MINING SERVICES

STATEMENT OF QUALIFICATIONS

2021

GEOTECHNICAL  CIVIL ENGINEERING  WATER RESOURCES
ENVIRONMENTAL  GEOLOGIC HAZARDS
VISION STATEMENT

Tierra Group will earn our customers’ respect and trust as a key team member providing leadership and focused expertise in geotechnical, water resources, civil, environmental, and geologic hazards engineering.

We will assist our customers’ sustainable development of the earth’s natural resources by providing forward thinking, innovative ideas, advice, and designs.

We will also provide an empowered company culture, promoting Teamwork and efficient execution, which will promote a healthy balance between professionals’ careers and personal lives, making Tierra Group the consultancy of choice for the top talent in the mining industry.

Through the course of our journey we will remain proud, yet humble, of Tierra Group’s contribution to our customers’ successes while fulfilling our entrepreneurial spirit.

CORE VALUE

“Our Clients are First,
the Team is Second,
and I am Third.”
Recognized as one of the leading Tailings and Heap Leach Stewardship firms in the world; Tierra Group International, Ltd. (Tierra Group) is an elite, client-focused, engineering firm; offering geotechnical, water resources, civil and environmental design, and consulting services to the mining industry.

Tierra Group’s founding principle is to earn our client’s friendship and professional respect by providing practical consulting advice and innovative engineering design expertise. Accomplished through focused, personal client-engagement, Tierra Group develops practical yet innovative solutions, and delivers results focused only on our client’s needs. Tierra Group does not desire, nor proclaim to be “all things to all clients”, rather “we only do, what we do”, and we strive to do it better than our peers, every day.

Teamwork is fundamental to business and project success; therefore, TEAMWORK is the foundation upon which Tierra Group was formed, and the cornerstone of everything we do. Tierra Group successfully executes projects by uniting clients, colleagues, and coworkers with directionally correct, focused execution plans.

Tierra Group’s unselfish regard for project success is reinforced in our company credo:

“Our Clients are First,
the Team is Second,
and I am Third.”

Applying this simple, straight-forward belief system, Tierra Group has established strong relationships with both Junior, Mid, and Major (Fortune 500) mining companies around the world. Headquartered in Lakewood, Colorado, Tierra Group has fully-staffed branch offices in Salt Lake City, Utah; Elko, Nevada; and Lima, Perú. We have successfully completed mining projects on six continents, and are willing to go wherever, and do whatever is required to support our clients’ needs.

We are proud of our clients, our Team, and our desire to sustain success in all areas of our business, and would now like to present our Company, Services, and Performance to you.

Sincerely,

Matt and Pete
COMMITMENT TO SAFETY

Tierra Group’s primary asset is our people. As such, we place a very high value on making sure each one of our employees understands the importance of working safely and feeling empowered to stop working if they ever believe a situation to be unsafe. Tierra Group conducts regular safety briefings during staff meetings and daily project tailgate meetings to convey safety topics to all employees and ensure they are aware of any specific project-related concerns.

Tierra Group’s registered MSHA Contractor ID is A4419. All Tierra Group employees who work on a mine site maintain active 24-hour MSHA safety training, obtain site-specific training as required, and deploy to projects with personal protective equipment (PPE) for the safe execution of their work assignments.

Tierra Group has internal procedures in place for near-miss and accident reporting, and has never experienced a reportable incident or lost time accident.

COMPLIANCE WITH CLIENT POLICIES

Tierra Group is committed to environmental, health, safety, and social responsibility worldwide. Our personnel and subcontractors are required to comply with our Clients’ Occupational Health and Safety policies and specific project policies pertaining to protocol areas, loss prevention, and drug and alcohol policies.

COMPLIANCE WITH CONTRACTING POLICIES

Tierra Group is registered with BROWZ (#22E07) to comply with companies’ specific contracting requirements. Tierra Group’s BROWZ ID is 22E07. For companies that do not use BROWZ, Tierra Group teams with the client to ensure compliance with all contractual requirements for executing work.

DRUG AND ALCOHOL POLICY

The use and/or abuse of any drugs (prescription or non-prescription) has the potential to impair judgment and put an employee or others in harm’s way. Tierra Group’s personnel policies prohibit employees from being under the influence of drugs or alcohol while on the job.
**PROJECT LOCATIONS**

Legend

- 🗺 Tierra Group Project
- 🚧 Pre Tierra Group Project
- 📍 Office Location
**TIERRA GROUP LEADERSHIP TEAM**

**MATT FULLER, LEG, P.GEO**

*FOUNDED PRINCIPAL, CO*

Mr. Fuller is a licensed Professional Engineering Geologist, QP, Chief Tailings Steward with over 30 years providing geological, geotechnical, and geological hazards design and consulting services to the international mining industry.

**JULIO JUAREZ, CIP**

*GENERAL MANAGER, LIMA*

Mr. Juarez is a Peruvian registered geological engineer with more than 19 years’ experience providing geotechnical, geological, and geo-environmental services to the international mining industry.

**FRANCISCO BARRIOS, PE**

*PROJECT MANAGER, AZ*

Mr. Barrios has over 16 years’ experience in the mining industry in civil/environmental engineering. He is experienced in design, planning, construction, and project management for a variety of international mining projects.

**MIGUEL GUTIERREZ, PE, PMP**

*SR. CIVIL-GEOTECH ENGINEER, CO*

Mr. Gutierrez is a civil/geotechnical engineer with over 15 years of project management experience for mining projects. His mining expertise includes geotechnical investigations, TSFs, waste dump, and water management facilities.

**ADRIEN K. BUTLER, PE**

*PROJECT CIVIL ENGINEER, CO*

Ms. Butler is a civil engineer with 15 years’ mining experience in tailings storage facilities (TSFs) and associated mining infrastructure such as ponds, spillways, pipelines, roads, and surface water diversion channels.

**DAN CAMBRA, PE**

*SENIOR ENGINEER, NV*

Mr. Cambra is a civil engineer with over 20 years’ mining experience in construction management, mine planning, site evaluation and development, and mine management.

**PETE KOWALEWSKI, PE**

*FOUNDED PRINCIPAL, UT*

Mr. Kowalewski is a Principal Engineer with over 27 years’ experience within the mining industry providing design, construction, operation, and closure of tailings/heap leach projects.

**JUSTIN KNUDSEN, PE**

*SR. GEOENGINEER, CO*

Mr. Knudsen is a Professional Engineer and Project Manager with over 17 years’ experience in the mining industry applying his geotechnical expertise designing tailings dams, heap leach pads, waste rock dumps, etc.

**JARED PURDY, PE**

*SR. GEOENGINEER, UT*

Mr. Purdy has 20 years of professional experience in mining geotechnics, geotechnical investigations, foundation design, and construction management projects in the United States and Latin America.

**MATT R. BENDER, PE, QP**

*DIRECTOR OF METALLURGY, CO*

Mr. Bender has 32 years’ experience in the mining and minerals industry with direct responsibility for metallurgical testwork, process designs, equipment sizing and selection, plant de-bottlenecking and optimization, and operations.
MINING SERVICES FOR THE MINING LIFE-CYCLE

PROJECT PLANNING/EVALUATION

Tierra Group provides services for the entire mining life-cycle, beginning with early-stage strategic planning, initial siting, pre-feasibility, and feasibility studies. Our contributions include designing tailings storage facilities, heap leach pads, process ponds, water supply reservoirs, waste rock storage facilities, and other surface infrastructure. We then develop capital and operating expense (CAPEX/OPEX) estimates and provide Qualified Person (“QP”) signature authority for Security Exchange Technical Reports (NI 43-101).

➢ Preliminary Economic Assessments
➢ Pre-Feasibility / Feasibility Studies
➢ OPEX/CAPEX Estimating
➢ NI 43-101 Technical Reports

DESIGN, CONSTRUCTION, AND OPERATION

Tierra Group’s capabilities extend through detailed engineering design and construction providing bidding and procurement support, resident engineering, and construction quality assurance (QA) / quality control (QC) during construction. Following commissioning, Tierra Group has provided on-going operations management support at several mines for many decades.

➢ Resident Engineer
➢ Construction Quality Assurance
➢ As-Built Drawings
➢ Operations Support
➢ Engineer of Record
➢ Tailings Stewardship
RECLAMATION AND CLOSURE
Tierra Group completes the mining life-cycle by developing and implementing facility-specific, and/or site-wide mine decommissioning, reclamation, and closure plans. An integrated approach during design and operations incorporating best available technologies (BAT) and best management practices (BMP) assures that areas impacted by mining can be reclaimed to provide post-closure beneficial use to surrounding communities.

➢ Progressive Closure Activities
➢ End-of-life Facility Planning
➢ Decommissioning Plans
➢ Reclamation Plans
➢ Closure Plans
➢ Post-Closure Monitoring Plans

ENGINEERING EXPERTISE
Tierra Group applies the following engineering skills throughout the mine life-cycle.

GEOTECHNICAL
Site Characterization
Geotechnical Analyses
Design and Specifications
Construction Documents
Resident Engineering
Quality Assurance
Operations Support
Forensic Investigations
Peer Reviews

WATER RESOURCES
Climatology
Water Supply
Water Balance
Water Storage
Water Distribution
Dams (Tailings/Water)
Treatment Systems
Hydraulic Structures
Supply Systems

CIVIL DESIGN
Dams (Tailings/Water)
Heap Leach Pads
Waste Rock Dumps
Hydraulic Structures
Infrastructure
Conceptual Plans
Feasibility Designs
Final Engineering Designs
‘For Construction’ Drawings
**REPRESENTATIVE PROJECTS**

**BARRICK GOLDSTRIKE MINES INC. | NEVADA**

Barrick’s Goldstrike Mine processes 30,000 tons of gold ore per day from its combined open-pit/underground operations located in the historic Carlin Trend in Nevada, U.S.A. Goldstrike’s tailings are stored in the North Block Tailings Disposal Facility (NBTDF). NBTDF was commissioned in 1994 and is among the largest rockfill tailings dams in the world. It is also one of the largest geomembrane-lined tailings storage facilities in the mining industry.

Tierra Group Team members began working at Goldstrike in 2003. In January 2012, Barrick hired Tierra Group as Engineer of Record for 12 jurisdictional dams, including NBTDF. In addition, Tierra Group provides engineering consultancy, design, and construction-engineering services for four tailings storage facilities.

**EL MOCHITO MINE | HONDURAS**

El Mochito is an underground zinc/silver mine located in the Santa Barbara Mountains in north-central Honduras. Tierra Group’s Team has been providing Tailings Stewardship Services at El Mochito continuously for the past 29 years. Since 1989, Tierra Group engineers have provided engineering consultancy, design, and construction services for three tailings storage facilities (El Bosque, Pozo Azul, and Soledad).

Being located in the tropics, tailings management at El Mochito has been fraught with many challenges including: monsoons, floods, karstik terrain, debris flows, constructing with tropical soils (laterite and saprolite), and social unrest. During the full mine life-cycle of three tailings storage facilities, Tierra Group has persevered with the owners and mine management to maintain continual operations with zero lost-time accidents.
**Midas Gold | Idaho**

Midas Gold’s project is located in Idaho’s remote central Rocky Mountains (U.S.A.). Midas is a Brownfields gold-antimony project featuring legacy open pits, waste rock dumps, and relic infrastructure. Tierra Group designed a tailings storage facility and developed a site-wide water management plan for a NI 43-101 compliant prefeasibility Technical Report.

The tailings storage facility includes a 460-foot rockfill dam with a composite geosynthetic liner system. The water management system includes a channel network and tunnel which will divert a perennial mountain stream around the mine. The tunnel diversion will reconstitute salmon migration, which has been blocked for decades due to historical mining activities.

**B2Gold, Masbate Mine | Philippines**

Tierra Group performed a due diligence study of Masbate’s 12-Mt tailings storage facility. Services provided included a forensic study to determine the cause of seepage through an abutment and performed an independent safety audit of tailings management practices. A risk analysis was performed, and water management optimization recommendations were made. Tierra Group and its sub-consultants then designed and commissioned a 1,500-m³/d supernatant water treatment plant. The water treatment plant was commissioned in early 2015 and has run continuously at 90 to 95% efficiency, greatly improving the mine’s site-wide water balance.
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