

NGWOS Next Generation Data Collection Platform - Desired System Features and Specifications

Category	Specification	Description
Power and Communication	Reduced operational power draw	Operational power consumption lower than current product line, < 12 volts
	Integrated voltage regulator	Allow for increased, combined power availability (> 1 Amp) for monitoring, and ability to direct connect auxiliary 12-24 volts, variable amperage power supplies, such as solar panels
	Power broker capabilities	Allow for dynamic power monitoring based on ambient and user input
	Remote system upgrades	Allow for remote system updates such as firmware, modem configurations, security settings, and password protection
	On-site communication options	Direct system communication using a computer and smart phone
	System component inventory	Utility that compiles the model, serial number, and firmware for all sensors connected to the datalogger, and transmits that information for inventory tracking purposes
	Camera integration	Simple integration of 12V camera systems, including the ability to collect, store, and transmit images at a user-defined interval
	Non-proprietary sensor integration	Seamless integration of non-proprietary sensors that utilize standard communication protocols
System Architecture	Vertical	A vertical system architecture provides a streamlined, integrated flow from observation to data storage and delivery as opposed to expandability obtained from adding retrofits and accessories, or a horizontal system architecture.
Telemetry	Redundant telemetry methods including, but not limited to: <ul style="list-style-type: none"> • GOES • Iridium • Cellular • MQTT • LoRa 	Intended to increase system stability in the event of telemetry mode failure. Additionally, the ability to transmit data from station, as well as between stations, using multiple formats. All modems must be compatible with secure USGS networks and systems.
	Modular telemetry radios	Provide pre-configured software modules and antenna connection points that will allow connecting various types of telemetry radios to the system
	Integrated Internet of Things (IoT) gateway	Capable of forwarding MQTT messages to the USGS AWS MQTT broker
	Standardized data transmission format	Consistent transmission message format to allow for more efficient data ingestion
	Capability to route data to a user-defined database	The use of third-party data hosting services is not desired
Data Processing and Storage	Open-source programming capabilities, such as Python	Add services to the datalogger to perform complex data collection and analysis tasks

	High-frequency data processing	Capable of processing high-frequency sensor data, up to 10Hz, for oceanographic and other waveform research applications
	High-frequency data storage	Capable of storing high-frequency sensor data for 90 days
	Interactive programming GUI	Provide user-friendly, intuitive programming modules to assist with complex programming
	Programming archive	On-board archival of system configurations and programming scripts that allows for return to previous configuration in the event of a programming error
Operating Temperature Range	-40 to +60° Celsius	Ability to operate properly during periods of extreme heat and cold
Weather Resistance	IP65 rated enclosure	Enclosure must be "dust tight" and protected against water projected from a nozzle
Form Factor	≤ 100 in ² and ≤ 3 pounds	Easy integration into existing USGS monitoring station infrastructure
Pricing	Competitively priced to current product line	Desired final cost below \$5,000 per system

Next Generation Water Observing System (NGWOS)

Table linked from NGWOS Next Generation Data Collection Platform RFI on sam.gov. For more information, contact Russ Lotspeich (rlotspei@usgs.gov)

September 20, 2021