



Watts, Griffis and McOuat

Since 1962

CONSULTING GEOLOGISTS AND ENGINEERS

## Overview

Since 1962, Watts, Griffis and McOuat Limited (**WGM**) has helped mining companies from around the world, realize the full potential of their mining operations. Whether a fully operational mine or a start-up exploration project, WGM has the expertise to deliver best-in-class professional services to your project throughout its operational life, and beyond.

## About WGM

WGM is Canada's longest running independent firm of geological and mining consultants providing value-added professional services of the highest standards to the global mineral resource industry. From grass-roots exploration through to mine closure, our expertise in project management, mineral resource and reserve estimates, technical reports, due diligence reviews, and property valuations, has distinguished WGM as the most trusted name in exploration and mining since 1962.

## Contact Us

Call us at any of our worldwide locations, or send us an email at [info@wgm.ca](mailto:info@wgm.ca). Also visit us online at [www.wgm.ca](http://www.wgm.ca).

**Toronto** (416) 364-6244

**Vancouver** (604) 682-1929

**Beijing** (86)01062241091

## Mining Services

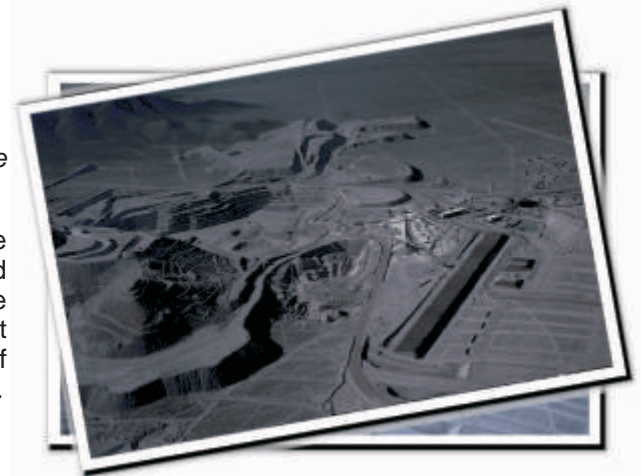
WGM has a dedicated team of highly qualified staff and associates with extensive mine engineering experience. We have completed preliminary assessments and feasibility studies and numerous due diligence reports on open pit and underground precious and base metal and industrial mineral projects varying from 100 tpd up to 100,000 tpd. Our professional services include:

- ✓ Gemcom **GEMS**® and **Whittle**® strategic mine planning and scheduling
- ✓ Economic modelling (cash-flow analysis)
- ✓ Metallurgical investigation and flow sheet design
- ✓ Operational improvement studies and recommendations
- ✓ NI 43-101 and JORC Compliance
- ✓ Mining risk analysis and optimization

## How we do it

*"Those who forget the past, are destined to repeat it".*

At WGM, we understand the importance of experience, and the power of foresight. We boast some of the broadest **operational experience** of any consulting firm in our class.



## Why choose us?

We offer some of the highest level of expertise in our field, and use the most advanced computer modelling systems on the market, including Gemcom **GEMS**® 3D geological and mine planning software, **Whittle**® open pit mine optimization software, **MapInfo**® GIS software, **AutoCAD**® and more.

Past assignments include the Bogosu Gold Mine, Ghana; Cerro Colorado Copper Project, Panama; the Khandiza Polymetallic Project, Uzbekistan; Lanta Bank's Gold Projects, Siberia; the Lac des Iles Palladium Mine, Ontario; Quebec Cartier Mines, Mont-Wright operation, Quebec; Wallbridge Mining Corporation's Maturi Project, Minnesota; and VVC's Beaver Brook Antimony Mine, Newfoundland.



## Metallurgical Investigation and Flow Sheet Design

Each mining project with flow processing has unique geological, mineralogical and other requirements. We review existing flowsheet designs and specific project characteristics, then help to make implementations to optimize efficiency and cost effectiveness - recommending and overseeing design modifications as needed.

We also work in early stages with companies to implement new systems from scratch - coordinating with client process system designers and implementers to ensure flowsheets work optimally for specific projects. We take mineral samples for testing, review particular conditions of the project, and determine the optimal choice of processing methods.

## NI 43-101 and JORC Compliance

WGM is qualified to make disclosure for its clients which comply with National

### Other WGM Services

NI 43-101 & JORC Technical Reporting  
Preliminary Economic Assessments  
Pre-Feasibility Studies  
Due Diligence  
Mineral Property Valuations  
Exploration Project Management  
Mineral Resource & Reserves  
Institutional Strengthening  
GIS Services  
Independent Qualified Person Review  
Fairness Opinion  
CSR Services  
First Nations Services  
Industry Safe Practice

Instrument 43-101 and JORC in regard to the mineral and mining projects it works on. WGM professionals have been instrumental in the development of international mining policies (e.g. NI 43-101, CIMVal). Our professionals are frequent speakers in the professional community, and are industry experts in all areas of mining policy, laws, and business strategies.

## Project Feasibility

WGM has the expertise to advance your projects from Preliminary Economic Assessment through to Pre-Feasibility Study. You can rely on our industry experts to oversee every aspect of your project, leaving no stone unturned. Notable past Feasibility Studies include Goldcorp Inc.'s Red Lake Mine in Ontario, Canada, and Arabian Shield Development Co.'s Al Masane Mine in Saudi Arabia.

## Mineral Resource and Reserve Estimates

One of WGM's main specializations is resource and ore reserve audits and estimates. Many clients request technical audits to ensure that resources and reserves have been estimated according to standard mining industry practice or to obtain an independent assessment of their estimates for either internal purposes or for third parties, such as financial institutions or other interested mining companies.

WGM can work with the client from the initial stages of an exploration program and will tailor the database and future program to meet their requirements. We also have the ability to import pre-existing databases and models in order to complete the task at hand and can return the finished product in a suitable format to the client.

## Strategic Mine Planning and Design

WGM uses some of the most advanced software available on the market, including Gemcom GEMS™ and Whittle™. Our in-house experts in these and other systems can provide the following client services:

- Open pit optimization and strategic mine planning
- Mine scheduling and fleet selection
- Operational improvement studies and recommendations
- Due diligence and technical audit on operating properties

## Mining Risk Analysis

For exploration and mining companies looking for foreign investment ventures, WGM can provide risk assessment studies covering relevant categories such as political, socio-economic and legal risks. Clients from around the world have relied on our sound technical analysis to make informed decisions regarding their investments.

## Economic Modelling

Every aspect of your mining venture's financial success hinges on proper economic modelling prior to and during mining operations. Project financing, capital and operating costs, sales revenues, financial issues (tax, depreciation), and sensitivity analysis are just some of the multitude of factors we consider for every undertaking.

# Trusted Worldwide

wgm.ca