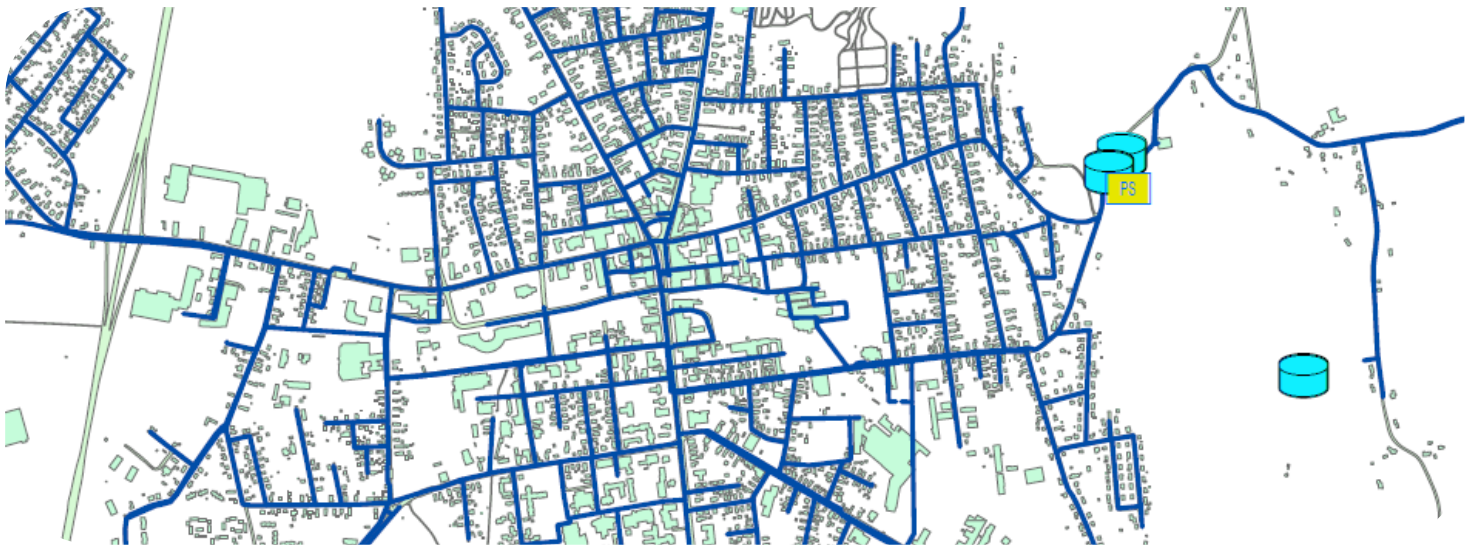


WATER SYSTEM COMPUTER MODEL UPDATE AND IDSE

CITY OF KEENE, NEW HAMPSHIRE



Water System Schematic

Dufresne Group (DG) updated the computer water model of the Keene water system after reviewing City master maps, record drawings, GIS data and tie sheets. Fire flow and C-value testing was performed to calibrate the model, which was verified by further field testing, including observing and recording pressures and flows at pump stations and conducting two 24-hour pressure recordings at multiple locations throughout the City.

The completed water system model was used to identify locations to conduct testing for HAA₅ and TTHM levels as required under the Stage 2 Disinfection-Disinfectants Byproducts Rule, based on simulated water age and historic chlorine residual data. After testing was complete, actual and predicted disinfectant byproduct data was compared to complete the System Specific Study and IDSE report for submittal to EPA.

As part of an investigation of water quality complaints in the northwest portion of the water system, extended period simulations were performed to assess flow reversals resulting from alternate source operation schemes.

KEY FEATURES:

- Modeled over 1,300 pipes along with pump stations, wells, tanks and pressure reducing valves.
- Calibrated the model using field data and continuously recorded tank level and flow data reported by the City's SCADA system.
- On/off operation of Water Treatment Facility unit filters simulated by control valves based on time.
- Model development discovered discrepancies in City's infrastructure mapping and previous models.
- IDSE sampling locations determined by model water age analysis to meet EPA compliance requirements.