Current Meter Quality Assurance Checking

Overview:

This procedure details the Quality Assurance of conventional current meter gaugings prior to Archiving.

When the quality assurance has been completed, the gauging is given to the data team to be archived.

Does the Gauging Contain?

- Gauging Card
- Glog Print out
- Hilltop Face card
- (Calculation of stage time – where applicable)

If not, please return to the Technician to complete.

Current Meter Quality Assurance Checking

1. Check Glog Gauging File

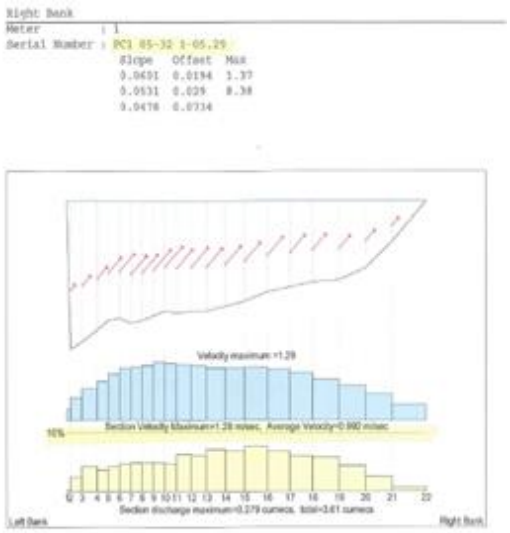
Is all the information present? Is it correct? Dates/Times/Props are critical

(*Highlighted areas indicate what to check*)

Gauging Report

Gauging Number	:414217
Site No	:1132517
Site Name	:HAY
River at	:Kiwitea at Haynes Line
Party	:AS
Map Ref	:T23:366207
Date	:13/09/2012
Start time	:10:54
End time	:11:18
Start Staff	:0.945 metres
End Staff	:0.945 metres
Mean Staff	:0.945 metres
Method	:06
Water Temp	:7.1 degrees
Spin Test	:43 42
Total Discharge	:3.609 cumecs
Total Area	:3.636 square metres
Maximum Depth	:0.62 metres
Mean Velocity	:0.9925 m/sec
Surface Width	:9.5 metres
Wetted Perimeter	:10.07 metres
Hydraulic Radius	:0.3612 metres
Verticals	:22
Measured Verticals	:20

Dist.	Depth	Corr M	Rev	Time	Vel	MeanVel	Area	Discharge
Left Bank								
0.4	0			---Effective Waters Edge 70% ---				
0.7	0.62	.6 1	1	242 40.1	0.35	0.35	0.031	0.0076
1	0.59	.6 1	1	681 40.1	0.65	0.65	0.1815	0.0904
1.4	0.54	.6 1	1	563 40	0.75	0.75	0.226	0.1576
1.7	0.5	.6 1	1	737 40	0.95	0.95	0.156	0.1326
2	0.49	.6 1	1	855 40	1.09	1.09	0.1485	0.1521
2.3	0.51	.6 1	1	923 40	1.18	1.18	0.15	0.1703
2.6	0.5	.6 1	1	1000 44.8	1.14	1.14	0.1515	0.1755
2.9	0.48	.6 1	1	996 40	1.26	1.26	0.147	0.1767
3.2	0.46	.6 1	1	1000 39.2	1.29	1.29	0.141	0.1802
3.5	0.47	.6 1	1	942 40	1.3	1.2	0.1395	0.1737
3.9	0.46	.6 1	1	975 40	1.24	1.24	0.184	0.2266
4.3	0.46	.6 1	1	913 40	1.16	1.16	0.184	0.2209
4.8	0.46	.6 1	1	892 40	1.14	1.14	0.225	0.2589
5.3	0.42	.6 1	1	916 40	1.17	1.17	0.215	0.2479
5.9	0.38	.6 1	1	910 40	1.16	1.16	0.24	0.2792
6.5	0.36	.6 1	1	854 40	1.09	1.09	0.222	0.25
7.1	0.34	.6 1	1	764 40	0.99	0.99	0.21	0.2183
7.8	0.33	.6 1	1	614 40	0.81	0.81	0.2345	0.2102
8.5	0.28	.6 1	1	526 40	0.7	0.7	0.2135	0.1639
9.2	0.17	.6 1	1	342 40	0.48	0.48	0.1575	0.0932
10.1	0			---Effective Waters Edge 70% ---			0.0765	0.0258



Right Bank
Meter : 1
Serial Number : PC1 85-32 1-05.29

	Slope	Offset	Max
	0.0631	0.0194	1.37
	0.0631	0.029	8.38
	0.0478	0.0334	

Gauging Number	Computed Discharge
Site No and Site Name **Check: Does this site exist in Hilltop (Is it spelled correctly?) or is it a new site?**	Total Area
Party and Date of Gauging	Below 10% for proportion of flow in section
Start and End time as well as Staff gauge values	Meter, Serial number and correct slope and offset
Method code	Effective Waters Edge/Waters Edge
Spin Test	Verticals/ Measured verticals
Maximum Depth	Surface Width
Water Temperature	Wetted Perimeter
Mean Velocity	Hydraulic Radius

Current Meter Quality Assurance Checking

2. Check Hilltop Face card

- Are the 15 items consistent with Glog output?
- Double check prop meters: slopes and constants

(*Highlighted areas indicate what to check*)

Hydrometric Gauging at Kiwitea at Haynes Line at 13-Sep-2012 11:06:00

Summary Results

Stage	0.945 m	Flow	3.610 m3/s	Area	3.636 m2
Mean Vel.	0.993 m/s	Max. Depth	0.620 m	Slope	0 mm/km
Width	9.500 m	Hyd Radius	0.361 m	Wet Perim.	10.067 m
Sed. Conc.	-1 mg/l	Temperature	7.1 C	Stage Change	0 mm/hr
Method & Vert	620	Verticals	201002003	Gauging No	414217
Meter S/N PC1 05-32 1-05.29		Slope	0.060	Intercept	0.019

Vertical spacing was Good.
Random error is +/- 6.2% at the 95% confidence limit
Systematic error is +/- 0.9%
Flow is between 3.384 and 3.837 at the 95% confidence limit

Details

OFFSET (m)	DEPTH (m)	POINT VELOCITIES (method code - vel (m/s)	MEAN VEL (m/s)	SEGMENT VALUES VEL (m/s)	AREA (m2)	FLOW (m3/s)
0.600	0.000		E=70%			
0.700	0.620	6=0.349	0.349	0.245	0.0310	0.008
1.000	0.590	6=0.647	0.647	0.498	0.1815	0.090
1.400	0.540	6=0.746	0.746	0.696	0.2260	0.157
1.700	0.500	6=0.954	0.954	0.850	0.1560	0.133
2.000	0.490	6=1.095	1.095	1.025	0.1485	0.152
2.300	0.510	6=1.176	1.176	1.136	0.1500	0.170
2.600	0.500	6=1.140	1.140	1.158	0.1515	0.175
2.900	0.480	6=1.264	1.264	1.202	0.1470	0.177
3.200	0.460	6=1.293	1.293	1.278	0.1410	0.180
3.500	0.470	6=1.199	1.199	1.246	0.1395	0.174
3.900	0.460	6=1.239	1.239	1.219	0.1860	0.227
4.300	0.460	6=1.163	1.163	1.201	0.1840	0.221
4.800	0.440	6=1.139	1.139	1.151	0.2250	0.259
5.300	0.420	6=1.168	1.168	1.154	0.2150	0.248
5.900	0.380	6=1.161	1.161	1.164	0.2400	0.279
6.500	0.360	6=1.094	1.094	1.127	0.2220	0.250
7.100	0.340	6=0.986	0.986	1.040	0.2100	0.218
7.800	0.330	6=0.807	0.807	0.897	0.2345	0.210
8.500	0.280	6=0.702	0.702	0.755	0.2135	0.161
9.200	0.170	6=0.482	0.482	0.592	0.1575	0.093
10.100	0.000		E=70%	0.337	0.0765	0.026
				Totals	3.6360	3.610

- Hilltop location
-Date and time of gauging
-Current Meter, slope and intercept
-Temperature
-Gauging Number
-Computed discharge
-Computed stage (where appropriate)
-Effective Water's Edge
-Verticals
-Correct number of verticals
-Stage change and/or rate of rise and fall (where appropriate)
-Area
-Mean Velocity
-Max Depth
-Width

3. Check the gauging has been described/classified correctly in Hilltop

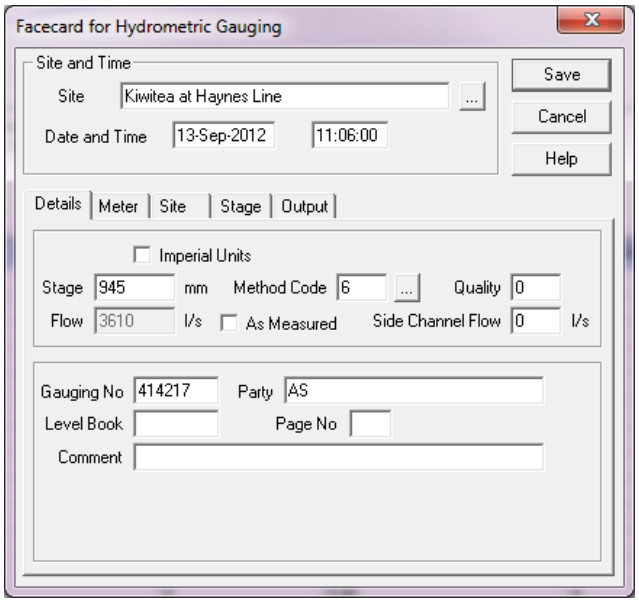
Current Meter Quality Assurance Checking

Numeric code	Symbol	Name	Description
0-9		A point velocity	A point velocity reading at the given number of tenths of depth, below the surface
10-19		A computed velocity at the measured number of tenths plus ten, below the surface.	A computed velocity at the measured number of tenths plus ten, below the surface. Thus 16 is a water velocity at 6/10 of the depth below the surface. The computed velocity is entered in the REVS column.
-1	**S**	Sounding with Flow	This is used to define the bed without taking a velocity measurement. Process FLOW adds the segment area to the current element when calculating the flow for this element.
-2	**N**	Sounding with no flow	This is used to define the bed at a point where there is no water movement. In a gauging this will normally be in slack water between the effective water's edge and the physical water's edge. If it is used between two velocity readings it effectively becomes a zero velocity reading.
-3	**E**	Effective Water's Edge (EWE)	This defines the points where the channel starts and finishes. It may be at the edge of the channel or a point near the edge of the channel, beyond which there is no significant flow. This method code requires an estimate of the flow between here and the nearest velocity reading to be entered in the REVS column. This value is an estimate of the mean velocity in this element as a percentage of the velocity in the nearest vertical where a velocity reading was taken. There should be only one of this method code for each channel edge.
-4	**P**	Physical Water's Edge (WE)	This is only used when the effective water's edge is not at the physical edge of the channel

Islands between channels should use either of the sounding method codes, but have zero depth.

4. Check Hilltop Face card in Manager Programme matches the print out

5. Check Hilltop Face card of Hydrometric Gauging



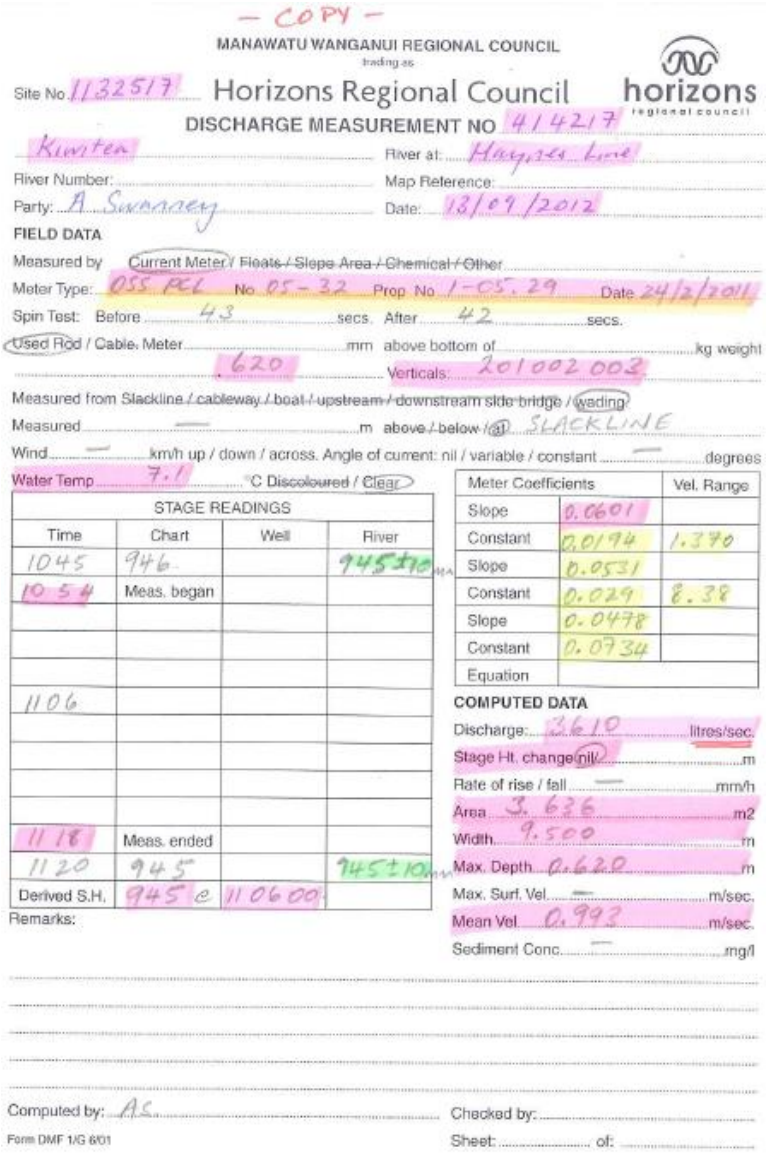
Details:
Stage (Hilltop Manager print out)
Method code
Gauging No
Party
Meter:
Slope and intercept correct for prop
Current Meter Serial No [meter, prop]
Calibration date
Site: (depends on gauging)
Spin tests
Location
Water Temp – clear/discoloured
Stage:
Arrival/Start/Finish/ Departure
Need ESG reading where applicable here
Stage change (mm/hr)
Comment:
Anything specific to the results of the gauging, e.g. control shifts, control for the gauging, digger upstream/on control…, trees cut down…. etc

Current Meter Quality Assurance Checking

6. Physical Face card

- Is this consistent to Hilltop output?
- Stage filed to the logged stage/External Staff Gauge? Provisional Ratings: logged stage

(*Highlighted areas indicate what to check*)



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MANAWATU WANGANUI REGIONAL COUNCIL trading as Horizons Regional Council

Site No 1132517 DISCHARGE MEASUREMENT NO 414217

Kiwiten River at: Haynes Line

River Number: Map Reference:

Party: A. Sweeney Date: 13/09/2012

FIELD DATA

Measured by Current Meter / ~~Floats / Slope Area / Chemical / Other~~

Meter Type: OSS PEL No 05-32 Prop No 1-C5.29 Date 24/2/2011

Spin Test: Before 43 secs. After 42 secs.

~~Used Rod / Cable. Meter~~ 620 mm above bottom of kg weight

Verticals: 201002 003

Measured from ~~Slackline / cableway / boat / upstream / downstream side bridge~~ / wading

Measured — m above / below / at SLACKLINE

Wind — km/h up / down / across. Angle of current: nil / variable / constant — degrees

Water Temp 7.1 °C ~~Discoloured~~ / Clear

STAGE READINGS

Time	Chart	Well	River
1045	946		945±10 mm
1054	Meas. began		
1106			
1118	Meas. ended		
1120	945		945±10 mm
Derived S.H.	945 @	110600	

Remarks:

Meter Coefficients		Vel. Range
Slope	0.0601	
Constant	0.0194	1.370
Slope	0.0531	
Constant	0.029	8.38
Slope	0.0478	
Constant	0.0734	
Equation		

COMPUTED DATA

Discharge: 26.10 litres/sec.

Stage Ht. change nil m

Rate of rise / fall — mm/h

Area 3.636 m2

Width 9.500 m

Max. Depth 0.620 m

Max. Surf. Vel. — m/sec.

Mean Vel. 0.993 m/sec.

Sediment Conc. — mg/l

Computed by: AS Checked by:

Form DMF 1/G 6/01 Sheet: of:

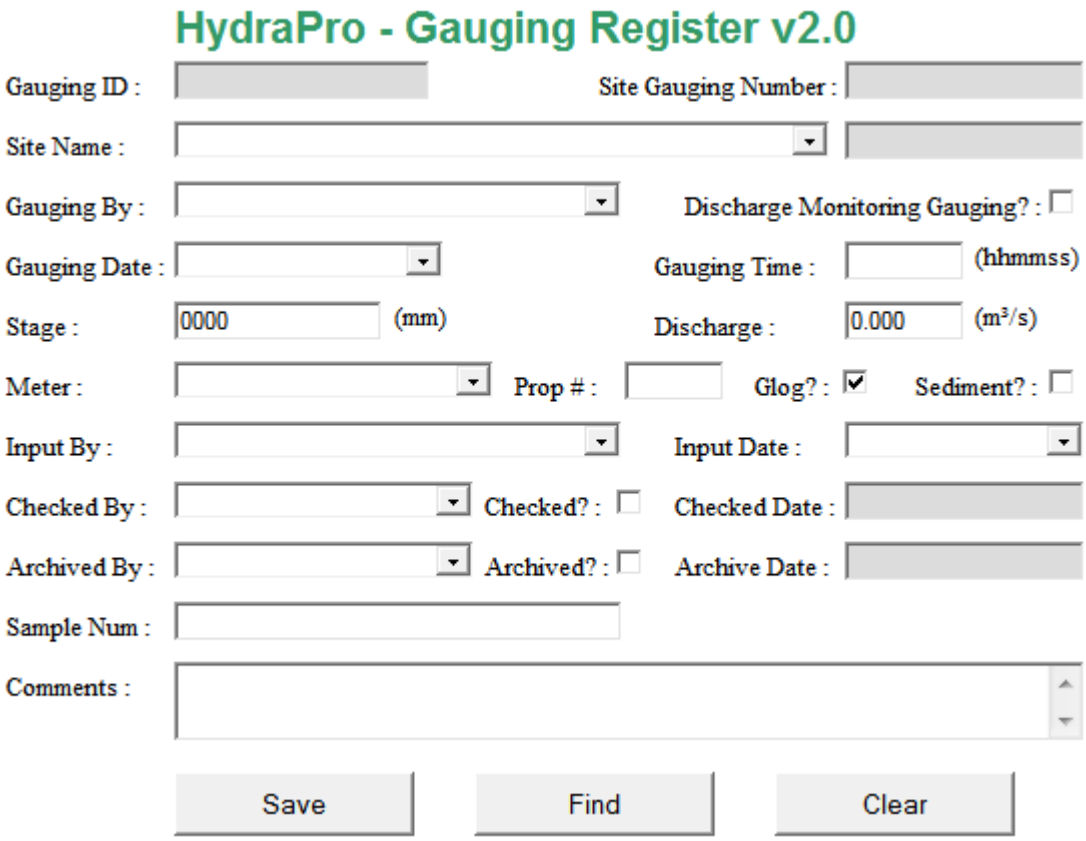
-Site Number and Site Name
-Gauging Number
-Party and Date of gauging
-Meter Type, No., Prop No., and date of calibration
-Current Meter coefficients
-Spin test
-Method code and verticals
-Location of gauging
-Water temperature
-Recorder, well and river stage heights/time at beginning and end of gauging as well as on arrival and departure
-Computed flow **l/s**
-Derived stage height and time for gauging (where applicable method used to calculate)
-Stage Height change (where applicable rate of rise and fall)
-Area
-Width
-Maximum depth
-Mean velocity

Where applicable:

-Distance above weight and size of weight
-Angle of current and Section
-Slope

7. Gauging Register

- Is this consistent with Hilltops output? Has the Register been completed?
- Does the filed stage height match?
- Does the Gauging Time match?
- Does the discharge measurement match the filed Hilltop discharge?
- Is the up-to-date Current meter serial and prop numbers entered?



If all the information is present and correct continue to complete quality assurance of the gauging *if not, please return to the Technician to complete*