DON WELCH (1938-2017)

By Denys Reades and Dennis Becker

Don Welch was born on February 8, 1938 and passed away on June 12, 2017. Don was a Senior Tailings Engineer, Principal, and Senior Consultant in Golder Associates' Mississauga office for over 50 years. Renowned for his passion, experience, and development of junior staff, Don's leadership in Golder and in the mining world are well-recognized and will be deeply missed.

Don was born and grew up in Ottawa, and went to McGill University in Montreal to study Civil Engineering. Part of his decision to choose McGill was his love of skiing - he was on the McGill ski team for four years, specializing in the two Nordic events, cross-country racing and ski jumping. After graduation, he moved to Europe where he completed post-graduate studies in Soil Mechanics and Foundation Engineering. Upon his return to Montreal, a friend invited him to hear a lecture by Golder Associates' Victor Milligan and Don was inspired to join Golder's Toronto office in December 1964, when the company was still very young with a total staff of about 25. He became an Associate in 1973 and a Principal in 1977. In December 2014, Don celebrated 50 years with Golder. He stepped down from full-time work in February 2015 but continued to work as a Senior Consultant.

Initially, Don worked on many overseas projects, living outside Canada for 7 of his first 15 years with Golder. In the 1960s, this included road projects in South Africa and Paraguay. Then in the early 1970s, as one of thirteen Golder expatriates, he was responsible for the geotechnical investigations, analyses and reporting on final engineering studies for three hydroelectric dams in northern Greece on the Acheloos River – a 180 m high embankment at Agios Georgris, a 140 m high concrete arch at Messochora and a 65 m high concrete gravity arch at Sykia – followed by studies on the Aoos River. While in Greece, Don met his future wife, Foula, who worked for the original SNC, with which Golder was carrying out the project on a joint basis. Greece was followed by work and living in Hong Kong (infrastructure development), Iran (site selection studies for nuclear power stations) and Egypt (the Port Said land reclamation project). With all the travel, Don acquired the nickname "the Wandering Welch".

Ultimately, Don became an acknowledged global expert in the management of mine tailings - from site selection studies through operation to decommissioning, as well as in dams,

embankments and water management. Since the late 1970s, Don worked almost exclusively on the disposal of mine tailings and waste rock as a group leader, project manager, project director, advisor and review consultant. He carried out siting studies, designs, construction supervision and closure on mining projects in conditions ranging from the tropical regions in many parts of the world, to permafrost in the Canadian Arctic and to high altitude and desert sites in the Andes. He supervised 21 tailings basin site selection studies and was involved with tailings at over 50 mines in various parts of the world. He was an enthusiastic proponent of Golder's mining-led development in South America, and instrumental in setting up Golder's first offices in Santiago, Chile and Lima, Peru.

One of his major projects in South America was as the initial engineering manager on the very large Antamina Tailings Impoundment Facility in Peru. The main containment structure is a concrete-faced compacted rockfill dam which will have an ultimate height approaching 300 m in a high-risk seismic zone in the Andes mountains. This facility won an Award of Merit in October 2002 from the Association of Consulting Engineers of Canada and Canadian Consulting Engineering Magazine.

Other major projects in which Don was involved include the large Collahuasi copper tailings facility in Chile (one of Golder's first mining projects in South America), feasibility studies for an 800 million ton copper basin in Argentina, the large Goro nickel project in New Caledonia and Inco's 150 million ton Voisey's Bay nickel project in Labrador. Don was also heavily involved with the expansions and subsequent closures of the Rio Algom and Denison uranium tailings facilities in Elliot Lake, Ontario. He was project manager for the feasibility studies and design of the Cigar Lake high grade uranium tailings basin in Northern Saskatchewan, which was never built.

Don authored or co-authored 38 technical papers on tailings and paste, with 43 different co-authors. He was one of only two consultants who participated with 17 staff from mining companies on the Mining Association of Canada committee that developed the 1998 "Guide to the Management of Tailings Facilities". He helped incorporate tailings dams into the Canadian Dam Safety Guidelines and also developed numerous internal Golder guidelines and tools for water balance modelling and mine waste management. Don contributed a chapter on water management to a handbook on stability in surface mines by the international Society for Mining, Metallurgy & Exploration. For several years, Don was also heavily involved with the Association of Consulting Engineers of Canada on export committees and eventually as a Vice President.