

# Water Treatment Plant Expansion City of Brooklyn Park

Progressive Consulting Engineers, Inc. (PCE) was part of the team selected to provide engineering services to the City of Brooklyn Park for the Water Treatment Plant Expansion Project. This project involved the expansion of the water treatment facilities in two phases, each phase increasing the plant treatment capacity by 10 MGD. The first phase went into operation in 1998. The expansion is integrated, with the existing plant such that both can be operated with no increase in personnel. The original plant was designed to remove iron and manganese by the manganese greensand filtration process.



The process depends upon oxidation of the iron and manganese by aeration and potassium permanganate, followed by filtration through a bed of manganese greensand. The original plant had difficulty in meeting its design capacity of 10 MGD for a variety of reasons, including very short filter runs and an inadequate backwashing system. The plant also proved to be very labor intensive. Part of the project was to improve the operation of the original plant.

Many of the operating problems were related to high manganese in the raw water, some of the wells had levels approaching 2.0 mg/L. It was determined that pretreatment was required to remove most of the manganese before filtration. A pilot study was done to investigate alternative pretreatment processes. Piloted processes included solids contact clarification, upflow contact flocculation, and downflow contact flocculation. The study also investigated and developed parameters for radon removal by aeration.

Based upon a present worth economic analysis, solids contact was selected as the pretreatment method to be employed. The plant expansion included aeration, filtration through treated (manganese oxide-coated) dual media, and chlorination.

**Client:** City of Brooklyn Park  
**Client Contact:** Jon Thiel, Director, O & M  
**Construction Year:** 1994  
**Project Cost:** \$149,000



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