

Wastewater Treatment Plant Expansion Design

Due to rapid population growth in the City of Collinsville, the existing treatment plant was quickly approaching the rated capacity. The City retained RJN Group, Inc. to perform a comprehensive capacity study and the subsequent design of the treatment plant expansion.



The findings of the capacity evaluation recommended upgrades, which included increased primary treatment, changes to aeration unit process, revised tertiary treatment operation scenario using partial stream filtration, chemical phosphorous removal, UV disinfection and a complete replacement of outdated mechanical and electrical equipment.

The overall expansion plan included a re-rating petition to allow continued growth in the service area. The final design for the 20-year planning period incorporated an upgrade from 4.41 MGD daily average flow to 5.85 MGD accommodating a 9.95 MGD design maximum peak flow. An Engineering Report and NPDES permit application was completed and submitted to the Illinois Environmental Protection Agency (IEPA).

Changing regulatory requirements within the state and the new requirements for a Total Maximum Daily Load (TMDL) Phase III Report for the stream where the plant effluent discharges required significant negotiations with the IEPA and environmental groups to address extremely restrictive discharge limits placed on the treatment plant.

A modified NPDES permit was negotiated with the IEPA which allows daily operating flexibility under the restrictive discharge limits placed on the WWTP by the TMDL study. A water quality study was initiated in an effort to have the TMDL limits raised.

RJN staff worked with City officials to develop and present a public relations program designed to gain support from the community residents and businesses. Informational materials presented explained the findings of the evaluation and the demonstrated the need for expansion. The City was able to issue municipal bonds to finance the WWTP and the identified upgrades to the wastewater collection system without public opposition.

The project was designed to be completed in three phases to address immediate equipment problems while negotiating with the IEPA.

- **Phase I** installed additional sludge storage and mixing capacity, back-up power generation, electrical upgrades and an additional maintenance service area
- **Phase II** (in progress) consists of equipment upgrades, hydraulic improvements, and process equipment to increase the treatment capacity of the WWTP
- **Phase III** will install equipment to address disinfection requirements

RJN is providing construction services for all phases of the project.

Illinois Protection Agency Negotiations and Public Support were critical