

ResilienTogether is a Defra-funded project that aims to build a Smart Catchment to enhance flood resilience. Our Learning Digests capture and share what we have learnt while we build a smarter, more resilient catchment.

## Water quality measurement: Autosamplers vs Probes & Sondes

A comparison of water quality measurement devices.



Figure 1. Bellflow Efconomy MCERTS



Figure 2. XYLEM YSI EXO-2

### ResilienTogether

ResilienTogether is creating a Smart Catchment, through use of innovative technologies and techniques, to reduce flood risk to people and places, enhance the water environment in the Pix Brook catchment and improve community resilience in the face of climate change.

### What have we learnt?

This digest draws from the University of Exeter's 'SuDS-specific water quality monitoring in the Pix Brook Catchment: A review of available technologies' report. It compares the use of autosamplers with the use of probes and sondes as two main technologies for water quality measurement. This has informed ResilienTogether's sampling methodology where a combination of autosamplers and sondes are being explored.

#### Autosamplers

- Autosamplers are automated devices designed to collect water samples at specific time intervals and are equipped with a sampler unit and a sample storage system.
- They are programmed to take samples at predetermined intervals or in response to specific events.
- Autosamplers can measure lots of different water quality parameters.

#### Probes & Sondes

- The terms "probe" and "sonde" are often used interchangeably in the context of water quality monitoring, but there can be slight differences in their connotations and usage.

**Probe:** A single sensor or a set of sensors designed to measure a specific parameters within a body of water.

Advantages	Disadvantages
Small and compact	Can't sample for anything that needs laboratory analysis
Can be used in situations where specific data points need to be collected	Can become damaged if the watercourse runs dry
Quick measurements	Measures one parameter

**Sonde:** An instrument that integrates multiple sensors for simultaneously measuring various water quality parameters.

Advantages	Disadvantages
Remote data collection over extended periods	Can't sample for anything that needs laboratory analysis
Real-time continuous or semi-continuous monitoring	Can become damaged if the watercourse runs dry
More sophisticated than individual probes	

Advantages	Disadvantages
Provide high quality data	Samples must be collected after the sampling period, so suited to shorter term needs
Can be set up and left unattended to collect samples	
Can be triggered remotely at any time	Larger piece of equipment, so installation requires suitable channel space and conditions
Some are refrigerated, which prevents degradation of samples due to high temperatures	

Autosamplers can measure lots of different parameters, whereas Sondes are more limited to parameters that do not require any lab analysis. Autosamplers and Sondes measure:

Total Suspended Solids	Turbidity	Temp	pH	NH <sub>3</sub>	DO	N	PO <sub>4</sub>	Mg	Zn	Ni	Cu
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓					



University  
of Exeter

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If you want to hear more, please contact

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