

Christopher Wright, P.E.

Principal Mining Engineer



Profession	Mining Engineer
Education	B.S. in Mining Engineering (1990) Colorado School of Mines
Registrations/	Registered Professional Engineer #74309 in Ohio, USA
Affiliations	Member of the Ohio Society of Professional Engineers Member of the National Society of Professional Engineers Member of the Society for Mining, Metallurgy & Exploration

Specialization

- Mining Engineering
- Project acquisition, evaluation and development
 - Technical writing
 - Continuous process improvement
 - Mine planning
 - Scheduling
 - Geologic modeling and databases

Expertise

Cris Wright is a mining engineer with over 20 years' experience in engineering management, mine technical reviews, economic analysis, OPEX/CAPEX, resource estimation, geologic modeling, mine design, mine planning, continuous process improvement, scheduling, and reclamation design for both the surface and underground mining of coal, gold, cobalt, copper, lead and zinc. He uses continuous process improvement methodologies to do better engineering and management, providing increased efficiency and cost reductions. A Competent Person/Qualified Person (CP/QP) for mining as defined by the world's stock exchanges, he has assured maximum productivity and mining rates through the use of advanced mining methods, procedures, software, and equipment in Texas, Louisiana, New Mexico, Montana, Ohio, Kentucky, China, Germany, Mexico and Venezuela. He earned his Bachelor of Science degree in Mining Engineering from the Colorado School of Mines with an emphasis on Mineral Economics and International Public Relations, China Specialty.

Project Experience

Consulting

- **Cost Modeling, Kayenta Mine, Peabody, Kayenta, Arizona.** Surface Mining Engineer. Performed cost modeling of dozers in MS Excel for the Black Mesa and Kayenta surface coal mines. (1998)
- **Mine Planning Services, Navajo Mine, BHP Billiton, Farmington, New Mexico.** Surface Mining Engineer. Provided mine planning services using Mincom mine planning software to the dragline strip coal mine. Also refined their geologic database and performed geologic modeling. (1997)
- **Mine Planning Services, San Juan Mine, BHP Billiton, Farmington, New Mexico.** Surface Mining Engineer. Provided mine planning services using Mincom mine planning software to the dragline strip coal mine mainly developing range diagrams for various production scenarios. (1997)
- **Coal Mine Expansion, Paso Diablo Mine, Carbones del Guasare, Maracaibo, Zulia, Venezuela.** Surface Mining Engineer. Worked with Venezuelan geologists to refine their geologic model and develop a plan to take the open pit Paso Diablo coal mine from 2.5 Mtpa to 7.5 Mtpa. (1996)
- **Life-of-Mine Plan, Socuy Mine, Carbones del Guasare, Maracaibo, Zulia, Venezuela.** Surface Mining Engineer. Performed geologic modeling and created a 30-year life-of-mine plan for the open pit coal mine. (1996)

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- ***Life-of-Mine Reclamation Design, Dolet Hills Lignite Mine, Dolet Hills Mining Venture, Mansfield, Louisiana.*** Surface Mining Engineer. Designed a life-of-mine reclamation plan and provided a post-mine topography in accordance with state and federal regulations for inclusion with the mine's permit. (1995)

Due Diligence

- ***Senior Mining Engineer, SRK Consulting China, Ltd, Various Chinese Clients, Beijing, China.*** Mining CP. Reviewed Chinese feasibility studies against JORC requirements for listing on the Hong Kong Stock Exchange (HKEx) and wrote competent person reports (CPR). (2011)
- ***Gob Pile Reclamation, Blackrock Production, LLC, ETC Capital, Pikeville, Kentucky.*** Surface Mining Engineer. Owner's representative for a venture capital company investing in a coarse coal refuse (gob) pile reclamation project. Analyzed proposed operations and business plan from cost to projected revenues. Built a detailed cost model in MS Excel to capture all of the project's variables in order to test sensitivities to the net present value (NPV). Conducted market research for the cleaned coal. Researched historic records to determine probable resource quality. (2009)
- ***Surface Lignite Mine Lawsuit, Dolet Hills Lignite Mine, Cleco, Mansfield, Louisiana.*** Surface Mining Engineer. Provided mining engineering services for the plaintiff in a lawsuit between them and their contract miner. The mine in question was a lignite strip mine in Louisiana that used a large dragline. (1998 to 2000)
- ***Lignite Mine Due Diligence, Romanta Wax Works, British Utility, Zeitz, Sachsen-Anhalt, Germany.*** Surface Mining Engineer. Analyzed productivity projections, equipment, and staffing levels. Romanta used bucket-wheel excavators (BWE) and sold electricity, paraffin, and excess steam for heating. (1994)

Management

- ***Project Manager Trainee, Idaho Cobalt Project, Formation Metals, Salmon, Idaho.*** Scheduler. Reviewed the mine plan, the ventilation plan, emergency procedures, and logistics for a proposed 800 ton-per-day underground cobalt-copper-gold mine. Used mining expertise and Primavera P3 to maintain the schedules for the mine/mill and refinery sites. Assisted project controls using Primavera Contract Manager. Evaluated potential contract miners, wrote the contract mining request for proposal (RFP) and performed the bid analysis summary. Maintained the cost model in MS Excel. (2007 to 2008)
- ***Magino Mine, Argonaut Gold, Wawa, Ontario.*** Engineering Manager. Decision maker on all engineering aspects of the project from the PDR to the PFS to the EIS. Managed all consultants' cost and schedule. (2012 to 2014)

Mine Feasibility/Preliminary Feasibility Study

- ***PFS, Artillery Peak Project, American Manganese, Kingman, Arizona.*** Surface Mining Engineer. Performed the mining responsibilities on an interim basis for a PFS for a surface manganese mine. (2011)
- ***PEA - Tailings Reprocessing, Avino Mine, Avino Silver & Gold Mines, Durango, Mexico.*** Mining QP. NI 43-101 technical report for the reprocessing of the tailings resource. (2011 to 2012)
- ***PEA, Magino Mine, Prodigy Gold, Wawa, Ontario, Canada.*** Mining QP. After receiving the Snowden-developed geologic model, developed an ultimate pit, mine schedule, production quantity, selected equipment, determined operating costs and capital expenditures, wrote the mining portion of the PEA and assisted in the production of the report. (2011 to 2012)
- ***PFS, Magino Mine, Argonaut Gold, Wawa, Ontario, Canada.*** Manager. Reviewed and approved entire document and wrote those parts not covered by the QPs. Delivered successfully on time. (2012 to 2014)

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Mine Geotechnical

- **Supervisor, San Felipe Project, Hochschild, San Felipe, Sonora, Mexico.** Exploration Drilling Supervisor. Supervised Chilean and Australian drill crews that were collecting core for the underground zinc-silver-lead-copper mine. Maintained the daily records and reports associated with the drilling program. Logged and photographed the core. Determined the rock quality designation (RQD) for the resource. (2008)

Mine Operations

- **Mining Engineer, Century Mine, Murray Energy, Alledonia, Ohio.** Underground Mining Engineer. Performed mining engineering duties pertaining to an underground longwall coal operation. (2008)
- **Mining Engineer, OhioAmerican, Murray Energy, Brilliant, Ohio.** Surface Mining Engineer. Performed mining engineering duties pertaining to a contour coal mining operation. (2008 to 2009)
- **Mining Engineer, Sarpy Creek Mine, Morrison-Knudsen, Hardin, Montana.** Surface Mining Engineer. Performed mining engineering duties pertaining to a dragline strip coal mine operation using cast blasting, as needed. (1997 to 1998)
- **Mining Engineer, San Miguel Mine, Morrison-Knudsen, Jourdanton, Texas.** Surface Mining Engineer. Performed mining engineering duties pertaining to a Gulf Coast lignite operation, as needed. (1993 to 1997)
- **Mining Engineer, Gibbons Creek Mine, Morrison-Knudsen, Carlos, Texas.** Surface Mining Engineer. Performed mining engineering duties pertaining to a Gulf Coast lignite operation. (1991 to 1993)
- **Summer Student, Ridgeway Mine, Kennecott Minerals, Ridgeway, South Carolina.** Surface Mining Engineer. Performed mining engineering duties pertaining to an open pit gold operation. (1989)
- **Miner, Edgar Mine, Colorado School of Mines, Idaho Springs, Colorado.** Underground Mining Technician. Miner at the Colorado School of Mines (CSM) experimental mine in Colorado semesters. (1987 to 1990)

Mine Scoping Study

- **EL Mine - Scoping Study, EL Mine, Corazon Mining, Lynn Lake, Manitoba, Canada.** Underground Mining Engineer. Conducted a desktop study of the Lynn Lake El Mine model based on the Lynn Lake Nickel Project PFS for Independent Nickel Corp. completed by Wardrop in December, 2007. Tetra Tech examined Mining estimations and assumptions of the EL Mine Model. (2012)
- **Ambler Project - Scoping Study, Ambler Project, NovaGold Resources, Alaska.** Underground Mining Engineer. Reviewed their available data and determined the mining method. Suggested open pit instead of underground methods. (2011 to 2012)

Continuing Education

Establishing a Social License to Operate in Mining (InfoMine), 2011

Professional Employment History

Engineering Manager, Argonaut Gold, 2011 to Present
Manager, Underground Mining Engineering, Tetra Tech, 2011 to 2012
Senior Mining Engineer, SRK Consulting China, Ltd, 2011
Senior Mining Engineer, Cris Wright Engineering, 2009 to 2011
Mining Engineer, Murray Energy Corporation, 2008 to 2009
Mining Engineer, MTB Project Management Professionals, 2007 to 2008

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Systems Engineer, Raytheon, 2001 to 2007

Mining Engineer, Cris Wright Mine Services, 1998 to 2001

Mining Engineer, Morrison-Knudsen/Washington Group International, 1991 to 1998

Security Clearance

DoD, SSBI (Inactive)

Language Proficiency

English: Native

Mandarin: Basic speaking and reading

Spanish: Basic speaking and reading