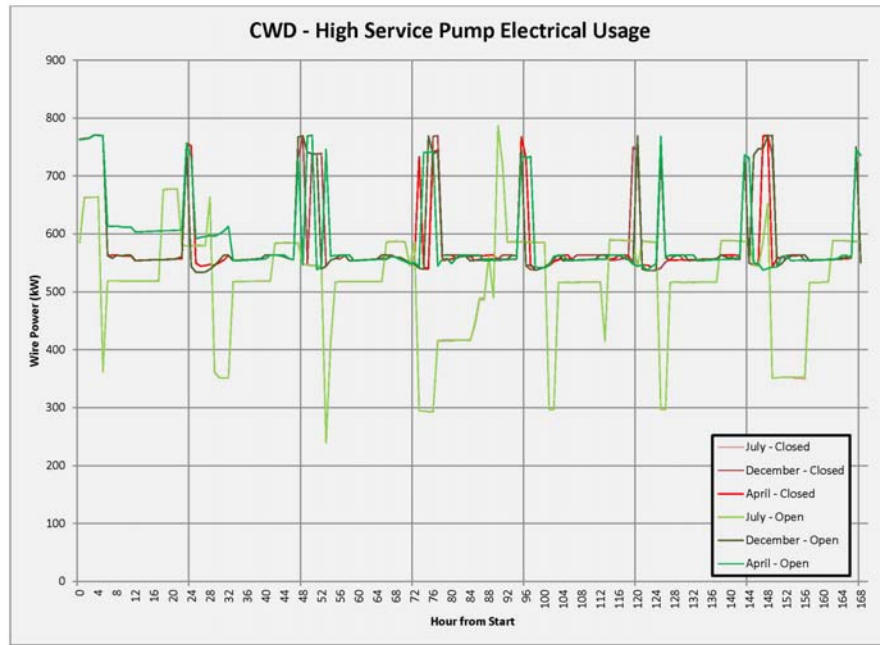


WATER MODELING FOR TRANSMISSION MAIN IMPROVEMENTS AND ELECTRICAL SAVINGS CHAMPLAIN WATER DISTRICT, VERMONT



As part of a 20-year Master Plan for the Champlain Water District (CWD), Dufresne Group (DG) calibrated a water model of the transmission system which included 6 pump stations, 19 water storage tanks, several pressure zones and various control valves and pressure reducing valves. DG also developed and calibrated a detailed model of the water treatment facility finished water pumps, suction piping and discharge piping. Using the calibrated water model, DG identified deficiencies within the transmission system and evaluated alternatives to resolve these deficiencies. Deficiencies for other components including the raw water and treatment systems were also identified.

In 2011, Dufresne Group utilized the computer model to simulate the construction of a new 1.7 mile 24-inch water transmission main loop. Using the model output, DG evaluated the hydraulic effects of the proposed system improvement and delivered electrical usage and cost values to CWD as part of the District's plan to reduce energy costs by lowering system headlosses and pump head requirements.

KEY FEATURES

- Development of the District's first GIS based water system computer model with water quality modeling capabilities.
- Water model includes over 110 miles of water transmission mains.
- DG developed extended period simulations (EPS) and implemented various automated system controls within the computer model.
- Extensive modeling of the high service and main service zone pumps at the water treatment facility.