

## CORNELL PUMP COMPANY APPLICATIONS MUNICIPAL





## CLOGGING PUMP STATION NEEDS INNOVATIVE APPROACH

## Cornell and partners tested various Cornell cutter variations to help alleviate ragging; the new hybrid cutter—auger worked best.

A Southwest Washington water district started a wastewater management system to address the needs of 77,500 residents. The system has a pump station with an 18.4 mgd capacity at 200' TDH.

Shortly after being placed in service, the station experienced daily ragging that caused the capacity to degrade. That flow shaved more than 1.2 million gallons of operating capacity. Though increasing costs, the system paid the energy cost to pump less liquid. The material was accumulating in the wet well.

The system operator tried fixes. They changed the pump order and instituted a self-cleaning cycle. The station was taken offline in April 2009 and operated seasonally. In that capacity, it had to be deragged twice daily, costing four hours of staff time per day. Cornell won the 2012 Pumps & Systems Innovative Product of the Year for our cutter pump technology. The original design of the cutter was placed in the system in 2012. While the cutter reduced some of the issues and increased the flow rate, the eye of the impeller was still getting clogged more frequently than the system operator wanted.

Cornell got to work creating more than half a dozen prototype designs for new cutters to deal with the plugging of the impeller eye; there needed to be more vane geometry to guide the flow of solids into the impeller passageway. Ultimately, the solution was using the stationary cutter from the original cutter system and adding a hybrid cutter that extended impeller vanes to the center while using the auger as a cutter of the ragging material.

The new cutter—auger design reduced capacity somewhat but kept a consistent flow rate throughout the day. Ragging events were reduced by more than ninety percent. The municipal water district has full retrofitted several other pump stations to reduce ragging events.