'Environmental monitors' for golf courses in the '90s?

■ In an effort to control development of the 18-hole Chateau Whistler Resort Golf Course, the nearby municipality of Whistler, British Columbia, Canada, required the builders to employ an "environmental monitor."

Acting as an environmental watchdog, Mike Nelson consulted on water-related issues throughout the courses' development, construction and maturation.

Nelson is principal of Nelson Environmental Services in Squeamish, B.C.

According to course manager Dave Gordon, the municipality had two major concerns about the new Robert Trent Jones Jr. golf course:

1) It needed to be more environmentally responsive than Whistler's Arnold Palmer course developed in 1982, and

2) It could not harbor the risk of polluting Lost Lake, a beautiful alpine lake bounded by the course on three sides.

In response to these concerns, resort owners hired Nelson to develop water quality guidelines. The task began prior to construction when Nelson conducted studies to determine drainage patterns.

Nelson also monitored water quality in Lost Lake for a year, on a weekly basis. Using an Alpha Sampler, he took numerous water readings.

To better organize his data, Nelson developed a model to predict the effects of golf course construction and fertilizers on Lost Lake. Using an agricultural model because no workable golf course model was available, Nelson forecast a worst-case scenario showing the lake's visibility would decrease by about two meters (25 percent) and then stabilize.

Nelson will continue to monitor the water quality twice a year in the spring and fall.

After review, the municipality agreed this level was acceptable. As it turned out, tests showed the construction and later fertilization affected the lake very minimally. However, the runoff from several storms during 1990 temporarily decreased the lake's visibility by the allowable two meters.

Part of Nelson's role as environmental monitor was to document all concerns to the municipality, and to communicate on an almost daily basis with Gordon and the project manager.

Monitor duties—Because water quality of the creeks downstream from Lost Lake had to be maintained as habitat for rainbow trout, Nelson was involved in almost every aspect of the permit process, rechanneling and construction. Working with Gordon and the contractors, Nelson's job also included:

- Making sure tree removal did not impact on the lake, streams or public traffic to Lost Lake;
- Helping prepare all the major documents dealing with stream works, including forestry and cutting permits and timber stamps;
- Writing memorandums on how best to divert the creek through the irrigation pond so the contractor could work on the creek in dry conditions;
- Helping obtain clearing debris applications for both main creeks;
- Procuring Ministry of Environment, Lands and Parks work approvals;
- Placing $360,000 worth of tile drainage used to pick up runoff and take it to the lake untouched;
- Consulting with fisheries concerning the timing of a pond diversion in order to cut a 300-meter channel through the course. (The gravel, excavation and diversion cost about $40,000, completely restoring Fitz-simmons Creek, a spawning habitat for Dolly Varden trout.)

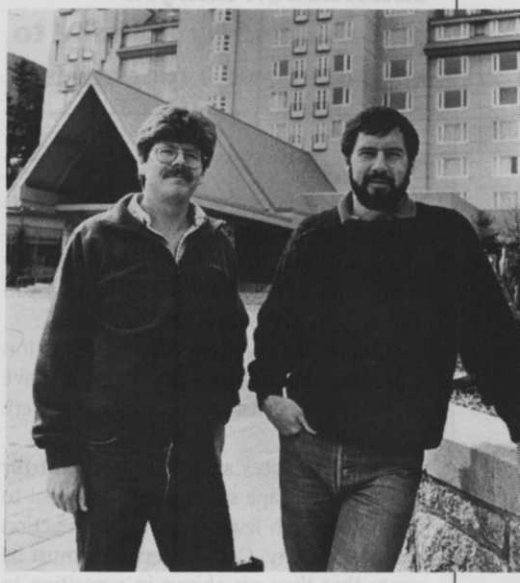
"We all agreed how to do things like build the settling pond," says Nelson. "But it was part of my role to put our plans into a written form and submit them to the division biologist for final approval."

Last October, Nelson submitted a report to update Gordon, the municipality and the Minister of the Environment. The report included the effects of the project; conclusions; and whether the environmental monitoring program should continue.

Continuing responsibilities—Until the municipality deems otherwise, Nelson will continue to monitor water quality in Lost Lake and make fertilizer and herbicide recommendations. His job now includes taking quarterly nutrient loading budget levels up- and down-stream from the lake and submitting his findings to Gordon and the municipality.

Nelson and Gordon have worked closely to develop a fertilizer program acceptable to all parties.

"Once the course is well-established, we will reduce the amount of fertilizer used and review our program annually," says Gordon. "We never intended to dump fertilizer on this course. But now we are more aware than ever what we can do. We apply fertilizer in small amounts so there is very little leaching.



Mike Nelson, left, and Dave Gordon worked together to develop water quality guidelines.

"There have been times when Mike's questions have helped us see the project more clearly and come up with better solutions. He also forces us to explain the rationale behind our fertilizing program. This is good; then we all know what's going on in a documented fashion."

Since the municipality's main concern of maintaining the water quality of Lost Lake has been realized, the environmental monitor's role has decreased somewhat. Still, for at least one year following the course opening this month, Nelson will continue to monitor the water quality twice a year in the spring and fall. In fact, he and Gordon anticipate water testing will eventually fall under the golf superintendent's supervision.

Nelson will continue to plug in new data in the Lost Lake environmental model, and Gordon's staff will continue to fertilize by hand within 10 meters of any water.

Both men agree that less fertilizer and more accountability are the landscape trends of the future.

—Leslee Jaquette