Bahamian Water Resources, the Environment & Ways the World Could End

by Larry Smith – Bahama Pundit, 2008

*"A can of soda costs more than 50 gallons of fresh water." -- Godfrey Sherman, general manager of the Water & Sewerage Corporation*

James Altucher is an investor who writes books with titles like *Super Cash*. And for all you alarmists out there, his latest project is about ways the world could end.

"I was thinking about this during dinner with a risk manager of a multi-billion dollar fund of funds," Altucher explained recently in the Financial Times. "All this guy does all day is worry. Pandemic this, dollar collapse that, terrorism, nuclear accident, etc etc. Imagine getting paid to worry?"

With that goal in mind, Altucher worked up a list of 30 scenarios on how the world can end. The options range from an asteroid strike to a financial collapse to a flu pandemic to running out of clean water. But that last scenario, he says, is the only one that is "very likely" to happen within the next 30 years.

"Only 0.001 per cent of the world’s water is drinkable. The supply is never going to change, but the demand is rocketing thanks to the modernisation of the developing world. More than half of all hospital stays in the world are due to water-related diseases."

A quick Internet search turns up tons of information on the world's growing water crisis - in terms of both availability and sanitation. As BBC reporter Alex Kirby warned: "Cut it how you will, the picture that emerges from today's data and tomorrow's forecasts is so complex and appalling it can leave you feeling powerless."

Experts say that more and more people are living in cities and raising the demand for food and water just as climate change is beginning to squeeze supply. So I thought that with development issues currently high on our radar, it would be useful to take a look at the water situation in the Bahamas.

Our little chain of islands has long suffered from a scarcity of fresh water, particularly in the south - that's why granny admonished us to always let the yellow mellow and only flush the brown down (since flushing accounts for 40 per cent of water use in our homes).

But now we take things for granted. Bahamians don't realise that fresh water is so scarce we spend a fortune to supply it. At a College of the Bahamas panel discussion on this subject last week, General Manager Godfrey Sherman said the Water & Sewerage Corporation must invest $250 million every five years for the foreseeable future.

That's big bucks for a small country. And as you may know, the WSC is in the same position as most other government entities - dead broke. Mr Sherman admitted he was running a deficit of $10-20 million a year.

We get our fresh water from rain, which percolates through the limestone rock to accumulate on top of salt water a few feet underground. But over-pumping to meet greater demand causes the two to mix, and rising sea levels due to climate change can also be expected to raise salinity levels, according to Philip Weech, a hydrologist who is now chairman of the BEST Commission.

Getting rid of garbage has always been a big problem on small islands, and since we have no drainage to the sea, everything dumped on or into the ground finds its way to the water table, including carcinogenic sewerage from your neighbour's poorly built septic tank. And groundwater pollution is very difficult and costly to clean up.

New Providence – where most of our homes and hotel rooms are located - is critically short of groundwater. We use about 11 million gallons a day, but the island's wellfields have been unable to meet the demand since the mid 1970s, when Nassau underwent strict rationing and the WSC began barging water from North Andros.

Dr Cant says rising sea levels over the next several decades will create more brackish wetlands on major islands, with Andros losing up to half of its fresh water resources. "We already have a water deficit and more people and development means more demand. So we must plan now to survive."

Globally, demand for water has tripled over the past half century, according to Lester Brown of the Earth Policy Institute, and water tables are falling in countries that contain more than half the world's people, including the big three grain producers - China, India and the United States.

"Seventy per cent of all water use is for irrigation, compared with 20 per cent used by industry and 10 per cent for residential purposes. While most people recognise that the world is facing a future of water shortages, not everyone has connected the dots to see that this also means a future of food shortages," Mr Brown said.

"Lakes are disappearing on every continent and for the same reasons: excessive diversion of water from rivers and over-pumping of aquifers. What is needed now is a new way of thinking about water use..As water becomes scarce it needs to be priced accordingly."

This brings us back to Mr Sherman's remarks at the panel discussion that water prices in the Bahamas are unrealistic - meaning too low.

With land at a premium today, activities such as rock mining and canal cutting can have a dramatic impact on water reserves. The best example of this is the Grand Lucayan Waterway, which developers cut across Grand Bahama years ago, destroying a 40-foot fresh water lens in the process.

A more recent example is on Rum Cay, where research indicates that marina dredging at Cotton Field Point breached that island's fresh water lens. And we are all aware that the Albany developers plan to cut through the coast near Adelaide for a marina, which will lead to beach erosion and could also damage the water lens.

On top of this, there is a consensus among water experts that most Bahamian islands do not have enough groundwater reserves to meet anticipated growth. This means that even large islands like Abaco and Grand Bahama will eventually have to develop alternate sources of supply that are more sustainable.

…Luckily we have vast volumes of clean seawater readily available, while waste brines can safely be disposed of in the same way that we get rid of our sewerage and storm water - by flushing them down deep injection wells.

But RO plants do require large amounts of energy, so the cost of fuel is a challenge these days. The WSC currently spends about $2.6 million a year on energy, which only reinforces the urgency of cutting our reliance on oil as soon as possible.

According to Dr Cant, the solution to our long-term water supply needs is to combine desalting technology with alternate energy sources like solar, wind and wave power, ocean thermal energy conversion, and waste to energy processes.

A good example of the possibilities is Current Cut, where a tidal current of 4 to 6 knots could easily power turbines to run an RO plant for North Eleuthera. And the production of fresh water in addition to energy is one of the reasons OTEC technology holds such promise for countries like the Bahamas.

OTEC produces power by using the temperature difference between deep and shallow ocean waters. In Nassau, warm surface sea water would be pumped into a low pressure chamber where it would vapourise. The steam would drive turbines to generate electricity, and then be condensed as fresh water by exposure to cold sea water pumped up from the Tongue of the Ocean.

The United Nations biodiversity treaty requires the Bahamas to protect a minimum of 10 per cent of its land and sea ecosystems - including coral reefs, wetlands, beaches, forests and groundwater reserves. But according to Ms Phillips, most targets do not currently meet this standard, and many receive no protection at all - including our fresh water reserves.

"Our analysis recommends protection of locally important fresh water resources, and we encourage the WSC to protect their wellfields from development so they can provide a backup strategy for fresh water supply."

The world faces increasing competition for scarce resources as population expands from six billion today to 8.9 billion by 2050 and the Bahamas is certainly not immune from development pressures. Planning ways to secure a sufficient supply of clean, fresh water while conserving our forests is another example of how we have to adjust to changing conditions.