

Combating Disappearing Reservoirs

George Wootten, Engineered Fluid, Inc.

Packaged pumping systems play an increasingly important role in regaining access to remaining water in areas suffering from drought.

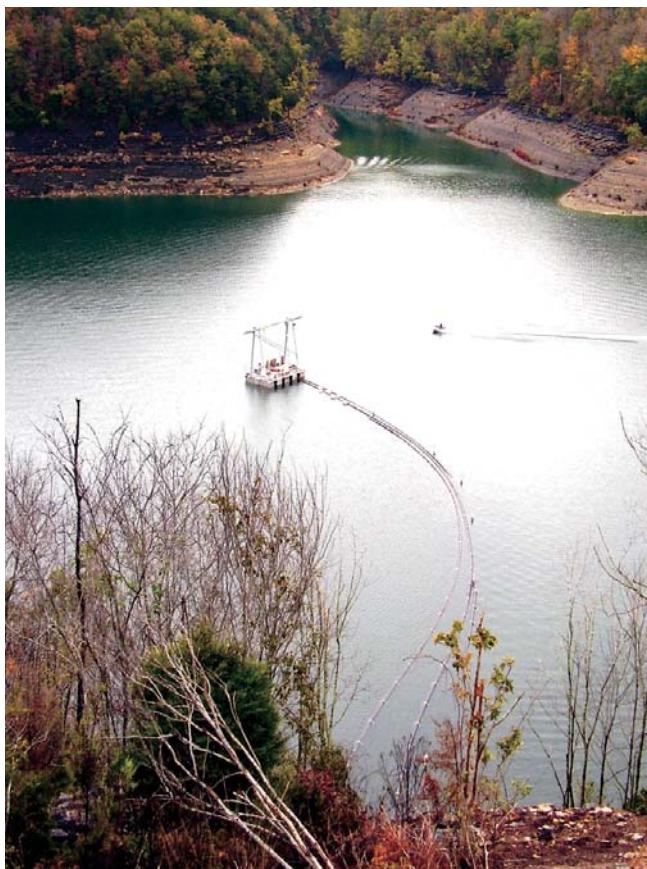
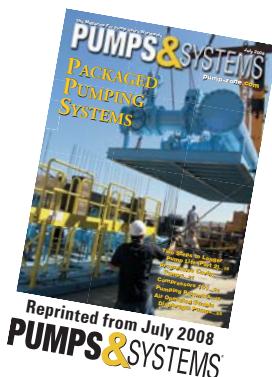
Much has been reported recently about surface water reservoirs in the Southeast and West maintaining dangerously low levels.

In many cases, water levels have dropped to below the raw water intake cribs, rendering the cribs unusable. In these circumstances, the municipalities and water purveyors have had to severely limit or stop using raw water intake pumps. We recently became involved in a project for floating a set of vertical turbine pumps onto Lake Cumberland in Kentucky to regain reliable access to the remaining water in the reservoir.

The pumps were set onto a barge and the pump controls were in a pre-fabricated, factory-built electrical apparatus building. This building was built at our plant in Centralia, Ill., and shipped complete to the jobsite, to be placed on a concrete foundation on the bank of the reservoir.



Pump controls and power distribution equipment nearing completion.

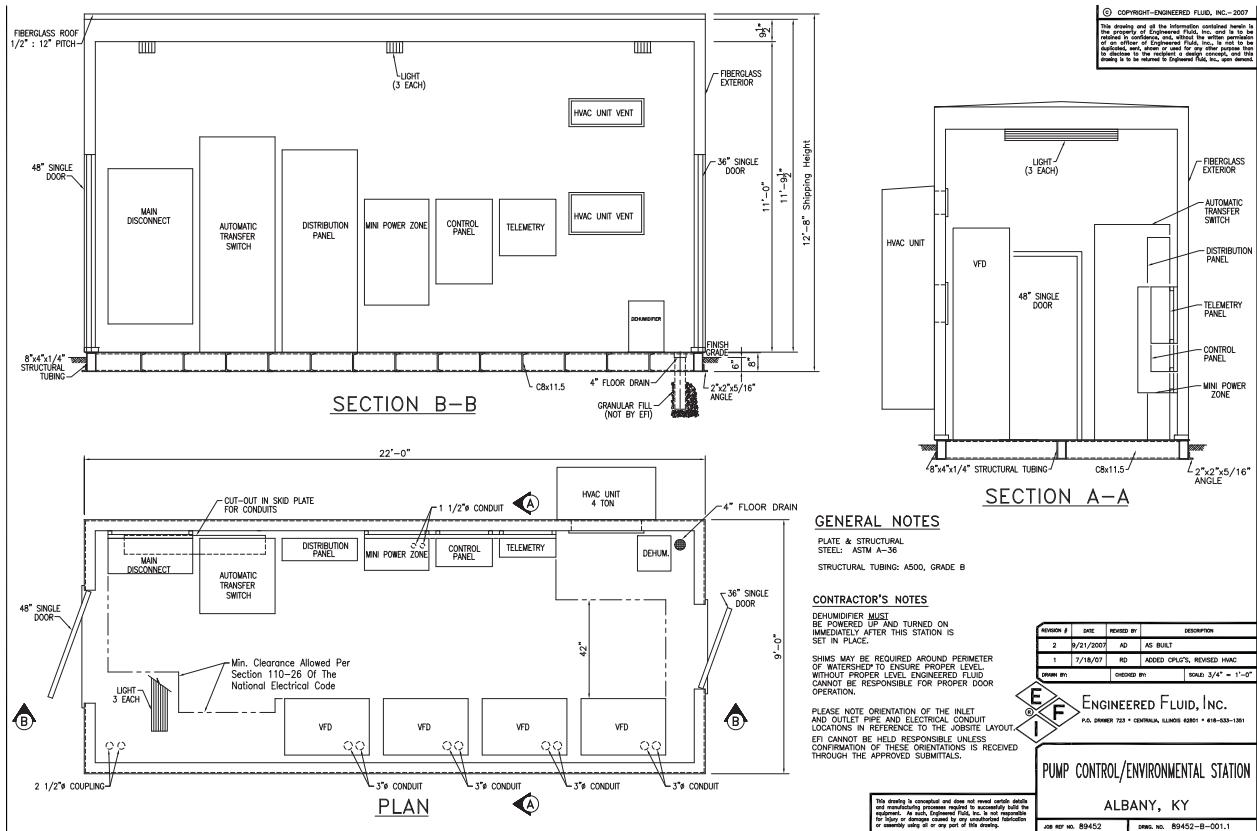


Lake Cumberland, Ky., showing the much lowered lake level. The floating pump barge is seen tethered with water lines and electrical lines from shore to the barge.

Background

The project was driven by a critical water shortage due to low water levels at the raw water supply. This work was performed under an emergency procurement negotiated directly between the owner, engineer and our company.

To save time, the controls building and pumps were pre-purchased by the



owner directly. While the equipment procurement negotiations were ongoing, the site construction was in design and was bid separately.

Because of the water emergency, there was \$5,000 per day liquidated damages on the contract if we delivered later than September 26, 2007. The order was placed June 4, and the unit shipped September 24. The project's start-up date was November 30, 2007.

Application

The application was to provide new raw water supply from a floating barge on Lake Cumberland in Kentucky. The design requirement for the pumps was 5,200-gpm at 416-ft TDH. The water level on the lake can vary up to 40-ft during the year. The pumps were shipped loose and installed on a barge by the installing contractor.

Scope

We designed, manufactured and delivered a controls building, complete with a 1,200-amp main disconnect, automatic transfer switch, distribution panel, four 250-hp VFDs with Mirus Harmonic Mitigation, an Allen-Bradley 5/05 Series PLC for pump control and sequencing and a complete building HVAC System with 4 tons of cooling. The building was complete, requiring only setting, anchoring and the electrical and instrumentation connections at the site.



Floating pump barge on Lake Cumberland in Kentucky.

P&S

George Wootten is with Engineered Fluid, Inc. gwootten@engineeredfluid.com or 618-533-1351.