Decorative Water Features and Water Quality

Within every parcel of buildings at Olympic Village there is at least one water feature – a rooftop stream, a reflecting pond, even a waterfall. These features help "celebrate water" – but they accomplish much more.

"The features are used to keep rainwater from the cisterns in constant motion so it won't stagnate," says Peter Kreuk. "Running it through the water features aerates it and exposes it to sunlight, which helps kill off bacteria. It's a pretty important functional role in the whole system." Circulation will help maintain the water at a "recreational" quality level – the same required for public swimming at beaches and lakes. "That allows for a certain level of bacteria in the water," says Bill Donald of Keystone Environmental.

"The recreational standard means, 'It's okay to swim in this water, and even swallow some of it, it won't kill you.'" (Nevertheless, it is anticipated that toilets throughout the development will be labeled with a sign reading, "Do not drink.")

Meanwhile, during hot weather, building water features will help provide a cooling effect for residents. "Passive design is subtle. The water in the ponds doesn't do all the work – the surroundings and the local climatic conditions will contribute," says SK Lai of Cobalt Engineering. "But if you sit there and the wind picks it up, the combination of our usually low humidity plus the effect of the pond will mean you'll feel a little cooler."

Walk through SEFC – the "celebration of water" is everywhere you look. Water has been brought back into the landscape – it's on the roofs, it's in the piazzas, it's in the basements. It's extraordinary. Patrick Lucey, Aqua-Tex

Inset series, left: Reflecting ponds at Parcel 4 add beauty and intrigue to the structure's design – and serve the functional purpose of circulating stored rainwater to ensure it stays clean. The water in the ponds thus does not require chlorination, giving the option of adding aquatic plants if desired.

Background: An illustrative plan of the courtyard of Parcel 4 helps to articulate the designer's intent – a thoughtful combination of pedestrian pathways, water features, an LED light sculpture, and a bamboo garden.

Irrigation

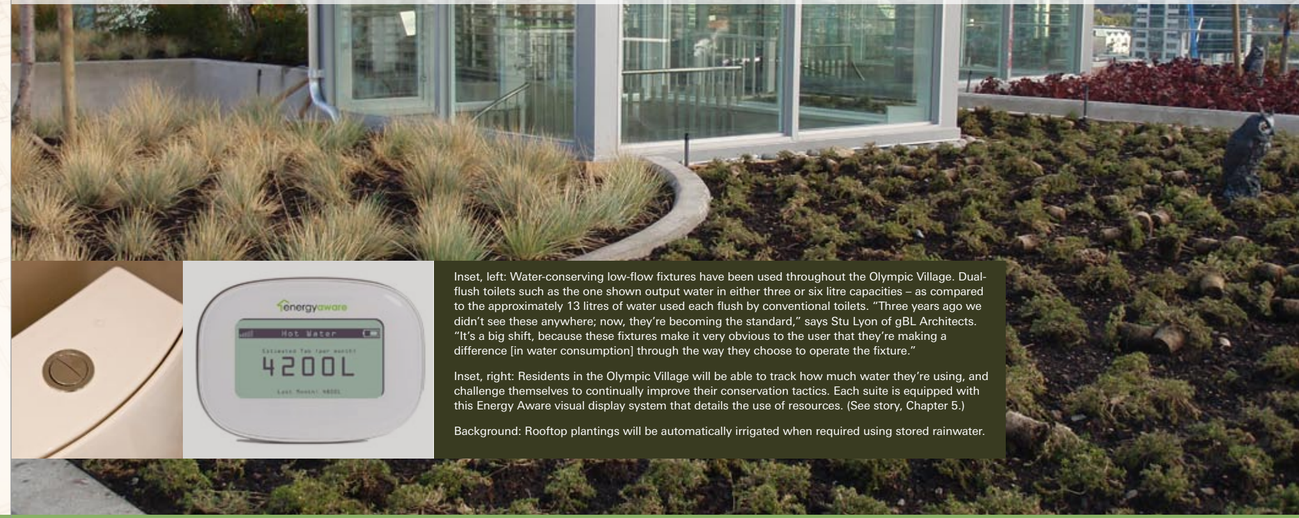
With extensive landscaping on the Millennium Water buildings, making sure plants are watered during dry periods is important.

"There is an automatic irrigation system throughout the project," says Kreuk. "There's a weather station and groundwater soil sensors, so if it has just rained, the irrigation system won't go on, but if the soil is dry and there's a scheduled watering, it will. It's based on plant needs and soil conditions, as compared to a standard system where you turn it on in May and it goes on every week until you turn it off in September. It will reduce water use for irrigation by almost 50 percent."

Rainwater Toilet-Flushing

Toilet-flushing is one of the most water-intensive activities in the modern home – which is why using rainwater for this purpose can have a dramatic effect on reducing the demand for municipally supplied drinking water. (See chart, page 6.)

But will residents adopt rainwater toilets with pride, or prejudice? Although the water is expected to eventually run clear once the building landscape has settled and fine organic matter has generally processed away, it is possible that the water may be slightly coloured due to its natural condition. For this reason, the system is designed so that future strata councils can install an additional filtering system if desired.



Inset, left: Water-conserving low-flow fixtures have been used throughout the Olympic Village. Dual-flush toilets such as the one shown output water in either three or six litre capacities – as compared to the approximately 13 litres of water used each flush by conventional toilets. "Three years ago we didn't see these anywhere; now, they're becoming the standard," says Stu Lyon of gBL Architects. "It's a big shift, because these fixtures make it very obvious to the user that they're making a difference [in water consumption] through the way they choose to operate the fixture."

Inset, right: Residents in the Olympic Village will be able to track how much water they're using, and challenge themselves to continually improve their conservation tactics. Each suite is equipped with this Energy Aware visual display system that details the use of resources. (See story, Chapter 5.)

Background: Rooftop plantings will be automatically irrigated when required using stored rainwater.