August 2018 DOH 331-613

Drinking Water State Revolving Fund

City of Bellingham

Dissolved Air Flotation Project

In summer 2009, algae in the City of Bellingham's surface water source, Lake Whatcom, clogged filters and reduced filter run times. Reduced filter run times result in less treated water produced and require more treated water to backwash the filters. This mode of operation is expensive and diminishes the amount of treated water the city can supply for consumption.

Dissolved air flotation treatment basins.

The City of Bellingham implements a robust watershed protection plan in collaboration with Whatcom County, Lake Whatcom Water and Sewer District, and homeowners in the watershed to reduce nutrient loading to Lake Whatcom. However, algae continues to bloom and, based on years of quarterly testing, the city expects it to be a long-term problem.

After evaluating several alternatives, Bellingham selected dissolved air flotation treatment process to address high loads of suspended organics, such as algae. In a subsequent pilot study, dissolved air flotation proved very effective at removing algae, resolving filter clogging, and resulting in substantially increased filter run times. Current filter run times during the summer are about 12 hours, but when Bellingham puts the dissolved air flotation into service in October 2018, they anticipate filter runs as high as 40 hours. Dissolved air flotation has the added benefit of reducing organic loads and minimizing the formation of disinfection byproducts by up to 25 percent.

In addition, the city converted the existing gas chlorination system to on-site hypochlorite generation for safety reasons and updated its treatment plant controls to accommodate the new processes.

Bellingham received a DWSRF construction loan of about $12 million to complete this project.

On-site hypochlorite generation facility.

Public health and environmental benefits

City of Bellingham will be able to produce more treated water efficiently and reliably with longer filter run times, decreasing the amount of treated water needed to backwash filters. In addition, the City will reduce the concentration of disinfection byproducts.