

Table S7: Qualitative practical consideration for concentration and extraction methods evaluated in this study in 2024. The table provides a qualitative comparison of approximate consumables cost, equipment requirements, total processing time, hands-on time, scalability, automation potential, and suitability for routine wastewater surveillance. Reported values are intended for comparative purposes rather than formal cost or throughput analysis.

Concentration / extractin method	Method	Hands-on time	Total processing time	Scalability / throughput	Equipment requirements	Automation potential	Relative consumables cost	Suitability for routine surveillance
Concentration	PEG/NaCl precipitation	Very low	Very long	Moderate	Centrifuge	Low	Very low	Moderate
	Nanotrap Magnetic Virus Particles	Low	Moderate	Moderate	Magnetic rack, centrifuge	High	Moderate	High
	InnovaPrep Concentrating Pipette	Very low	Very short	Very low	Concentrating Pipette Select instrument	Low	High	Moderate
	Ultracentrifugation	Very low	Long	Moderate	Ultracentrifuge	Low	Low	Limited
Concentration + extraction	ZymoPURE Water DNA/RNA Kit	Moderate	Moderate	High	Centrifuge	Low	Moderate	High
Extraction	QIAamp RNeasy PowerFecal Pro	Moderate	Moderate	High	Centrifuge	High	Moderate	High
Extraction	QIAamp Viral RNA Mini Kit	Moderate	Short	High	Centrifuge	High	Low	High