

A Video Diary Field Trip: Working with a Multi-Parameter Sonde



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Three Components of Real-Time Water Quality Monitoring Program

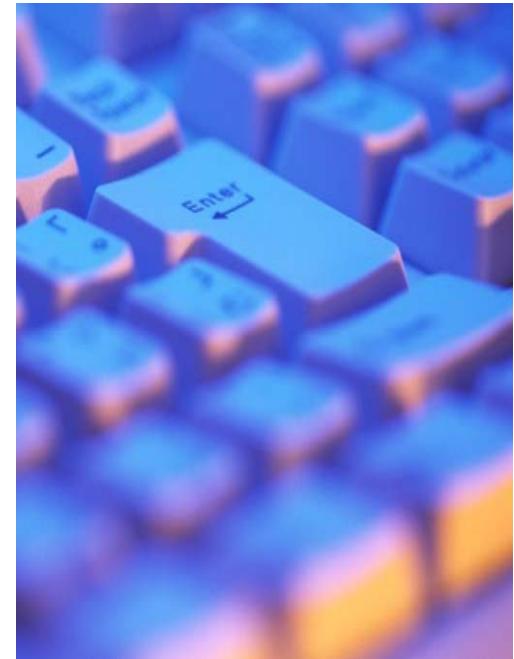
FIELD



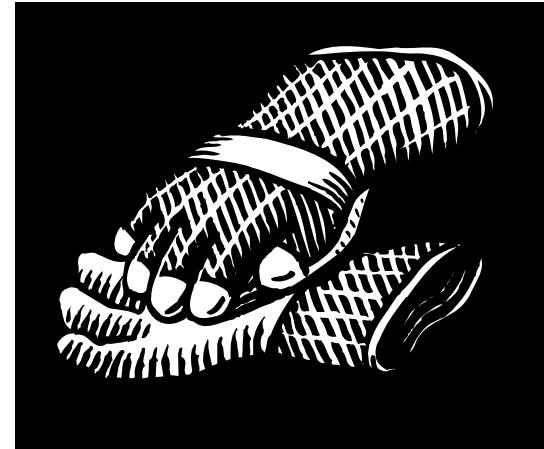
LAB



OFFICE



Plan Ahead!!!





Field Procedures - Installation

Step #1:

Place field sonde into deployment structure in river (log data internally)

Place QA sonde into river alongside the field sonde

Step #2:

Record field sonde reading (1st choice in field; 2nd choice in office)

Record QA sonde reading using hand-held display or field laptop

1st

2nd

If field laptop/hand-held display available:
connect to field sonde in hut; record field sonde readings

If field laptop/hand-held display unavailable:
return to the office and download field sonde readings

Step #3:

Compare field sonde readings to the QA sonde readings using the Comparison Table (should be done in the field if possible)



Step #4:

Readings from field sonde and QA sonde are ranked from Poor to Excellent

Step #5:

If rankings fall within the **Poor** or **Marginal** range for either pH or Dissolved Oxygen the field sonde must be removed and recalibrated before reinstallation**

If rankings fall within the Fair, Good or Excellent range for either pH or Dissolved Oxygen the field sonde can remain in the water

Step #6:

Collect grab sample to send to laboratory for analysis

** Judgment must be used in determining if it is logistical to remove/recalibrate instrument

Quality Assurance/Quality Control

Is Essential!!!

Ensures the integrity of
the real-time program
and the resulting data



Comparison Table

Parameters	Excellent	Good	Fair	Marginal	Poor
Temperature (°C)	$\leq\pm0.2$	$\geq\pm0.2$ to 0.5	$\geq\pm0.5$ to 0.8	$\geq\pm0.8$ to 1.0	$\geq\pm1.0$
pH (unit)	$\leq\pm0.2$	$\geq\pm0.2$ to 0.5	$\geq\pm0.5$ to 0.8	$\geq\pm0.8$ to 1.0	$\geq\pm1.0$
Dissolved Oxygen (mg/L)	$\leq\pm0.3$	$\geq\pm0.3$ to 0.5	$\geq\pm0.5$ to 0.8	$\geq\pm0.8$ to 1.0	$\geq\pm1.0$
Conductance $<35\mu\text{S}/\text{cm}$ ($\mu\text{S}/\text{cm}$) $>35\mu\text{S}/\text{cm}$ (%)	$\leq\pm3$ $\leq\pm3$	$\geq\pm3$ to 10 $\geq\pm3$ to 10	$\geq\pm10$ to 15 $\geq\pm10$ to 15	$\geq\pm15$ to 20 $\geq\pm15$ to 20	$\geq\pm20$ $\geq\pm20$
Turbidity <40 NTU (NTU) >40 NTU (%)	$\leq\pm2$ $\leq\pm5$	$\geq\pm2$ to 5 $\geq\pm5$ to 10	$\geq\pm5$ to 8 $\geq\pm10$ to 15	$\geq\pm8$ to 10 $\geq\pm15$ to 20	$\geq\pm10$ $\geq\pm20$

Anything listed in red are new rankings due to low concentrations of particular parameters that were originally based on percentage alone. This caused problems because the percentages for particular stations were below the accuracy of the sensor.

Field Procedures - Removal

Step #1:

Place QA sonde into river alongside the field sonde

Step #2:

Record field sonde reading (1st choice in field; 2nd choice in office)

Record QA sonde reading using hand-held display or field laptop

If field laptop/hand-held display available:
connect to field sonde in hut; record field sonde readings

If field laptop/hand-held display unavailable:
return to the office and download field sonde readings

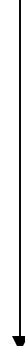
Step #3:

Remove field sonde
from deployment
structure



Step #4:

Compare field sonde readings to the QA sonde readings
using the Comparison Table (can be done in field or office)



Document....

Document....

Document!!



A scenic view of a rocky river. The water flows rapidly over and around large, dark, textured rocks. In the background, a bridge with a single visible support pillar spans the river. The surrounding area is lush with green and yellow foliage. A small waterfall is visible on the right side of the frame.

Thank You