

TREATMENT SELECTION

RO vs UF — the decision tree.

When the source water analysis lands on your desk, map each parameter against the right membrane choice. UF, NF, RO — the right tool for the right water, costed for the right life.

Reading the table

Run your SANAS-accredited source water analysis row by row. The first parameter that lands in an 'RO' column drives the train. Multiple RO rows justify the energy and recovery trade-off without question.

Parameter	Threshold	UF only	UF → NF	UF → RO
TDS	< 600 mg/L → UF	Yes	—	—
TDS	600–1,500 mg/L → NF	—	Yes	—
TDS	> 1,500 mg/L → RO	—	—	Yes
Hardness (CaCO₃)	< 200 mg/L	Yes	—	—
Hardness (CaCO₃)	200–500 mg/L	—	Yes	—
Hardness (CaCO₃)	> 500 mg/L	—	—	Yes
Fluoride	> 1.5 mg/L	—	—	Yes
Nitrate (NO₃)	> 11 mg/L	—	—	Yes
Heavy metals	Above SANS 241 limits	—	—	Yes
Bacteriology	Any contamination	Yes	Yes	Yes
Colour / organics	TOC > 5 mg/L	—	Yes	Yes
Recovery target	> 85%	Yes	Yes	—

Reference: SANS 241:2015; DuPont FilmTec™ Design Guidelines 2023; Crittenden et al., MWH's Water Treatment, 3rd ed., 2012.