

LET'S GO FOR GREEN DESAL

Suddenly the environment is the only thing that matters in the world. We in the desalination industry have spent our days trying to find cheaper ways of making water from the sea, but now it seems that is not enough. We have to make cheaper water from the sea while prioritising the protection of marine life and minimising the greenhouse gases we produce. If we can't do that, then people in many parts of the world - California being the prime example - won't want our water at all.



Christopher Gassan

It is frustrating to find our industry's reputation blackened by the likes of the World Wildlife Fund, and the Pacific Resources Institute. One feels that unless we do something about this quickly, desalination will find itself environmental bad guy number three, right behind nuclear power and SUVs.

Desalination does have an environmental impact. It uses energy (see table below), it takes water from the sea (with the risk of entrainment and impingement of marine life), and it returns concentrate to the sea creating a saline plume around the outfall. However, this does not mean that we have to hang our heads in shame when people start talking about green issues. Even in California there is a strong argument that desalination is the most environmental solution to the growing crisis of water scarcity.

Think of it this way. Once the annual per capita availability of fresh water resources falls below 1,667m³/head, a population will encounter "water stress" according to the United Nations Environmental Program. The impact of water stress is felt not so much by humans, but by the flora and fauna of a river basin. There is not enough fresh water to dilute the toxins in agricultural run-off and industrial discharges. Great rivers struggle to reach the sea, putting an unbearable stress on estuary life.

This is the reality of conventional water use in California today. It has pushed the Delta Smelt of the Sacramento San Joaquin estuary to the edge of extinction. The giant pumps of the California Water Project were switched off for 10 days this summer to protect their numbers, but it may be too late. Environmentalists see this three inch silvery fish as the first in a line of fish, animals and plants which will become extinct if the stress on the river delta continues to build.

It is not just the 18 million people now dependent on the water pumped from the delta into the California Water Project that have created this potential wildlife holocaust. It is also climate change. It has been a hot dry summer in California. Natural flows are well below normal. For this reason it is not enough for environmentalists to say that no growth and

better conservation are the only solution. If the stress on California's natural fresh water resources is to be significantly reduced, the state needs to diversify its water portfolio to include desalination. Certainly this will involve some additional energy consumption (although as with the Perth project in Australia, this need not add to greenhouse gases). It will also involve intakes and outfalls (although as the New Cartagena Canal project in Spain shows, these can be designed to minimise the marine impact). But, despite these drawbacks, it is the only way of ensuring that during a dry year the pressure on the San Joaquin delta never gets as bad as this again.

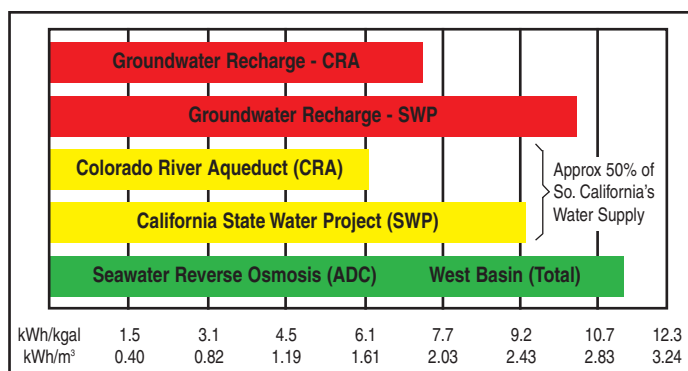
Think of the stress that the California Water Project puts on a river estuary by drawing away 25% of its flow, then think of the stress imposed on the Pacific Ocean by desalination. Even if all 2 million m³/d of desalination plants were to be built in California, the total impact on the ocean would be no more than 0.0000000001% of its capacity.

Nobody should be allowed to talk about the stress desalination imposes on coastal waters, without acknowledging the much more dramatic stress that existing large scale water transfer projects impose on delicate aquatic habitats.

I suspect that ranting about the alternatives is probably not going to be enough to win the argument however. We as an industry need to promote the concept of Green Desal. This would involve agreeing a standard for energy consumption and the impact of intakes and outfalls which would represent best practise in the industry, and could be promoted to the general public as the best guarantee that a desalination plant would have a lower environmental impact than withdrawing the same amount of freshwater from nature where conditions meeting the UN definition of water stress are prevalent.

Let's talk about this in Gran Canaria.

Energy Consumption of water resources in the US west.



Source: Water Desalination Report/Affordable Desalination Coalition