



Dante Bolanos, P.E.

Sr. Geo-Environmental Engineer

Education

B.S., Mining Engineering, Universidad Del Altiplano Puno, Perú 2002

M.Sc., Mining Engineering, Montana Tech of the University of Montana, 2006

M.Sc., Environmental Engineering, Montana Tech of the University of Montana, 2006

Registrations/Certifications

Professional Engineer Arizona (#58107)

Experience Summary

Mr. Bolanos is a Geo-Environmental Engineer with over 18 years of experience in the mining industry. His experience includes site selection, concept development, geotechnical assessment, analyses, and design of environmental mining facilities such as tailings storage facilities (TSF), waste rock storage facilities (WRSF), and heap leach facilities (HLF). Projects included research for mine waste management, geotechnical and hydrogeological site investigations, construction supervision, quality assurance/quality control (QA/QC), material testing, and planning and implementation of closure plans. His international experience includes projects in Latin America (Argentina, Bolivia, Brazil, Chile, Colombia, El Salvador, Honduras, Mexico, Nicaragua, and Perú) and Western Africa.

Project Experience

Mine Closure/Reclamation and Environmental

ASSET RETIREMENT OBLIGATION, TOPIA MINE | MEXICO

Developed inventory and closure concepts for main mine facilities, including closure cost estimates. (Tierra Group, 2019)

TASIAST PROJECT | NORTHWESTERN AFRICA

Geotechnical site investigation, construction support, and project coordination for the closure design of TSF No. 1 and No. 2. The project is located in the western Sahara region. (Knight Piésold, 2015 to 2018)

CLOSURE PLAN, EL DORADO PROJECT | EL SALVADOR

Developed a list of assets and infrastructures and developed closure concepts for the underground works. (Knight Piésold, 2017 to 2018)

PINOS ALTOS MINE | MEXICO

Developed closure concepts for the physical closure of an inactive filtered tailings management facility. (Knight Piésold, 2016 to 2017)

CLOSURE COVER SYSTEM DESIGN AND CONSTRUCTION OVERVIEW, NUKAY PROJECT | MEXICO

Designed a closure cover system for TSFs located in a semi-arid and hot climate. (Knight Piésold, 2013 to 2014)

MINE PERMITTING, CONSTANCIA PROJECT | PERU

Preparation of technical reports for permitting. Design of topsoil stockpiles and saturated material storage facility. (Knight Piésold, 2011 to 2012)

MINE PERMITTING, CONGA PROJECT | PERU

Prepared and coordinated technical reports and deliverables for permitting water reservoirs and sediment ponds. (Knight Piésold, 2010)

GROUNDWATER SITE INVESTIGATION, TWIN CREEKS MINE | NEVADA

Participated in a groundwater site investigation for a TSF. Assisted in constructing groundwater monitoring wells, soil, and groundwater sampling. (Knight Piésold, 2011)

GOLDSTRIKE MINES | NEVADA

Groundwater site investigation. Assisted in soil sampling, groundwater sampling, lithology logs, and aquifer performance tests and data collection to determine hydraulic properties. (Knight Piésold, 2010)

GROUNDWATER ASSESSMENT, CORTEZ GOLD MINE | NEVADA

Performed aquifer performance tests and data collection to determine hydraulic properties. (Knight Piésold, 2010)

Heap Leach Facilities

CANDELONES PROJECT | DOMINICAN REPUBLIC

Led the site investigation planning, execution, and engineering analysis for a heap leach pad (HLP) feasibility design. The work included laboratory program development, interpretation, foundation characterization, and geotechnical analysis (Tierra Group, 2022)

VELADERO MINE | ARGENTINA

Led the site investigation planning, execution, and engineering analysis for the Phase 11 HLP expansion. The work laboratory program development, interpretation, foundation characterization, and geotechnical analysis (Tierra Group, 2022)

VELADERO MINE | ARGENTINA

Led the site investigation planning and execution to identify construction borrow sources. (Tierra Group, 2022)

VELADERO MINE | ARGENTINA

Assisted in the dam safety review (DSR) for the in-heap pond retention embankment. (Tierra Group, 2021 to 2022)

APUMAYO MINE | PERU

Provided quality review of the completed geotechnical assessment to support the expansion of the Apumayo leach pad. (Tierra Group, 2021 to Present)

VELADERO MINE | ARGENTINA

Completed the Phase 4B and 5B Veladero Leach Pad assessment. The assessment included reviewing the design, report, CQA documents, as-built drawings, and high-level engineering analyses. (Tierra Group, 2020)

BARNES CANYON PROJECT | UTAH

Assisted with slope stability analyses for inactive HLFs. (Tierra Group, 2019)

UNIDAD MINERA UTUNSA | PERU

Completed stress and deformation analysis for an HLF using SIGMA/W and slope stability analysis using SLOPE/W. (Tierra Group, 2019)

LA INDIA MINE | MEXICO

Completed calibration and installation of several vibrating wire piezometers, including data interpretation. The instruments were installed at the HLP, Stages 1 and 2. (Knight Piésold, 2012 to 2018)

ROUND MOUNTAIN | NEVADA

Geotechnical analyses and effect of solution application using boreholes. The work included laboratory data interpretation and seepage and slope stability models using GEOSTUDIO. (Knight Piésold, 2016)

ROCHESTER MINE | NEVADA

Buttress design for permitting and construction. Work included limit equilibrium slope stability, deformation analyses, and liner system design. (Knight Piésold, 2012 to 2013)

LA GRANJA PROJECT, TEST HEAP FACILITIES | PERU

Developed project layouts for two alternative locations for the 120-million-ton test HLP, process water and stormwater ponds, and waste dumps. (Knight Piésold, 2008)

TOROMOCHO PROJECT | PERU

Conceptual design of an HLP. Developed heap leach and pond configurations, grading plans, and material take-offs. (Knight Piésold, 2008)

LA GRANJA PROJECT, STRATEGIC PRODUCTION PLAN | PERÚ

Assisted and developed layouts and conceptual designs for the 2.80-billion-ton HLP, waste dumps, and water management facilities. (Knight Piésold, 2008)

Waste Rock and Tailings Storage Facilities

LA LIBERTAD MINE | NICARAGUA

Provided engineering support for the Crimea In-pit TSF construction. (Tierra Group, 2022 to Present)

EL LIMON MINE | NICARAGUA

Provided engineering support for the TSF San Jose Expansion. (Tierra Group, 2022 to Present)

LA CARIDAD MINE | MEXICO

Completed data review and gap analysis, assisted with TSF audit, and provided training to site personnel (Tierra Group, 2022 to Present)

MINERA WILLIAM | MEXICO

Completed data review and gap analysis and assisted with Velardena TSF audit (Tierra Group, 2022)

EMPIRE STATE MINE | NEW YORK

Provided support on the geotechnical field investigation and data interpretation for the TSF. (Tierra Group, 2021 to 2022)

EL MOCHITO MINE | HONDURAS

Completed project management, geotechnical field investigation planning, and geotechnical analysis for the La Soledad TSF, Stage 5 Expansion. (Tierra Group, 2021)

EL MOCHITO MINE | HONDURAS

Assisted with the annual dam safety inspection of two inactive TSFs and one active TSF. (Tierra Group, 2020)

LA NEGRA MINE | MEXICO

Construction supervision, including planning and execution of rockfill test pad and monitoring report preparation. (Tierra Group, 2019 to Present)

LOS PINARES PROJECT | HONDURAS

Directed and coordinated geotechnical field investigation for two proposed TSF sites, including site recognition and preliminary construction material assessment. (Tierra Group, 2019)

EL LIMON MINE | NICARAGUA

Completed initial geotechnical laboratory data interpretation and foundation assessment for the San Pancho TSF. (Tierra Group, 2019)

BLACK BUTTE PROJECT | MONTANA

Design review of several water management facilities, including cemented TSF, process water pond, non-contact water reservoir, and other secondary facilities. (Tierra Group, 2019)

BOMBORE PROJECT | WESTERN AFRICA

Conducted finite element seepage analyses to evaluate pore-water pressures and flow regimes for the proposed TSF. Performed slope stability analyses under static and post-earthquake conditions. (Knight Piésold, 2018 to 2019)

ANA PAULA PROJECT | MEXICO

Managed the geotechnical assessment to characterize the proposed sites for the WRSF and TSF. The assignment included the development of geotechnical site investigation and geotechnical laboratory testing programs and coordination with contractors for all field activities. (Knight Piésold, 2017 to 2018)

DAM SAFETY ASSESSMENT | BOLIVIA

Performed TSF dam safety assessments. The project included reviewing existing information, visual inspection, review of operating and monitoring practices, instrument threshold values, best practices, and geotechnical recommendations for several inactive and three active facilities. (Knight Piésold, 2016)

ANNUAL DAM SAFETY INSPECTION | ROUND MOUNTAIN, NEVADA

Annual dam safety inspections of a TSF, Cell A. The work included a visual inspection of the embankment, seepage collection system, and piezometer data review. (Knight Piésold, 2015)

CHALCHIHUITES PROJECT | MEXICO

Project coordination, scheduling, and budget control for a TSF Pre-feasibility Study (PFS). (Knight Piésold, 2013 to 2014)

SITE SELECTION ALTERNATIVE STUDY, MISSION MINE | ARIZONA

Assisted with identifying and evaluating alternatives for a new TSF site. The work included the development of concepts considering geological, hydrogeological, and geotechnical aspects; concepts for surface water management. The work was completed while considering Best Available Demonstrated Control Technology (BADCT) required for the Arizona Aquifer Protection Permit. (Knight Piésold, 2013)

FILTERED TSF, PINOS ALTOS MINE | MEXICO

Estimated geotechnical properties for filtered tailings and completed slope stability analyses for different case scenarios. (Knight Piésold, 2011)

PRE-FEASIBILITY STUDY, MARMATO PROJECT | COLOMBIA

PFS for a TSF and WRSF. The work included alternatives assessment, developed concepts for surface water management, and overall project coordination. (Knight Piésold, 2012)

CONCEPTUAL STUDY, GRAMALOTE PROJECT | COLOMBIA

Developed TSF and WRSF layouts for several alternative locations, preliminary surface water management, and decision matrix. (Knight Piésold, 2010)

AGUAS CLARAS TSF | BONANZA, NICARAGUA

Geotechnical site investigation and construction of Aguas Claras TSF. Construction supervision and field assistance during the construction of the Aguas Claras TSF. (Knight Piésold, 2010)

AGUAS CLARAS TSF | BONANZA, NICARAGUA

Geotechnical site investigation, design, and construction of Aguas Claras TSF. Geotechnical drilling, design, and evaluation of TSF capacity. Developed embankment layouts and filling curves. Construction supervision and field assistance during the construction. (Knight Piésold, 2010)

FILTERED TSF, PINOS ALTOS MINE | MEXICO

Geotechnical site investigation for the existing filtered TSF, an inspection of cone penetration test with pore water pressure measurements, and vane shear tests. (Knight Piésold, 2011)

Geotechnical

LA LIBERTAD | NICARAGUA

Coordinated the geotechnical field investigation to support the design of the Volcan open pit mine. (Tierra Group, 2022 to Present)

EL LIMON | NICARAGUA

Coordinated the geotechnical field investigation and prepared a report to support the design of the Panteon underground mine. (Tierra Group, 2022)

LA LIBERTAD | NICARAGUA

Coordinated the geotechnical field investigation and prepared a report to support the design of the Rosario and Tranca open pits. (Tierra Group, 2021 to 2022)

EL LIMON | NICARAGUA

Coordinated the geotechnical field investigation and prepared a report to support the design of the Tigra-Atravezada underground mine. (Tierra Group, 2021 to 2022)

EBP RISCOS DE ORO PROJECT | NICARAGUA

Coordinated the geotechnical field investigation to support the design of the underground mine. (Tierra Group, 2021 to 2022)

EBP GUAPINOL PIT PROJECT | NICARAGUA

Coordinated a geotechnical field investigation to support the design of the Guapinol open pits. (Tierra Group, 2021 to 2022)

GEOTECHNICAL ON-SITE SUPPORT, PINTO VALLEY MINE | ARIZONA

Provided geotechnical support for the open pit operations. The work included reviewing piezometer and displacement data, inspecting high walls and benches, and reviewing existing operating practices. (Tierra Group, 2019)

Professional Affiliations

Society for Mining, Metallurgy, and Exploration, Inc. (SME); Member

Employment History

CURRENT EMPLOYER	TIERRA GROUP INTERNATIONAL, LTD.
POSITION	Sr. Geo-Environmental Engineer / Project Manager
YEARS	2019 to Present
EMPLOYER	KNIGHT PIÉSOLD AND Co.
POSITION	Project Engineer
YEARS	2013 to 2019
EMPLOYER	KNIGHT PIÉSOLD AND Co.
POSITION	Staff Engineer
YEARS	2006 to 2012
EMPLOYER	SAN RAFAEL MINE
POSITION	Intern Engineer
YEARS	2002

Language Proficiency

Quechua: Native
Spanish: Fluent (spoken and written)
English: Fluent (spoken and written)
Portuguese: Basic