Document Owner: Manager Customer Planning

Turbidity Meter Calibration (on line)

***Scope/Purpose**: Turbidity (relative clarity) is a vital indicator of water quality and a key compliance criteria in several types of treatment. Frequent calibration and verification of the turbidity meters to ensure that readings are accurate is therefore crucial to ensure that compliance with the New Zealand Drinking Water Standards is able to be demonstrated.*

Health & Safety and Operational Information

Hazard Indicators

Personal Protection

Health and Safety Information

- Health and Safety documentation.

Operation's & Maintenance Documentation

- Equipment Operation and Maintenance Manuals

Customer Information (Confidential)

Priority Customer Categories

Emergency Procedure / Escalation

- Make "Site Safe" and isolate risks to people or property with resources at hand

Escalate if extra resources required or problems occur!

- Escalate to Team Leader and inform of the issues faced and/or expected resources required if necessary.

Additional Documentation

- SOP Work Instruction for Disinfection of Water Systems
- Specific equipment manuals
- Critical control point (CCP) document for specific plant (see associated Water Safety Plan)

Required Skills, Competencies (Qualifications and/or Certifications)

Competent persons only NZ Certificate in Infrastructure Works Level 3 or higher (or similar) with strand in Water Treatment. Training in water sampling and instrument calibration.

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Standard Operating Procedure

Required Equipment

Equipment and Information	Details
Fully Equipped Vehicle	Ensure vehicle, plant, equipment and materials appropriate to the day's work schedule is available.
Vulnerable & Priority List	N/A
Specialist Equipment	Manual instructions, reagents/standards (in date), volumetric flask, distilled/deionised water. Store carefully – protect reagents from extreme heat or cold.

Prepare to do the work

Action	Action Details
Pre Start Process	Complete the Daily Pre-Start.
Notification	Calibration can often cause generation of plant alarms so ensure that relevant notifications are made prior to commencing procedure.

Perform the work

Action	Trade	Action Details
Notification	Serviceperson - Water Treatment	Ensure Plant Operator has been notified and relevant alarms have been temporarily disabled.
Inspect	Serviceperson - Water Treatment	It is advisable to use the 'hold' function during calibration so that 'spikes' in readings are not recorded Check the Turbidity meter, clean and dry head assembly Clean the sensor flow chamber/vial compartment only with a soft cloth.
Calibration	Serviceperson - Water Treatment	Complete any cleaning/maintenance tasks prior to calibration. Calibration is undertaken using Primary standards. Use menu guided for calibration instructions. Agitate the standard solution prior to calibration to ensure consistent turbidity of standard. Make sure there are no bubbles in the solution. Wait until sure that readings have stabilised. Ensure calibration lid is used to prevent light intrusion. Vials - do not touch or scratch glass as this can cause measurement errors, use silicon oil provide and wipe with soft cloth.
Verification	Serviceperson - Water Treatment	Undertake verification using a secondary standard (Cal-Stick, Ice-pic, Gelex) immediately following calibration and then weekly or after any interruption to continuous reading. Verification should be undertaken using a 10 NTU standard and the menu guided verification steps. Needs to read within 10% to be accepted. If using a secondary standard like an 'Ice Pic' the instrument will ask for the serial number. If a verification is not acceptable then the instrument must be recalibrated. Secondary standards have a shelf life. Solid secondary standards should be reconfirmed annually by manufacturer/supplier (certificate provided).
Close Out Record	Serviceperson - Water Treatment	Ensure instrument is taken off 'Hold'. Record that analyser has been calibrated in SCADA and complete an exception to account for the fluctuations in turbidity from the analyser while calibration was undertaken. Relevant alarms are re-enabled.