

Identified Challenge	Overview of Challenge	Identified Successes (From Discussion Session)	Possible Council Coordination
<u>Equipment</u> <u>Maintenance and</u> <u>Associated Costs</u>	Description of Challenge: Most devices are deployed for an extended period of time (days to ~ a month). Because they are susceptible to biofouling or vandalism (depending on device placement) these sondes must be prepared with anti-fouling measures pre-deployment and retrieved or serviced frequently. There is an additional cost associated with this maintenance, and the procedures vary by entity.	Maintenance solutions include: • Use solar panels as power sources for telemetry and to preclude maintenance for battery changes, since solar-powered batteries need replacement only once every three years. • Install a pump to pump water through and over sensors (however, pumps require a lot of power) • Use UV light to disinfect, clean sensors, although this requires a lot of battery power also • To reduce power usage, turn on telemetry modems for 10 minutes only once or twice/day. • 50W solar panels can be used to power pumps. To protect expensive sondes from vandalism, participants had developed a number of strategies, such as: • Place sonde and signage in public locations, such as state parks • waterside owners willing to oversee a nearby sonde • Sondes locked in a flow-through container and submerged • Use crowd-sourced technology to report on sonde condition • Decorate sonde containers with an American flag, a Confederate flag, or a large number “3”, which was Dale Earnhardt’s NASCAR number. A suggested solution for fouling is to wrap the sonde in saran wrap, and secure with duct tape. This layer can simply be cut off to inspect the sonde. The sondes are also deployed in pre-drilled PVC pipes to preclude corrosion and bent brushes	Create a shared resource for continuous monitoring related maintenance Standard Operating Procedures, tips and tricks.

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<u>QA/QC and SOPs</u>	QA/QC and SOPs are at various stages of development and approval and vary by instrument and monitoring entity.	NOAA SOPS already exist for continuous monitoring devices, so these can be used as a template, or starting place: • Installation • Maintenance • Three level data review Process is more automated Macros identify outliers • All SOPS are updated annually • an annual tech training • data management and handling • Calibration	Create a shared resource for already approved SOPs as a reference for programs developing their own The Council/Florida monitoring entities must determine the amount of acceptable variability in monitoring results. We should also make decisions about whether alternative methods would be appropriate. Participants in the discussion recommended that we provide Nutrient Sensor Method, and input on products developed by the NWQMC's Continuous Monitoring workgroup.
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<u>Data Sharing, Availability, and Comparability</u>	Some monitoring entities do not have approved SOPs and QA/QC protocols, which can inhibit data comparability between programs. Continuous monitoring sondes typically collect more data points over a period of time than other sampling methods, it requires additional resources for storage and management.	ORCA has its own database; the size of ORCA's datafiles currently at 1 Terabyte. SJRWMD is using Hydstra to both evaluate and manage CM data. DEP is currently looking at Aquatics Informatics to store CM data, and may collaborate with NFWMD on a license for data management and storage.	Create a shared resource with links to where data is currently available for public consumption for various programs. To increase cost effectiveness of using CM sondes- share information regarding the outcome of studies related to when Continuous Monitoring data is necessary and cost effective in lieu of other sampling procedures.
<u>Design and Implementation</u>	To successfully deploy these devices, staff must address telemetry and other logistics to account for environmental conditions (E.g, tidal range, vandalism, nutrient sensors) over the period of deployment. The operations, management group and the data collectors must work together to achieve a successful outcome.	In terms of the data collectors, SJRWMD indicated that joint water quality and hydrological teams can best address issues that arise from CM devices, as well as work together to understand the system being monitored. In some cases, the data dictionary may need to be modified if the device is moved to another location. SJRWMD also uses sondes on vertical, moveable platforms to address water level changes and prevent vandalism.	The Council agrees that it will develop a document to inform monitoring entities who are considering continuous monitoring of its pros and cons and considerations. Create a shared Resource of "lessons learned" from various design and implementation challenges previously encountered.