

Wetland plants used to treat sewage

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Scientist Edgar Lemon, left, who developed a novel approach using wetland plants to treat sewage, discusses the technique with Lloyd Rozema of Aqua Treatment Systems.

Lincoln greenhouse-tourist complex to be first in the province to use 'constructed wetland' as a novel back-to-nature approach to treatment.

With a little help from literally thousands of cattails and other wetland plants, a major greenhouse operation here will soon be the first in Ontario to use a novel back-to-nature approach for treating its sewage.

Niagara Under Glass, a \$23.5 million greenhouse-tourist complex now under construction in Lincoln, has received approval from the province's Ministry of Environment to treat its sewage and waste water using a 'constructed wetland' that will purify the water enough to allow the greenhouse to use it again.

'It will be a closed-loop system that will work on an old principle - keep it simple,' said John Albers, president and general manager of Niagara Under Glass which will be completing the first phase of its 20,520 square metre complex before the end of this year.

'With this (wetland) system, you are working with nature, you are not fighting against it.'

The system, using thousands of wetland plants rooted in thick beds of sand, is the brain-child of Niagara resident Edgar Lemon, a retired Cornell University soil scientist who has been experimenting with ways of using wetlands to treat sewage for the past eight years.

With the help of the Friends of Fort George, a Niagara-based group dedicated to preserving historic parks, the Ministry of Environment and Regional municipality of Niagara, the 78-year-old Lemon began testing the power of wetlands to treat sewage effluent from his home town. The U.S. Environmental Protection Agency became so impressed with the results - ministry test

showed the effluent could be cleaned to drinking-water standards - that it awarded Lemon about \$100,000 US to see if he could get the wetland plants to work their magic through the long, frozen months of winter.

Albers, a native to Lincoln who has worked most of his life in the greenhouse business, also became impressed when he read about Lemon's experiments in local newspapers a few years back.

'I went to Niagara-on-the-Lake to see (Lemon's) system for myself and at the end of it was a tap with water running so clean, it looked like you could drink it,' said Albers. 'Seeing is believing.'

Niagara Under Glass is not located near conventional sewer systems, so Albers and his partner, Mike Duffy, had been looking for other ways of treating the tourist attraction's waste.

When the facility's second phase is completed in 2001, it will include indoor ponds, food and retail outlets and the builders hope to attract 200,000 visitors annually.

The wetland system will be capable of purifying up to 18,000 litres of effluent per day filtering it through one box after another until it is clean enough to drain into two larger ponds full of cattails and other plants that will make up part of the planned sprawling park.

Duffy said the purified water will be re-used in the greenhouses and washroom facilities.

Drinking water will go through an additional treatment process known as reverse osmosis. Altogether, the system will cost Niagara Under Glass about 420,000 to build. 'I'm pretty excited about this,' said Lemon of Albers' and Duffy's decision to use his approach, 'because I think these fellows are marching proudly into the 21st century with this.' Lemon's long-term dream is to see constructed wetlands used to treat sewage from entire municipalities.