Robertson GeoConsultants Inc.
Mining, Geotechnical and Environmental Engineers

STATEMENT OF QUALIFICATIONS
for
ARD / GEOCHEMICAL SERVICES

1.0 Introduction

This Statement of Qualifications (SOQ) summarizes the specialized services provided by Robertson GeoConsultants Inc. (RGC) in the field of ARD and geochemistry. This SOQ is organized into four sections with an overview of RGC as a company, followed by a presentation of our in-house technical skills, the relevant experience of our personnel and a summary of relevant projects.

2.0 Robertson GeoConsultants Inc.

Robertson GeoConsultants Inc. (http://www.robertsongeoconsultants.com/) is an employee-owned consulting firm specializing in geotechnical and environmental engineering for the mining industry. Our firm is based in Vancouver, B.C. and consists of a small team of specialty consultants with expert knowledge in hydrology, hydrogeology, geochemistry, geotechnical engineering and their application to mining. Since incorporation in 1995, we have worked on over 70 projects in 10 countries, including some of the largest mining projects in the world. Our experience, integrity and quality of work is widely recognized in the environmental mining community, as demonstrated by our broad client base which includes many international mining companies and other industries, real estate developers, government regulatory agencies and other consulting firms.

Our international experience has also given us recognition as one of the leading experts in ARD and geochemistry. As a result, our senior staff now assists other consulting firms in their geochemical needs and carries out independent third-party reviews of ARD/geochemical issues on a regular basis. Recent examples of senior review work includes our participation in the ARD and geochemical issues at the Lupin Mine, NWT, Canada, the Red Dog Mine, Alaska, the Grasberg Mine, in Indonesia to name a few.

Robertson GeoConsultants Inc. takes an active role in the advancement of new technologies applied to mining through participation in various research projects, industry initiatives and sponsorship of the HYDROMINE (http://technology.infomine.com/hydromine/) and ENVIROMINE (http://technology.infomine.com/enviromine/), the premier websites for hydrogeological and environmental information and technologies related to mining.

3.0 ARD & Geochemical Services

RGC offers a broad range of ARD & geochemical consulting services for mining, industrial and municipal properties, including:

- Site characterization and field investigations (field surveys, sampling, drilling monitoring);
- Running laboratory and field testing programs;
- Interpretation and modeling (equilibrium and transport modeling);
- Prediction of long term ARD and geochemical issues;
- Open-pit water quality modeling;
- Contaminant plume delineation; and,
- Development and engineering of ARD control strategies;

Robertson GeoConsultants Inc. has developed an expertise in site characterization and provides a full suite of technical services related to field investigations including field surveys, soils sampling and testing, drilling, monitoring well installation, hydraulic testing, water level monitoring and water quality sampling. Our staff has experience with all major drilling and well installation methods and is familiar with local and international guidelines and regulations pertaining to surface water and groundwater monitoring and sampling. We routinely employ computer-aided techniques for interpretation of geochemical and hydrogeological results.

Robertson GeoConsultants Inc. provides a range of surface water and groundwater modeling services related to contaminant migration, water management and aquifer remediation. Our modeling team is experienced with a wide range of numerical modeling techniques and commercial modeling software packages giving us flexibility to select the modeling approach most suited to project objectives. The results of field investigations and numerical modeling are commonly used in environmental assessments, development of surface water and groundwater protection and/or remediation/control strategies and design of monitoring programs.

4.0 Personnel

This section summarizes our key personnel with experience in ARD and geochemistry. Brief descriptions of the key individuals with particular emphasis on each member's experience in ARD and/or geochemistry are provided below. Detailed resumes for the key project team members can be found on the company website (http://www.robertsongeoconsultants.com/personnel/personnel.asp).

Andrew MacG. Robertson, Ph.D., P.Eng.: **Dr. Robertson** has a B.Sc. in Civil Engineering, a Ph.D. in Rock Mechanics, and 30 years of experience in geotechnical and environmental engineering. He was the lead investigator and/or designer for numerous project teams for mining companies and provides review, senior evaluation, and counseling to a number of mining companies, research establishments, professional associations and provincial, state and federal agencies. Dr. Robertson has an international reputation as a specialist in the prediction/control of acid rock drainage and has been one of the principal contributors to the *Draft Acid Rock Drainage Guidelines* (BC AMD Task Force), *Rehabilitation of Mines – Guidelines for Proponents* (Ontario Ministry of Northern Development and Mines), *Mine Rock Guidelines – Design and Control of Drainage Water Quality* (Saskatchewan Environment and Public Safety, Mines and Pollution Control Branch), *Guidelines for ARD Prediction in the North* (Department of Indian Affairs and Northern Development), *Mine Waste Management* (California Mining Association) and others.

Dr. Robertson is president of Robertson GeoConsultants Inc. He serves as lead investigator in geotechnical studies and most geochemical studies and serves in a review capacity for hydrogeological projects.

Christoph Wels, Ph.D., M.Sc.: **Dr. Wels** has a M.Sc. in Watershed Hydrology and a Ph.D. in Hydrogeology and has over 15 years of experience in groundwater related studies. He completed his doctorate at the University of British Columbia on the subject of numerical modeling of groundwater flow and solute transport in fractured rock. Dr. Wels has led numerous groundwater investigations and groundwater modeling studies for international and local clients. He is experienced in the use of a wide range of modeling tools ranging from specialized models to simulate contaminant migration, infiltration and percolation in unsaturated soils to simulating complex, regional aquifer systems. Dr. Wels also assists other consulting firms as an advisor and has participated on review boards and carries out peer reviews for hydrogeological projects. Dr. Wels has authored numerous publications on various aspects of groundwater and contaminant flow modeling and is currently editor of the HYDROMINE website.

Dr. Wels is Principal and Senior Hydrogeologist with Robertson GeoConsultants Inc.. He serves as lead investigator in most hydrogeological projects. His responsibilities include project management, supervision of modeling studies and senior review.

Shannon Shaw, B.Sc. M.Sc.: **Ms. Shaw** has a B.Sc. in Chemistry and Geological Sciences, a M.Sc. in Geological Sciences and 6 years of consulting experience in geochemical related studies. Her specialization is in the assessment of the geochemical impacts of mining to the surrounding environment, (in particular to surface and groundwater resources) and the development of contaminant control strategies for impacted areas. Ms. Shaw has extensive field and modeling related experience including geochemical speciation and transport modeling for a wide range of projects. She also assists other consulting companies as a third party reviewer for geochemical projects. Ms. Shaw is also the editor of the ENVIROMINE website dedicated to the discussion of environmental technologies related to mining.

Ms. Shaw is Principal and Senior Geochemist with Robertson GeoConsultants Inc. and serves as the lead investigator in most ARD & geochemical studies. Her responsibilities include project management, all aspects of geochemical and load balance studies and third-party review.

Laura Findlater, B.Sc.: **Ms. Findlater** holds a B.Sc. in Geology and has recently completed her undergrad thesis on groundwater flow modeling under the supervision of Dr. Leslie Smith. Since joining RGC in 2001, she has completed several modeling assignments including the development of a comprehensive groundwater flow and solute transport model for the Woodcutters Mine site and the prediction air and water movement in waste rock piles (using TOUGH AMD). Laura was also responsible for the development of the interactive Flow Analysis tools available on the HYDROMINE website.

Ms. Findlater is a Staff Hydrogeologist with Robertson GeoConsultants Inc. and is responsible for numerical modeling using a range of numerical modeling tools (including standard groundwater flow and solute transport models).

In addition to the above listed personnel, Robertson GeoConsultants Inc. often work in close association with a number of specialist consultants when required for specific projects.

5.0 Relevant Experience

This section lists several ARD & geochemical projects, which Robertson GeoConsultants Inc. has successfully worked on in recent years. Detailed descriptions of our experience can be found on the company website at the links provided below.

- *Woodcutter's Mine, Australia*

  http://www.robertsongeoconsultants.com/projects/wood.asp

- *Questa Tailings Facility, USA*

  http://www.robertsongeoconsultants.com/projects/questatails.asp

- *Questa Mine Site, USA*

  http://www.robertsongeoconsultants.com/projects/quesmin.asp

- *Zortman and Landusky Mines, USA*

  http://www.robertsongeoconsultants.com/projects/zortsky.asp

- *Warrego Tailings Impoundment, Australia*

  http://www.robertsongeoconsultants.com/projects/warrego.asp

- *Red River Watershed, USA*

  http://www.robertsongeoconsultants.com/projects/redriver.asp

- *Gilt Edge Mine, USA*

  http://www.robertsongeoconsultants.com/projects/gilt.asp

- *CanTung Mine, Canada*

  http://www.robertsongeoconsultants.com/projects/cantung.asp

- *Faro, Vangorda and Grum Mines, Canada*

  http://www.robertsongeoconsultants.com/projects/vangrum.asp

- *Arctic Project, Alaska*

  http://www.robertsongeoconsultants.com/projects/arctic.asp

- *Tintaya Mine, Peru*

  http://www.robertsongeoconsultants.com/projects/tintaya.asp