Rivers advocate Dr. Hugh Whiteley

By Janet Baine  
GRCA Communications Specialist

Retired University of Guelph engineer and hydrologist Dr. Hugh Whiteley is a passionate advocate for the rivers in his community.

For his years of dedication, especially to local waterways, he received a 2015 Watershed Award from the GRCA.

Whiteley’s interest in water is rooted in genetics. One grandfather was a sea captain, the other operated a summer resort on Mara Lake in B.C. At age four he received his first paddle and accompanied his parents on many canoe trips.

As a child, he built snow dams in the spring and raced matchstick boats in the runoff streams in front of his Ottawa home. This led to a study of engineering at Queen’s University with a fourth year undergraduate thesis on flood prediction.

Thirsty for more knowledge of water, he studied at Imperial College in London (Diploma in Hydrology) and at the St. Anthony Falls laboratory at the University of Minnesota (M.Sc.). Whiteley then applied his training in Guyana (Land of Three Rivers).

He arrived at the University of Guelph in 1966 to teach and also complete his Ph.D. in hydrology. His teaching and research focused on water flow within the landscape.

“A great flood made to the GRCA is likely the development of the hydrologic modeling system that we use to run all our flood forecasting,” said James Etienne, the GRCA’s senior water resources engineer. “And he probably taught half of the engineering staff at the GRCA.”

Flood forecasting model

Flood forecasting is a key activity of the GRCA, especially during the spring. Whiteley’s streamflow modeling system is called the Guelph All-Weather Storm-Event Runoff Model (GAWSER). It was developed 35 years ago as a tool for research on causes of pollution in the Great Lakes when Whiteley was part of an international group - the Pollution from Land Use Activities Reference Group (PLUARG).

The GAWSER model examined the impact of agricultural drainage on water quality of streams flowing into the Great Lakes. Whiteley applied this model in the Canagagigue Creek watershed, a tributary of the Grand River flowing through Elmira.

When floodplain mapping was being updated by the GRCA in the mid ‘80s, Lorrie Minshall, Whiteley’s former student and an employee of the GRCA (now retired), asked him to adapt his model to estimate flood flows for floodplain mapping.

Two former students — Dwight Boyd, now the GRCA’s director of engineering, and Dr. Harold Schroeder — adapted GAWSER for use in the Grand River watershed. Several other conservation authorities in southern Ontario also use it.

“The model did such a great job of modelling the hydrology of the Speed and Eramosa River and later the Grand River, it was adapted into the forecast model used by GRCA today to help manage and forecast floods,” said Boyd.

When it comes to finding engineering solutions, Whiteley has always adhered to the mantra of the undergraduate engineering students at the University of Guelph – “all of us are smarter than any of us.” For this reason, he said his achievements have all been collaborative efforts with the contributions and support of his colleagues.

“Likely the most important contribution he has made is the legacy of students he taught and inspired over his career. Many still reside in the Grand River watershed or are involved in water-related careers. Hugh’s inquiring mind lit the spark that inspired many others,” Boyd said.

A systems approach

“The ways of defining and solving water-resource problems are way better now than they were when I started,” Whiteley said. “In the 1960s engineers defined a single narrow problem and then found a solution,” but Whiteley said “focus on single issues results in new set of problems. Instead, it is necessary to look at entire systems to find sustainable responses.”

The Ontario approach to source water protection is an excellent example, he said. It considers water quality and quantity issues in an entire watershed and then finds lasting solutions, taking all aspects of water and land into consideration. Whiteley was a peer reviewer on a number of the Source Water Protection Studies in the Grand River watershed.

“As a peer reviewer and technical advisory committee member, he always has very good questions and they are not always easy questions to answer. You need that, because it leads to better results,” said Martin Keller, source protection program manager at the GRCA.

In his home city of Guelph, Whiteley has chaired and has been a member of many water-related advisory committees. He chaired a citizen’s advisory committee during development of the 1993 Guelph River Systems Management Plan and is a current...