



Field Guide

Section 82 Water Monitoring with In-Situ

Aqua TROLL 700/800 • VuLink • VuSitu • HydroVu



Access the Field Guide Online

[In-Situ Documentation](#) | [Technical Support](#)

Last Updated February 2026

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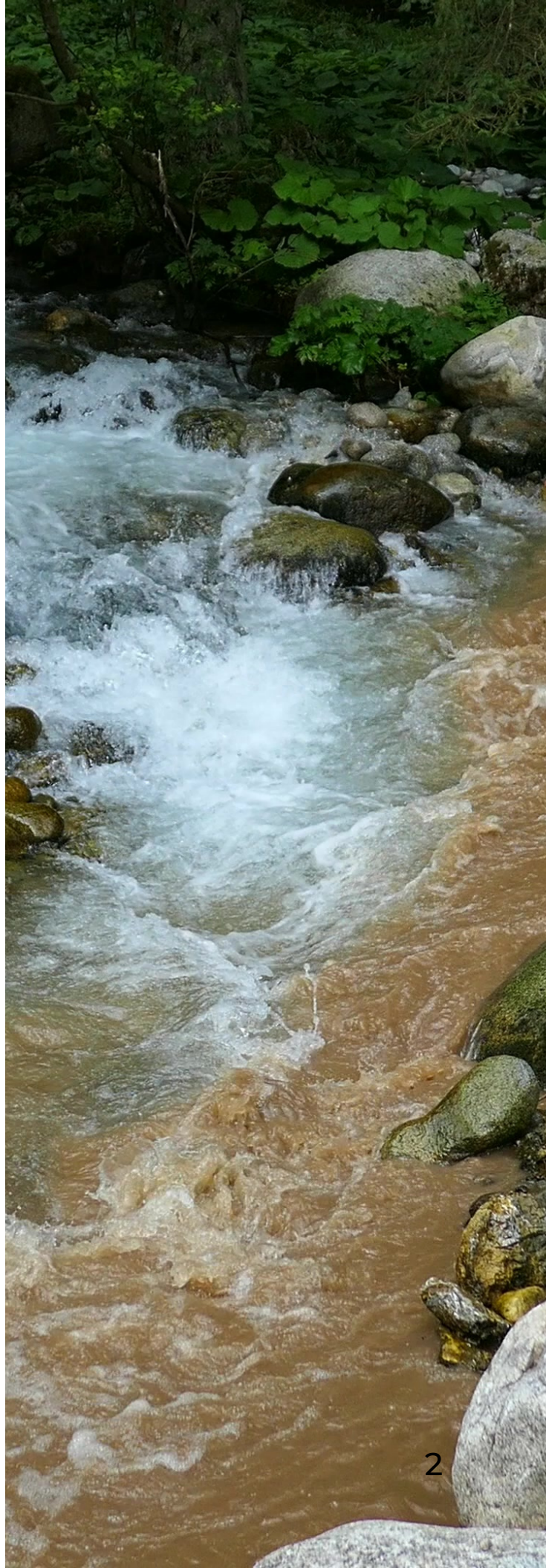
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Build Your Field Kit

Section 1 Before You Go

Cleaning / Maintenance

- ☐ Nitrile gloves
- ☐ Blue roll
- ☐ Cleaning brush
- ☐ Pressurised spray bottle + water
- ☐ Mild detergent
- ☐ Hex driver & flat-head screwdriver
- ☐ Spare batteries (2D + 3Li)
- ☐ Spare O-rings

Safety / PPE

- ☐ Life jacket
- ☐ Whistle
- ☐ Throw line
- ☐ Safety boots
- ☐ Cut 5 gloves
- ☐ Mobile phone + charging cable
- ☐ Umbrella/shelter

Calibration

- ☐ Nitrile gloves
- ☐ Blue roll
- ☐ Cal solutions (refrigerated)
- ☐ Phone with VuSitu app
- ☐ 1L sealable waste container

Sondes & Sensors for Installation/Swapping

- ☐ Sondes needed for installation or swapping
- ☐ Lab-calibrated sensors for planned swaps
- ☐ Port plugs (if required by sonde config)

TIPS

- Check weather before departure.
- Follow your company's lone-working protocols.
- Use shared calendars to update your location.
- Carry ID/authorization for site access.
- Store sonde in calibration mode with water for short periods, to prolong the life of your sensors.

Update Firmware

1

Download VuSitu

Download the VuSitu app for free and register your Aqua TROLL sonde.

2

Connect via Bluetooth or VuLink

Aqua TROLL 600 and 800 connect directly via Bluetooth, or use a TROLL Com Plus or a VuLink.

3

Follow On-Screen Instructions

VuSitu will prompt you to update if firmware is out of date.

4

Apply Update

Click the Update button (allow 15-20 min via Bluetooth).



TIPS

We recommend keeping an eye out for firmware updates and applying them at a time that best suits your operations—either onsite or when the sonde is returned to the lab between deployments.



Calibrate

Section 1 Before You Go

- Sensor calibrations, including batch calibrations of up to 6 sensors of the same type, can be carried out using the VuSitu app.
- Follow the on-screen instructions for calibrations in the lab, as required by Section 82.

Helpful Calibration Videos:

- [How To - Calibrate your Aqua TROLL Turbidity Sensor Video](#)
- [How To - Calibrating the Aqua TROLL RDO Sensor Video](#)
- [How To - Calibrating the Aqua TROLL 600 Video](#)
- [How to Calibrate Your Aqua TROLL pH/ORP Sensor \(or any ISE sensor, including ammonium\)](#)
- [How To – Batch Calibrating Sensors in VuSitu](#)



TIPS

- Make a schedule to keep track of when sondes/sensors in your program are due for calibration or maintenance.
- Supplies needed for calibration: Cal solution(s), waste beaker, paper towels, hex driver

Set Up Telemetry

Section 1 Before You Go

Follow the Quick Start Guide to set up your VuLink:

Set up your VuLink or other telemetry system. Telemetry can be claimed to In-Situ's cloud-based HydroVu data acquisition and analysis tool, or programmed to another data logger. The [Quick Start Guide](#) covers these topics:

- **Setting up and deploying**
 - Set up VuLink and HydroVu, set up VuSitu app, connect instruments, deploy to site
- **Understanding the LEDs on VuLink**
 - Power, network, and sensor indicators
- **Troubleshooting network connectivity**
 - Network setup and diagnostics
- **Power and battery information**
 - 3 Lithium batteries for extended operation
- **Safety information**



Watch the Helpful Video:

[How To - VuLink Setup Video](#)



Label/Designate Hardware

Follow your organization's procedures for documenting site deployment information.

Typically includes:

Sonde: Model number and serial number

Sensors: Sensor types and serial numbers

Telemetry: Telemetry model and serial numbers

Monitoring Site: Location/GPS; upstream or downstream of CSO

Deployment Type: Kiosk, riverbank, or fixed location (see below)

Site Considerations

Section 1 Before You Go

Before installing your sonde, carefully assess the site to ensure accurate and reliable data collection.

1. Representative Location

Is the chosen point along the watercourse likely to provide data that accurately reflects the overall water quality?

2. Accessibility and Safety

Ensure there is safe and reliable access to the site for both deployment and future maintenance visits.

3. Land Access Permissions

Confirm that you have the necessary permissions to access and install equipment at the chosen location.

4. Local Knowledge

Understanding site-specific conditions is essential. Know how water levels fluctuate throughout the year, especially any expectations for drying or flooding.



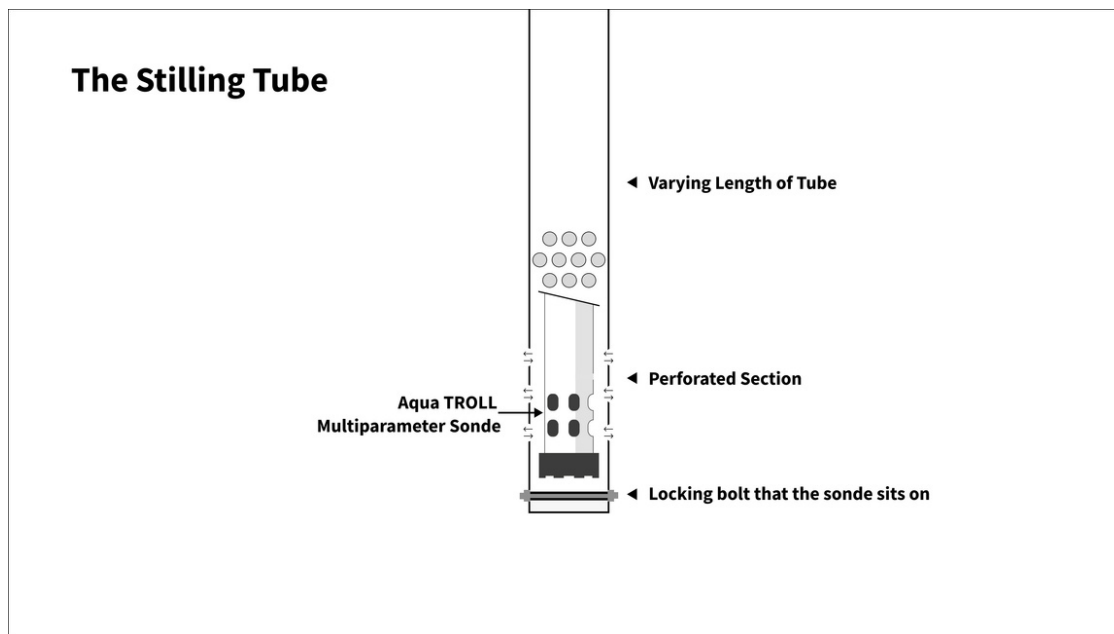
Health & Safety

Helpful Tips:

- ✓ Follow your company's risk protocol and health & safety guidance.
- ✓ We recommend that you complete a safety training course on working in or near water (example).
- ✓ Ensure proper access permissions have been secured before entering private property.
- ✓ Update your work calendar with site visit locations and expected times.
- ✓ Alert a contact person in your organization about your site visit plans and send entry/exit updates during the day's visits.
- ✓ Lock your vehicle during times when you are not present at the vehicle.
- ✓ Carry a mobile phone on your person at all times.
- ✓ Be aware of your surroundings and the presence of other people as you enter the site, so you are not mistaken as an intruder.
- ✓ Carry identification or authorization paperwork establishing your access rights.
- ✓ Wear proper protective clothing for your visit, especially including a life jacket if accessing a riverbank installation and appropriate footwear or waders if water access is likely.

Deployment Methods

All sonde deployment methods, except the pumped kiosk setup, utilise a stilling tube—so let's start there.



What Is It?

A stilling tube is a perforated housing that holds a multiparameter sonde used for continuous water quality monitoring. The perforations allow water to flow freely in and out, ensuring representative sampling while minimizing turbulence. The sonde is securely positioned with the tube and automatically records measurements at predefined intervals.

Why It's Needed:

- **Protection:** Shields sonde from vandalism, impact, and debris
- **Consistent sampling:** Keeps the instrument fixed in place
- **Controlled flow:** Ensures stable water movement for accurate readings
- **Safety:** Allows sonde retrieval from top of the tube (no water's edge work)

Size & Material:

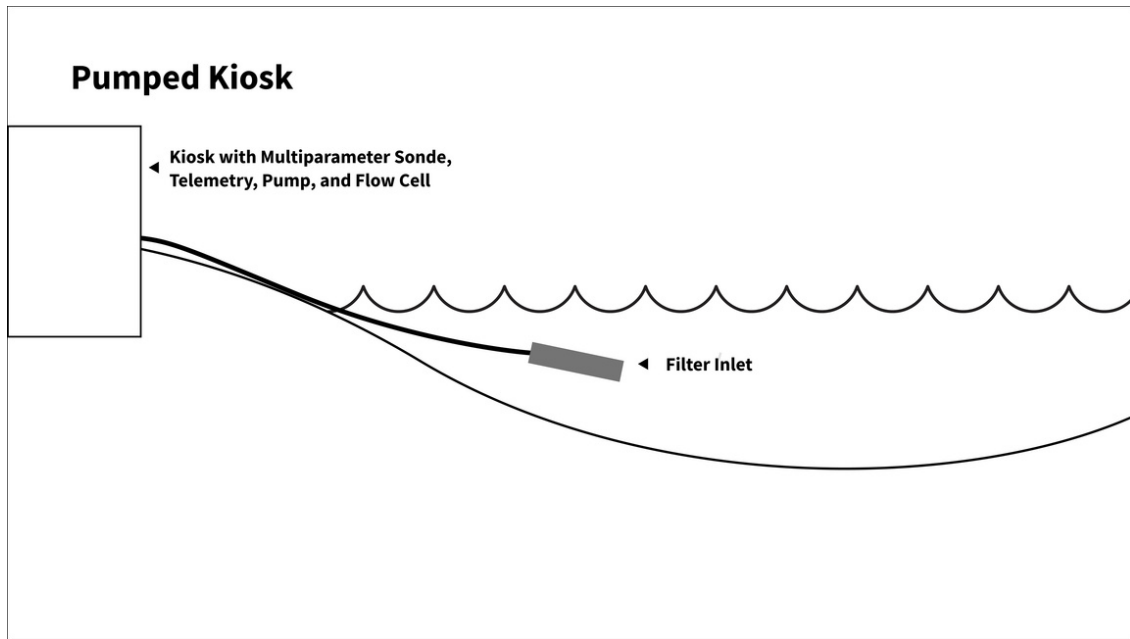
Typical Size: 3m and 6m lengths • **Diameter:** 4-inch (~10.2cm) • **Material:** PVC or stainless steel

TIPS

- Use a continuous length of tube if possible, or machine any joints to remove interior lips.
- The 4-inch (~10.2 cm) diameter allows sufficient water flow for accurate measurements.
- PVC is ideal for freshwater, but stainless may be needed in estuarine or coastal settings.

Method 1: Pumped Kiosk

A pumped kiosk is a remote, automated water quality monitoring station housed within a weatherproof enclosure.



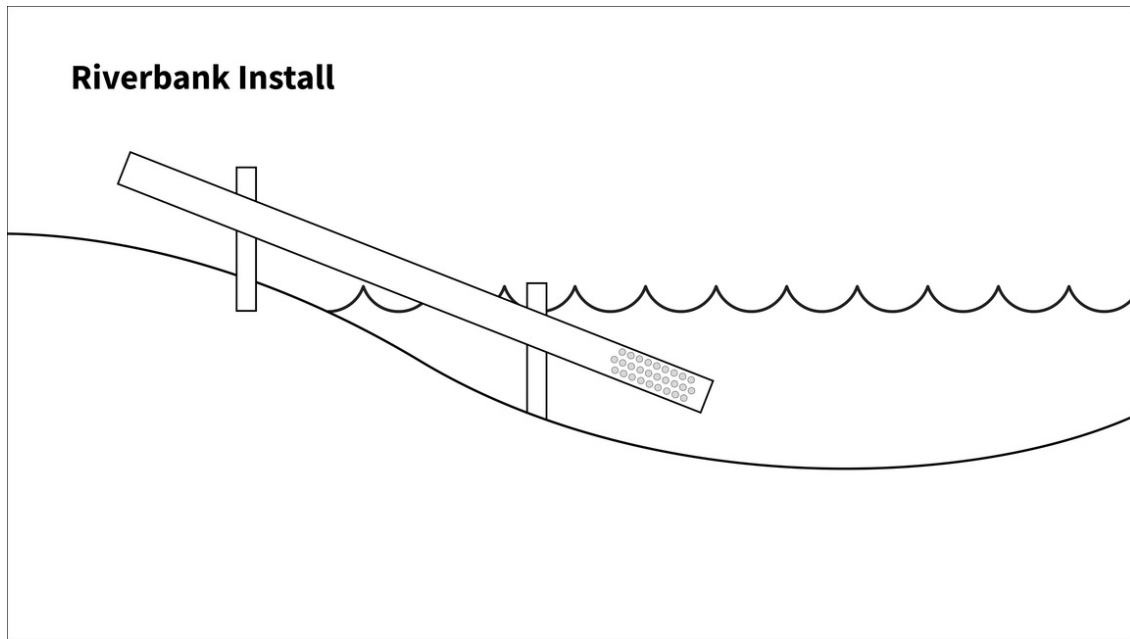
Inside the kiosk:

- A **pump** continuously draws water from the watercourse into a **flow cell**.
- The **multiparameter sonde** analyzes the sample directly within the flow cell.
- A **telemetry unit** transmits the collected data to a remote platform for real-time monitoring.

Benefits

This method allows for controlled sampling conditions and easy maintenance away from the water's edge.

Method 2: Riverbank Install



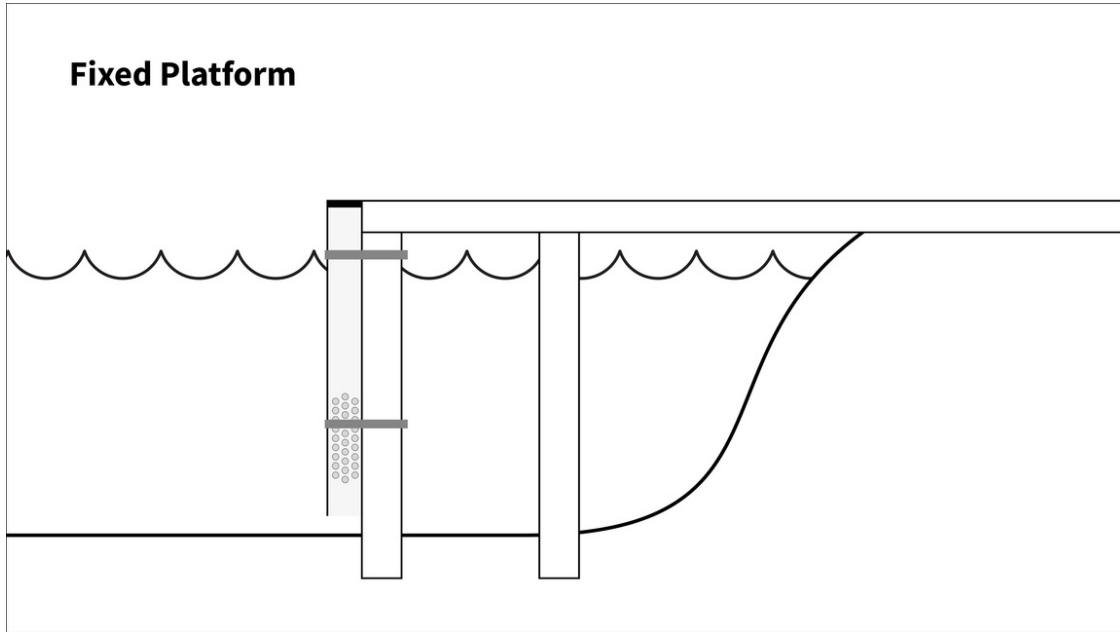
In this setup, a stilling tube is securely fixed to the riverbank so that:

- The perforated section remains submerged at the desired depth for sampling
- The top of the tube extends at least two metres from the water's edge, allowing safe access for retrieval and servicing

Benefits

This is one of the most common and practical configurations for river monitoring.

Method 3: Fixed Platform



Vertical arrangement:

A vertical stilling tube is mounted directly to a fixed platform such as a jetty, pier, or bridge structure.

Benefits

- Stable positioning
- Ease of maintenance
- Suitability for deeper or tidally influenced sites

Document the Deployment

Section 2 During Your Visit

Your reporting for the deployment or visit will need to include:

- Date of deployment or visit
- Site location/name/GPS coordinates
- Discharge point monitored, including whether upstream or downstream
- Method of deployment (kiosk, riverbank, fixed platform)
- Sonde, sensors, and telemetry list, including serial numbers
- Settings information, including data averaging and data upload frequency

Cleaning/Maintenance

Labor and equipment costs are minimised with advanced passive and active antifouling on all sensors and 9+ month battery life of the Aqua TROLL 800, making it a reliable choice for long-term deployments under Section 82.

Maintenance will include:

- ☐ Cleaning the sonde of any fouling
- ☐ Refilling ISE solutions if needed
- ☐ Replacing desiccant if needed
- ☐ Checking for any signs of leaks and replacing o-rings if needed
- ☐ Checking and replacing the wiper brush if needed
- ☐ Replacing batteries if needed for the Aqua TROLL and the VuLink

Maintenance Videos & Resource Links:

- [How To - Maintain your Aqua TROLL 600 Video](#)
- [Aqua TROLL 700-800 Maintenance Kit Wiper Instructions](#)
- [Aqua TROLL and Level TROLL Care and Maintenance Guide](#)
- [Follow These 5 Tips to Get the Best Data from Your Ammonium Sensor](#)

Swap Sensors/Sondes

Section 2 During Your Visit

- Consult the **Aqua TROLL 800 manual** for instructions on removing and installing sensors.
- Swap out any sensors that may be due for lab calibration, using the replacement calibrated sensors you have brought with you.
- Be sure to make note of the new serial numbers of any sensors or sondes that you have replaced during your visit.
- **Note that a port plug must be installed when no sensor is occupying a sonde port:**
[Aqua TROLL 500-600-700-800 Port Plug Instructions](#)



CRITICAL: It is important not to get water into the sensor ports as you remove sensors from the sonde. Dry off the sonde first, and then hold it at a downward angle as you remove sensors from the ports.



Troubleshooting

Please consult the instrument and sensor manuals for information that could help you with troubleshooting:

Instruments Manuals Links:

- [Aqua TROLL 700 Manual](#)
- [Aqua TROLL 800 Manual](#)
- [VuLink CI Manual](#)
- [Aqua TROLL 700-800 Antifouling Restrictor Instructions](#)

Sensor Instructions Links:

- [Aqua TROLL 500-600-700-800 Ammonium Sensor Instruction Sheet](#)
- [Aqua TROLL 500-600-700-800 Conductivity-Temperature Sensor Instructions](#)
- [Aqua TROLL 500-600-700-800 Nitrate Sensor Instruction Sheet](#)
- [Aqua TROLL 500-600-700-800 pH-ORP Sensor Instruction Sheet](#)
- [Aqua TROLL 500-600-700-800 RDO Sensor Instructions](#)
- [Aqua TROLL 500-600-700-800 Turbidity Sensor Instructions](#)

Contact Technical Support:

North America:

support@in-situ.com
1-970-498-1500 option 2

South America:

support@in-situ.com
1-970-498-1500 option 2

Europe:

Europe.support@in-situ.com
+44 (0) 121 733 7743 option 3

Storage for Transport

Consult the [Aqua TROLL 800 manual](#) for instructions on storage for transport. Improper storage can damage the sensors.

Short-term storage (less than one week):

- With the sonde's restrictor in calibration mode, pour 15 ml of tap water into the restrictor and thread the cap into place.
- Make sure not to use deionised water.

Long-term storage (more than one week):

- The pH/ORP sensor and any other ion-selective electrode sensors must be removed from the sonde and capped on both ends. The sensor end's cap should have Storage Solution or pH 4 calibration standard dampening the sponge. Use electrical tape to seal this storage cap.
- All other sensors can remain in the sonde and stored as described for short-term storage.

TIPS

A wine bottle plastic stacking crate is useful for holding sondes vertically during storage and transport.



Document Your Visit

Section 3 After Your Visit

Record the actions taken during your visit, using the documentation protocol set up by your organization.

Using In-Situ's Cloud Connection System

VuLink's seamless connection to the In-Situ HydroVu cloud-based data management tool is the way to achieve the rigorous reporting required by Section 82. The VuSitu/HydroVu Cloud Connection simplifies your work onsite, eliminating time spent manually downloading and emailing files. This prevents loss of logs and calibration reports and makes it easier to view, manage and share your data.



When you're not there: The combined power of VuLink and HydroVu keeps watch on your monitoring sites, and it expands your ability to analyse and act on the data you collect. Use the two together from any location 24/7 to:

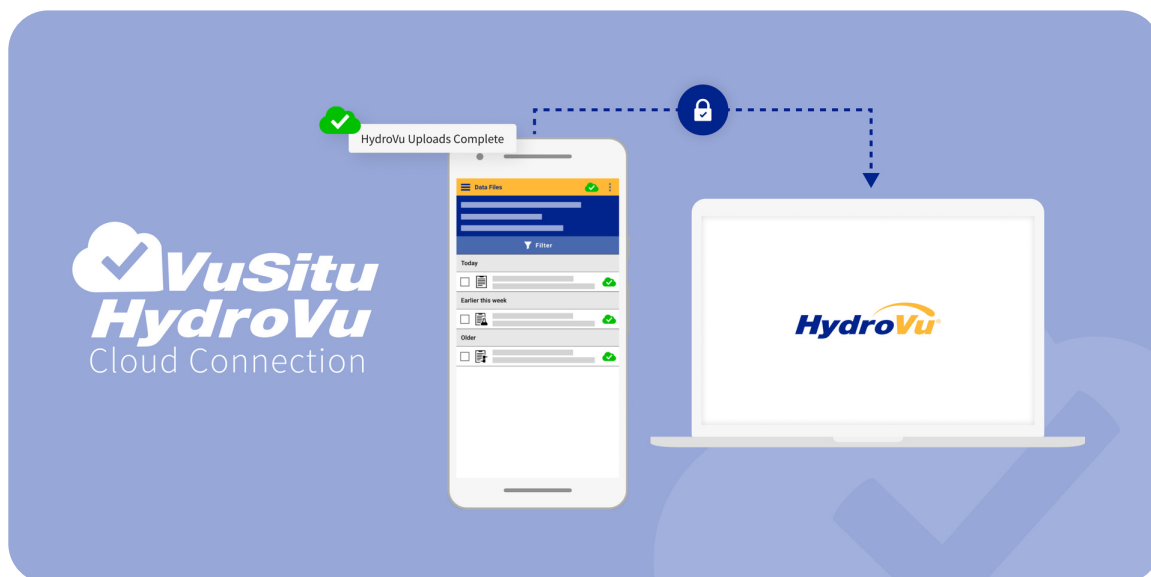
- Minimise risk with more frequent data access and analysis.
- Receive real-time updates without costly site visits.
- Set customisable, multi-condition alarms for critical parameters.
- Share real-time data with stakeholders for regulatory compliance or other updates.

While in the field: Use the VuSitu mobile app and Cloud Connection to:

- Update your records for the sondes and sensors deployed.
- Simplify your work onsite, eliminating time spent on manually downloading and emailing data files.
- Prevent loss of logs and calibration reports.
- Make it easier to view, manage, and share your data.

Watch the Video:

[VuSitu HydroVu Cloud Connection Video](#)



Contact sales@in-situ.com to order supplies, repair kits, and any sensors needed. Or go to in-situ.com to order online.

See the list below for some of the most frequently used parts and supplies for the Aqua TROLL Multiparameter Sonde and Sensors and the VuLink telemetry unit.

Calibration Solutions & Kits

- [pH/ORP Reference Junction Fill Solution](#)
- [ORP/Redox Calibration Solution](#)
- [pH Calibration Solution \(various sizes and pH levels\)](#)
- [pH/ORP Calibration Kit, Full Range pH plus ORP](#)
- [Reference Junction Kit](#)
- [pH Calibration Kit, Full Range pH Only](#)
- [pH Electrode Storage Solution](#)
- [Ammonium Sensor Reference Junction Solution](#)
- [Ammonium Calibration Kit](#)
- [Dissolved Oxygen Calibration Kit](#)
- [Sodium Sulfite \(\$\text{Na}_2\text{SO}_3\$ \) DO Calibration Solution](#)
- [Conductivity Calibration Kit](#)
- [Conductivity Calibration Solution Single](#)
- [Turbidity Standard](#)



Sensors

- pH/ORP Sensor
- Ammonium Ion-Selective Electrode Sensor
- Conductivity/Temperature Sensor
- Rugged Dissolved Oxygen Sensor
- Turbidity Sensor
- Plug for Empty Sensor Port
- RDO Sensor Fast Cap Replacement Kit

Aqua TROLL 800 Multiparameter Sonde

- Maintenance Kit (includes o-rings, lint-free cloths, o-ring grease, wiper parts)
- Replacement Wiper Brush Kit
- Desiccants

VuLink Telemetry Unit

- Lithium Batteries (Set of 3)
- VuLink Antenna
- VuLink Wall/Pole Mounting Kit



Additional CSO Monitoring Resources

- [\(Webinar\) How to Prepare to Meet New Requirements for CSO Impact Monitoring](#)
- [Combined Sewer Overflow \(CSO\) Monitoring Landing Page](#)





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