Template for I/A Tech Comparison

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SFR - Single Family Residence (330 permitted gpd, 165 gpd flow for cost effectiveness calculations

Influent - Assume septic tank discharges at 65 mg/L TN and drainfield takes out another 25%, so 50 mg/L TN is reasonable baseline for comparisons.

Basics	
Manufacturer / Parent Company	Hydro-Action
Model / Technology Name	AN Series
Background	
Patent Year	2017; US10414678B2
Years in production	Est. 1988, AN Series 2012
Approach	
Category (Media filter, ATU, Mebrane, sequencing batch, drainfield, etc.)	ATU with Pre-Tank and Recirculation
Positioning	
Ideal applications	Residential, Commercial, High-Strength
Capacity Range	450 to 1100; Modular to 20,000+
Performance	
	NSF 15 mg/l, 2013
TN concentration output range category (<5 / <10 / <15 /<19 mg/L)	MD 20.3 mg/l, 2015 NY 11.1 mg/l, 2021
TP concentration output range category (<0.5/<1.0 mg/L)	
	Baseline @ 34.519 kg/year
	AN Series @ 7.66 kg/year
kg N removed/year beyond Ref'd 50 mg/L	Difference @ 26.859 kg/year removed
Approvals	
Residential Permits	
MA	N/A
General/ Provisional (<50)/Pilot (<10)	
RI	
Other States	

	MD, NY, etc.
Commercial Permits	NSF 245

Testing

Internal performance testing data - how many years / data points / sampling frequency?	2012-2021; 2015; MD 18 systems quarterly 2021; NY 20 Bi-monthly + every three years
Internal performance testing data - Range, mean, median BOD/TSS/TN values	NSF 15 mg/l TN
3rd party testing data - how many years / data points / sampling frequency?	NY @ 343 Data Points 2015-2021+
3rd party testing data - Range, mean, median BOD/TSS/TN/TP values	
3rd party testing source/organization (s)	

Cost

NEW SFR Construction (design+permit+equipment supply+install)	
	740.33 kWh/year; 2.02 kwh/day
Monthly operating costs (electricty etc.)	$11.10/month
Yearly O&M requirements	6 months $250 Contract $133 Electrical
Yearly O&M costs (without sampling)	$383 Total
Yearly O&M costs (with sampling)	$500 per sample each
Expected system lifespan (range)	Pump Out @ 5 years Design @ $2500 Install @ $6000 Operation @ $383 System 4 bedroom to 11 bedrooms @ $10,000 to $25,000
Total Cost of system over over 20 years (design + install + operation + maintenance + repairs)	Pump Outs @ 4 x $500 = $2000 Replacements @ $3000
Beyond 20 years	

Cost Effectiveness

Cost per kg N removed beyond ref'd 50mg/L - 20 year	26.859 kg removed per $383 = $14.25/ kg
Beyond 20 years	

Retrofits

Ability to use tech in retrofit applications

Expected capital cost of a retrofit for SFR

Phosphorus Removal
Commentary

Pitch
Unique aspects/advantages
Why us?

Clusters

Cluster potential?	Yes
Range (gal/day)	20,000 gallons +

Contact Point
Local Representatives MA & RI