



DISINFECTION BYPRODUCT REDUCTION PROGRAM

ST. JOHNSBURY, VERMONT

In May of 2007 Saint Johnsbury officials contracted with Dufresne Group (DG) to evaluate the source of supply and water treatment systems with the objective of reducing disinfection byproducts. Saint Johnsbury was in violation of the Stage 1 Disinfectants/Disinfection Byproducts Rule as the Running Annual Average for Trihalomethane (THM) was above the 80 parts per billion Maximum Contaminant Level. Saint Johnsbury operational staff had already conducted various operational modifications including elimination of pre-chlorination and system wide flushing, but these measures were not successful in reducing THM levels.

DG reviewed alternative operational treatment practices including:

- Operational Improvements Only
- Source Management
- Water Distribution System Best Management Practices
- pH Reduction
- Reduced Chlorine Dose
- Pre-sedimentation
- Enhanced Coagulation
- Installation of Total Organic Carbon Removal Techniques
- Microfiltration, Ultrafiltration and Nanofiltration Removal Techniques
- Use of Alternatives Disinfectants Including Ultraviolet Light

DG recommended a stepped improvement system beginning with the least costly alternatives and only proceeding with more costly alternatives if necessary. These improvements included:

- Reduce the chlorine dose at the water treatment facility and boost chlorine at two points in the distribution system
- Begin data collection at deeper intake points at the source of water supply
- Extend the potassium permanganate feed point to increase detention time
- Eliminate backwash recycle
- Construct a larger clearwell