CASE STUDY:

JOHN UMSTEAD HOSPITAL

Location:	Butner, N.C. (Granville County)
Industry:	Psychiatric Hospital (SIC Code 8063)
Pollution Prevention Application:	Water Conservation
Waste Reduction:	429,000 gallons saved per year
Annual Savings:	$2,016 per year
Contact:	Al Judd, Department of Health and Human Services (919) 575-7633

BACKGROUND

The John Umstead Hospital in Butner, N.C. is a psychiatric care facility that serves 16 counties in the north central region of the state. The facility was built by the federal government in 1942. John Wesley Umstead Jr. purchased the facility from the federal government for the state of North Carolina, and the John Umstead Hospital opened in 1947. Today, the 593-bed hospital provides psychiatric treatment and care for persons older than 6 years.

As part of Gov. Mike Easley's Utility Savings Initiative (USI) program, the John Umstead hospital created a Conservation Awareness Team (CAT) to focus on reducing utility usage and increasing conservation awareness.

IMPLEMENTATION OF WATER CONSERVATION MEASURES

Ice Machine Consolidation

Prior to February 2003, five separate ice machines were located in the main kitchen area of the John Umstead Hospital. Four of the machines used 'once-through' or open-loop cooling, meaning that water ran from the city line, one time through the compressor, and then was discharged to the town of Butner. In this process, incoming water circulates through the refrigeration compressor in order to dissipate heat and then it is discharged into the city sewer system. Non-contact water is not contaminated in the cooling process and can be reclaimed for reuse in the original process, or in alternative operations.

The Conservation Awareness Team (CAT) at John Umstead Hospital determined that the largest ice machines wasted 3,286 gallons of water in just 10 days during the winter. The CAT calculated that the largest machine wasted 132,000 gallons per year, and each of the three smaller machines wasted 99,000 gallons per year. A total of 429,000 gallons of water per year were wasted by these four ice machines.

Over the next several months, the CAT centralized the five kitchen ice machines, and closed the cooling loop using an existing cooling tower and circulation pump. Because the hospital was able to make these changes without installing a

Pipes behind centralized ice machines, connecting cooling loops.

cooling tower or a water pump, and hospital maintenance personnel were able to handle the improvements without outsourcing for labor, costs for this project were low. Further, after centralizing the machines, kitchen staff realized that one of the water-cooled machines was unnecessary, and thus were able to eliminate it. This project was completed in June 2003.

The sole investment for this project was the piping needed to connect the cooling water for three machines, which amounted to approximately $800. The 429,000 gallons of water that John Umstead Hospital will save each year due to this measure will equal approximately $2,016 per year in savings on utility payments. Clearly, payback for this project will be a matter of months. Moreover, centralization of the ice machines will allow hospital staff to operate fewer of the four remaining machines during the colder months, further reducing utility costs.

Pipes leading from kitchen to cooling tower and pump station. (Dirt path shows where excavation took place for laying the pipes.).