Table 2. Common pollutants and approaches for directly monitoring, monitoring surrogates, response variables, and commonly used models. This table only includes some pollutants, but it should help in understanding some of the issues to consider when deciding which approach or approaches will best meet the monitoring objective. (For an explanation of "grab samples" and other sampling methods, see Section 7, Protocols.)

Pollutant	Direct Monitoring	Surrogate Monitoring	Response Variables	Other Important Variables *	Models
Temperature	Probes, launched monitors (e.g., HOBO), and direct measurements	Light/shading, groundwater signal (stable isotope variables)	Algae, macros, and fish	Air temperature, flow, time of day, depth, turbidity, cloud cover	CE-QUAL WASP(7) SNTEMP (U.S. Geological Survey)
Dissolved oxygen (DO)	Probes and direct measurements	Temperature, redox, and flow/temperature/algal biomass	Macros and fish	Temperature will affect percent saturation, depth, flow, velocity	Streeter-Phelps
Nutrients (phosphorus and nitrogen)	Grab samples and integrated samples In some cases use probes, or streamside auto-analyzers to collect surrogate samples	Turbidity or sediment	Algae, macro-invertebrates, fish, macrophytes	pH, temperature, and DO might affect the solubility of phosphorus, flow (sediment transport)	UAFRI SWAT QUAL2K
Sediment	Grab samples and integrated samples	Turbidity	Physical characteristics, "embeddedness", macros, and algae	Flow	PSIAC AGNPS SWAT KINEROS2
Salts/total dissolved solids (TDS)	Probes and grab samples	Electroconductivity probe; riparian vegetation	Macros and fish	Flow	QUAL2K
Pathogens	Grab samples and integrated samples	Fecal coliform bacteria; *E. coli*	Human health, livestock health	Turbidity, nutrients, temperature	
Metals	Grab samples	Bioaccumulation in living organisms; sediments		DO might affect total hardness, pH	MINTEQAQ
Organic pesticides	Grab samples	Bioaccumulation in living organisms			WINPST

These are variables that often must also be measured in order to correctly interpret monitoring results.