

ALEX STROUTH, M.A.Sc., P.Eng., P.E.
Senior Geological Engineer

Education

M.A.Sc., Geological Engineering, University of British Columbia (2006)

B.A.Sc., Geological Engineering, Colorado School of Mines (2004)

Experience

2007-Present Geological Engineer, BGC Engineering Inc.

2004-2006 Research and Teaching Assistant, University of British Columbia

Affiliations

Graduate student (Ph.D.) at University of British Columbia

Association of Environmental & Engineering Geologists

Professional Engineer (P.E.), Colorado, Alaska, Utah

Professional Engineer (P.Eng.), British Columbia, Alberta

Mr. Strouth has diverse background in applying the principles of geotechnical engineering and engineering geology to the design and construction of large engineering projects, with expertise in risk reduction engineering and geotechnical asset management. Mr. Strouth's experience includes site characterization investigations, geological mapping, geohazard assessment, airphoto interpretation, and construction quality assurance. His analysis and design experience includes numerical slope stability analyses, foundation ground anchors, reinforced soil retaining walls, rock and soil slope excavations and stabilization measures, foundation preparation in problem soils, and geohazard protection structures. Mr. Strouth has worked in a wide variety of large and small engineering projects in arid, temperate, permafrost, and tropical climates.

Following is a summary of selected projects in which Mr. Strouth has been involved:

Regional-scale assessments and geotechnical asset management

Includes assessment of debris flow, flood, rockfall, and avalanche hazards that affect linear infrastructure or municipal developments. Projects typically include hazard zone identification and mapping, risk assessment, prioritization of hazard sites, geohazard management planning, and conceptual mitigation design.

- Asset management for drainage infrastructure affected by debris hazards at ~20 creeks, District of North Vancouver, British Columbia
- Flood, debris flood, and debris flow hazard prioritization and mitigation assessment across 3,300 km of highway, Alberta
- KSM mine site geohazard identification, prioritization, and risk assessment, British Columbia
- Landslide, rockfall, flood, and cut slope hazard assessment, risk assessment, and conceptual mitigation design, 140 km Cerro Casale Mine Access Road, Chile
- Landslide, rockfall, snow avalanche, and flood hazard assessment for 30 km long electrical transmission line in mountainous terrain, British Columbia
- Multi-geohazard assessment for electrical transmission line, Dominican Republic
- Guatemala City landslide risk evaluation tool and conceptual mitigation options, training to empower local communities to reduce landslide risk, Guatemala

Site-specific geotechnical assessment

Includes site-specific assessment of geotechnical site characteristics and geohazards, typically including field-based site characterization, numerical assessment, qualitative or quantitative risk assessment, and design.

- McLymont Creek and Volcano Creek run-of-river hydroelectric projects, ground characterization for roads, bridges, excavations, and facilities, British Columbia
- Landslide forensic assessment, Mexico City
- Site assessment for rockfall shed, Brucejack mine access road, British Columbia
- Rock slope stability evaluation for bridge foundations, 6 locations, British Columbia
- Mt Edith Cavell geohazard risk assessment and risk management options assessment, Jasper National Park, Alberta
- Landslide assessment of potential for catastrophic collapse and runout distance affecting a proposed open pit mine, British Columbia
- Cerro Casale plant site characterization and geotechnical design on ancient volcanic avalanche deposit, Atacama Chile
- Hazard assessment, instrumentation installation, and risk assessment for landslide affecting proposed mine facilities, Atacama Chile
- Rock slope seismic assessment and stabilization design to protect municipal water supply pipeline, North Vancouver, British Columbia
- Rockslide forensic characterization and hazard assessment for a highway, Washington

Years of Relevant Experience: 16

Geohazard mitigation design

Includes conceptual design of risk reduction options, options analysis and selection of a preferred mitigation design, geotechnical design of mitigation measures, cost estimating, and creation of illustrations and reports.

- Cheekeye debris flow barrier, sized for 2.8 Million m³ debris flow, Squamish, British Columbia
- Exshaw, Jura, Cougar, Heart, Harvie Heights Creeks debris flood mitigation, Bow River Valley, Alberta
- Catiline creek debris flow mitigation design, Squamish-Lilloet Region, British Columbia
- Rockfall assessment and preliminary design of rockfall detector fence for private railway, Quebec
- Debris flow risk assessment and conceptual design of debris flow barriers, Lions Bay, British Columbia
- Mine plant site geohazard mitigation design for rockfall, snow avalanche, and debris flow, British Columbia

Detailed design and construction experience

Includes detailed site investigation, numerical analysis and design, creation of specifications and construction drawings, and engineering services during tendering and construction.

- Mackay Creek flexible net barrier design for debris flows, North Vancouver, British Columbia
- Heart Creek debris flood basin to protect highway and community, Exshaw, Alberta
- Brucejack mine reinforced soil retaining wall, 12 m high, British Columbia
- Debris flood sediment basins and barriers, Thames and Kilmer Creek, District of North Vancouver, British Columbia
- Cougar Creek flexible net debris flow barrier, 40 m long, 6 m high, Bow River Valley, Alberta
- Rock slope stability assessment and rock excavation for bridge, Iskut River, British Columbia
- Run of river hydropower intake design and construction, including bedrock and geohazard assessment, British Columbia
- Fitzsimmons Creek debris flood barrier, 14 m high reinforced soil wall, Whistler, British Columbia
- Galore creek access road, geohazard assessment, cut and fill slope stability assessment, and construction, for 120 km long road in very rugged, mountainous terrain, British Columbia
- Reinforced soil wall and slope stabilization design and construction for Canadian National Railway, British Columbia

Selected Publications

Strouth, A., McDougall, S., Jakob, M., Holm, K., and Moase, E. 2019. Quantitative risk management process for debris flows and debris floods: lessons learned in Western Canada. 7th Debris-Flow Hazards Mitigation, Golden, CO, USA.

Strouth, A., Moase, E., Holm, K., and Jakob, M. 2017. Debris-flow risk management: recent activity in Western Canada. Association of Environmental and Engineering Geologists. 2017 Annual Meeting, Colorado Springs.

Strouth, A. 2017. Toolbox for Decision Making. Invited presentation at 2016 95th Annual Meeting of the Transportation Research Board, Engineering Geology Committee Meeting (AFP10). Washington DC.

Strouth, A. 2016. An Example of Mapping Geotechnical Assets for Alberta Transportation. Invited presentation at 2016 95th Annual Meeting of the Transportation Research Board, Engineering Geology Committee Meeting (AFP10). Washington DC.

Strouth, A., Lato M, Zaleski, M., and Holm, K. 2016. Probabilistic Geohazard Assessment: Accounting for Engineered Mitigation. 67th Highway Geology Symposium, Colorado Springs.

Strouth, A., Gartner, J., Holm, K., and Jakob, M. 2015. Debris Flood Assessment and Mitigation Design: Trans-Canada Highway, Alberta. 66th Highway Geology Symposium, Sept. 2015.

Strouth, A., Bale, S., Jakob, M. 2014. Flexible Net Barrier Construction Following Debris Floods in Canmore, Alberta. Association of Environmental and Engineering Geologists. 57th Annual Meeting

Strouth, A, Pritchard, M., Roche, D., and VanBuskirk, C. 2012. Geosynthetic reinforced soil walls for debris barrier in Whistler, B.C. Geosynthetics Magazine. August/September 2012. Vol. 30, No. 4.

Strouth, A., VanBuskirk, C., Pritchard, M., Keegan, T., and Lowe, J. Use of Geosynthetic Fabric Reinforced Soil on Mainline Railways – Design and Construction. in AREMA 2009 conference proceedings. Chicago, IL September 2009.

Strouth, A., and Eberhardt. 2009. Integrated Back and Forward Analysis of Rock Slope Stability and Rockslide Runout at Afternoon Creek, Washington. Can. Geotech. J. 46: 1116-1132.

Strouth, A., Eberhardt, E. The use of LiDAR to overcome rock slope hazard data collection challenges at Afternoon Creek, Washington. in 41st U.S. Rock Mechanics Symposium. Golden, Colorado, June 2006.

Strouth A., Burk, R.L., and Eberhardt, E. 2006. The Afternoon Creek Rockslide near Newhalem, Washington. Landslides, 3(2):175-179.