

# 2020 GHG Verification Torex Gold Resources Inc.

Prepared for:

Torex Gold Resources Inc. 130 King Street West, Suite 740, Toronto, ON, M5X 2A2

Envirochem Project No.: 21028

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## **VERIFICATION STATEMENT**

May 10th, 2021

Torex Gold Resources Inc. (Torex) retained Envirochem Services Inc. (Envirochem) to conduct a third-party verification to a limited level of assurance on their 2020 GHG inventory ("GHG Assertion"). This GHG Verification was developed following ISO 14064 methodology.

The GHG Assertion is comprised of the "Inventario GEI 2020\_MML\_FE" document, prepared by Minera Media Luna, S.A. de C.V. ("Responsible Party"). The GHG reporting covers the reporting period of January 1<sup>st</sup>, 2020 to December 31<sup>st</sup>, 2020. The GHG Assertion states a total of 191,142 tonnes CO₂e were emitted during the 2020 calendar year. As the verifier, it was Envirochem's responsibility to express an opinion as to whether the GHG Assertion is materially correct, in accordance with the stated methodologies.

The review was completed in accordance with the ISO 14064 Part 3, and the work was performed to provide limited, but not absolute assurance with respect to the GHG Assertion.

Based on the processes and procedures conducted and described in this Verification Statement, Envirochem is satisfied the GHG Assertion, including the asserted annual emission of 191,142 tonnes  $CO_{2}e$ , for the 2020 reporting period is materially correct, and a fair and accurate representation of the GHG Assertion in accordance with the verification criteria. There are no unresolved discrepancies that disputes the belief that the GHG Assertion is not, in all material respects, fairly presented in accordance with the relevant criteria.

Yours truly,

**Envirochem Services Inc.** 



# **VERIFICATION SUMMARY**

Level of Assurance	Limited level of assurance	
Objectives	<ul> <li>Issue a verification report that details the verification activities</li> <li>Issue a limited verification statement</li> </ul>	
Criteria	<ul><li>ISO 14064-1</li><li>ISO 14064-3</li></ul>	
Summary	No unresolved material discrepancies identified	
Verification Team	<ul> <li>Farzad Dehkordi</li> <li>Neil Allen</li> <li>Alex Jardine</li> <li>Adam Cronkhite</li> <li>Kimberly Walton</li> </ul>	
Scope	<ul> <li>Facility Name: El Limón Guajes mining complex (ELG Mine Complex) and the Media Luna early stage development project</li> <li>Organizational Boundary: Operational Control</li> <li>Physical Operations: Gold mining and processing</li> <li>Emission Sources: Stationary fuel combustion, mobile fuel combustion, electricity, process emissions</li> <li>GHG's Emitted: Carbon Dioxide, Methane, Nitrous Oxide</li> </ul>	
Reporting Period	Reporting Period: January 1, 2020 – December 31, 2020	
Materiality	Quantitative materiality threshold is 5%	
GHG Inventory	• 191,142 tonnes CO <sub>2</sub> e	



# **TABLE OF CONTENTS**

1.0 INTRODUCTION			1		
		FACILITY DESCRIPTION			
2.0	MET	METHODOLOGY1			
	2.1	DOCUMENTS REVIEWED	2		
		VERIFICATION SCHEDULE			
3.0	RESULTS				
	3.1	VERIFICATION FINDINGS	2		
	3.2	INHERENT LIMITATIONS	4		
	3.3	IDENTIFIED DISCREPANCIES AND RESOLUTIONS	4		
4.0		TICIPANTS AND QUALIFICATIONS	5		
4.0 5.0	PAR	TICIPANTS AND QUALIFICATIONS			
	PAR				
	PAR				
5.0	PAR CON				
5.0 LIS	PAR CON	TABLES	6		
5.0 LIS	PAR CON	ICLUSION	6		



2020 GHG Verification | May 2021 Torex Gold Resources Inc.

## 1.0 INTRODUCTION

This Verification Report summarizes the tasks taken for planning and executing the verification to deliver an opinion as to whether the GHG Assertion is presented fairly and in accordance with the verification objectives, scope and criteria. It includes the five components described below:

- Verification Summary, shown above;
- Introduction, which describes the parties, the verification objectives, scope and criteria, and list of the Responsible Party's documents that have been reviewed;
- · Verification Schedule, which describes key activities and dates;
- Verification Findings, which describes the results of the verification; and,
- Verification Statement, provided at the start of this Verification Report.

# 1.1 Facility Description

El Limón Guajes (ELG) gold mining complex is located in the highly prospective Guerrero Gold Belt, 180 kilometres southwest of Mexico City, in the state of Guerrero, Mexico. The El Limón Guajes mining complex is a gold mining operation comprised of the El Limón, Guajes and El Limón Sur open pits, the El Limón Guajes underground mine including zones referred to as Sub-Sill, El Limón Deep and 71, and the processing plant and related infrastructure.

Processing of the gold ore is conducted centrally with a targeted throughput rate of 13,000 tonnes per day, as well as the El Limón Guajes Open Pit and El Limón Guajes Underground mines. The operation utilizes filtered tailings, a process in which the moisture content of tailings is reduced.

Greenhouse gas emissions result from the operation of the facility including stationary combustion, mobile combustion, electricity consumption, explosives usage, welding fumes, oxidation of lubricants, and anaerobic degradation during waste water treatment.

# 2.0 METHODOLOGY

A GHG Emission Inventory, following the principles outlined in ISO 14064 Part 1, was developed and used to compare against the GHG Assertion to verify the methodology and results. This process involved checking that all units, parameters, and conversion factors were labeled correctly, calculations were correct, and that all input and output numbers were correct. Project documents provided by Responsible Party, and supplementary documents published by the Mexican federal government, the Secretariat of Environment and Natural Resources (SEMARNAT), and the Intergovernmental Panel on Climate Change (IPCC) were reviewed during this process.



#### 2.1 Documents Reviewed

The following documents were provided by the Responsible Party during the verification process:

- Inventario GEI 2020 MML FE
- 2019 Torex GHG Inventory

The following is a list of additional documents that were used for the verification process:

- El Reglamento de la Ley General de Cambio Climático en Materia del Registro Nacional de Emisiones
- Acuerdo que establece las particularidades técnicas y las fórmulas para la aplicación de metodologías para el cálculo de emisiones de gases o compuestos de efecto invernadero
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories
  - Volume 3: Industrial Processes and Product Use, Chapter 5: Non-Energy Products from Fuels and Solvent Use
  - Volume 5: Waste, Chapter 6: Wastewater Treatment and Discharge
- SEMARNAT Factor De Emision Del Sistema Electrico Nacional 2020

#### 2.2 Verification Schedule

The following details the schedule that was established for the verification process.

- Initial Meeting: March 2021
- Envirochem begins verification process: April 2021
- Draft verification report is provided: May 2021
- Final verification report is complete: May 2021

#### 3.0 RESULTS

# 3.1 Verification Findings

A summary of verification items, verification procedure, and findings are shown in **Table 1**. This assessment was used to advise the verification opinion in determining the consistency of the GHG Assertion within the verification objective, scope, and criteria. There are no unresolved discrepancies that disputes the belief that the GHG Assertion is not, in all material respects, fairly presented in accordance with the relevant criteria.



**Table 1: Verification Findings** 

Description	Procedure	Findings	
Emission Sources	Comparison of 2020 GHG Inventory to 2019 GHG Inventory.	Waste water treatment emissions were included in 2020, which had not been included previously. No material discrepancies have been detected.	
Changes in Emissions	hanges in Emissions Comparison of 2020 GHG Inventory to 2019 GHG Inventory.  Annual en 3.3%. No been dete		
Emission Quantification	GHG Emission Inventory: Calculations and activity data reviewed.	GHG quantification methodologies were compared to those published by relevant regulatory bodies including SEMERNAT and IPCC. Emissions were recalculated using provided activity data. No material discrepancies have been detected.	
Completeness of Activity Data	Comparison of 2020 GHG Inventory to 2019 GHG Inventory.	Activity data is comprehensive and consistent with operations. No material discrepancies have been detected.	
Diesel	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.	
Gasoline	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.	
LP Gas	GHG Emission Inventory: Calculations and activity data reviewed.  Methodology and calculations correct. No material dishave been detected.		
Electricity	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.	
Lubricant	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.	
Explosives	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.	
Welding GHG Emission Inventory: Calculations and activity data reviewed.		Methodology and calculations are correct. No material discrepancies have been detected.	



Waste Water Treatment	GHG Emission Inventory: Calculations and activity data reviewed.	Methodology and calculations are correct. No material discrepancies have been detected.
GHG and Energy Intensity	GHG Emission Inventory: Calculations reviewed.	A material discrepancy was detected, but has been resolved.

### 3.2 Inherent Limitations

The following limitations to this GHG Verification were noted in evaluation the GHG Assertion:

- The provided activity data was used for fuel and electricity consumption, but activity data was not verified with the original data;
- The provided material consumption/use (i.e., for acetylene, lubricants, explosives, waste water treatment) was used, but was not compared against the original data;
- Fuel energy content was not compared against original technical data sheets;
- Material produced/processed was not compared against original production logs.

# 3.3 Identified Discrepancies and Resolutions

**Table 2** provides a summary of issues raised, the response provided by the Responsible Party, and any resulting actions taken to resolve the potential issues. A total of one (1) material discrepancy, and one (1) immaterial discrepancy was identified, with both discrepancies reaching a resolution.

Table 2: Material and Immaterial Discrepancies Identified

Identified Error, Omission or Misrepresentation	Material/Immaterial	Resolution
The 2019 National Electric System Emission Factor was used in the inventory instead of the updated 2020 emission factor.	Immaterial. This error would have resulted in an additional 2,377 tonnes CO <sub>2</sub> e, or a difference of 1.2%.	This was resolved by using the updated 2020 National Electric System Emission Factor.
Energy intensity (CO₂e) used 2019 value for gold produced.	Material. This error resulted in a 5.5% lower reported emissions intensity.	This was resolved by updating the gold produced to the 2020 value.



# 4.0 PARTICIPANTS AND QUALIFICATIONS

A summary of qualifications of Envirochem's assessors who prepared and reviewed this report is as follows:

### Farzad Dehkordi, M.Sc. Environmental Engineering, Air Quality Expert

Senior Manager & Partner

Mr. Dehkordi has more than 20 years of experience in various industrial sectors as executive, regulator and consultant. He acquired his master's degree in civil and environmental engineering and has tailored his career to incorporate environmental engineering focusing on air and odour pollution assessment, modelling, and control. Mr. Dehkordi is proficient in air dispersion modelling assessments, air emissions inventory, NPRI & GHG calculations, air and odour monitoring & sampling and data analysis with a variety of tools and software including CALPUFF, CALApps, AERMOD, AERSCREEN, SCREEN3, ArcGIS, SURFER, EPA TANKS, WRPLOT View, MEIT tool, R software, and Python scripting. He is versed in air assessment guidelines and regulatory framework in Canadian provinces. He has conducted air quality assessment and modelling projects for a variety of facilities including: agricultural operations, composting facilities, wastewater treatment plants, bulk terminals, rendering plants, steel making factories, scrap metal recycling, pulp & paper, wood products, mining and petroleum & natural gas in a team, both as a member or as a team leader. Also, he has conducted waste to energy feasibility studies. He is experienced in odour sampling work through a variety of different projects.

#### Neil Allen, M.Sc.

Senior Environmental Specialist - HSE Assurance and Management Systems

Mr. Allen, B.Sc., M.Sc., P.G.Dipl.Env.Mngt., P.Ag., EP(EMSLA), EP(CEA), CHSMSA, COR, is a Senior Environmental and Health and Safety Auditor with over 23 years of consulting experience in Canada, New Zealand, Australia, and India, He is a Certified Environmental Management System (EMS) Lead Auditor to ISO 14001 [EP(EMSLA)] and Certified Regulatory Compliance Auditor [EP(CEA)] (Health and Safety and Environmental) with ECO Canada / CECAB. He is also a Certified Health and Safety Management System Auditor (CHSMSA) with the Auditing Association of Canada, an OHSAS 18001 Lead Auditor, and a Certificate of Recognition (COR) Program Safety Management System (SMS) Auditor Certified with the Manufacturing Safety Alliance of BC, the Trucking Safety Council of BC, and the Alberta Safety Council in Alberta. He is also a Certified Towards Sustainable Mining (TSM) Verification Auditor with the Mining Association of Canada (MAC), and a GHG Verification Auditor to ISO 14064-3. For the past 22 years, Neil has specialized in completing Regulatory Compliance Audits (Environmental and Occupational Health and Safety), Green Marine Verification Audits, Environmental Management Frameworks for First Nation Clients, Occupational Health and Safety Management System Audits (COR and OHSAS 18001), Greenhouse Gas (GHG) Verification Audits to ISO 14064-3, and EMS Audits and EMS Development and Implementation to ISO 14001:2004 & 2015 for a number of private and government sector Clients in Canada and Internationally.

#### Alex Jardine, B.Sc.

Environmental Scientist

Mr. Jardine has strong analytical skills acquired through his undergraduate studies in chemistry, post-graduate studies at BCIT (Environmental Engineering) and experience as an analytical laboratory technician. He has experience in air quality monitoring, air permitting, pollution control, and air quality dispersion modelling and general environmental consultancy in British Columbia and the Lower Mainland. He is well versed in a variety of air quality software including CALPUFF, SCREEN3, WRPLOT etc. Alex



2020 GHG Verification | May 2021 Torex Gold Resources Inc.

has served in emissions sectors including agricultural operations, composting facilities, wastewater treatment plants, bulk terminals, rendering plants, shredding facilities, sawmills and hospitals. Alex has experience and training in a wide variety of air emissions and field monitoring, odour sampling, data analyses / interpretation and sampling techniques.

#### Adam Cronkhite, B.A.Sc.

Environmental Engineer (EIT)

Mr. Cronkhite is an Environmental Engineer-In-Training (EIT), working towards a professional engineering designation. His studies in Chemical Engineering at Queen's University have developed his analytical and problem-solving skills, serving him while successfully completing air monitoring, air permitting, and air modelling projects. He is well versed in a variety of air quality software including CALPUFF, AERMOD, AERSCREEN, SCREEN3, ArcGIS, SURFER, EPA TANKS, WRPLOT View etc. He has experience providing air quality services to a variety of facilities and industries including asphalt plants, sawmills, marine terminals, metals recycling plants, and waste/compost facilities.

#### Kimberly Walton, MCC

Environmental Scientist

Ms. Walton acquired her Master of Climate Change at the University of Waterloo where she established an understanding of climate science, adaptation, and mitigation. She then went on to graduate with an advanced certificate in Sustainable Energy Management (SEMAC) through BCIT. Ms. Walton has developed a variety of skills throughout her studies and work experience, including GHG inventory assessments, energy audits, lifecycle costing, community climate action plans, and climate risk assessments. She is well versed in NPRI and GHG reporting and using air quality software including WRPLOT.

# 5.0 CONCLUSION

The Envirochem verification team has found no unresolved discrepancies that disputes the belief that the GHG Assertion is not, in all material respects, fairly presented in accordance with the relevant criteria. As noted above, in **Section 3.1**, the team created a GHG emissions inventory to confirm that all calculations, units, conversion factors, and parameters were correct. Based on the information that was provided, it has been determined that the final calculation of 191,142 tonnes CO<sub>2</sub>e emissions is materially correct, and a fair and accurate representation of the GHG Assertion in accordance with the verification criteria.

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