

CASE HISTORY 08 — LANPAC®

Iron Removal from Potable Water Without Plugging

City of Willmar pilot proves LANPAC removes iron from potable water to 0.04 ppm without plugging across a 90-day test period.

APPLICATION

Potable water iron removal, packed tower aerator

IRON CONCENTRATION

1.96 ppm inlet → 0.04 ppm outlet

PILOT DURATION

90 days — no plugging observed

◆ THE PROBLEM

Under the direction of Burns & McDonnell, a nationally known engineering and consulting firm, the city of Willmar, Minnesota conducted a pilot study to determine whether an engineered packed tower could successfully remove iron from potable water. Groundwater iron concentrations of 1.96 ppm were well above the EPA secondary maximum contaminant level of 0.3 ppm. Conventional packed tower aeration strips dissolved ferrous iron by oxidizing it to ferric form, which precipitates — but oxidized iron accumulates as deposits on packing surfaces, progressively fouling conventional media and increasing pressure drop until replacement becomes necessary.

LANPAC reduced iron from 1.96 ppm to 0.04 ppm without plugging across the entire 90-day test — results that led directly to a full-scale 5,000 gpm installation.

◆ WHY LANPAC WAS SELECTED

According to Willmar's Superintendent of Water Supply, Bart Murphy, results from their three-month feasibility study proved that iron could be removed effectively and economically using a vertical tower packed with 2.3" LANPAC. LANPAC's patented geometry distributes liquid more evenly and completely than other packings, and its open, plugging-resistant structure allows iron oxide deposits to accumulate at contact points without bridging — the failure mode that causes conventional random packing to foul.

◆ MEETING THE REQUIREMENTS

In the Burns & McDonnell system, a filtration unit downstream collected the iron oxide that precipitated out of the well water. LANPAC successfully reduced iron concentrations to 0.04 ppm without plugging during the entire 90-day test.

PRODUCT

LANPAC

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IRON REDUCTION

98%

Inlet 1.96 ppm reduced to 0.04 ppm — more than 7x below EPA secondary MCL of 0.3 ppm

APPLICATION CONTEXT

Iron removal

Potable water

Air stripping

Plugging resistance

NOTE

Performance backed by Lantec 100% warranty.

Based on these results, four ten-foot diameter packed columns using LANPAC were subsequently specified to treat a total water flow of 5,000 gpm.



LANPAC® features plugging-resistant engineering. Its patented geometry distributes liquid more evenly and completely than other packings.

Willmar pilot column test specifications:

Parameter	Value
Column diameter	18 inches
Water flow	20 gpm
Water temperature	48°F
Air flow	100 cfm
Packing height	10 feet
Iron content — inlet	1.96 ppm
Iron content — outlet	0.04 ppm