

# Continuous Water-Quality Sampling Programs: Operating Procedures

## **Appendices**

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for the  
Resources Information Standards Committee

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## Appendix 1. The RISC CWQ Forms

RISC CWQ – 01. Station Design Part 1: Site Description

RISC CWQ – 01. Station Design Part 2: Data Source, Sensors, and Sensor Parameters. See Figure 1-1

Figure 1-1. A summary of the various combinations of data source, sensors, and sensor parameters used in completing RISC CWQ – 01. Station Design Part 2: Data Source, Sensors, and Sensor Parameters

RISC CWQ – 02. Station Log and Maintenance Form

RISC CWQ - 03. Specifications of the Parameters of the Portable Sensors Parameters

RISC CWQ – 04. Field and Laboratory Data Part 1: The pre-cleaning, post-cleaning, and re-deployment data

RISC CWQ – 04. Field and Laboratory Data Part 2: Sources of standard calibration solutions and the calibration data for the **deployed sonde**

RISC CWQ – 04. Field and Laboratory Data Part 3: Sources of standard calibration solutions and the calibration data for the **portable sonde**.

**Note:**

D = Deployed sonde

P = Portable sonde

C = Calibration information

**RISC CWQ – 01. Station Design Part 1: Site Description**

<b>Station Information</b>			
*Agency/ Firm		*EMS Id	
*Station Name		*Station No.	
*Science		*Region	
*EMS Office		*Establishing Agency	
*Nearest Community		*Established Data	
*Location Type		*Location Purpose	
Channel Flow		Watershed Code	
<b>Coordinates</b>			
*Latitude (degrees, min, sec)		*UTM Northing	
*Longitude (degrees, min, sec)		*UTM Easting	
*Geo Reference Source		UTM Zone	
<b>Free Form Information</b>			
Access Instructions			
Site Description			
Equipment Description			
Type of Deployment (include tube design)			
<b>Gauge Information (Hydrometric data)</b>			
Datum Description			
Gauge Datum Reference			
Datum Elevation			
Elevation Gauge Zero			
Zero Flow Gauge Height			
Drainage Area			
<b>Station Assessment Information</b>			
*Station Subject to Approval	<input type="checkbox"/> yes <input type="checkbox"/> no		
*Station Subject to Grading	<input type="checkbox"/> yes <input type="checkbox"/> no		

**RISC CWQ – 01. Station Design Part 2: Source, Sensors, and Sensor Parameters.**

<b>Data Source Information</b>			
*Source Name		*Source Type	
*Manufacturer		*Serial No.	
<b>Polled Data Sources</b>			
*Source Class			
*Source Username		Source Password	
Polling Interval		Polling Attempts	
<b>Telnet and FTP Sources</b>			
Server name		IP Address	
<b>Modem Sources</b>			
*Modem Type		*Negotiate	
*Baud		*Parity	
*Data Bits		Stop Bits	
Duplex		Connect Delay	
State Timer		Phone Number	

<b>Sensor and Sensor Parameters Information</b>			
<b>Note:</b>			
This section is completed for each sensor.			
If there is more than one sensor parameter per sensor, complete this section for each sensor parameter.			
*Sensor Name		*Manufacturer	
*Model		*Serial Number	
*Start Date		End Date	
*Number of Parameters			
*Parameter		*Parameter Code	
*Channel		*Sampling Interval	
*Accuracy (give units)			
*Resolution (give units)		*Range – min to max (give units)	

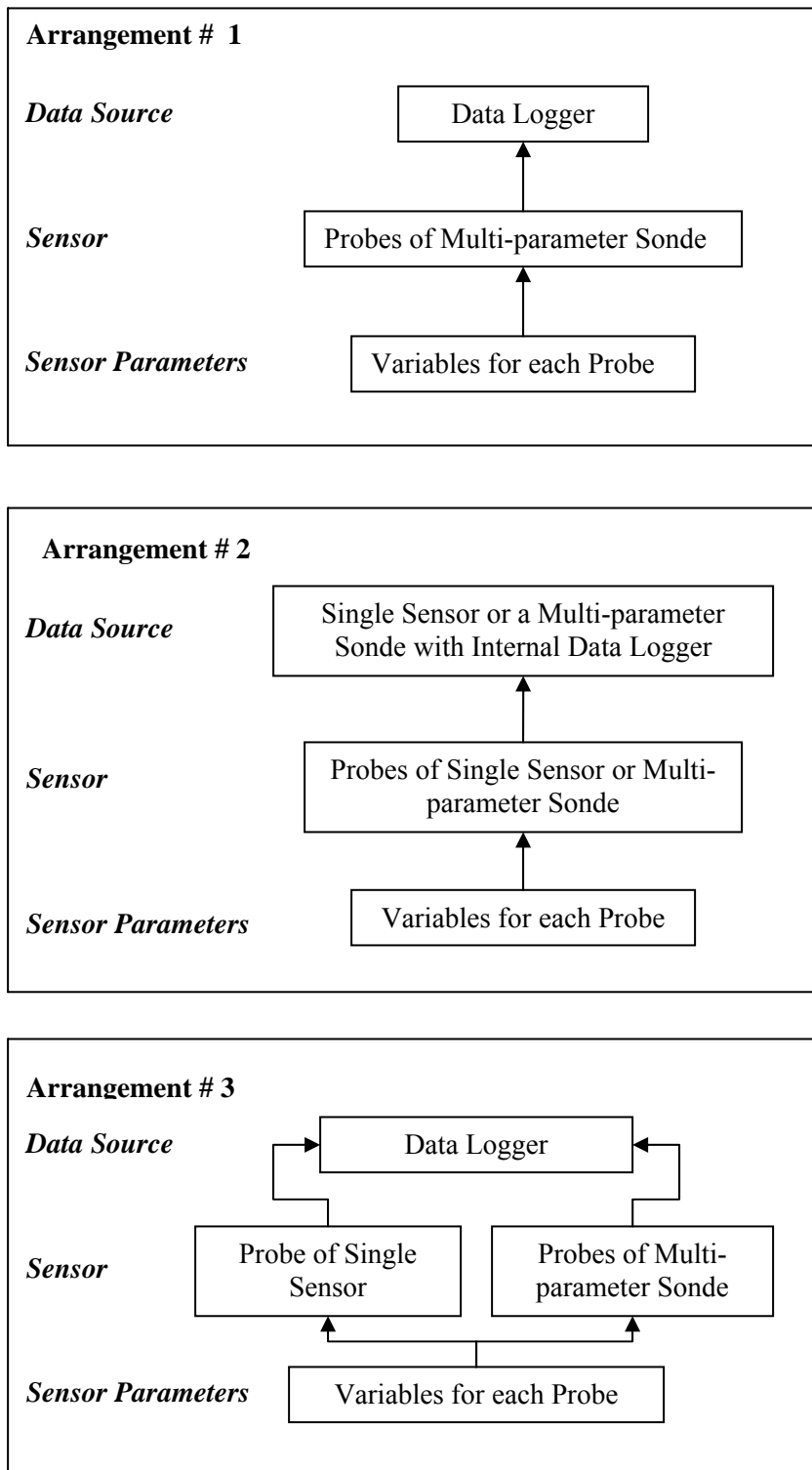


Figure 1-1 Summary of the various combinations of data source, sensors, and sensor parameters used in completing RISC CWQ – 01. Station Design Part 2: Data Source, Sensors, and Sensor Parameters.

**RISC CWQ – 02. Station Log and Maintenance Form.**

<b>Station Information</b>			
Agency / Firm		EMS Id	
Station Name		Station Number	
<b>General Site Visit Information</b>			
Station Log Date		Log Recorded By	
Weather			
Lab Sample Collected	<input type="checkbox"/> yes <input type="checkbox"/> no	Lab requisition number	
<b>Arrival Information</b>		<b>Departure Information</b>	
Date (yy / mm/ dd)		Date (yy / mm / dd)	
Watch Time		Watch Time	
Data Logger Time		Data Logger Time	
External battery (v)		External battery (v)	
Internal battery (v)		Internal battery (v)	
Air temperature		Air temperature	
Water temperature		Water temperature	
<b>Maintenance Type</b>			
<input type="checkbox"/> Routine visit	Comments		
<input type="checkbox"/> Changed batteries	Comments		
<input type="checkbox"/> Replaced source	Old Source Serial No		
	New Source Serial Number (add information to RISC CWQ - 1)		
<input type="checkbox"/> Replaced sensor	Old sensor Serial No		
	New sensor serial Number (add information to RISC CWQ -1)		
<input type="checkbox"/> Other	Give details		

**CWQ RISC 03. Specifications of the Parameters of the Portable Sensors**

<b>EMS Id:</b>			<b>Site name:</b>	
<b>Start date (yy/mm/dd):</b>			<b>End date (yy/mm/dd):</b>	
<b>Depth &amp; Level present</b>		<input type="checkbox"/> yes <input type="checkbox"/> no		
<b>Temperature</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Specific conductivity</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>pH</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Chlorophyll</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Turbidity</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Dissolved Oxygen</b>	Name		Accuracy (units)	
	Manufacturer		Resolution	
	Model No.		Range	
	Serial No.		Above same as deployed sonde	<input type="checkbox"/> Yes <input type="checkbox"/> No



**RISC CWQ – 04. Field and Laboratory Data Part 1: Pre-cleaning, Post-cleaning and Re-deployment data.**

EMS ID:						Date: yy/mm/dd					
Site name:											
Operator's Name:						Operator's Affiliation:					
Parameter	Units	Pre-cleaning data				Post -cleaning data		Re-deployment data			
		Deployed (D1)	Portable (P1)	Deployed (D2)	Portable (P2)	Deployed (D3)	Portable (P3)	Deployed (D4)	Portable (P4)	Deployed (D5)	Portable (P5)
		<i>in situ</i>		in bucket of stream water		In stream water		in bucket of stream water		<i>in situ</i>	
Temperature	° C										
Specific Conductivity	µS/cm										
pH	pH units										
Chlorophyll	µg/L										
Turbidity	NTU										
Dissolved Oxygen	mg/L										

**RISC CWQ – 04. Field and Laboratory Data Part 2: The calibration information (C1 & C2) and source of standards for the deployed sonde.**

Sensor Parameter	Calibration Standard	Units	Source of Calibration Standard	Temperature (° C)	Pre-calibration (C1)	Post Calibration (C2)
Temperature		(° C)				
Conductivity	1413	µS/cm				
		Cell constant (cm <sup>-1</sup> ) =				
Specific Conductivity	1413	µS/cm				
pH	pH 7					
		(YSI) MV reading after calibration = It should be 0 ± 50 mV. (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
	pH 4					
		(YSI) MV reading after calibration = It should be + 165 to +180 mV from 7 buffer. (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
	pH 10					
		(YSI) MV reading after calibration = It should be – 165 to – 180 mV from 7 buffer (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
Chlorophyll	DI	µg/L				
	other	µg/L				
Turbidity	DI	NTU				
	100	NTU				
Dissolved Oxygen	DI (BP = )	%				
	DI	mg/L				

**RISC CWQ – 04. Field and Laboratory Data Part 3: The calibration information (C1 & C2) and source of standards for the portable sonde.**

Sensor Parameter	Calibration Standard	Units	Source of Calibration Standard	Temperature (° C)	Pre-calibration (C1)	Post Calibration (C2)
Temperature		(° C)				
Conductivity	1413	µS/cm				
		Cell constant (cm <sup>-1</sup> ) =				
Specific Conductivity	1413	µS/cm				
pH	pH 7					
		(YSI) MV reading after calibration = It should be 0 ± 50 mV. (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
	pH 4					
		(YSI) MV reading after calibration = It should be + 165 to +180 mV from 7 buffer. (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
	pH 10					
		(YSI) MV reading after calibration = It should be – 165 to – 180 mV from 7 buffer (Hydrolab) KCl added <input type="checkbox"/> yes <input type="checkbox"/> no				
Chlorophyll	DI	µg/L				
	other	µg/L				
Turbidity	DI	NTU				
	100	NTU				
Dissolved Oxygen*	DI (BP = )	%				
	DI	mg/L				

## Appendix 2. Excel Program No. 1.

**Add the data from RISC CWQ - 04**

**Calculate the Data Grade**

**Compare data obtained *in situ* with those obtained "in a bucket of stream water".**

**Note:**

- Add the values to the appropriate columns on page 1.
- Add the data for one field site at a time.
- When the calculations are complete for one site, save the Excel file under a new name so that the original file is available for subsequent data sets.
- DO NOT add or remove data from the columns on the rest of the pages.
- Scroll down with cursor on the bottom corner of the appropriate cell to obtain all of the values in a column.

Date:		Station Name:								Operator			
Parameter	Units	D1	P1	D2	P2	D3	P3	C1	C2	D4	P4	D5	P5
Temperature	° C												
Spec. Cond	≤ 100 µS/cm												
Spec. Cond	> 100 µS/cm												
pH	pH units												
Turbidity	≤ 40 NTU												
Turbidity	> 40 NTU												
DO	≤ 4 mg/l												
DO	> 4 mg/l												

Parameter	Units	Accuracy
Temperature	° C	± 0.2 ° C
Spec. Cond (a) ≤ 100 µS/cm	µS/cm	± 2 µS/cm
Spec. Cond (b) > 100 µS/cm	µS/cm	± 2 % of reading
pH	pH units	± 0.2 pH units
Turbidity (a) ≤ 40 NTU	NTU	± 2 NTU
Turbidity (b) > 40 NTU	NTU	± 5% of reading
DO (a) ≤ 4 mg/l	mg/l	± 0.2 mg/l
DO (b) > 4 mg/l	mg/l	± 5% of reading

D = deployed sonde  
P = Portable sonde  
C = Calibration data

It is important to put the SC, turbidity & DO data in the correct cells

<b>Data Grade using Option 1 (in situ data) for accuracy as a set value</b>						
Parameter (units)	(D1 - D3)	(P1 - P3)	(D1 - D3) - (P1 - P3) = F	(C1 - C2) = CD	F  +  CD  = SE	Data Grade
Temperature ° C		0	0	0	0	0
SC (≤ 100 μS/cm)	0	0	0	0	0	Excellent
pH (pH units)	0	0	0	0	0	Excellent
Turbidity (≤ 40 NTU)	0	0	0	0	0	Excellent
DO (≤ 4 mg/l)	0	0	0	0	0	Excellent

<b>Data grade using option 1 (in situ data) for accuracy as a % of the reading</b>						
Parameter (units)	(D1 - D3)	(P1 - P3)	(D1 - D3) - (P1 - P3) = F	(C1 - C2) = CD		
SC (> 100 μS/cm)	0	0	0	0		
Turbidity (> 40 NTU)	0	0	0	0		
DO (> 4 mg/l)	0	0	0	0		
<b>% of reading cont.</b>			100(F/D1) = % F	100(CD/C1) = % CD	%F  +  %CD  = SE	
SC (> 100 μS/cm)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Turbidity (> 40 NTU)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
DO (> 4 mg/l)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

<b>Data Grade using option 2 (bucket data) for accuracy as a set value</b>						
Parameter (units)	(D2 - D3)	(P2 - P3)	(D2 - D3) - (P2 - P3) = F	(C1 - C2) = CD	F  +  CD  = SE	Data Grade
Temperature ° C		0	0	0	0	0
SC (≤ 100 μS/cm)	0	0	0	0	0	Excellent
pH (pH units)	0	0	0	0	0	Excellent
Turbidity (≤ 40 NTU)	0	0	0	0	0	Excellent
DO (≤ 4 mg/l)	0	0	0	0	0	Excellent

<b>Data grade using option 2 (bucket data) for accuracy as a % of the reading</b>						
Parameter (units)	(D2 - D3)	(P2 - P3)	(D2 - D3) - (P2 - P3) = F	(C1 - C2) = CD		
SC (> 100 μS/cm)	0	0	0	0		
Turbidity (> 40 NTU)	0	0	0	0		
DO (> 4 mg/l)	0	0	0	0		
<b>% of reading cont.</b>			100(F/D2) = % F	100(CD/C1) = % CD	%F  +  %CD  = SE	
SC (> 100 μS/cm)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Turbidity (> 40 NTU)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
DO (> 4 mg/l)			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

<b><i>In situ</i> vs. "in a bucket of stream water" for pre-cleaning data as a set value</b>				
Parameter (units)	(D1 - P1)	(D2 - P2)	$((D1 - P1) - (D2 - P2))/\text{accuracy}$	<b>Acceptable (Y or N)</b>
Temperature ° C	0	0	0	Yes
SC ( $\leq 100 \mu\text{S/cm}$ )	0	0	0	Yes
pH (pH units)	0	0	0	Yes
Turbidity ( $\leq 40 \text{ NTU}$ )	0	0	0	Yes
DO ( $\leq 4 \text{ mg/l}$ )	0	0	0	Yes

<b><i>in situ</i> vs. "in a bucket of stream water (accuracy as a percent of reading)</b>				
Parameter (units)	$100(D1-P1)/D1$	$100*(D2-P2)/D2$	$((100*(D1-P1)/D1) - (100*(D2-P2)/D2))/\text{accuracy}$	<b>Acceptable (Y or N)</b>
SC ( $> 100 \mu\text{S/cm}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Turbidity ( $> 40 \text{ NTU}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
DO ( $> 4 \text{ mg/l}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

<b><i>in situ</i> vs. "in a bucket of stream water for re-deployment data (accuracy as set value)</b>				
Parameter (units)	(D4 - P4)	(D5-P5)	$((D4-P4)-D5-P5))/\text{accuracy}$	<b>Acceptable (Y or N)</b>
Temperature ° C	0	0	0	Yes
SC ( $\leq 100 \mu\text{S/cm}$ )	0	0	0	Yes
pH (pH units)	0	0	0	Yes
Turbidity ( $\leq 40 \text{ NTU}$ )	0	0	0	Yes
DO ( $\leq 4 \text{ mg/l}$ )	0	0	0	Yes

<b><i>in situ</i> vs. "ina bucket of stream water for re-deployment (accuracy as a percent of the reading)</b>				
Parameter (units)	$100*(D4-P4) / D4$	$100*(D5-P5) / D5$	$((100(D4-P4)/D4) - (100*(D5-P5) / D5))/\text{accuracy}$	<b>Acceptable (Y or N)</b>
SC ( $> 100 \mu\text{S/cm}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Turbidity ( $> 40 \text{ NTU}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
DO ( $> 4 \text{ mg/l}$ )	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

## **Appendix 3. Excel Program No. 2 for Flagging Unreasonable Monitoring Data and Data gaps.**

Temperature  
pH  
Dissolved Oxygen  
Turbidity  
Specific Conductivity

Note:

- Add the data, time and monitoring data to the appropriate columns.
- DO NOT add or remove any information from the remaining columns. Scroll down with cursor on the bottom corner of the appropriate cell to obtain all of the values in a column.



**Temperature – Bold are added data**

Date	Time	data no	Temp °C	□range	□accuracy	□truncation	□data gaps	# flags /parameter	Flagged	Comments
M/D/Y	hh:mm:ss									
11/21/2005	12:30:24	1	<b>5.98</b>	5.98	5.98	5.98	0	0	0	
11/21/2005	12:45:24	2	<b>6.01</b>	6.01	6.01	6.01	0	0	0	
11/21/2005	13:00:29	3	<b>6.03</b>	6.03	6.03	6.03	0	0	0	
11/21/2005	13:15:29	4	<b>6.05</b>	6.05	6.05	6.05	0	0	0	
11/21/2005	13:30:29	5	<b>6.07</b>	6.07	6.07	6.07	0	0	0	
11/21/2005	13:45:29	6	<b>6.09</b>	6.09	6.09	6.09	0	0	0	
11/21/2005	14:00:29	7	<b>6.11</b>	6.11	6.11	6.11	0	0	0	
11/21/2005	14:15:29	8	<b>6.12</b>	6.12	6.12	6.12	0	0	0	
11/21/2005	14:30:29	9	<b>6.12</b>	6.12	6.12	6.12	0	0	0	
11/21/2005	14:45:29	10	<b>6.1</b>	6.1	6.1	6.1	0	0	0	
11/21/2005	15:00:29	11	<b>6.06</b>	6.06	6.06	6.06	0	0	0	
11/21/2005	15:15:28	12	<b>6.02</b>	6.02	6.02	6.02	0	0	0	
11/21/2005	15:30:28	13	<b>6</b>	6	6	6	0	0	0	
11/21/2005	15:45:28	14	<b>5.98</b>	5.98	5.98	5.98	0	0	0	
11/21/2005	16:00:28	15	<b>5.97</b>	5.97	5.97	5.97	0	0	0	
11/21/2005	16:15:29	16	<b>5.97</b>	5.97	5.97	5.97	0	0	0	
11/21/2005	16:30:28	17	<b>5.96</b>	5.96	5.96	5.96	0	0	0	
11/21/2005	16:45:28	18	<b>5.96</b>	5.96	5.96	5.96	0	0	0	
11/21/2005	17:00:29	19	<b>5.96</b>	5.96	5.96	5.96	0	0	0	
11/21/2005	17:15:00	20	<b>5.96</b>	5.96	5.96	5.96	0	0	0	
11/21/2005	17:30:00	21	<b>5.96</b>	5.96	5.96	5.96	0	0	0	
11/21/2005	17:45:00	22	<b>5.96</b>	5.96	5.96	5.96	0	0	0	

**pH - Bold are added data**

Date	Time	data no	pH	□range	□accuracy	□truncation	□ data gaps	# flags/parameter	flagged	Comments
M/D/Y	hh:mm:ss									
11/21/2005	12:30:24	1	<b>6.92</b>	6.92	6.92	6.92	0	0	0	
11/21/2005	12:45:24	2	<b>6.83</b>	6.83	6.83	6.83	0	0	0	
11/21/2005	13:00:29	3	<b>6.78</b>	6.78	6.78	6.78	0	0	0	
11/21/2005	13:15:29	4	<b>6.77</b>	6.77	6.77	6.77	0	0	0	
11/21/2005	13:30:29	5	<b>6.75</b>	6.75	6.75	6.75	0	0	0	
11/21/2005	13:45:29	6	<b>6.7</b>	6.7	6.7	6.7	0	0	0	
11/21/2005	14:00:29	7	<b>6.73</b>	6.73	6.73	6.73	0	0	0	
11/21/2005	14:15:29	8	<b>6.71</b>	6.71	6.71	6.71	0	0	0	
11/21/2005	14:30:29	9	<b>6.72</b>	6.72	6.72	6.72	0	0	0	
11/21/2005	14:45:29	10	<b>6.71</b>	6.71	6.71	6.71	0	0	0	
11/21/2005	15:00:29	11	<b>6.7</b>	6.7	6.7	6.7	0	0	0	
11/21/2005	15:15:28	12	<b>6.72</b>	6.72	6.72	6.72	0	0	0	
11/21/2005	15:30:28	13	<b>6.79</b>	6.79	6.79	6.79	0	0	0	
11/21/2005	15:45:28	14	<b>6.77</b>	6.77	6.77	6.77	0	0	0	
11/21/2005	16:00:28	15	<b>6.8</b>	6.8	6.8	6.8	0	0	0	
11/21/2005	16:15:29	16	<b>6.73</b>	6.73	6.73	6.73	0	0	0	
11/21/2005	16:30:28	17	<b>6.76</b>	6.76	6.76	6.76	0	0	0	
11/21/2005	16:45:28	18	<b>6.76</b>	6.76	6.76	6.76	0	0	0	
11/21/2005	17:00:29	19	<b>6.74</b>	6.74	6.74	6.74	0	0	0	
11/21/2005	17:15:00	20	<b>6.74</b>	6.74	6.74	6.74	0	0	0	
11/21/2005	17:30:00	21	<b>6.74</b>	6.74	6.74	6.74	0	0	0	
11/21/2005	17:45:00	22	<b>6.74</b>	6.74	6.74	6.74	0	0	0	
11/21/2005	18:00:00	23	<b>6.71</b>	6.71	flag	6.71	0	1	1	

**Dissolved oxygen - Bold are added data**

Date	Time	Data No	DO	P range	P accuracy	P truncation	Pdata gaps	# flags/parameter	Flagged	Comments
M/D/Y	hh:mm:ss		mg/L							
11/21/2005	12:30:24	1	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	12:45:24	2	<b>12.47</b>	12.47	12.47	12.47	0	0	0	
11/21/2005	13:00:29	3	<b>12.46</b>	12.46	12.46	12.46	0	0	0	
11/21/2005	13:15:29	4	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	13:30:29	5	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	13:45:29	6	<b>12.47</b>	12.47	12.47	12.47	0	0	0	
11/21/2005	14:00:29	7	<b>12.49</b>	12.49	12.49	12.49	0	0	0	
11/21/2005	14:15:29	8	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	14:30:29	9	<b>12.5</b>	12.5	12.5	12.5	0	0	0	
11/21/2005	14:45:29	10	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	15:00:29	11	<b>12.48</b>	12.48	12.48	12.48	0	0	0	
11/21/2005	15:15:28	12	<b>12.44</b>	12.44	12.44	12.44	0	0	0	
11/21/2005	15:30:28	13	<b>12.42</b>	12.42	12.42	12.42	0	0	0	
11/21/2005	15:45:28	14	<b>12.41</b>	12.41	12.41	12.41	0	0	0	
11/21/2005	16:00:28	15	<b>12.4</b>	12.4	12.4	12.4	0	0	0	
11/21/2005	16:15:29	16	<b>12.38</b>	12.38	12.38	12.38	0	0	0	
11/21/2005	16:30:28	17	<b>12.36</b>	12.36	12.36	12.36	0	0	0	
11/21/2005	16:45:28	18	<b>12.35</b>	12.35	12.35	12.35	0	0	0	
11/21/2005	17:00:29	19	<b>12.35</b>	12.35	12.35	12.35	0	0	0	
11/21/2005	17:15:00	20	<b>12.33</b>	12.33	12.33	12.33	0	0	0	
11/21/2005	17:30:00	21	<b>12.34</b>	12.34	12.34	12.34	0	0	0	
11/21/2005	17:45:00	22	<b>12.32</b>	12.32	12.32	12.32	0	0	0	
11/21/2005	18:00:00	23	<b>12.31</b>	12.31	flag	12.31	0	1	1	

**Turbidity - Bold are added data**

Date	Time	Data No.	Turb	✓range	✓accuracy	✓accuracy	✓truncation	✓data gaps	#flags≤40NTU	#flags>40NTU	flagged
M/D/Y	hh:mm:ss		NTU		≤ 40 NTU	> 40 NTU					
11/21/2005	12:30:24	1	<b>0.8</b>	0.8	0.8		0.8	0	0	0	0
11/21/2005	12:45:24	2	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	13:00:29	3	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	13:15:29	4	<b>1</b>	1	1		1	0	0		0
11/21/2005	13:30:29	5	<b>0.9</b>	0.9	0.9		0.9	0	0		0
11/21/2005	13:45:29	6	<b>0.9</b>	0.9	0.9		0.9	0	0		0
11/21/2005	14:00:29	7	<b>1</b>	1	1		1	0	0		0
11/21/2005	14:15:29	8	<b>0.9</b>	0.9	0.9		0.9	0	0		0
11/21/2005	14:30:29	9	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	14:45:29	10	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	15:00:29	11	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	15:15:28	12	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	15:30:28	13	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	15:45:28	14	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	16:00:28	15	<b>0.7</b>	0.7	0.7		0.7	0	0		0
11/21/2005	16:15:29	16	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	16:30:28	17	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	16:45:28	18	<b>0.7</b>	0.7	0.7		0.7	0	0		0
11/21/2005	17:00:29	19	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	17:15:00	20	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	17:30:00	21	<b>0.8</b>	0.8	0.8		0.8	0	0		0
11/21/2005	17:45:00	22	<b>0.9</b>	0.9	0.9		0.9	0	0		0
11/21/2005	18:00:00	23	<b>0.8</b>	0.8	0.8		0.8	0	0		0

**Specific Conductivity - Bold are added data**

Date	Time	Data No	Spec Cond	✓ range	✓ accuracy	✓ truncation	✓ data gaps	#flags/parameter	flagged	Comments
M/D/Y	hh:mm:ss		µS/cm							
11/21/2005	12:30:24	1	<b>31</b>	31	31	31	0	0	0	
11/21/2005	12:45:24	2	<b>31</b>	31	31	31	0	0	0	
11/21/2005	13:00:29	3	<b>31</b>	31	31	31	0	0	0	
11/21/2005	13:15:29	4	<b>32</b>	32	flag	32	0	1	1	accept
11/21/2005	13:30:29	5	<b>31</b>	31	31	31	0	0	0	
11/21/2005	13:45:29	6	<b>31</b>	31	31	31	0	0	0	
11/21/2005	14:00:29	7	<b>32</b>	32	32	32	0	0	0	
11/21/2005	14:15:29	8	<b>32</b>	32	flag	32	0	1	1	accept
11/21/2005	14:30:29	9	<b>31</b>	31	31	31	0	0	0	
11/21/2005	14:45:29	10	<b>31</b>	31	31	31	0	0	0	
11/21/2005	15:00:29	11	<b>31</b>	31	31	31	0	0	0	
11/21/2005	15:15:28	12	<b>32</b>	32	32	32	0	0	0	
11/21/2005	15:30:28	13	<b>32</b>	32	32	32	0	0	0	
11/21/2005	15:45:28	14	<b>32</b>	32	32	32	0	0	0	
11/21/2005	16:00:28	15	<b>32</b>	32	32	32	0	0	0	
11/21/2005	16:15:29	16	<b>32</b>	32	32	32	0	0	0	
11/21/2005	16:30:28	17	<b>32</b>	32	32	32	0	0	0	
11/21/2005	16:45:28	18	<b>32</b>	32	32	32	0	0	0	
11/21/2005	17:00:29	19	<b>32</b>	32	32	32	0	0	0	
11/21/2005	17:15:00	20	<b>32</b>	32	32	32	0	0	0	
11/21/2005	17:30:00	21	<b>32</b>	32	32	32	0	0	0	

## Appendix 4: Checklist of Validation Steps

1. Examine RISC Forms: Ensure that the mandatory fields are populated.
2. Determine the Data Grade for each Parameter (from Appendix 2, sheet 2.)
3. Comparison of the data obtained *in situ* with those obtained "in a bucket of stream water"  
(from appendix 2)
4. Examine the Monitoring Data for Data Gaps and Anomalies (from Appendix 3).

**1. Examine RISC Forms: Ensure that the mandatory fields are populated.**

Form	Completed		Comments
	Yes	No	
RISC CWQ – 01 Station Design			
RISC CWQ – 02 Station Log and Maintenance Form			
RISC CWQ – 03 Specifications of the Portable Sensor Parameters			
RISC CWQ – 04 Field and Laboratory Data			

**2. Determine the Data Grade for each Parameter (Appendix 2)**

Parameter	Data Grade				
	Excellent	Very Good	Good	Fair	Poor
Temperature					
Spec. cond.					
pH					
Turbidity					
DO					
Other					

Notes:

**3. Results of the comparisons of data collected in situ and "in a bucket of stream water" (Appendix 2)**

Comparison of pre-cleaning data			
Parameter	Acceptable		Comments
	Yes	No	
Temperature			
Specific conductivity			
pH			
Turbidity			
Dissolved oxygen			
Comparison of re-deployment data			
Temperature			
Specific conductivity			
pH			
Turbidity			
Dissolved oxygen			

**4. Examine the Monitoring Data for Data Gaps and Anomalies**

Period of Monitoring Data

From: \_\_\_\_\_

To: \_\_\_\_\_

No of Data points: \_\_\_\_\_

Parameter	No of Flags	% of Data Points Flagged	Comments
Temperature			
Spec. Cond			
pH			
Turbidity			
DO			