



TONKA EQUIPMENT COMPANY

Project Profile

Village of Willshire, OH Water Treatment Plant

VILLAGE OF WILLSHIRE, OH WATER TREATMENT PLANT

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APPLICATION:

Iron removal and hardness reduction

TONKA PROCESS EQUIPMENT:

Detention Tanks (2) • Vertical Pressure Filters (4)
• Membrane Filtration Systems (2) • Chemical Feed System
• PLC-based System Controls

PROJECT BACKGROUND

This groundwater treatment plant is the first municipal membrane treatment plant in Ohio. The Tonka system is designed for conventional iron removal coupled with membrane treatment for hardness reduction. Special attention was given to provide the highest quality potable water without generation of brine waste, a disposal problem often associated with ion exchange softening treatment.

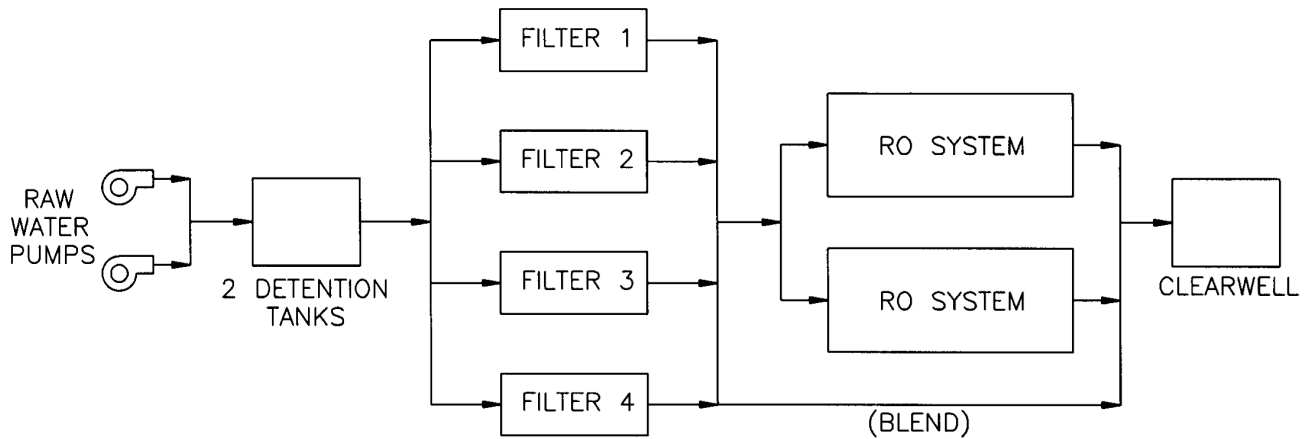
PROCESS

The water supply is received from two wells. Sodium hypochlorite and potassium permanganate are added for disinfection and iron oxidation prior to detention. Four 4' diameter vertical pressure filters manufactured by Tonka Equipment Company are employed to remove the iron. Dual media within the filters consists of 18 inches of silica sand capped with 12 inches of anthracite.

Sodium bisulfite and antiscalant chemicals are added to the filtered water prior to reaching one of two Tonka nanofiltration membrane skids for hardness removal.

Special criteria were set for the removal of sulfate and TDS as well as total hardness. Softened water is blended with a bypass stream to produce water with a total hardness of 150 mg/l. Sodium bicarbonate and caustic soda are added for pH adjustment to the finished water. The water is collected in clearwells where it is pumped to the distribution system using two high service pumps.

SYSTEM SCHEMATIC



Controls consist of multiple Allen Bradley PLC-based automatic control panels. The Tonka main control panel operates all filter functions, chemical feed pumps, and the Tonka nanofiltration membrane skid. All controls are networked together to ensure total system responsibility.

PERFORMANCE

	Influent (mg/l)	Finished Water (mg/l)
Iron	2.34	Less than 0.3
Hardness as CaCO ₃	1110	150
Sulfate	760	142
TDS	1570	396

Membrane surface area 400 sf / membrane

FEATURES OF THE TONKA SYSTEM

- Total system responsibility
- Proven technology
- PLC based control system

FOR ADDITIONAL DETAILS, CONTACT:

Tonka Equipment Company



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