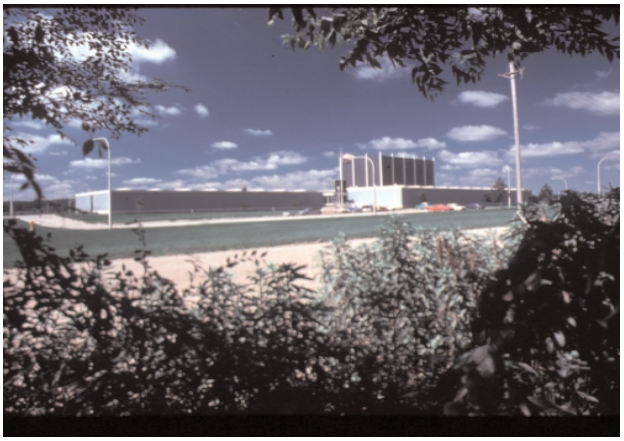
DB / DBO

DESIGN

CONSTRUCTION

PERMITTING

OPERATIONS



Platte Water Treatment Plant
Metropolitan Utilites District - Omaha, Nebraska

Highlights

- *New plant for an existing system*
- *Facility planning*
- *Growing community*
- *SDWA compliance planning*
- *Permitting*

The Platte West project located west of the rapidly developing Omaha metropolitan area near the Platte and Elkhorn Rivers. The initial study phase verified water demand projections made by MUD staff and established the need, cost, and schedule for the water production facilities. The project also determined the boundary and ultimate capacity of the groundwater aquifer adjacent to the Platte River, which was developed into a water supply wellfield. The wellfields consist of approximately 769 ha (1,900 ac) of land and will have 42 gravel-packed wells about 31 m (100 ft) in depth.

This comprehensive project developed a new water supply for Omaha. The project includes water treatment and storage facilities, wellfields, collection and transmission piping, and river crossings designed to meet ever-changing Safe Drinking Water Act requirements. The multidisciplinary project involved architecture, construction engineering, structural, electrical, mechanical, instrumentation, treatment processes, and operational specialists and is expected to cost $177.5 million. HDR integrated finished water quality from the new facility to be compatible with two other existing treatment facilities.

The project also the boundary and ultimate capacity of the groundwater aquifer adjacent to the Platte River that was developed into a water supply wellfield consistin of approximately 769 ha (1,900 ac) of land. The recommended wellfield has 42 gravel packed wells approximately 31 m (100 ft) in depth. In addition the MUD Platte South is a comprehensive water supply, treatment, storage, and transmission project used to develop a new water supply for the city of Omaha.

This multidisciplinary project involved architectural, construction engineering, structural, electrical, mechanical, instrumentation, treatment processes and operational specialists. This 13-year three-phased project is expected to cost $177.5 million. HDR integrated finished water quality from the new facility to be compatible with two other existing treatment facilities (one surface and one groundwater) serving the city of Omaha.

Key project elements included:

- complex permitting requirements for the project.
- optimized technologies and planning to meet the changing SDWA requirements.
- Innovative technologies considered were powdered-activated carbon, ozone and granular-activated carbon.
- Conventional design and membrane filtration were evaluated for the treatment processes.

HDR

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Tolt Water Treatment Plant
Seattle, Washington

Highlights

- Guarantor of DBO
- Large water treatment plant
- Surface water
- Ozonation
- Response to environmental/ archeological concerns

The City of Seattle's development of the 120-mgd Tolt water treatment facility using the innovative design-build-operate approach is the largest project of its kind in North America. Azurix is guarantor and will provide long-term operations of the completed facility, which is scheduled for completion in Fall of 2000.

The city was faced with the challenge of continuing to meet the service area's growing demand while satisfying both existing and anticipated future water quality regulations. Because of high turbidity levels occurring during the winter, the existing Tolt supply - which represents 30% of Seattle's water supply - was being shut down an average of one of every two winters. The new facility will filter the Tolt water to allow year-round availability of this supply while filtration will increase the water yield from the Tolt.

A number of factors influenced the city's decision to consider utilizing an alternative approach to develop its first water filtration plant. In the end, they determined that DBO would "most completely meet the city's key objectives."

After soliciting qualifications and shortlisting four teams, the city issued a request for proposals that included requirements for submission of two separate scenarios - one that was more conservative and met the regulations that were anticipated at facility startup and another that incorporated process enhancements that could be desired in the long term. In addition to the technical specifications, the city required respondents to save a minimum of 15% from their pre-design budget estimate. The city estimates that the finally negotiated price of $101 million for the design, construction and 25 years of operations will save them $70 million.

During the course of preparing the site for construction, it was discovered that the area contained artifacts believed to be part of a Native American tool-making site possibly dating back 4,000 to 7,000 years ago. Because of the archeological significance, the schedule was modified. In addition, the site has been the subject of a number of tours. As a city press release stated, "The Tolt filtration plant will offer the people of the region a new and more consistent water supply and, at the same time, connect the story of the first Native American people who lived in the Cascade Mountains with the traditions of the Snoqualmie people."

The Tolt treatment plant will consist of a chemical feed system, flocculation basins, deep bed anthracite filters, a buried clearwell, wash-water clarification and solids drying basins with an on-site landfill for disposal of dried solids. The plant also includes ozonation which, which combined with filtration, will achieve the 5 log Cryptosporidium removal/inactivation goal established by the city.

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