horizons regional council

Hydrology Operations Manual

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Conventional Gauging Quality Code

Overview:
If all information possible for the gauging is present, correct and consistent from Quality Assurance of the Gauging

Quality Code:
Select the appropriate quality code for the gauging based on the criteria below. Current practice is in a transitional phase from ISO748:1979 to ISO748:2007 and NEMS (V1.1 June 2013):

QC 600	• Random error ≤ 5%, • WL reference if rating applicable (flow relationship) • Spin test • WL measured through gauging (ESG, Logger)
QC 500	• Random error 5% > x < 10% • Gauging is compromised in some way and is a fair representation of the monitored parameter • Measured data does not meet operational standards/best practice at time of acquisition • No spin test • Velocity measured beyond prop velocity range • No WL reference if building relationship to flow • No measured WL through gauging (ESG, Logger) • Channel width measured without calibrated instrument • Minimum Observation depth exceeds tolerance for current meter
QC 400	• Random error ≤ 10% • Vertical or verticals have >10% flow • Applicable to visual estimates which have measured velocity/ calculated area • Maximum for indirect gauging methods • Maximum QC for slope area gauging • Maximum for velocity head rod
QC 300	• Hydraulic model gauging • Established relationship derived flow
QC 200	• Un-calibrated/out of date calibrated instruments • Visual gauging/gauging which cannot be verified • External/ no quality coded to meet NEMS • Volumetric missing any: calculated uncertainty/standard deviation, calibrated container, minimum 10 fillings, max time to fill >10 seconds

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1. Add Quality Code to digital Hilltop Face card of Hydrometric Gauging

2. Note Quality Code on front of physical gauging card in **_pencil_** with initials of who completed the check and date of check

3. Repeat for Hilltop Face card print out

4. Update Gauging Register with whom checked the gauging and select the checked box

5. Hand in to the Data Team to Archive

Table 1 Table of Decision Matrix for Quality Code Conventional Gaugings (NEMS V1.1 June 2013)

Uncertainty/ error calculation			
Test	0 < 5%	5% ≥ x < 10%	≤ 10%
Error uncertainty	600 / 200	500 / 200	400 / 200
uncertainty calculation for gauging	600 / 200	500 / 200	400 / 200
site choice	600 / 500	500	400
WL measured regularly throughout gauging	600 / 500	500	400
WL reference if rating relationship	600 / 400	500 / 400	400
Calibrated sensors (current meters 2yrs; ADCP 3yrs)	600 / 200	500 / 200	400 / 200
Channel width measured with calibrated instrument	600 / 200	500 / 200	400 / 200
Channel width - measured via direct/indirect methods	600 / 500	500	400
Current Meter Gauging			
Spin test/ current meter validation	600 / 400	500 / 400	400
Velocity measured within prop velocity range	600 / 400	500 / 400	400
Minimum velocity measurement period 40 seconds	600 / 500	500	400
Minimum velocity measurement period 20 seconds for rapid change stage	500	500	400
Velocity measured at 20 verticals	600 / 500	500	400
Depth measured for 22 verticals (including edges)	600 / 500	500	400
Width between verticals not exceed width 1/20th of regular channel	600 / 500	500	400
Width between verticals not exceed width 1/15th of irregular channel	600 / 500	500	400
2 Depth measurements at each vertical	600 / 500	500	400
Flow in one vertical ≥10%	400	400	400
Volumetric			

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Standard deviation/uncertainty calculation	600 / 200	500 / 200	400 / 200
Calibrated container	600 / 200	500 / 200	400 / 200
Filling > 10 seconds	600 / 500	500	400
10 filling used	600 / 500	500	400
Visual Gauging			
Current meter used to measure velocity at verticals	400 / 300	400 / 300	400 / 300
Visual estimate gauging	300	300	300
other indirect gauging methods	400	400	400
Slope-area	400	?	?
Hydraulic model gauging	300	300	300
Established relationship gauging	300	300	300
Velocity head rod	400	400	400
Open - contracting equation calculated gauging	400	400	400