**Section 604.620 Biologically Active Filtration**

Biologically active filtration refers to the filtration of surface water or a groundwater with iron, manganese or significant natural organic material, which includes the establishment and maintenance of biological activity within the filtration media. The objectives of biologically active filtration may include control of disinfection byproduct precursors; increased disinfectant stability; reduction of substrates for microbial regrowth; breakdown of small quantities of synthetic organic chemicals; and oxidation of ammonia-nitrogen, iron and manganese. Biological activity can have an adverse impact on turbidity, particle and microbial pathogen removal, disinfection practices, head loss development, and filter run times and distribution system corrosion.

a) Before use of biologically active filters, the community water supply must conduct a pilot study and obtain Agency approval. Pilot study objectives must be clearly defined and must ensure the microbial quality of the filtered water under all anticipated conditions of operation.

1) The pilot study must be of sufficient duration to ensure establishment of full biological activity; often greater than three months is required.

2) The pilot study must establish empty bed contact time, surface filtration hydraulic loading rate, substrate loading rate per unit filter media volume, and treatment efficiency for removal or reduction of concentration of parameters targeted for the pilot study.

b) The final filter design must be based on the pilot plant studies and must comply with Section 604.605.