

Location: Charlotte, NC

Industry: Mixed Use

Pollution Prevention Application: Water reuse and conservation

Waste Reduction: 24,000,000 gallons annually

Annual Savings: \$213,370

Payback Period: 18 months

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Background

The Duke Energy building in downtown Charlotte is a 48 story LEED Platinum building serving as the headquarters for Duke Energy Corporation and several other prestigious businesses. Located in the heart of Charlotte's central business district, it is a prominent landmark that offers an exceptional standard of environmental accountability.

While known for its present-day sustainable offerings, the Duke Energy building sits on a site that has a long history of environmental contamination. The site has been influenced by a nearby Civil War-era naval ordnance depot producing gunpowder and ammunition, and pollutants from a land use history of dry cleaners and gas stations. These operations leached heavy metals and volatile organic compounds into the aquifer that lies below the building. When site preparation for the building began in February 2006, with the foundation excavation requiring blasting down 100 feet and below the groundwater table, contractors discovered contaminated groundwater. Dewatering operations and construction were brought to a halt as owners faced significant costs (\$0.34 / gallon) associated with permitting and off-site disposal of the contaminated water.

Tempest Environmental was asked to assist with on-site water treatment in order to allow the project to continue. The final integrated water management system installed collects and treats 24 million gallons of groundwater and rainwater annually. The treated water is then reused to supply irrigation for the campus and adjoining park, and provides all make up water for the building's cooling system.

Designed, built and installed in two months, the system saved millions of dollars associated with disposal or treatment of contaminated ground water, reduced the building's demand for potable municipal water, and was instrumental in earning the building a LEED Platinum certification. Through the project's implementation, what would have been a costly problem for the owner became a cost-saving asset.

Waste Reduction Activities:

Groundwater from the dewatering well and rainwater from the roof are collected in a "soup" of dirty water in the buildings' basement. A filtration regime including an air stripper, media filter, ultrafiltration, and reverse osmosis treats the water to remove contaminants and bring the water to a quality appropriate for the end use application. On average, the system saves the facility a total of 24 million gallons per year that would otherwise be purchased from the local water utility. This also significantly reduces the burden the facility places on an otherwise stressed municipal water supply system.