



# TONKA EQUIPMENT COMPANY

## Project Profile

### SOUTH LYON WATER TREATMENT PLANT

City of South Lyon, MI

#### SOUTH LYON WATER TREATMENT PLANT

Contact: Dave Miller  
Chief Operator  
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#### DESIGN ENGINEER

*HUBBELL ROTH & CLARK, Inc.*  
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#### TONKA REPRESENTATIVE

*DuBois-Cooper, Inc.*  
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#### APPLICATION:

Iron Removal - Expansion and Automation of existing WTP for increased capacity and ease of operation.

#### TONKA PROCESS EQUIPMENT:

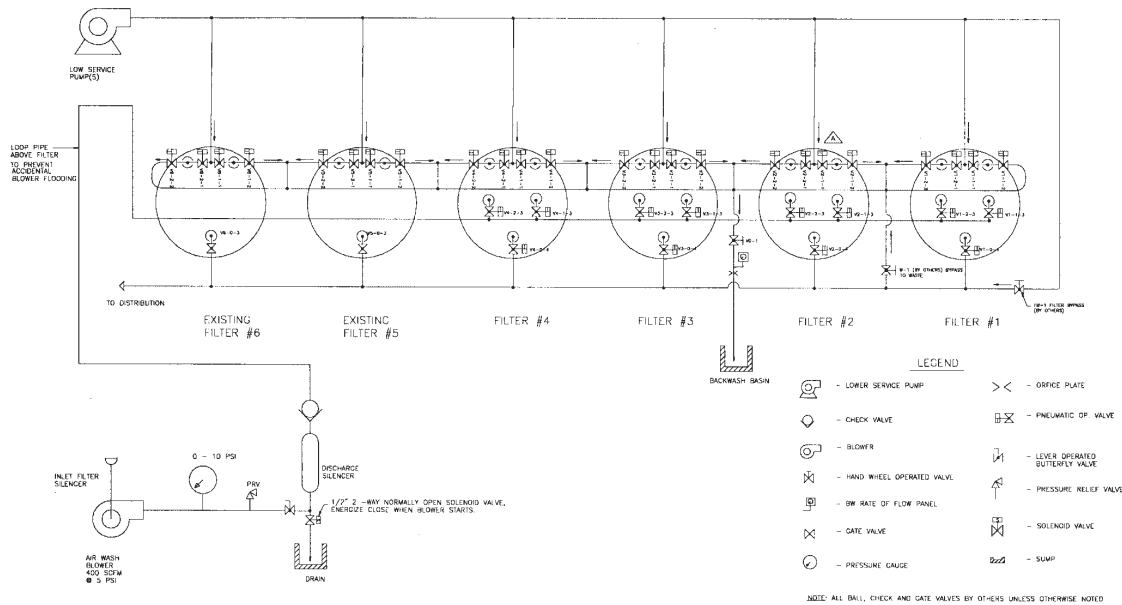
Horizontal pressure filters designed with sustained Simul-Wash™ backwashing, automatic plant valves, PLC controls.

#### PROJECT

Due to the rapid growth in the City of South Lyon, water demands had strained its water production capacity and iron removal capabilities. Hubbell, Roth & Clark, Inc. Consulting Engineers were hired to evaluate the City's current iron removal system, evaluate future water demands, and to design an expansion and upgrade of the aged manually operated water treatment facility. After reviewing a number of treatment options, the engineers at Hubbell, Roth & Clark and the City of South Lyon chose to design the plant upgrade and expansion around the Tonka proposed plant automation system. The raw water entering the plant has moderate iron, which is aerated and filtered prior to distribution.

#### PROCESS

The water treatment facility incorporates aeration for oxidation of iron; disinfection; detention; and four new 8' diameter x 34' OAL two-cell horizontal pressure filters. Each filter vessel is constructed with a common underdrain to both cells and a mono media filter bed of 24" of anthracite. Two existing filters were kept online. Challenges facing this project were that the plant had to keep producing water continuously, and that some of the existing piping had to be removed.



The new horizontal pressure filters are designed with the value added “Simul-Wash™” backwash process. This unique process uses air and water in combination at sub fluidization water rates, providing the most effective means of backwashing granular media filters<sup>1</sup>. Tonka’s Simul-Wash™ media rejection backwash trough was integrated into the filter design, which enables the air and water backwash cycle to continue for a limitless period of time without media loss. These process features maximize filter cleaning efficiency and reduce the backwash wastewater generated by approximately 50% over conventional methods. This key process design feature saved the City of South Lyon up front construction costs as well as saving South Lyon money every time they backwash. Filtered water is pumped to the City’s distribution system and elevated tanks for storage.

## PERFORMANCE

The raw water analysis summarized below reflects moderate to high concentrations of iron existing in the water. The treatment process has been highly efficient in delivering high quality water as indicated below. The City of South Lyon and the installation contractor F.J. JONES & CO. placed this system online in record time, allowing the City to meet record water production levels during the summer of 2001 while the communities surrounding South Lyon had to ration water during this same period.

	Raw Water	Finished Water
Iron (as Fe)	3.2 mg/l	0.1 mg/l

**FOR ADDITIONAL DETAILS, CONTACT:**  
Tonka Equipment Company

<sup>1</sup>Amirtharajah, Appiah, et al. *Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers With Air Scour*, AWWA Research Foundation and American Water Works Association, 1991.



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