Project Status, September 2018: CS-175; Dynamic Collection System Control

Summary
The two areas of focus for the project CS-175; Dynamic Collection System Control are: analysis of dynamic control for the GDRSS system, and an operator decision support dashboard. Here we provide a review of progress made for each of these tasks and discuss future work.

Updates

Dynamic Control for the GDRSS

In August we used a genetic algorithm to produce a set of parameters to use with our control algorithm to reduce Combined Sewer Overflows (CSOs). Simulations with various storms show that this method could reduce CSOs by as much as 77%. In September we continued to refine this methodology and application for the search of effective parameter values for different storm type. This effort is ongoing.

Decision Support Dashboard

Real-time data feeds went online in September for many network locations including pump stations, backwater gates, In-line Storage Dams (ISDs), and retention basins. We have begun to build the applications necessary to use our control algorithm in real time with these data and provide recommendations accordingly through a dashboard interface. A prototype of our dashboard can be found here.

LIFT Challenge

On October 1st University of Michigan and Great Lakes Water Authority team members presented our findings of this project at WEFTEC 2018 as part of the LIFT Intelligent Water Systems Challenge competition. The team highlighted both the work towards an operational control algorithm as well as the recommendation dashboard, winning first place in the process. The presentation can be provided upon request.

Future Work

What We Need: Schedule a meeting with GLWA stakeholders to discuss findings and application.
In October we plan to roll out a prototype of an operational recommendation dashboard. We will share this with operators and request feedback.

Reporting

We look forward to providing an update of our progress on October 31, 2018.

Wendy Barrott (GLWA,) Branko Kerkez, Sara Troutman, Gregory Ewing, and Abhiram Mullapudi (U of M) with competition organizers after winning the LIFT Intelligent Water Systems Challenge at WEFTEC 2018 for work on dynamic control of sewer assets.

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