Q & A prepared for the Essay portion of the Future City Educator Workshop held on 9/30/08 at IPFW

The answers below are provided by MATT JONES, WATER RESOURCE EDUCATION SPECIALIST, ALLEN COUNTY PARTNERSHIP FOR WATER QUALITY (ACPWQ)
The ACPWQ has a Resource Education Library including the materials Project WET and Enviroscape Storm Water modules and the award-winning PBS39/ACPWQ documentary, "A Watershed Mentality" on video. More information, address and contact info at ACPWQ website www.acwater.org

Q: Explain the nature of the shortage of water that is occurring now and may continue into the future in our cities if we don’t pursue some innovative strategies for conservation.

A: Of all the water we have on the planet, only a fraction is available as surface fresh water. All the other fresh water is either locked up in physical systems or unavailable to the masses without time/labor/cost intensive projects.

Two-fifths of the planet’s surface fresh watersheds are inhabited by less than one percent of the world’s population.

With global climate change on the immediate horizon, the desert zones of the planet will be extending toward the poles and the temperate areas will receive rainfall in larger, heavier rainstorms. This last point will be underscored by intensive erosion, degradation of water quality and increased flooding.

Water filtration resources will be taxed by a dwindling supply and degraded water quality; driving the cost of clean water up and taxing the systems for the handling of delivery, waste treatment and ongoing maintenance.

Q: In general, can you talk about water consumption? Do you have any statistics about how much is used, particularly by people on their homes?

A: Per-person, per-day rates (in liters):

- Sub-Saharan Africa = 10-20
- Africa at-large = 30-40
- Europe = 200
- N. America & Japan = 350

Q: We use water for drinking, cooking, watering our lawns, sewage, etc. Describe the contamination concerns that students should be familiar with as they attempt to design a home water system that is self-sustaining. What is currently done to treat water for its use? (Please discuss the physical, biological and chemical strategies you are aware of to treat water)

A: Adjust for pH: Liming water
- e.Coli Bacteria: Chlorination (high intensity UV light can also be used)
- Trace contaminants: Flocculation
- Large particulates: Settling ponds
- Small particulates: Sand filtration

Q: We often hear the initials LEED. Can you tell use what this stands for and what these guidelines are for building? How does this relate to the task of each team to create a self-sustaining home?
A: LEED = Leadership in Energy and Environmental Design. This concept and certification system determines the sustainability of any particular project. In the case of storm water, the ideal net output is zero.

Q: Besides municipal water, are there other sources of water that students can use within their homes of the future? How would they collect, clean, and use those sources of water?

A: Deep wells: Typically these systems don’t require much treatment. Depends on aquifer
Surface water: Treatment depends on chemistry of water supply
Rain water cistern: Depending on area and locale of airborne contaminants as to water quality.
Grey water: Basic filtering makes this reusable for all but potable water.

Q: What is “grey” water? What is “potable” water?

A: Potable water is fit for consumption (typically after some treatment)
Grey water is post-consumption and is water usable for flushing, irrigation, utility, etc.

Q: What are some strategies that can be used within the home right now to conserve water? Can any of these strategies be expanded in the future to increase a home’s ability to decrease the use of municipal water?

A: Reduce; Recycle; Reuse: Mostly, lower initial consumption. Secondly, reuse items that require water in their production cycle. Use of Grey water tanks would pertain to the last.

Q: Can you describe some technologies used to recover and reuse the water that a person has already used within their home? Is it all automated or do humans have to be involved?

A: Rain water infiltration; Use of native plants; Xeroscaping; Grey water tanks; Green (Eco) roofs; Increase porosity of soils; Plant trees (shade). Watering Timetable.

Q: How would we monitor a self-sustaining system so that a home’s water won’t become contaminated and make people ill? What kind of sensors or “checks” would be used to monitor the water?

A: pH; Nitrate/nitrite/Phosphorus testing; Bacteria cultures

http://www.worldwatercouncil.org
http://www.waterindustry.org/Water-Facts/world-water-6.htm
www.acwater.org