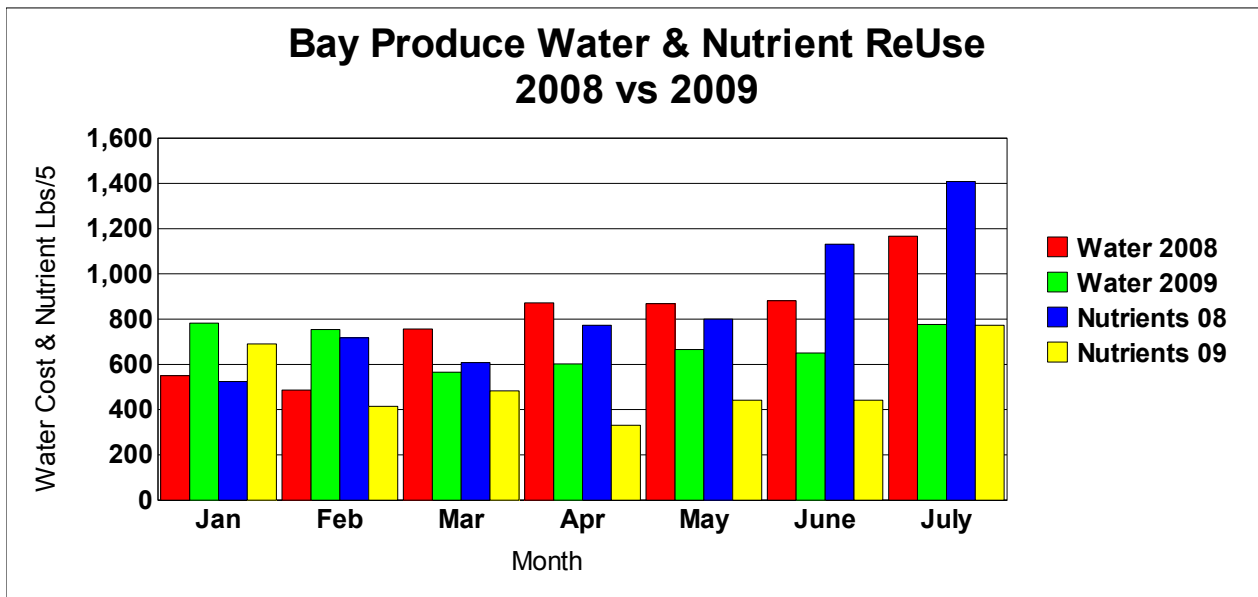




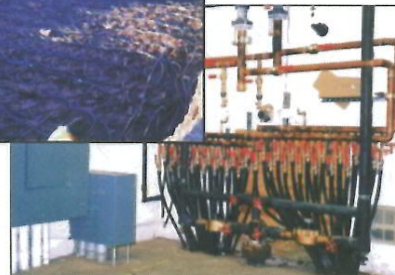
PROJECT: Recycling Water and Nutrients used for Hydroponic Irrigation in Bay Produce Greenhouse

Purpose: Reduce cost and environmental impact by reducing water and fertilizer use.



Other Challenge Center Energy Saving Activities:

- Install geothermal heating and cooling in main building
- Composte plant material from Bay Produce, saving garbage cost
- Creation of Marathon Confidential Paper Shredding, providing work for consumers, product sales & needed service
- Bale and recycle all paper and cardboard used by agency
- Implement paper-less applications where appropriate
- Implement duplex printing on all computers
- Convert to Cocoa as a growing media for Bay Produce and recycle
- Use of Biological (good bugs) instead of chemicals in greenhouse
- Stop using bulk Co2 and install Co2 generators, by product is heat
- Grow our own plants vs purchasing seedlings and paying transport
- Convert double water heaters to single system, cut heating load 1/2
- Use dishes instead of disposable plates
- Use low water & heat dishwashers
- Installed setback thermostats
- Addition of efficient roof top air conditioning in group homes
- Installed air exchangers to the main building
- Created mezzanine to allow better maintenance of heat pumps
- Upgraded all windows in main building for energy efficiency
- Installed air curtains in production areas
- Lighting: upgraded to T-8 lighting, reduced fixtures, LED exit lighting, reduced night lighting to 1/3 load, area lighting times by 1/2
- Presented for WITC HVAC program on geothermal and sustainable applications



Superior's First Geothermal System

Buried on the north side of the Challenge Center, 8 feet below the surface are miles of piping, which the 26,000 square foot facility now uses to provide the heating and cooling needs of the Agency. The new geothermal system installed this year will reduce heat

and cooling energy needs by 1/3, saving the Agency approximately \$7,600 annually, while keeping the facility comfortable for everyone. The system combines technology from a combination of 19 new heat pumps and an air exchange system to extract heat and cold during winter and summer months. An aging boiler system at the 20 year old facility needed replacement and options were explored. It was determined this system would need to be energy-efficient state of the art, improve comfort, extend the life of other equipment, and reduce negative effects of energy use on the environment. A geothermal system met the criteria. The Challenge Center received substantial support from SWL&P, & Superior CDBG, and an Implementation grant from Focus on Energy to complete the installation.

