

# Water in a warming world

*Item 9 in the Mayors' Climate Protection Agreement: energy efficiency in water processing.*

Water: too much - or its lack, is rapidly becoming a primary issue for communities around the world. The irony of global climate change is that we can expect increases in both droughts and floods. The increase in temperature causes more evaporation, resulting in drier ground and wetter skies. A warmer atmosphere can hold more water; but when it's saturated, we experience heavier downpours.

Ohio is on a boundary – north of us, there is certainty that overall rainfall will increase. South of us, even in the south of Ohio, there is some certainty that rainfall will decrease. In Alliance? Models vary in their current predictions for overall rainfall amounts in this part of Ohio, with somewhat of a leaning toward more rainfall. We do know that the rain will come more often in heavy downpour events, with greater potential for flooding. However, between these events, the higher temperatures will cause more rapid evaporation, with the likely result of lowered lake and river levels despite the floods.

So what do these changes mean for future water use here in Alliance?

First, there are energy efficiency issues regarding water use. The city of Alliance is doing the right thing by replacing its aging water pumps with more energy-efficient models. Methane recovery at the wastewater plant is another possibility that can be explored for energy savings. In our homes and businesses, we can conserve energy by conserving hot water. We can lower the setting on the hot water tank and wrap it with an insulation blanket, take shorter showers, use water-efficient washing machines and dishwashers, and wash clothes in warm or cold water. As the EPA reminds us, “You'll save energy, water and money.”

But beyond the energy issue, we need to think increasingly about water efficiency and conservation – both of quantity, and quality. We can be better prepared for the uncertain future of climate change, and limit stresses on our fresh water supply, by reducing our water use now.

So how can we increase water efficiency? Mount Union has recently installed low-flow plumbing fixtures in its student housing – a solution we can use in our homes, too. Waterless urinals are becoming standard in major commercial projects, and even composting toilets have found their way into facilities and homes (they're not as awful as they sound!). Using greywater for flushing, or rainwater for landscape irrigation can also reduce fresh water use. By using native plants for landscaping, the need for irrigation can be avoided entirely – a significant cost savings. And around the house? Turn off the water when brushing or lathering, fix the leaks, try to wash only full loads of laundry or dishes, and use a broom instead of water to clean the patio.

What can we do to avoid flooding, and to protect the water quality of our rivers and reservoirs? Reducing the amount of water that runs off of roofs and paving and into storm drains and rivers reduces flooding potential, and reduces the amount of pollutants that end up in local rivers and reservoirs (Alliance's drinking water comes from surface water that flows into the Deer Creek and Walborn Reservoirs, with the Mahoning River as back-up). Limiting the chemicals on our

yards will limit the pollutants washed into our water supply. Keeping storm water on-site allows the water to soak into the ground, filtering it and replenishing local ground water supplies. Try disconnecting your downspouts and allowing the water to soak into your yard (at least ten feet from foundations), or into a rain garden. Another alternative is to find ways to store the excesses of downpours, saving the water for use during the dry spells. Rain barrels and cisterns are an old technology whose time has come again - new models come with connectors to downspouts, faucets, and screening to avoid mosquito problems.

Cities such as Pittsburgh, Chicago and New York are coming up with strategies to slow and clean their storm water. Green roofs, planted with turf or low-growing plants, absorb storm water and carbon dioxide and exhale oxygen, while simultaneously insulating the space below (Ford Motor Co. holds the record for the world's largest green roof, totaling 10 acres). "Green infrastructure" such as vegetated swales, rain gardens, permeable paving, and landscaping along streets and parking lots help to absorb water, as do wetland restorations and urban forests. This "greening" comes with the additional benefit of lowering the surrounding air temperature – and cooling adjacent buildings.

It's difficult to imagine being short of fresh water in Ohio, so close to the Great Lakes, and Ohio has done much to clean up its waterways since the days of the Cuyahoga River fire. But as the climate changes and lake levels begin to fall, it's time to look ahead to our warmer future. We need to plan ahead for the likely floods and possible droughts, and to place the highest value on this most necessary resource.

### **Check it Out:**

EPA Climate Change website:

<http://www.epa.gov/climatechange/effects/water/northamerica.html>

Union of Concerned Scientists: [http://www.ucsusa.org/greatlakes/glregionohi\\_wat.html](http://www.ucsusa.org/greatlakes/glregionohi_wat.html)

U.S. Global Change Research Program: Climate Change Impacts on U.S.:

<http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overviewmidwest.htm>

Rooftops to Rivers – Green strategies for controlling storm water quantity and quality:

<http://www.nrdc.org/water/pollution/rooftops/contents.asp>

Ohio EPA water quality and fish consumption advisory:

<http://www.epa.state.oh.us/pic/nr/2007/february/07FishConsumptionAdvisory.html>

Rain Barrel info: <http://rainbarrelguide.com/>

Build your own: [http://www.cwp.org/Community\\_Watersheds/brochure.pdf](http://www.cwp.org/Community_Watersheds/brochure.pdf)

Rain Gardens: [http://www.crup.org/pdf\\_files/neo\\_raingarden\\_manual.pdf](http://www.crup.org/pdf_files/neo_raingarden_manual.pdf)