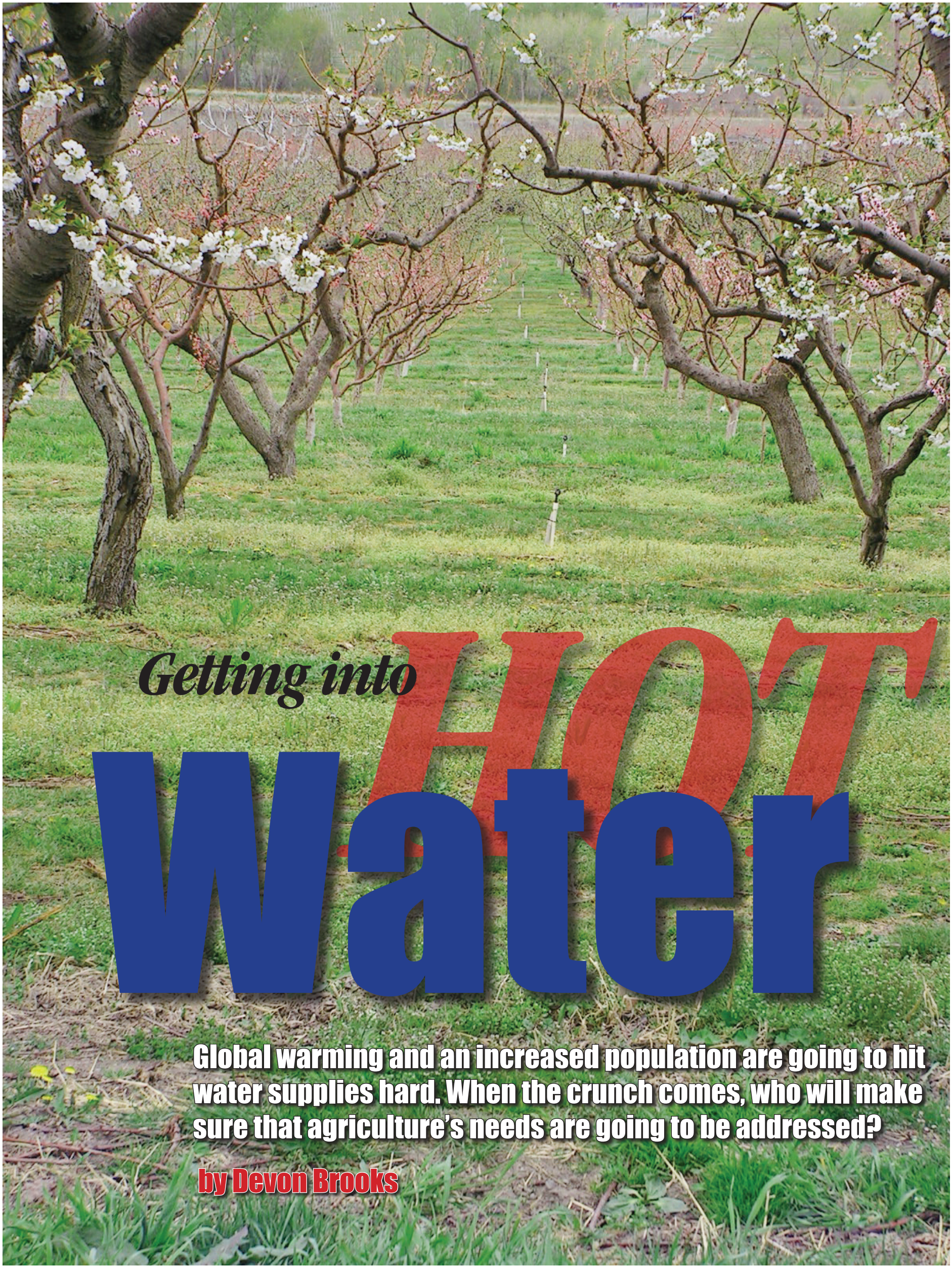

Getting into HOT Water

Global warming and an increased population are going to hit water supplies hard. When the crunch comes, who will make sure that agriculture's needs are going to be addressed?

by Devon Brooks

Farmers in the Okanagan and Similkameen have been broadsided by any number of issues in the past two decades. Who could foresee that China would dominate the world's apple industry and help drive prices into the basement? Or that real estate prices would reach such heights that no fruit grower can entertain the idea of buying land unless they are transforming grapes into wine?

Another broadside is coming. This one is foreseeable, but it remains to be seen whether politicians, the general populace and the fruit industry is really aware of just how monumental it will be.

The broadside is going to be about water: access, quantity, quality, purity, runoff and its uses.

Farmers might be tempted to feel complacent. As Anna Warwick Sears, the water stewardship director of the Okanagan Basin Water Board points out, "There's a big context here and the context is the province issuing water licenses. Licenses are given in perpetuity – first in time is first in rights."

Since 70% of water use in the Okanagan is allocated to agriculture, and most of those water use permits were set decades ago when farming was essential to the local economy and the population small, it would seem that agricultural access is a sure bet.

Take note however when Sears says, "There's potentially some very big things that could happen." One of those things is population growth. People will move here and they won't ask, they'll demand water. Who will bet that politicians will always side with a relative handful of farmers against popular demand?

"It is hard to know how we'll go about our new water management issues," says Sears.

Ted van der Gulik is with the Resource Management Branch of the B.C. Ministry of Agriculture & Lands. Speaking at the BCFGA's Horticultural Forum in November, van der Gulik said all available water licenses in the Okanagan basin would be allocated within a decade and a half.

Of course, the population is not projected to flat line by 2021, meaning competition for water will increase.

And that water is going to get less abundant due to global warming. Van der Gulik warns, "Thirty years from now [the] average daily temperature in Kelowna is going to be 40°C."

It's not going to be about a little extra sunscreen on summer days.

Higher summer and winter temperatures suggest a greatly reduced snow pack, or possibly no snow pack at all. Longer, hotter growing seasons means more water will be needed when there is less available.

That is something that couldn't have been foreseen by those who assigned water licenses a hundred years ago.

Something else they couldn't foresee are the pine beetles that are literally eating up B.C.'s forests.

Sears reports, "One hydrologist says the pine beetle is the biggest driver of water supply changes since the glaciers left the valley."

Trees soak up water as it falls, preventing run off but also reducing the supply that makes it to the lakes. They also shade the land, reducing evaporation on hot, sunny days. Take out a large number of trees and it simultaneously increases the opportunity for flooding and drought.

PHOTOS BY DEVON BROOKS

Bill Stewart indicates the portion of the new above ground valve structures designed for the installation of water meters in the future.

The more trees they kill, the greater the beetles' impact will be. On average 25% of Okanagan forests are susceptible.

Profits~

Water shortages have implications that go well beyond local supplies. CIBC World Markets puts out a monthly report on trends that the bank's researchers feel will have profound impacts, either negative or positive, on investing.

In November they turned their attention to water.

Benjamin Tal, a senior economist at CIBC World Markets, writes, "The water industry of today resembles the oil industry during its golden era, before and right after WWII. And the market is paying attention."

This matters because, just as farmers have seen their political importance fade with the decline in rural population, so too does their economic clout seem to be fading.

As Tal points out water shortages are becoming a global issue. "The supply of fresh water in the global ecosystem is no larger today than when humans first walked the earth. Only 0.1% of the world's water is readily accessible to humans. Water demand, however, is doubling every 20 years — more than twice the rate of population growth."

At the moment water is seen as a free commodity by most Canadians. This works both for, and against, the farmer and will continue to do so in the future.

As Tal writes, "In a normally functioning market, growing demand for water would be kept in check by higher prices. But water, of course, is not yet a commodity and its price is determined by politicians —not by the market."

As water supplies become more valuable it is inevitable that some entrepreneurs will see the value in supplying, owning and trading water. Equally inevitable is that they will challenge the idea that farmers should get a "free ride" based on water rights given in the 19th and 20th centuries.

The United States is ahead of us on the track of competition for water and have begun moving it from "freebie" to an increasingly valuable trading item. Tal says, "Water markets are emerging in the western U.S. (Colorado, California, Utah, Nevada) where hundreds of thousands of acre-feet of water rights are traded each year through private, voluntary transactions."

Improved technology

The good news is that there is a great deal that can be done to reduce the watery footprint both in and outside of the agricultural industry.

One of the things the Okanagan Basin Water Board has been doing for three decades is allocating grants for projects to keep water clean. Recently the Board's mandate expanded and grants are now going out to increase the efficiency of water use.

One such grant flowed to Osoyoos, where Bill Stewart is replacing 30-year-old flow regulation valves feeding various farms in the area.

In all Stewart will replace 40 valves averaging $600 for parts and labour by next spring.

This somewhat dry topic may seem inconsequential but Stewart says the old valves, which were underground, were delivering one-and-a-half to two times what they were supposed to. The worst one was letting through 200 gallons per minute to a farmer who was allocated to receive only 55 gallons.

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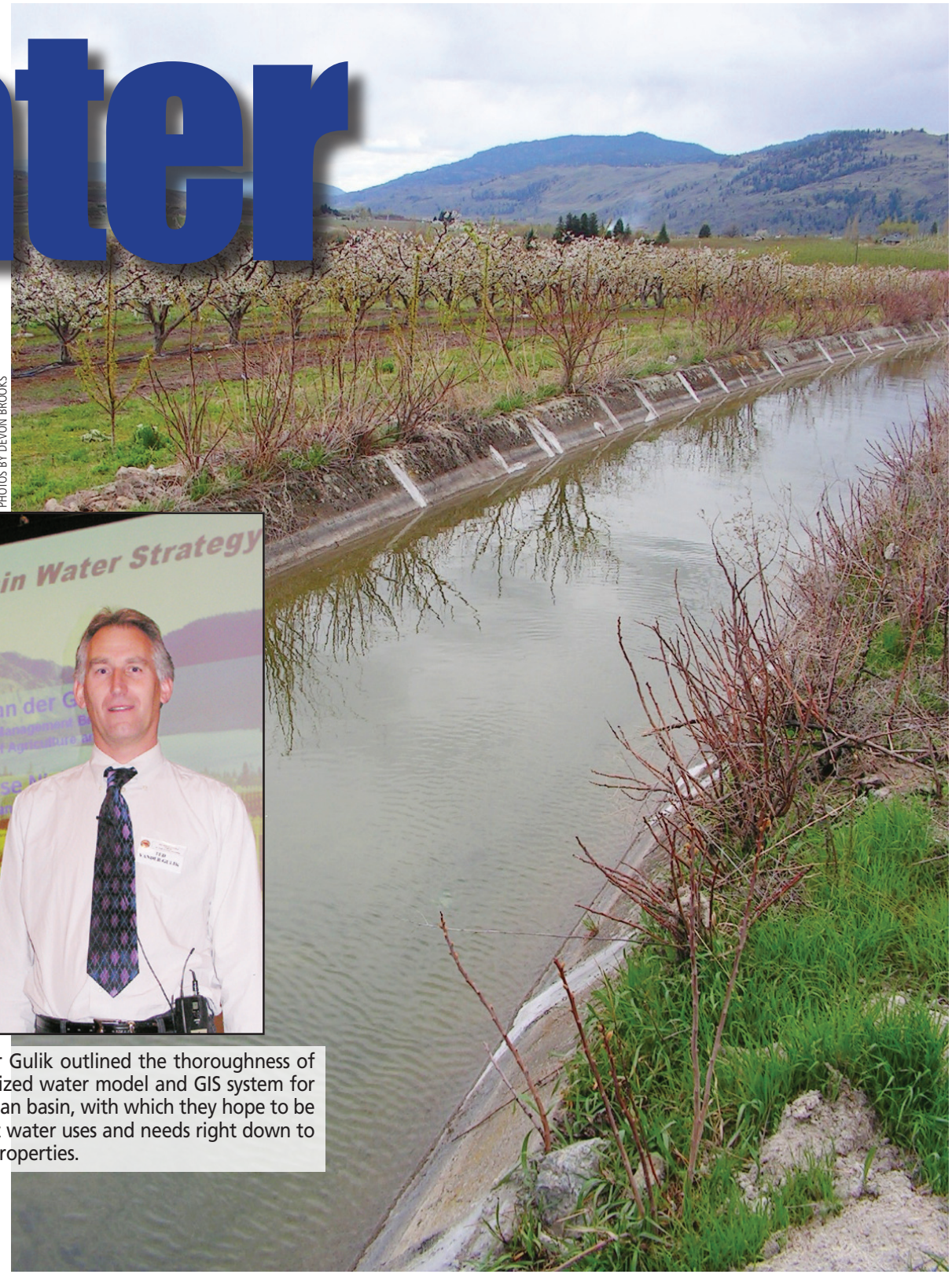
...Water



PHOTOS BY DEVON BROOKS

Ted van der Gulik outlined the thoroughness of a computerized water model and GIS system for the Okanagan basin, with which they hope to be able predict water uses and needs right down to individual properties.

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The deterioration of the valves occurred gradually over time, so many farmers may not have been aware of the extra volume they were getting, but if they weren't aware before, they became acutely aware when the flow suddenly dropped off. Stewart says, "They have enough water, but the question is do they have enough pressure."

In the 200 to 55 gallon drop off situation, the farmer had to modernize his sprinkler systems and, unlike the valve replacement, that expense was on the farmers' tab.

When asked if the area had been using too much water before the valves were replaced, Stewart shakes his head. In the future he says, "I suggest we'll be in surplus."

Costs

This modest investment has substantial payoffs and there are likely others that will reap similarly impressive returns for the water supply, but most improvements will be much more expensive.

Stewart says there are numerous water lines in the Osoyoos area that need to be replaced outright. Now extend that problem to most if not all communities in the region.

Tal reports, "The infrastructure of water delivery in the industrial world is in dire need of investment. Some of America's water systems were built during the Lincoln administration, and in some major cities, more than half of the water intended for delivery to consumers is lost en route."

The problem is cost. Stewart says Osoyoos' badly needs to replace one of its booster stations and, because of new regulations imposed by health authorities in the province, the town's chlorine treatment plant needs upgrades.

A story in Kelowna's Daily Courier quotes Interior Health as saying Okanagan governments need a $500 million infusion to bring drinking water up to standard.

The CIBC report states, "Federal governments are showing no desire to get involved, and municipalities can only dream of possessing the requisite amount of cash. As a result, governments are now much more open to the notion of privatizing their water infrastructure which, in turn, is providing a substantial boost to the private water industry."

Private industry only make those kind of investments where it can generate a return.

Tal concludes, "…municipalities need to allow the price of water to rise to levels that resemble full recovery costs. And this is precisely what they are doing. Water prices in many industrialized countries are now rising much faster than inflation, and this trend will only accelerate in the coming years."

Stewart says some farmers are forward thinking and very careful with their water use. Others look at the water they receive as something to be used up because they had to pay for the water license, but payment is going to get more expensive.

The new valve connections are above ground and lengthy sections in the new design will allow water meters to be put in place at some point in the future.

Stewart says the meters are going to be a necessity. "In my mind it's the first step in the conservation of water."

Already five districts in the region are testing out water meters.

Solutions

If you want to know whether the region is or is not in trouble right now, no one can tell you for sure. Says Sears, "It's hard to say if we're in a water deficit right now."

That's because of the 79 water sheds that feed into the Okanagan Basin, only 16, the largest, have ever been accurately measured. Water flows from the remaining 63 have only been estimated.

Which is why, says Sears, "Basic research is a priority."

That is research on the amount of water input. Output, or water use, is another area of research that the province is heavily involved in. At the Horticultural Forum van der Gulik gave details on a detailed Geographical Information System his ministry is putting together. It will give comprehensive information on property up and down the entire basin on a 500x500 m grid.

This GIS system will create a unified cadastre, or water model, that will include natural information resulting from temperature minimums and maximums, water content, precipitation, elevation and even soil type. Manmade modifications will also be factored in for crop type and the irrigation system. Information will be available for the region, municipality, the purveyor or by watershed.

For Sears the answers ultimately come from more building more flexibility into the water management system. "The two main things are more water storage and conservation – you need buffers."

The buffed up Okanagan Water Basin Board will not, she says, be forcing solutions on anyone. She sees it as an information source. "It is not a strong arm entity."

But if the Board is not the agency to enforce tough choices in the future, somebody else will. When push comes to shove neither the general population nor the politicians are going to put a premium on agricultural access unless farmers and their representative bodies make sure they are in line to deliver their message.