINING AND MILLING OPERATION

The Musselwhite Mine (Musselwhite) is operated by Goldcorp Canada Ltd., a wholly-owned subsidiary of Goldcorp, Inc. and is located in the Patricia Mining District within the Skinner and Zeemel Lakes Areas on the south shore of Opapimiskan Lake, in Northwestern Ontario. Musselwhite is a fly in fly out operation and is situated approximately 130 kilometers (km) north of the town of Pickle Lake and 470 km northwest of Thunder Bay, Ontario. Seven communities, including five First Nation communities, with a combined population of approximately 4,000 are located within the vicinity of the mine. There are approximately 490 people employed at Musselwhite.

The mine site consists of a potable water treatment plant, crushing plant, mill and tailings complex, tailings thickener facility, groundwater interception system, conveying system, shop/warehouse and other ancillary facilities. Musselwhite gold production commenced in 1997 and primarily underground mining methods were employed. The current mine production is 4,000 tonnes/day ore and 2,000 tonnes/day barren rock. The barren rock material is stockpiled then utilized for underground backfill.

The milling facility uses two-stage crushing to reduce the ore and conventional gold extraction techniques to concentrate the gold. The tailings or residue from this process is washed with incoming tailings reclaim

water in thickeners to recover cyanide. Residual cyanide is treated by an INCO SO_2 cyanide destruct system prior to being pumped to the tailings thickener plant (installed in 2010) which is located in the Tailings Management Area (TMA) approximately 3 km west of the plant site.

The use of cyanide begins with the grinding area, which uses re-circulated cyanide bearing solution from the counter current decantation (CCD) wash circuit as process water within the grinding mills, Knelson concentrators, Delkor linear screen and pump boxes. The grinding circuit classified product reports to the grinding thickener and thickened underflow slurry is pumped to the leaching circuit. After the slurry reports to the leaching circuit, the control system (via an automatic titrator) adds make-up cyanide to the first of four leach tanks using sodium cyanide solution at approx. 19 w/w%. In rare cases, operators also add make-up cyanide to "leach tank #3" as required. The leach pulp is transferred from tank to tank via gravity with approximately 7.5 hours retention per tank with 4 tanks in series. The purpose of these tanks is for the dissolution of gold. The leached pulp then flows to the carbon-in-pulp (CIP) circuit for gold adsorption using activated carbon. The CIP circuit utilizes six tanks with a nominal retention time of 0.8 hour per tank allowing the slurry to flow by gravity through in-tank or interstage agitated screens. The CIP tails report to an activated carbon safety screen and tails are pumped to the CCD thickeners for cyanide recovery. Interstage screens retain the activated carbon within the CIP tanks, which advances carbon counter current to the slurry via vertical pumps within the tanks, operating on an operator initiated timed basis. Loaded carbon from the first tank (CIP #1) is scalped from the slurry over a screen and forwarded to the elution circuit to remove the gold. This elution step produces a concentrated solution of gold that is sent to the electrowinning circuit for gold recovery. The barren solution from electrowinning is recycled for reuse in the elution circuit. There is however a small bleed of weak cyanide solution from the elution/electrowinning circuit to either the leach tank(s) or alternatively the CIP #4 tank.

The process for the tailings works begins with the washing of CIP tailings slurry in two CCD wash thickeners using water reclaimed from the tailings pond. This water washing recovers a portion of the cyanide from the tailings slurry for re-use in the gold extraction process. At the same time it reduces the cyanide content requiring destruction. The discharge from the CCD wash circuit is pumped to a cyanide destruction reactor where the concentration of cyanide (Weak Acid Dissociable (WAD) cyanide) is removed with the use of sulfur dioxide (SO_2), air and/or oxygen and copper sulfate ($CuSO_4$). A process discharge of < 2.0 milligrams per liter (mg/L) of WAD cyanide is targeted. The reactor discharge is pumped to the tailings thickener about 3km west of the plant site where the tailings are thickened to approximately 74% solids. The thickened tailings are then conveyed through tailings pipelines where they are spigotted within the tailings management area to stack the tailings. Tailings lines are installed such that they are spill-protected using ditching and spill containment ponds. The tailing solids settle within the impoundment, or tailings area, while the supernatant is contained as the primary clearwater pond. The tailings area consists of a shallow, valley-like depression that is contained by a series of seven engineered, low permeability dams (A-G) flanging the south and east sides of the tailings area. Seepage through dams is collected and contained in a seepage collection pond and pumped backed to the tailings area when necessary. Additionally, a groundwater interception system was installed in 2010 to intercept a plume that is migrating from the toe of dam B of the TMA towards Zeemel Lake. This plume has been tracked over time with the use of groundwater monitoring wells. Approximately 75% of the tailings solution

discharged to the tailings pond is returned to the mill process. Surplus water from the mill (from mine dewatering and precipitation inflow) is stored and seasonally discharged to the receiving environment via the polishing pond to maintain a controlled water elevation within the tailings pond. Water discharges by gravity from the polishing pond to the treatment wetland. The decant valve on the polishing pond discharge controls the water discharge rate from the polishing pond into the treatment wetland. The Sustainability Department adjusts this valve according to flow rate and daily water quality results. The final point of compliance is the wetland outlet, where water is discharged through a Palmer-Bowlus flume into a constructed rip-rap channel that directs water to Lake 282 on the Paseminon River.

E.I. DuPont De Nemours &Co., Inc. (DuPont) is the cyanide producer and supplier for Musselwhite. Musselwhite receives solid sodium cyanide briquettes in one-ton "bag-in-box" intermediate bulk container (IBC) plywood boxes. The sodium cyanide containers are stored in a secure reagent storage warehouse. The warehouse is constructed with corrugated sheet metal walls and roof. The cyanide storage area within the warehouse has been constructed with sloped concrete flooring and containment berms. The facility is a ventilated metal building with access ramps at either end. The building has vertical rising bay doors that can be opened for loading and unloading. The building has vent openings to provide adequate ventilation. Cyanide is stored separately from other reagents by a concrete berm and has a separate concrete drainage and sump area that would prevent mixing of other reagents in the event of spills. The liquid sodium cyanide is stored in tanks in the reagent area of the mill with a venting system within the mixing and storage tanks.

The cyanide storage and mixing tanks are located in the mill facility within a concrete containment and sump with sufficient capacity to contain 110% of the largest tank. The tanks have appropriate ventilation and hydrogen cyanide gas (HCN) monitoring. Cyanide mixing and holding tanks have ultrasonic level transmitter indicators and high-level alarms that prevent tank overfilling. Musselwhite stores and manages cyanide in engineered tanks, pipelines, concrete containments, reagent storage, cyanide destruction system and tailings management area under appropriate quality control and quality assurance (QA/QC) programs. All pipelines are labeled to identify the content and the flow directions are marked. Musselwhite employs inspection and preventive maintenance programs to assure that all cyanide equipment and facilities are functioning as designed and to monitor process solutions.

Musselwhite has developed a comprehensive closure plan to complete the appropriate management of cyanide solutions and solids, and the decontamination of the cyanide facilities. The closure plan addresses the management of the cyanide facilities including milling, leach tanks, thickeners, cyanide destruct tanks, cyanide mixing and storage tanks and piping, tailings management and closure, performance monitoring (surface water, groundwater, seepage, survey monuments and erosion) and long-term maintenance. The plan has sufficient detail to support the International Cyanide Management Code (ICMC or Code) compliance and cost estimation.

Musselwhite has identified potential cyanide exposure scenarios and developed plans and standard operating procedures (SOPs) to eliminate, reduce and control exposure to cyanide. Musselwhite has completed programs to optimize cyanide use. Operating plans and individual task specific SOPs provide

details for safe storage, handling and distribution of sodium cyanide liquid; safe operation of cyanide equipment; personal protective equipment (PPE) requirements; and inspection requirements

Musselwhite has its own on-site capabilities for fire-fighting, HazMat clean-up and medical emergencies. Musselwhite has an on-site medical clinic that is staffed with a nurse qualified to provide medical/emergency assistance. There is a physician who provides 24 hour medical services via telephone or electronic communications. Musselwhite will take full responsibility for response to a cyanide release. Musselwhite has formalized arrangements with the Thunder Bay Regional Health Science Center to provide assistance to workers exposed to cyanide, if required. Musselwhite has emergency response teams trained in firefighting, confined space, cyanide spill response and decontamination, cyanide awareness, use of response equipment, first aid for cyanide poisoning and others. Every shift has first aid trained personnel.

Musselwhite provides many avenues of opportunity for stakeholders to communicate issues of concern regarding the management of cyanide at the mine (through Goldcorp's corporate website, community meetings and others). Musselwhite has established communication channels with the First Nation Councils and Communities through an Environmental Working Committee (EWC) that has been implemented through the Musselwhite Agreement in 2001. By way of the EWC, local First Nation representatives and other resource personnel learn and discuss environmental issues the site manages and participate in the decision process regarding topics potentially affecting their interests. Musselwhite provided information regarding cyanide management practices through EWC meetings, mine industrial sewage inspections, tours of the site, consultation meetings and technical reports. Cyanide related spills will be reported to the corresponding regulatory agencies within specified regulatory time frames. Reporting procedures and requirements are described in the mine emergency response plans. Musselwhite's reporting categories effectively cover the release and exposure scenarios identified in the Code.

Facilities and operational features added to the Musselwhite operations since the initial certification audit include: (1) TMA dyke raises, (2) Groundwater interception System (constructed in 2009 but commissioned in 2010), (3) Tailings Thickener (for paste tailings), and (4) a Stabilization Berm constructed at the toe of Tailing Dam C.

The Musselwhite operation was found to be in Full Compliance with the International Cyanide Management Code; and this operation has not experienced compliance problems during the previous three-year audit cycle.

3. SUMMARY AUDIT REPORT

PRINCIPLE 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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 1.1**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has committed to only purchase cyanide from producers that are compliant with the International Cyanide Management Code (Code). The cyanide supply contract with DuPont states that DuPont is and shall remain a signatory to the International Cyanide Management Code during the term of the contract. DuPont is signatory to the Code and was certified as complaint under the Code December 2009 and is currently in the process of recertification.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 2.1**
	☐	not in compliance with	

Basis for Audit Finding:

The cyanide supply contract between Goldcorp and DuPont specifies that Musselwhite takes ownership of the product at the time of delivery to the mine site reagent warehouse. Further, the contract states that DuPont shall comply and shall cause their "… production and transportation personnel, distributors, contract transporters and transporter consignor supply chains to comply with all applicable Code principles, standards of practice, performance goals, audit recommendations and certification requirements applicable to [DuPont's] production facilities and applicable to transportation to [Musselwhite], including the specific compliance matters set out in the Code's Cyanide Production Verification Protocol and Cyanide Transportation Verification Protocol."

DuPont has subcontracted the transportation to RSB Logistics, Inc. (RSB), and Miller Transportation for the transportation of sodium cyanide from their Memphis facilities to the Musselwhite Mine. The contracted transporters via their agreement with DuPont have an agreement with Goldcorp assigning them with the responsibility of transporting cyanide to the Musselwhite Mine in accordance with the Code. Empire Express has also delivered cyanide to the site from the DuPont supply facilities and is an ICMI Code certified transporter.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 2.2**
	☐	not in compliance with	

Basis for Audit Finding:

Review of the sodium cyanide supply contract indicates that Goldcorp does not contract with cyanide transporters directly. Goldcorp's contract is with DuPont and the contract specifically states that DuPont shall comply and shall cause their "… production and transportation personnel, distributors, contract transporters and transporter consignor supply chains to comply with all applicable Code principles, standards of practice, performance goals, audit recommendations and certification requirements applicable to [DuPont's] production facilities and applicable to transportation to [Musselwhite], including the specific compliance matters set out in the Code's Cyanide Production Verification Protocol and Cyanide Transportation Verification Protocol." The contracted transporters via their agreement with DuPont have an agreement with Goldcorp assigning them with the responsibility of transporting cyanide to the Musselwhite Mine in accordance the ICMC.

RSB Logistic, Inc. is the primary transporter of the supply chain for transportation from the LSI (Lemm Services Inc.) Packaging Operation in Memphis to the Musselwhite Mine. DuPont has also indicated that Miller Transport is a transporter of cyanide to Musselwhite. Further, Empire Express has transported cyanide to Musselwhite. RSB, Miller Transport, and Empire Express are all signatories to the Code and are Transportation Code certified.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 3.1**
	☐	not in compliance with	

Basis for Audit Finding

The Reagent Building is the storage facility for the delivered solid sodium cyanide briquettes in one-ton "bag-in-box" intermediate bulk container (IBC) plywood boxes. The building is a ventilated, metal, roofed building with access ramps at either end. The building has vertical rising bay doors that can be opened for loading and unloading. The facility is secure, with a concrete floor, and concrete stem walls for containment. There is a separate fenced area within the reagent storage warehouse for the storage of the solid cyanide. The cyanide storage area has a separate drainage system to a dedicated sump. The Reagent Building is a secure storage warehouse located away from people and surface waters.

Musselwhite modified the reagent storage warehouse in August 2009. The modifications were designed by an engineering firm and as part of the modification process DuPont reviewed the design and stated the plans for the updated reagent building appeared to be adequate for the storage of solid sodium cyanide intermediate bulk containers. Construction of the modifications included the installation of a liner (Linear Low Density Polyethylene [LLDPE] Geomembrane) by a third party consulting firm. Testing the placement, compaction of a limestone fill and assessing the existing soil conditions was supervised by still another third party engineering firm. The design and quality assurance and quality control (QA/QC) documents are in an on-site library for inspection and review. No changes have been made in the cyanide storage area over the past three years.

The project designer for the cyanide mixing and liquid storage area was H. A. Simons LTD Mining Group and all technical design specifications for the project are summarized in Project Construction – Level Design documents dated July 25, 1996. The construction documents used sound engineering practices for the design of all cyanide unloading, storage and mixing components. Musselwhite maintains these documents in an on-site library for inspection and review. No changes have been made in the cyanide mix area over the past three years.

In 2009 Musselwhite contracted with Focus NDT and Eddy Ongaro Engineering Corporation (EOEC) to conduct ultrasonic thickness tests and structural inspections of the cyanide tanks and the leach tanks. No problems were detected with cyanide mix tank or the storage tanks but some tank thickness issues in the upper portions of the Leach Tanks were identified. As a result of the inspections and testing, Musselwhite modified their operating practices and engaged in construction programs to upgrade tankage in the process circuit. Musselwhite maintains the inspection documents and construction documents in an on-site library for inspection and review.

The Musselwhite cyanide mixing and holding tanks have ultrasonic level transmitter indicators and high-level alarms that prevent tank overfilling. The cyanide mixing and holding tanks have both mechanical floats and ultrasonic level indicators alarmed with audible alarms at 95% levels and are monitored from the Mill Floor HMI and mill control room. The tank levels are monitored for trends on a daily basis and calibrated and maintained quarterly by the Maintenance Department. Musselwhite cyanide mixing operators conduct a detailed inspection of the area prior to mixing cyanide. This inspection includes verification and documentation of all tank levels prior to mixing.

Cyanide mixing and storage tanks are located on concrete pads and within their own concrete curbed containment within the reagent area of the mill, which prevents seepage to the subsurface. Inspection of the concrete containment areas indicated all containments were clean and in good operational condition.

Standard of Practice 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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 3.2**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has specific procedures for unloading sodium cyanide from a transport truck and safe transport from the warehouse to the mixing area. Warehouse personnel have been trained in proper unloading and storage procedures including inspections of the facilities prior to the placement of material in the Reagent Building and responses to an emergency during the off-loading of the IBCs from the transport truck. Procedures limit the stacking height of the IBCs to three high and for rotating the cyanide inventory so that they use the older inventory first. IBC containers are tracked individually by serial number and the empty containers are not used for any other purpose.

The sodium cyanide is dumped into a hopper on top of the cyanide mix tank inside the Mill Building.

After the cyanide is emptied into the hopper, the operator checks the IBC bag for any residual briquettes. The bag is then rinsed over top of the mixing tank. The box is rinsed on the concrete floor within the mill where the water drains to a sump and pump to deliver accumulated liquids to the process circuit. The wooden box is then marked on several sides with bold letters “BURN”. The empty, rinsed bag is placed back into the wooden box for disposal, i.e., for burning at the designated burn pit on site. Originally the rinsed empty plastic bags were disposed of in the on-site landfill but in the summer of 2012 the procedure was changed to burn the bags with the boxes. The outer wooden crate containing the empty, rinsed bag is transferred to the burn pile location and burned.

The procedure for mixing sodium cyanide outlines the requirements for PPE, inspections, addition of water, mixing of cyanide, transfer of the solution from the mixing tank to the holding tank; addition of caustic, the addition of dye to color the cyanide solution, and other measures required for safe addition of solid cyanide briquettes to the tank. Musselwhite’s written procedures require that reagent operators wear PPE including rubber suits, rubber boots, long sleeved rubber gloves and full face respirators or half face respirator with face shield during a mixing operation. Additionally the procedure requires observation by a second operator wearing appropriate PPE during the mixing of liquid cyanide. Musselwhite has written procedures that address the prompt clean-up of spills during mixing. Any liquid spills or leaks within the concrete containments are automatically pumped from the mixing area sump back into the mixing tank. Operators are trained to hose down the liquid spill areas immediately.

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 utilizing contingency planning and inspection and preventive maintenance procedures.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 4.1**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has developed and implemented operator manuals, procedures, instructions, and forms that address protection of human health and the environment for the use and management of cyanide including use of reagents, the operation of crushing and grinding equipment, leaching and CCD equipment, gravity circuit, cyanide destruction, and the Tailings Management Area (TMA). These documents are supplemented by operating plans and task specific SOPs that describe the management and operation of the cyanide facilities. The Province of Ontario requires mining operations to prepare Operations Manuals and keep the manuals up to date. The procedures detail the potential risks involved with each task and adequately describe safe work practices. The operating manuals detail the operating parameters and design capacities of the cyanide circuit facilities and the TMA. The tailings are neutralized to WAD cyanide concentrations in the slurry of approximately 2 mg/L in an INCO/SO_2 system. The facility has identified the assumptions and parameters on which the facility design was based and to applicable regulatory requirements. The TMA was designed to contain the 100-year, 12-hour interval storm event (the Timmins Storm) with a two meter freeboard. WAD cyanide concentrations discharged into surface water is limited to 0.02 milligrams per liter (mg/L). WAD cyanide concentrations discharged from the destruct reactor tank to the tailings thickener is limited to 5 mg/L.

Musselwhite has developed a series of documents that defines the policies, procedures and responsibilities for compliance with the Code. These documents describe the standard practices necessary for the safe and environmentally sound operation of the facility including water management procedures, inspection programs and preventative maintenance (PM) programs. The programs include inspection and documentation of all cyanide tanks, pumps, pipelines, containment areas, and the tailings facility. Currently daily, weekly and monthly inspections are being completed with work requests and work orders being developed as needed. Inspections are documented. The unloading area and solid cyanide storage area are inspected prior to an unload event and prior to removing a cyanide box from the storage area for mixing. Musselwhite uses a computer based preventive maintenance system, eMESA® to identify, issue

work orders and document all preventive maintenance activities. The PM program includes critical equipment. Musselwhite has developed a code compliant change management procedure to be used when a change that can have the potential to adversely affect quality, health, safety, efficiency, community and security is proposed. Musselwhite has developed procedures to manage contingencies in the cyanide facilities (i.e. water balance upset, overtopping of tanks, broken pipeline, ruptured valve) including key scenarios and responses for upset conditions at the plant, the TMA and the water balance.

Musselwhite has developed procedures to manage contingencies in the operations such as, appropriate actions and responses for process spills, refinery sump pump high level alarm resulting in the potential of a spill to the environment, and breach of tailings to the environment (tailings pumping system trouble or failure). The "Emergency Preparedness Plan, Spill Responses", (October 2012) discusses measures and response actions to be taken if there is a spill. The Ontario Mining Act requires a mine to develop a management plan for periods of temporary mining inactivity. The 2010 Closure Plan Amendment includes details for the temporary suspension of operations.

Musselwhite has established inspection frequencies on a shift (process plants), daily (milling operations, and TMA) and monthly (all facilities by Department Leaders) basis. These inspections are designed to assure and document that the facilities are functioning within design parameters. Daily inspections are conducted by operators to assure the proper function of the process facilities - plant piping, tanks, tank levels, and containments. Tank level records (continuous readings) are stored on the HMI digital storage system. Daily inspections (an inspection on each shift) of the TMA that includes checks of the pond level, any wildlife mortality, integrity of embankments, reclaim lines, and the seepage control area. A third party engineer conducts an annual inspection of the TMA.

Standard of Practice 4.2: ***Introduce management and operating systems to minimize 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	

Basis for Audit Finding:

Musselwhite conducts routine metallurgical testing (bottle roll tests) to evaluate cyanide addition and recovery rates. The ore is generally consistent allowing for nominal cyanide application rates. The counter-current decantation (CCD) system includes two CCDs for washing cyanide from the tailings for return to the process. This works to recycle approximately 75% of the cyanide back to the circuit, further reducing the cyanide used and the amount of cyanide destructed.

Evaluations have been done by Musselwhite showing that cyanide could possibly be reduced by reducing water usage via higher leach density. Also the operation has considered conducting leach tests to determine if the cyanide concentration in the Leach Circuit could be reduced. This work along with other considerations to reduce cyanide use has been done in conjunction with the Toxic Reduction Act administered by the Ontario Ministry of Environment

Musselwhite has implemented a strategy and management system to control the addition of cyanide in the mill by regularly monitoring cyanide concentration in the leach circuit and gold extraction evaluated to optimize the recovery. Also considered in the analysis is the cyanide concentration going to the TMA to assure that the cyanide concentration is below 50 mg/L WAD cyanide after cyanide destruction.

Standard of Practice 4.3: ***Implement a comprehensive water management program 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	

Basis for Audit Finding:

Musselwhite has a comprehensive and probabilistic water balance that is capable of evaluating forward looking scenarios. Maintenance of the model includes periodic calibration and re-evaluation of assumptions. The water balance model is run monthly or as needed. It can be accessed any time to check water volumes in the TMA ponds and compare projected pond elevations with measured pond elevations.

The water balance focuses on the TMA and includes: (1) Inputs - tailing discharge (plus the geotechnical properties of the tailings, i.e., tailings slurry percent solids and moisture content, consolidated tailings dry density and percent saturation, and tailings specific gravity), precipitation, direct precipitation run-on to the TMA surface, water from the seepage collection pond, groundwater interceptions wells, and mine water (dewatering); (2) Outputs - reclaim water to the mill, pond evaporation, retained water, discharge to the Polishing Pond, and seepage from the impoundment collected via the seepage collection pond. The tailings pond elevation is measured monthly and every year the entire tailings pond is surveyed. This is done in conjunction with Golder Associates evaluation of the tailings dam.

The Musselwhite water balance model provides for precipitation run-on but the actual input value entering the tailings impoundment is negligible because the up gradient watershed is insignificantly small. The only excess water that enters the system during a storm event is from precipitation falling directly onto the TMA. Musselwhite utilizes meteorological data collected from an onsite meteorological station

to recalibrate the model, i.e., recalibration based on actual site conditions. The model assumes that all precipitation occurring during the winter months (typically November to May) will run-off in May, June, and July. The water balance model incorporates production rates, tailings geotechnical properties (in-situ tailings density, tailings specific gravity, tailings porosity, percentage solids by weight), TMA impoundment water depths and geometries, tailings water reclaim rates, meteorological data and seasonal discharge.

The Operation, Maintenance and Surveillance Manual for Goldcorp Musselwhite Mine's Tailings, Cyanide and Water management Facilities and specific Standard Operating Procedures for the cyanide facilities incorporate inspection and monitoring activities to prevent unplanned discharge of process solutions to the environment. The TMA has been designed to contain fluid volume resulting from precipitation and runoff in the tailings impoundment during a 100-year, 24-hour storm event and maintain a 1.5 m freeboard. The water balance model incorporates the design maximum operating levels. Musselwhite has standard operating procedures and Mill and Tailings Operating Manuals for operating the facilities within design limits. During inspections, operators check to ensure that the water levels in the tailings impoundment are within maximum operating levels. The water level of the reclaim pond is measured each shift and regularly reviewed by the Mill Superintendent. The actual water level is included in the water balance. To protect the earth dams of the TMA from over-topping, an emergency spillway has been constructed on the north abutment of Dam D.

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	

Basis for Audit Finding:

Musselwhite has implemented cyanide destruction as a primary means to maintain WAD cyanide concentrations below 50 mg/L in open waters in the TMA. Generally WAD cyanide concentrations in the end of pipe discharge to the TMA (after thickening) are below 2 mg/L. Otherwise all process solutions and slurries are in tanks and pipelines. Musselwhite completes sampling and analysis every three hours of the WAD cyanide concentration in the detoxified tailings at the discharge point of the cyanide destruct reactor.

Monitoring shows that WAD cyanide concentrations in the supernatant pond were less that than 0.2 mg/L from February 2010 to December 2012 (with the exception of one excursion in late September 2011

where the measured value was 0.21 mg/L

Musselwhite has been successful in preventing wildlife mortality related to cyanide in the open water ponds by treating the tailings slurry to well below 50 mg/L prior to discharge. In conjunction with the "Fish and Wildlife Management Plan", Musselwhite has implemented a mortality monitoring program along with TMA inspections that documents any mortalities on the Tailings Inspection form. Also, Musselwhite has developed and implemented a "Fish & Wildlife Management Plan" as a program to minimize impacts to surrounding fish and wildlife. Should wildlife mortalities be discovered on the mine site, Musselwhite environmental staff collect the animal and send it off site for a necropsy if conditions warrant. There were no known mortalities related to cyanide from February 2010 to December 2012.

Standard of Practice 4.5: ***Implement measures to protect fish and wildlife from direct and 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	

Basis for Audit Finding:

Musselwhite is in full compliance with Standard of Practice 4.5. The operation has an authorized direct discharge to surface water at the EF-3 flume Prior to discharge water moves through the following path: 1) slurry is processed for cyanide destruction in the INCO SO_2 system; 2) the slurry then flows to the Thickener at the TMA; (3) thickened slurry discharges to the TMA and water from the thickening process flows to the Supernatant Pond via rip rapped ditches constructed around the periphery of the discharge dyke of the TMA; 4) water is recycled back to the mill from the Supernatant Pond but excess is seasonally pumped to the Polishing Pond; 4) the Polishing Pond has a managed gate valve discharge point that discharges to a treatment wetland; 5) the treatment wetland discharges to the EF-3 flume. Treated effluent from the flume ultimately flows into Lake 282 on a seasonal basis – May to October. Water quality at EF-3 indicates that WAD cyanide is below 0.02 mg/L, e.g., WAD cyanide concentrations were reported to average 0.0015 and maximum cyanide concentrations of 0.006 mg/ from February 2010 to December 2012.

The Ontario Ministry of Environment (MOE) issued an Environmental Compliance Approval to Musselwhite authorizing a mixing zone. Musselwhite monitors surface water in the established mixing zone (MUS-22). Water quality monitoring at MUS-22 has shown that both the average and maximum concentrations are <0.002 mg/L of WAD CN.

Musselwhite has an Environmental Effects Monitoring programs to identify any adverse effects of their

effluent on fish, fish habitat (benthic invertebrate communities), and the use of fisheries resources. Musselwhite conducts acute lethality testing and chronic toxicity testing for reports to the regulatory authorities.

Musselwhite does not have an indirect discharge to surface water. A Seepage Collection Pond is located on the downstream side of the southern dam of the TMA. The Seepage Collection Pond is seasonally pumped to the tailings pond to prevent surface water discharge to a constructed fish habitat and ultimately to Zeemel Lake. West of the Seepage collection pond is the Groundwater Interception System that further prevents seepage from the TMA from entering Zeemel Lake. Water from the Interception System is continually pumped to the TMA. Evaluation of the groundwater Interception System is performed by sampling 40+ groundwater stations, 16 local surface water stations and 14 regional surface water stations. The local stations are monitored on a monthly basis and the regional stations thrice yearly for WAD cyanide and other parameters. Surface water is measured downstream of the TMA and the Polishing Pond, at the discharge point (EF-3) and regionally several kilometers downstream for the facility. A review of water quality data in Lake 282 and Zeemel Lake indicated that WAD cyanide was less than 0.002 mg/l during the sampling periods in 2010, 2011, and 2012.

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	

Basis for Audit Finding:

Musselwhite employs a number of water management practices and measures to control seepage and protect groundwater in the vicinity of the mine site. These measures include construction and maintenance of secondary concrete containments for all process tanks and pipelines. The tailings are detoxified and conveyed to an engineered facility – the TMA. The tailings dams have been designed and constructed as clay or glacial till core structures. The cores are keyed into clay or till foundations. Hydrogeologic studies of the impoundment area have been completed to evaluate the seepage potential from the underlying glacial tills. Additionally, Musselwhite does not use mill tailings as underground backfill. In July 2010 a Groundwater Interception system was commissioned consisting of wells and pumps down gradient of the south embankment of the TMA to prevent any potential seepage from the TMA from entering Zeemel Lake and the constructed fish habitat in the vicinity. The interception system is designed to create a groundwater gradient towards the TMA and away from Zeemel Lake.

Ontario Provincial Water Quality Objectives (OPWQO) has a surface aquatic standard of 0.005 mg/L free cyanide but the project does not have a formal permit standard for groundwater in the monitoring network around the TMA. Because the OPWQO applies only to free cyanide for surface water, Musselwhite has applied it as their groundwater objective using WAD cyanide rather than free. Musselwhite has taken the approach that a measurement of 0.025 mg/L WAD cyanide would trigger a risk based approach to respond with additional groundwater protective measures. Review of the groundwater data during the recertification audit showed that WAD cyanide concentrations are below 0.002 mg/L WAD CN from 2010 through December 2012.

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	

Basis for Audit Finding

Musselwhite has spill prevention and containment measures for the two cyanide storage areas (warehouse for the sodium cyanide IBCs and the liquid mixing and storage tanks) and process areas. The process areas include the mill and the acacia cyanidation circuit, the CIP area, the leach tanks, and the CCDs. The containments are constructed of cast-in-place reinforced concrete. The concrete secondary containments for each area can contain at least 110% of the single largest tank. Other than maintenance of the secondary containment systems, no changes have been made of the secondary containment systems during the past three years. Visual inspections of the secondary containments verified that there are no materials stored within the secondary containment to compromise their capacities. An overflow at the cyanide destruct system would drain by gravity through an opening in the wall and into the tailings sump and then pumped to the tailings box. Musselwhite has automated pumps within the containments to pump collected solutions into the process circuit.

All Musselwhite cyanide process tanks and pipelines are constructed with materials compatible with high pH cyanide solutions; and critical process tanks are instrumented with level sensors that are connected to alarms on the HMI and automatic interlocks that shut down the valves or pumps if levels are exceeded.

The tailings conveyance pipeline is within an excavated compacted earthen (clay) liner. Part of the channel is sloped towards the mill, then reaches a high point and then is sloped towards the TMA. The pipeline has a flow differential alarm that would notify Musselwhite if there was a break in the tailings delivery pipeline.

Musselwhite has located facilities in areas that do not pose any undue risks to surface water that would require special protection. All process facilities are located upstream of the Polishing Pond and TMA.

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	

Basis for Audit Finding:

The operation is in full compliance with Standard of Practice 4.8. Quality control and quality assurance (QC/QA) programs have completed during construction of cyanide facilities, including the cyanide storage facilities, pipelines, the INCO/SO_2 cyanide destruction plant, the groundwater interception system, the tailings thickener, and the TMA. Musselwhite retained a qualified engineering firm to oversee and provide construction verification documentation of the plant, mill and support facilities. The QC/QA reports are all prepared by qualified engineering companies and approved by Simons at the time of construction.

The recertification audit verified that Musselwhite has retained all quality control and quality assurance records for construction of operational facilities and the TMA – facilities constructed for the control and management of cyanide.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 4.9**
	☐	not in compliance with	

Basis for Audit Finding

Musselwhite has written plans for monitoring of groundwater, surface water, fish and wildlife and aquatic

resources. Specifically, as per the requirements of the groundwater sampling, the sampling frequency is conducted annually, twice a year, three times a year or 4 times depending on the location of the well. The water elevation of each well is collected monthly. Also incorporated into the Groundwater Monitoring Program is the collection of surface water samples and water elevations recorded from the Seepage Collection Pond, Seepage Collection Ditch. Sampling and water profiles in Zeemel Lake are conducted four times a year. Sampling in Lake 282 is conducted monthly during the discharge period.

The sampling procedures include sample filtering, types of bottles and preservation, chain of custody, field measures (temperature, pH, electrical conductivity and dissolved oxygen) and equipment calibration. There are specific procedures for the office and field, documentation and registration of the samples and calibration, and quality control. Musselwhite uses the program EQWIN to store and manage the water quality data.

The water quality sampling documents ("Procedures for Surface Water Monitoring" and "Procedures for Groundwater Monitoring" by Musselwhite, updated August 2012) presents the requirements for documenting sampling conditions and procedures.

Musselwhite conducts inspections for and records wildlife mortalities. Musselwhite has been successful in preventing wildlife mortality related to cyanide in the open water ponds by keeping the WAD cyanide concentrations below 2.5 mg/L.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 5.1**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has developed a life-of-mine plan which includes a schedule for decommissioning cyanide facilities as part of the overall mine closure and reclamation. The plan incorporates the "Musselwhite Mine, Cyanide Facilities Decommissioning Plan" that outlines the sequence for decommissioning, detoxification and dismantlement of cyanide facilities. The Decommissioning Plan addresses the decommissioning and closure management procedures of the cyanide facilities including milling, leach tanks, thickeners, cyanide destruct tanks, cyanide mixing and storage tanks and piping, disposal of cyanide reagents, decontamination of equipment containing cyanide, reduction of the cyanide concentration to levels protective of human health, and wildlife management, closure performance monitoring (surface water, groundwater, seepage, survey monuments and erosion), and long-term maintenance. The Decommissioning Plan has a closure cost estimate and sufficient detail to support Code compliance. The plant site decommissioning sequence and implementation procedures meet the needs of the ICMI Cyanide Code in protecting human health and wildlife.

The Decommissioning Plan provides a written procedure and implementation schedule and accounts for an annual review including cost development to fund third party implementation of the cyanide related decommissioning measures. Decontamination and cleanup would be done in such a manner to ensure that the mill is safe for workers with regards to exposure to cyanide and to render the site cyanide free.

Goldcorp internally requires annual updates to the Life of Mine and the Asset Retirement Obligation (ARO) Programs. The Closure Plan states that Musselwhite will conduct an annual review for the activities to be undertaken including the costs for cyanide decontamination and dismantlement of the mill.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 5.2**
	☐	not in compliance with	

Basis for Audit Finding

The Musselwhite closure cost estimate provides costs for individual tasks for closure of the entire site including the milling operation, TMA, closure monitoring programs, long-term maintenance, etc. It has been calculated to provide sufficient funds for a third party contractor to complete the work and incorporates the internal cyanide facility decommissioning costs estimate.

Goldcorp requires ongoing annual review and update of the Life of Mine Plan; and the Closure Plan states that Musselwhite will conduct an annual review for the activities to be undertaken including the related costs for mill's cyanide decontamination and dismantlement

Musselwhite has established an Irrevocable Standby Letter of Credit to fund the decommissioning and closure cost. Additionally, Musselwhite accrues reclamation and closure funds as part of the cost of production.

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 eliminate, reduce and control them.***

The operation is	☒	**in full compliance with**	**Standard of Practice 6.1**
	☐	in substantial compliance with	
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has developed and maintained written Standard Operating Procedures and plans that describe the management and operation of the cyanide facilities. SOPs and plans have been developed to eliminate, reduce and control exposure to cyanide. Operating plans and individual task specific SOPs provide details for safe operation of cyanide equipment, PPE requirements and inspection requirements. Musselwhite solicits worker input in developing and evaluating health and safety procedures via direct communication to supervisors or during safety meetings conducted at all process areas. Musselwhite conducts pre-work inspections of the mill. Pre-work inspections are also conducted prior to every mix event, prior to removing a cyanide box from the reagent warehouse and prior to a cyanide offload from the transportation truck to the reagent warehouse. In addition, weekly and monthly inspections of cyanide facilities are conducted and documented. Inspections cover all cyanide areas and include PPE, Material Safety Data Sheets (MSDSs), warning signs, leach tank and valves conditions, safety showers and eye wash stations, cyanide antidotes tagged and stored properly, cyanide salt formations, leaks from pipes, flow of cyanide labels on pipes, HCN alarms, fire extinguishers and others. Musselwhite has developed a procedure to evaluate a proposed change/modification to any part of the cyanide process flow or to any of the cyanide management controls related to the cyanide process. All changes or modifications are communicated to the workforce and training requirements updated.

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	

Basis for Audit Finding:

Musselwhite has developed procedures and plans for the cyanide facilities to prevent the generation of hydrogen cyanide (HCN) gas, and has located key cyanide process facilities in well-ventilated areas with appropriate HCN monitors. The pH is continuously monitored and maintained to prevent the formation of HCN. The cyanide mixing and storage tanks and CCD thickeners have exhaust fans. Stationary HCN monitors are located at key areas within the mill building identified as areas of potential worker exposure to cyanide. The location of the monitors was based on a risk assessment conducted by Musselwhite. Areas of potential worker exposure has not changed over the past three years. Musselwhite has installed safety showers with eyewash stations and dry chemical fire extinguishers at relevant cyanide usage areas. Eye wash stations operate on reduced pressure to prevent contaminants from being forced into the eye. Musselwhite also has handheld HCN sensors to monitor HCN concentration in areas where cyanide-related tasks are conducted and when required for maintenance activities (e.g., in confined space entry). Musselwhite has implemented HCN monitoring equipment maintenance and calibration programs as directed by the manufacturer. Musselwhite has established requirements for PPE at all relevant process areas and for all cyanide-related activities.

Warning signs are in areas where cyanide is used to alert workers that cyanide is present, that smoking, open flames, eating and drinking are not allowed and that the necessary cyanide-specific PPE must be worn. Pipes containing cyanide are marked as containing cyanide solution and show flow direction inside the gravity circuit, leaching/CIP circuit and tailings washing and treatment. Signage for confined spaces at the tank entry points has also been placed. Signage was re- evaluated and reviewed for the recertification audit.

Musselwhite has MSDSs for sodium cyanide in English (the language of the workforce) in all the areas where the cyanide is used. MSDSs are also available in electronic format on Musselwhite intranet. Musselwhite has developed and implemented procedures to report and investigate cyanide related incidents.

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	

Basis for Audit Finding:

Musselwhite has developed written emergency response procedures for cyanide exposure and implemented these procedures through training and installation of emergency response equipment. Musselwhite has emergency response equipment including safety showers with eyewash stations, cyanide antidote kits (containing oxygen, amyl nitrite, sodium thiosulfate, sodium nitrite, charcodote and first aid kit), resuscitators, rescue vehicle, spill response equipment, HazMat equipment and others. The emergency response equipment is regularly inspected by the Safety Department and by the Emergency Response Team.

Cyanide antidote kits are stored at the manufacturer's recommended temperature and replaced by their expiration dates. Musselwhite has on-site capabilities for cyanide-related firefighting, medical emergency, and Hazmat clean-up. The emergency response team is trained to provide first aid for cyanide exposure including oxygen and amyl nitrite administration. Every shift has at least one emergency responder at each area where cyanide is used. Musselwhite has an on-site medical clinic that is staffed with a nurse qualified to provide medical/emergency assistance. There is a physician who provides 24 hour medical services over the telephone if the nurse calls him. In addition, Musselwhite made formalized arrangements with the Thunder Bay Regional Health Science Center to provide assistance to workers exposed to cyanide, if required. The Thunder Bay Regional Health Science Center as a fully functional emergency department and trauma center is prepared to accept cyanide exposed patients and is equipped with a variety of treatment options for them.

Musselwhite has specific written emergency procedures to respond to cyanide exposure which include symptoms of cyanide exposure, first and medical aid procedures, and amyl nitrite precautions. The Emergency Preparedness Plan (EPP), Spill Responses, also describes first aid measures and decontamination procedures to respond to cyanide exposures. Musselwhite conducts periodic mock emergency drills based on likely cyanide release/exposure scenarios to test the response procedure and incorporates lessons learned from the mock drills into its response planning.

Musselwhite conducts periodic mock emergency drills to test response procedures and incorporates lessons learned from the mock drills into its response planning.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 7.1**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite has developed several plans and SOPs that address accidental releases of cyanide including containment plans and analysis of potential scenarios. Musselwhite plans contain procedures for potential scenarios such as 1) cyanide intoxication; 2) on-site accidents during cyanide transportation; 3) releases during unloading and mixing; 4) cyanide related fire and explosion; 5) pipe, valve or tank ruptures; 6) electrical power outage and pump failures; 7) failure of the cyanide destruction reactor; 8) crack in the tailings dam, severe erosion or excess seepage through the tailings dam, and tailings dam breach with slurry flow to the environment; 8) cyanide spill control and clean-up; and 9) decontamination and emergency evacuation.

The Emergency Response Plan (ERP) and the procedure for mill emergency response describes in appropriate detail the response actions required for clearing site personnel from the area of exposure, use of cyanide antidotes and first aid measures for cyanide exposure to workers.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 7.2**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite solicited the input of its workforce in the emergency response planning through safety meetings and mock drills. The site is remote from communities and would not rely on outside responders.

Musselwhite is fully qualified and equipped to handle on-site emergency response to fire, environmental and worker exposure. Musselwhite made formalized arrangements with the Thunder Bay Regional Health Science Center to provide assistance to workers exposed to cyanide, if required.

In addition, Musselwhite has established communication channels with the First Nation Councils and Communities through an Environmental Working Committee (EWC). Musselwhite has made the councils aware of the nature of the risks associated with accidental cyanide releases, or consulted with them regarding appropriate communications and response actions.

Musselwhite has its own on-site capabilities for fire-fighting, HazMat clean-up and medical emergency. Musselwhite has made formalized arrangements with the Thunder Bay Regional Health Science Center to provide assistance to workers exposed to cyanide, if required. The site uses outside training providers to assist the ERT with readiness preparation.

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	

Basis for Audit Finding:

Musselwhite has committed, in the ERP and SOPs, the necessary emergency response equipment and first aid to manage all cyanide incidents at the operation and to coordinate transportation to the nearest medical facilities. Musselwhite has certified emergency responders trained in firefighting, confined space, spill response, cyanide awareness, use of response equipment, first aid for cyanide poisoning and others.

The ERP describes the anticipated roles and responsibilities of emergency response coordinators (e.g., first crew leader at scene, department supervisor/superintendent, mine general manager, sustainability department representative, mine site nurse, emergency response team, safety leaders, and others) for a cyanide related emergency. The ERP contains a list of the emergency response team, including the name of the emergency responders, their shift schedule (day or night shift), work area, room number at the mine camp and phone numbers. In addition, the ERP includes an external emergency contact list including Ministry of the Environment (MOE) Spills Action Center, DuPont, RSB, Ontario Mine Rescue, CANUTEC, Ornge Air Ambulance, Thunder Bay Regional Health Sciences Center, the Windigo and Shibogama First Nation Councils, and others. These agencies will be contacted in case of an emergency as needed. Musselwhite has a list of emergency response equipment including equipment location. The ERP includes procedures to inspect the emergency response equipment on an annual basis and assure its

availability when required.

The ERP includes procedures to inspect the emergency response equipment on annual basis and assure its availability when required. The ERT is responsible for inspecting the emergency equipment as part of the team routine inspections. Annual inspection records for the Self Contained Breathing Apparatus (SCBA) as well as mock drill records certifying that the spill response equipment are maintained by Musselwhite. Oxygen, CAREvent resuscitators and cyanide antidotes are inspected by the site nurse every three months and the rescue vehicle and fire truck every other day by the ERT.

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	

Basis for Audit Finding:

The ERP and related facility plans include procedures and contact information for notifying management, regulatory agencies (e.g., MOE, Environment Canada, CANUTEC, Department of Fisheries & Oceans, and Ministry of Labor (MOL), Ontario Provincial Police (OPP), First Nation Councils, DuPont, RSB, Thunder Bay Regional Health Sciences Center, the media and others. The Mine General Manager is responsible for directing communication with the media.

Standard of Practice 7.5: ***Incorporate into 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	

Basis for Audit Finding:

The ERP discusses cyanide response and remediation measures for cyanide release scenarios. The ERP includes procedures for spill containment and clean-up, and treatment of contaminated material. The ERP prohibits the use of sodium hypochlorite, ferrous sulphate or hydrogen peroxide to treat cyanide that has

been released to surface waters. Liquid or soil residues will be treated with lime (liquid) and/or soda ash. Once soils have been treated, they will be properly placed in the TMA. Musselwhite has established a pH of 6-8 for soils after clean-up. Containment berms would be constructed, if necessary, to minimize the extent of the release and prevent it from reaching drainage systems

Musselwhite extracts and treats water from Opapimiskan Lake for a potable water supply. In the event that Musselwhite drinking water is affected by a cyanide spill into Opapimiskan Lake and is not fit for human consumption, the mine has a contingency plan regarding the supply of good quality drinking water. Musselwhite maintains a two day supply of bottled water on site at all times. It is anticipated that two days would be a sufficient time frame to get additional drinking water to the site. The supply of bottled water would continue until the site's drinking water is deemed fit for human consumption based on chemical sampling and analysis.

In the event of a cyanide spill, Musselwhite has identified potential sampling locations based on a risk assessment of potential flow paths of a release of sodium cyanide. The cyanide sampling plan, included in the ERP, describes these potential sampling locations. Sampling locations have been identified along the mine access road, mill/reagent storage building and TMA. The cyanide management plan also includes sampling procedures, sampling parameters as well as the desired endpoint after clean up of all cyanide spills (e.g., Total and WAD cyanide final concentrations). Sampling will be conducted based on the "Surface Water Monitoring Procedure & the Groundwater Monitoring Procedure" described in the Musselwhite Environmental Management System.

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	

Basis for Audit Finding:

The ERP is reviewed on at least an annual basis by the Sustainability Department or following a mock drill or incident as needed. Musselwhite has a document procedure in place which ensures the ERP contents are current (e.g., response individuals call-out numbers, emergency equipment and services, emergency procedures and others). The EPP contains a table presenting the revision history of the ERP, including revision descriptions and dates. The revision history of the Plan shows there have been eight revisions to the plan since 2010.

Musselwhite conducts annual mock drills based on likely cyanide release/exposure scenarios to test the

response procedure and incorporate lessons learned from the mock drills into its response planning. Reports on the September 2010, December 2010 and December 2011 were reviewed to verify compliance. All deficiencies identified after the two mock drills have been corrected and incorporated into SOPs, ERP and training. Verification was conducted by documentation review and random interviews to operators.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 8.1**
	☐	not in compliance with	

Basis for Audit Finding:

All new employees and visitors receive a general site safety induction that includes cyanide characteristics, areas where cyanide is used in the mine, warning signs and cyanide emergency response numbers. All employees who may be performing cyanide related tasks or working in an area where cyanide is used are required to complete training in cyanide awareness. This includes contractors and new hires. Training material for cyanide awareness includes ICMC, product information, uses and application, chemical reactions, shipping, PPE, safety precautions, gas detection equipment, basic cyanide emergency plan, process spills and releases, initial response activation, techniques to isolate process spills, emergency response numbers and cyanide first aid. In addition to cyanide awareness training, all personnel in job positions that involve the use of cyanide and cyanide management receive training on how to perform their assigned tasks with minimum risk to worker health and safety. Individual training in SOPs is provided for each specific task the operator will perform related to cyanide management.

All mill operators including maintenance personnel receive Mill/Crusher Induction on the safe and practical operation of the process facilities. The induction includes HCN and evacuation alarms, cyanide poisoning injection kit, location of cyanide antidote kits and HCN monitors, response to a power failure, spill kits (usage and location), emergency situation and response, pipeline breaking, confined space entry and others. Mill operators and emergency responders are also trained in cyanide spill response and first aid for cyanide poisoning.

Musselwhite provides annual refresher training in cyanide awareness, spill response and first aid for cyanide poisoning to all employees who may be exposed to cyanide, including process operators, emergency responders, contractors, and others. In addition, Musselwhite discusses cyanide-related health and safety issues as well as changes in cyanide management SOPs, if any, at safety meetings. Refresher training records and safety meeting records for 2010 through 2012 (where cyanide related topics or SOPs were discussed) were reviewed by auditors.

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.***

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 8.2**
	☐	not in compliance with	

Basis for Audit Finding:

All personnel in job positions that involve the use and management of cyanide (including unloading, mixing, production and maintenance) receive training on how to perform their assigned tasks with minimum risk to worker health and safety. Task-specific training is provided prior to working with cyanide independently. Task-specific training include mill/crusher induction, sodium cyanide unloading and mixing, mill emergency response, daily inspection and emergency response of the tailings area, decontamination and maintenance of the cyanide system, emergency generator procedure, confined space entry, cyanide exposure treatment, inspection of the cyanide system, use of handheld HCN sensors, and others. Musselwhite provides training elements necessary for each job identified in the training materials for the mill and leach/CIP operator.

Qualified personnel provide task training related to cyanide management activities. For example, the mill/crusher induction to new mill operators is provided by various mill and leach/CIP operators who have worked for many years in the mill. The Safety Department is responsible for providing refresher training in cyanide awareness and has personnel qualified as "Train the Trainer" to conduct this training.

Musselwhite provides annual refresher training in cyanide awareness, spill response and cyanide poisoning to all employees who may be exposed to cyanide including process operators, emergency responders and contractors. In addition, Musselwhite discusses cyanide-related health and safety issues as well as changes in cyanide management SOPs, if any, at safety meetings. Musselwhite requires written tests to evaluate the effectiveness of cyanide training. Employees are also evaluated on their job performance by their supervisors through field observation of specific tasks. Training records are retained by Musselwhite. The records include the name of the employee and the trainer, the date of training; the topics covered, and test results demonstrating an employee's understanding of the training materials.

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	

Basis for Audit Finding

Musselwhite has trained all cyanide unloading, mixing, production and maintenance personnel in procedures for cyanide mill emergency response (including mill evacuation), first aid for cyanide poisoning, cyanide awareness, spill response (spills and leaks in the process area, spills during transportation of cyanide, etc.), use of the emergency response equipment, decontamination procedures, spill response and clean-up procedures, and others. Musselwhite emergency response team and emergency response coordinators are familiar with and trained for their response roles and use of response equipment. The emergency response team has weekly training sessions. Every shift has at least an emergency responder trained to administer amyl nitrite and oxygen at each area where cyanide is used.

Musselwhite has its own on-site capabilities for fire-fighting, HazMat clean-up and medical emergency and will take full responsibility for response to a cyanide release. The EPP includes an external emergency contact list including MOE Spills Action Center, DuPont, RSB, Ontario Mine Rescue, CANUTEC, Ornge Air Ambulance, Thunder Bay Regional Health Sciences Center and others. These agencies will be contacted in case of an emergency as needed.

Musselwhite provides annual refresher training in cyanide awareness, spill response and first aid for cyanide poisoning to all employees who may be exposed to cyanide, including process operators, emergency responders, contractors, and others. In addition, Musselwhite discusses cyanide-related health and safety issues as well as changes in cyanide management SOPs, if any, at safety meetings. All training records are filed by employee.

Musselwhite conducts mock emergency drills to test response procedures and incorporates lessons learned from the mock drills into its response planning. The mock drills are also conducted to ensure the integrity of the emergency equipment. A debrief is conducted to discuss lessons learned from the drills and identified corrective actions. Action items are incorporated into the Musselwhite Microsoft SharePoint intranet (known as “Conveyor”) system to track their completion.

PRINCIPLE 9 – DIALOGUE

Engage in public consultation and disclosure.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 9.1**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite provides many avenues of opportunity for stakeholders to communicate issues of concern regarding the management of cyanide at the mine. Musselwhite set up the Environmental Working Committee (EWC) with the First Nation Councils in 2001. Through the EWC, First Nation representatives and other resource personnel learn and discuss environmental issues the site deals with and participate in the decision process regarding topics potentially affecting their interests.

Musselwhite also provides tours of the site (by request) which include cyanide facilities. MOE regulators, for example, visit the site annually as part of the mine industrial sewage inspection. Inspections include site tour, discussion and sampling. Opportunities for public input are also available during the new project development and permitting phase of various projects related to the mine.

The Goldcorp website under Musselwhite Mine includes the Toxics Reduction Act Annual Public Report and the CN Reduction Plan Summary. A contact page is included whereby members of the public are provided with general site contact information.

The Musselwhite mine is also reports to the federally regulated National Pollutant Release Inventory (NPRI) on an annual basis. Cyanide losses are required to be reported on the basis of losses through effluent and tailings. This information is publically available.

A presentation was delivered by Musselwhite personnel to the Ontario Ministry of Environment in February 2011 on Cyanide management and use, including the ICMC. This presented an opportunity for the regulatory authorities to gain an understanding on cyanide use and to ask questions.

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

	☒	**in full compliance with**	
The operation is	☐	in substantial compliance with	**Standard of Practice 9.2**
	☐	not in compliance with	

Basis for Audit Finding:

Musselwhite provided information regarding cyanide management practices through EWC meetings, mine industrial sewage inspections, consultation meetings and reports. Technical reports (i.e., groundwater modeling, surface water monitoring) are provided to the community.

Musselwhite provided the public with a sustainability report up until 2007. The sustainability report included an explanation of the milling operations including cyanide use and consumption rates for different years of production. More recently, sustainability data have been collected and aggregated into a single corporate sustainability report. The 2011 report is made available on the Goldcorp website. The data summary associated with the report contains information on total cyanide use by the company – it does not identify individual usage at the mine.

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	

Basis for Audit Finding:

Musselwhite provides information on cyanide in written format (i.e., sustainability and technical reports (i.e., groundwater modeling, surface water monitoring)) and oral form (i.e., visual presentations to the communities). A translator from English to Ojicree is always present during the EWC meetings, where environmental issues and initiatives at Musselwhite are discussed with First Nation representatives. Musselwhite corporate website also provides information on the use and management of cyanide (http://www.goldcorp.com/English/Unrivalled-Assets/Mines-and-Projects/Canada-and-US/Operations/Musselwhite/Reports/default.aspx).

Previous sustainability reports (2007) have explained the milling operation including cyanide use. Since 2009, the site reports they would direct inquiries to the ICMI summary audit report from the certification audit. This would provide the most detailed information around how cyanide is managed on site. Additionally, the recent development of the Toxic Reduction Plans have specific details on cyanide use at the facility and also give options for reducing cyanide usage. This plan is available to local stakeholders and is currently available on the Goldcorp website.

Based on the potential for environmental impact, cyanide spills are reported to the corresponding regulatory agencies within specified regulatory time frames. The Spill Prevention Contingency & Reporting Plan, described in the ERP, states the reportable quantity for sodium cyanide. All spills entering the natural watercourse will be reported regardless of quantity. All spills off the mine site are also be reported. These regulatory agencies may include Ontario Ministry Of Environment (MOE) Spills Action Center (SAC), Environment Canada, Department of Fisheries and Oceans (Spill enters waterway), and OPP. Spill information reported to MOE is available upon request to public. Information on reported spills is presented in Goldcorp sustainability reports in a "Reported Environmental Incidents" table. Musselwhite is also required to immediately report to the MOL any worker fatalities or critical injuries. Musselwhite's reporting categories effectively cover the release and exposure scenarios identified in the Code.