# TOXIC SUBSTANCE REDUCTION PLAN SUMMARY

This Toxic Substance Reduction Plan Summary has been prepared in accordance with Section 8(2) of the *Toxics Reduction Act* and satisfies the minimum Plan Summary content requirements stipulated in Section 24 of Ontario Regulation (O.Reg.) 455/09.

## Basic Facility Information

| Mandatory Basic Facility Information Item | Details |
|---|---|
| **Substance Name and Chemical Abstracts Service (CAS) Registry Number for the Substance(s) whose Toxic Substance Reduction Plans are summarized by this this Plan Summary** | Nitrate Ion (Per O.Reg.455/09, "no single CAS numbers apply to these substances") |
| **National Pollutant Release Inventory (NPRI) and O.Reg.127/01 Identification Numbers** | NPRI ID: 1941<br>O.Reg.127/01 ID: 9490 |
| **The legal and trade names of the owner and the operator of the facility, the street address of the facility and the mailing address of the facility, if different** | Goldcorp Porcupine Gold Mines<br>Goldcorp Canada Ltd.<br>4315 Gold Mine Road, South Porcupine, ON P0N1H0 Canada |
| **The number of full time employee equivalents at the facility** | 745 |
| **The two- and four-digit North American Industry Classification System (NAICS) codes and the six-digit NAICS Canada code** | 21 – Mining & Oil & Gas Extraction<br>2122 – Metal Ore Mining<br>212220 – Gold & Silver Ore Mining |
| **Public contact** | Kathy-Lynn Morrish<br>Environmental Compliance Coordinator<br>Goldcorp Canada Inc. [address per above]<br>(705) 235-6720 |
| **The spatial coordinates of the facility expressed in Universal Transverse Mercator (UTM) within a North American Datum 83 (NAD83) datum** | UTM Zone 17<br>482866 E, 5368194 N |
| **Parent Company Information** | Goldcorp Inc.<br>Suite 3400-666 Burrard Street, Park Place<br>Vancouver, BC V6C 2X8<br>(604) 696-3000 |

## List of All Substances for which Toxic Substance Reduction Plans Have Been Prepared at the Facility

The Facility has prepared Toxic Substance Reduction Plans for the following prescribed Toxic Substances:

Arsenic*

Cadmium*

Chromium*

Cobalt*

Copper*

Lead*

Manganese*

Nickel*

Zinc*

Vanadium [CAS number 7440-62-2]

Cyanides (Ionic)*

Hydrochloric Acid [CAS number 7647-01-0]

Particulate Matter*

PM10*

PM2.5*

Nitrogen Oxides [CAS number 11104-93-1]

Carbon Monoxide [CAS number 630-08-0]

Ammonia (Total)*

Nitrate Ion*

*Per O.Reg.455/09, “no single CAS numbers apply to these substances”

## Statement of Intent

As required by s.4(1) of the TRA, a Plan must include either a statement of the Facility’s intent to reduce the use and/or creation of the Toxic Substance at the Facility, or the reasons for not including this statement.

A statement of the Facility’s intent to reduce the “creation” of the Toxic Substance has not been included as a part of this Plan. The Toxic Substance is not used within the Facility’s process and therefore no statement with respect to intent to reduce use of the Toxic Substance is required.

The activity that has been classified as a “creation” of the Toxic Substance for the purpose of the required TRA Quantification, Accounting and Reporting exercise for the Toxic Substances is the

generation of the Toxic Substance as a dissolved residue in effluent which is a by-product of explosives detonation within the underground mining operations at the Facility.

The Facility is of the opinion that it has previously optimized its use of explosives to greatest extent that can reasonably be expected. Furthermore, the use of explosives is directly linked to the Facility's production and therefore, given the previously optimized use of explosives, the use of explosives cannot be reduced without negatively impacting Facility production.

Through mining engineering practices and industry best practices, explosives usage at the facility is continually being optimized. Specifically, emulsion products has been implemented as these products are much less soluble in water. ANFO explosives are used in bulk which minimizes spillage as compared to traditional dry bagged explosives. Explosives usage is a vital component of the Facility's mining operations and therefore has a direct impact on production. In addition to optimizing use of products which result in the presence of the Toxic Substance in effluent, the Facility also implements measures to minimize the release of the Toxic Substance to the environment, which include a two polishing ponds through which mine water flow to minimize off-site release of the Toxic Substance. Treatment wetland systems are effective in destroying the Toxic Substance prior to final discharge, since nitrogen species in constructed and natural wetlands can be transformed by five possible processes; nitrification, denitrification, volatilization, adsorption, and plant uptake.

It should also be noted that Facility currently meets and/or exceeds all regulatory requirements which are designed to control the release of the Toxic Substance and minimize potential off-site impacts resulting from the release of the Toxic Substance.

## Objectives of the Toxic Substance Reduction Plan

The Objectives of the Plan are as follows:

- provide the reader with information on measures currently in place at the Facility which control the "creation" of the Toxic Substance;
- provide support for the Facility's position with respect to the Statement of Intent of this Plan; and
- document how the Facility has fulfilled the applicable requirements under the TRA and O.Reg.455/09 with respect to the Toxic Substance.

## Description of Why the Toxic Substance Is Used or Created

The activity that has been classified as a "creation" of the Toxic Substance for the purpose of the required TRA Quantification, Accounting and Reporting exercise for the Toxic Substance is the generation of the Toxic Substance as a dissolved residue in effluent which results from explosives detonation within the mining operations.

For the purpose of the required TRA Quantification, Accounting and Reporting exercise for the Toxic Substance, the calculated "release" values have been assumed to be equal to the amount "created," despite the fact that these releases are controlled releases. Section 12(6) of O.Reg.455/09 provides considerations for determining the "Best Available Methods" for tracking and quantifying the Toxic

Substance. MOE guidance pertaining to this section of O.Reg.455/09 states that the importance of selecting Best Available Methods is to provide the best decision making information when determining which toxics reduction options, if any, are worthwhile to implement. It should be noted that, given the Facility's decision to not include in this Plan a statement of its intent to reduce the "creation" of the Toxic Substance (as supported by the information provided in the Statement of Intent section of the Plan), no decisions will be made with respect to toxics reduction based on the calculated "creation" values for the Toxic Substance. Taking this into consideration, the Facility used judgement based on relevance and effort required to obtain information and feels that it has gone to reasonable efforts in identifying and applying the Best Available Methods for quantifications in this case.

The Toxic Substance is not used in the Facility process.

## Rationale for Not Implementing Toxic Substance Reduction Options

As required by s.18(4) of O.Reg.455/09 (as amended by s.9(3) of O.Reg.214/11), a Plan must contain an explanation of why no toxic substance reduction options will be implemented.

Facility personnel have considered each of the seven categories for toxic substance reduction options, and, in light of the information provided in the Statement of Intent section of this Plan, the Facility feels that no toxic substance reduction options can be identified in any of the seven toxic substance reduction categories.

Therefore the rationale for not implementing toxic substance reduction options is that no toxic substance reduction options could be identified.

## Statement that the Plan Summary Accurately Reflects the Current Version of the Plan

As required by s.24(1)8 of O.Reg.455/09 this Plan Summary accurately reflects the current version of the Plan.

## Planner License Number

As required by s.18(2) of O.Reg.455/09 (as amended by s. 9(2) of O.Reg.214/11), the Licensed Toxic Substance Reduction Planner responsible for providing Planner Recommendations on and certification of this Plan is as follows:

Russell Polack
Air Quality Specialist
Golder Associates Ltd.
Toxic Substance Reduction Planner License Number TSRP0002

## Copies of the Certification

Certification statements are provided in the following page.

**Toxic Substance Reduction Plans Certification by Highest Ranking Employee**

As required by s.4(2) of the *Toxics Reduction Act* (TRA), Toxic Substance Reduction Plans must contain a certification, signed by the highest ranking employee at the Facility who has management responsibilities relating to the Facility.

The following Certification Statement is being made under s.19(2) of Ontario Regulation (O.Reg.) 455/09 (as amended by s.11 of O.Reg.214/11) and satisfies the requirements of s.4(2) of the TRA for the Toxic Substance Plans that are assembled within this single document as of the date of this Certification Statement. Furthermore, the following Certification Statement is limited to the respective versions of the Plans which are dated as indicated in the Certification Statement:

*As of (insert date)* Dec 20 / 2013, *I, (insert name)* Marc Lauzier, *certify that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the plans are factually accurate and comply with the Toxics Reduction Act,2009 and Ontario Regulation 455/09 (General) made under that Act.*

- *Particulate Matter* *(dated December 18, 2013)*
- *PM10* *(dated December 18, 2013)*
- *PM2.5* *(dated December 18, 2013)*
- *Nitrogen Oxides* *(dated December 18, 2013)*
- *Carbon Monoxide* *(dated December 18, 2013)*
- *Nitrate Ion* *(dated December 18, 2013)*
- *Ammonia* *(dated December 18, 2013)*

*Signature*

Dec 20 / 2013

*Date*

Marc Lauzier

*Print Name*

December 18, 2013 Project No. 13-1192-0089

Kathy-Lynn Morrish
Goldcorp Canada Ltd.

**LICENSED TOXIC SUBSTANCE REDUCTION PLANNER CERTIFICATION STATEMENT: TOXIC SUBSTANCE REDUCTION PLANS FOR TRA PHASE II SUBSTANCES FOR GOLDCORP CANADA LTD. PORCUPINE GOLD MINES**

Dear Ms. Morrish:

Golder Associates Ltd. (Golder) was retained by Goldcorp Canada Ltd. Porcupine Gold Mines (the Facility) to provide various services pertaining to Phase II Toxic Substance Reduction Plan preparation under the *Toxics Reduction Act* (TRA), including Toxic Substance Reduction Planner (Planner) certification of Phase II Toxic Substance Reduction Plans (the Plans).

The following Planner Certification Statement which is made under s.19.1(4) of Ontario Regulation (O.Reg.) 455/09 (as amended by s.11 of O.Reg.214/11) satisfies the Planner Certification requirements for the Plans that are assembled as a single document as of the date of this Certification Statement. Furthermore, the following Certification Statement is limited to the respective versions of the Plans which are dated as indicated in the Certification Statement:

> *As of (December 18, 2013), I, Russell Polack certify that I am familiar with the processes at the Goldcorp Canada Ltd. Porcupine Gold Mines facility that use or create the toxic substances referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the Toxics Reduction Act, 2009 that are set out in the toxic substance reduction plans referred to below for the toxic substances and that the plans comply with that Act and Ontario Regulation 455/09 (General) made under that Act.*

- *Particulate Matter* (December 18, 2013)
- *PM10* (December 18, 2013)
- *PM2.5* (December 18, 2013)
- *Nitrogen Oxides* (December 18, 2013)
- *Carbon Monoxide* (December 18, 2013)
- *Nitrate Ion* (December 18, 2013)
- *Ammonia (Total)* (December 18, 2013)

Russell Polack
Toxic Substance Reduction Planner
License No. TSRP0002

December 20, 2013
Date

DCC/RLP/FSC/ms

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