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Ecosystem Interlaboratory QA Program, Study FP64 for Major Ions & Nutrients and Total Phosphorus in Surface Waters. (Jan & Feb 1994.)

H. Alkema

Aquatic Ecosystem Protection Branch
National Water Research Institute
867 Lakeshore Rd, Burlington, ON
Canada L7R 4A6

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RESEARCH & APPLICATIONS BRANCH

FINAL REPORT

REPORT NO. AEPB-TN-94-01

ECOSYSTEMS INTERLABORATORY QUALITY ASSURANCE PROGRAM

FP/GLAP STUDY 64

for January and February 1994

An Interlaboratory Quality Assurance Study for Major Ions & Nutrients and Total Phosphorus in Surface Waters *

by

H. Alkema

Environmental Standards & Statistics
Aquatic Ecosystem Protection Branch
National Water Research Institute
Burlington, Ontario

April 1994

* the companion study (FP64) for Trace Metals is Report AEPB-TN-94-02

Environnement Canada
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LE PLAN VERT DU CANADA
CANADA'S GREEN PLAN

National Water Research Institute
867 Lakeshore Road, P.O. Box 5050
Burlington, Ontario
L7R 4A6

15 April 1994

To: Participants & Managers in the:
Ecosystem Interlaboratory Quality Assurance Program

Re: Final Report for FP/GLAP Study FP64 - Major Ions & Nutrients and Total P Portion

Dear Participant,

The Institute is pleased to distribute this final report to the FP/GLAP participant laboratories. This report includes results and evaluations for two unique series of samples - one for Major Ions & Nutrients and another for Total Phosphorus. The evaluation of results includes an evaluation for systematic bias as well as for precision (flagged results). A complete listing of all laboratory results is included so that each laboratory can compare its results and evaluations with other laboratories. For details concerning these evaluations please refer to the attached Appendix A: Glossary of Terms, or to the Research & Applications Branch QA Manual.

We would like to thank all participants for their cooperation and prompt responses. In return it is the aim of the quality assurance group to give prompt evaluations and reports and effective remedial assistance.

The laboratories listed in this report submitted their data with a confidential laboratory code. This confidentiality is fully respected by our staff. Access to these codes is possible through the relevant laboratories or program authorities.

Laboratory heads are encouraged to discuss the attached report openly with those who manage their programs and those who use their laboratory data. In addition, if any laboratory is experiencing difficulties or is reviewing a methodology, I can make a referral to a laboratory which has demonstrated good performance. Also, to assist in *improving* or *confirming accuracy* of analysis, our Institute is able to provide a wide variety of reference waters for a cost recovery fee.

Should you have any questions or comments regarding this study, please contact me - phone 905-336-4929 or fax 336-4989.

Yours truly,

Harry A

H. Alkema
QA Chemist, Ecosystem QA Pgm.

Attachment: Individual Laboratory Appraisal

Canada

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Printed on recycled paper

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Table 1

ENVIRONMENT CANADA
National Water Research Institute

Ecosystem Interlaboratory Quality Assurance Program
PARTICIPATION LIST - Study FP/GLAP 64 (Jan & Feb '94)

Accutest Labs Ltd.
Alberta Environmental Centre
ASL Analytical Service Lab Ltd.
Barringer Laboratories Ltd.
Battelle Marine Sciences Lab
Can Test Ltd.
Chalk River Laboratories
Chemex Labs Alberta Inc.
Chemical & Geological Laboratories Inc.
City of Calgary
Edmonton Public Works
Elliot Lake Research Stn
Enviro Science & Engineering Inc. FL
Environment Canada - Atlantic Region
Environment Canada - Centre St. Laurent
Environment Canada - NLET
Environment Canada - Pacific & Yukon Region
Environment Canada - WQB, Western & Northern Region
Environment Canada - River Road, Ottawa
Environment Manitoba
Environment New Brunswick
Forestry Canada - Sault Ste Marie
Illinois State Water Survey (HWRIC)
Indian & Northern Affairs Canada
Lab Elite Ltée, PQ
Laboratoire de Santé, Publique du Québec
Ministère de l'Environnement du Québec - Laval
Ministère de l'Environnement du Québec - Ste. Foy
Norwest Labs (Edmonton)
NWQL USGS, Arvada, CO
Ontario Ministry of Environment - Dorset
Ontario Ministry of Environment - Rexdale
Ontario Ministry of Environment - Kingston
Ontario Ministry of Environment - London
Ontario Ministry of Environment - Thunder Bay
Ortech Intl., ON
PEI Agriculture
Penn State University, PA
Rockcliff Research Management Inc. (WTC)
Saskatchewan Health, SK
Saskatchewan Research Council, SK
Sawyer Environmental Laboratory - University of Maine
Shell Calgary Research Centre, AB
Suncor Inc. OSG, AB
VG Hospital, NS
Zenon Environmental Inc., BC

Table 2a

COMPARISON OF LABORATORY PERFORMANCE (STUDY 0064)

Major Ions & Nutrients

	BIAS			FLAGS			
LAB CODE	NO. OF PARAMETERS ANALYZED	NO. OF PARAMETERS BIASED	PERCENTAGE OF PARAMETERS BIASED (%)	NO. OF RESULTS RANKED	NO. OF FLAGS ASSIGNED	PERCENTAGE OF RESULTS FLAGGED (%)	SUM OF % BIAS AND % FLAGS SCORE
F004	7	0	0.00	59	0	0.00	0.00
F068	9	0	0.00	82	2	2.44	2.44
F036	16	0	0.00	160	10	6.25	6.25
F020	16	0	0.00	146	10	6.85	6.85
F031	14	0	0.00	129	9	6.98	6.98
F032	18	1	5.56	178	5	2.81	8.36
F007	11	1	9.09	109	2	1.83	10.93
F003	19	1	5.26	187	11	5.88	11.15
F058	14	1	7.14	136	8	5.88	13.03
F001	18	2	11.11	169	7	4.14	15.25
F042	17	2	11.76	163	6	3.68	15.45
F048	12	0	0.00	118	19	16.10	16.10
F025	15	1	6.67	149	15	10.07	16.73
F015	15	2	13.33	141	11	7.80	21.13
F008	19	3	15.79	151	9	5.96	21.75
F067	20	3	15.00	190	13	6.84	21.84
F040	5	1	20.00	49	1	2.04	22.04
F038	19	2	10.53	168	20	11.90	22.43
F063	13	2	15.38	123	9	7.32	22.70
F013	10	2	20.00	98	5	5.10	25.10
F069	17	2	11.76	170	23	13.53	25.29
F035	12	3	25.00	111	2	1.80	26.80
F046	20	4	20.00	183	16	8.74	28.74
F075	19	4	21.05	168	14	8.33	29.39
F002	14	3	21.43	139	13	9.35	30.78
F010	18	6	33.33	166	11	6.63	39.96
F033	16	6	37.50	150	6	4.00	41.50
F071	14	4	28.57	139	18	12.95	41.52
F014	15	5	33.33	143	20	13.99	47.32
F073	8	2	25.00	79	19	24.05	49.05
F057	8	2	25.00	73	24	32.88	57.88
F009	10	4	40.00	99	20	20.20	60.20
F016	19	7	36.84	184	48	26.09	62.93
F034	13	5	38.46	122	30	24.59	63.05
F059	12	4	33.33	110	33	30.00	63.33
F006	15	7	46.67	132	32	24.24	70.91
F066	18	7	38.89	153	50	32.68	71.57
F060	20	9	45.00	189	51	26.98	71.98
F037	11	5	45.45	108	33	30.56	76.01
F030	20	10	50.00	185	70	37.84	87.84
F011	15	9	60.00	143	42	29.37	89.37
F064	14	9	64.29	134	88	65.67	129.96

THE FOLLOWING PARAMETERS WERE USED IN THE ANALYSIS

Cond	pH	B	DOC	ALK	DIC
NO3+NO2	NH3	TKN	F	HARD	Na
Mg	Si	SO4	Cl	K	Ca
Colour	Tot N				

THE FOLLOWING PARAMETERS WERE EXCLUDED

Turb

Table 2b

COMPARISON OF LABORATORY PERFORMANCE (STUDY 0064)

Total Phosphorus

	BIAS			FLAGS			
LAB CODE	NO. OF PARAMETERS ANALYZED	NO. OF PARAMETERS BIASED	PERCENTAGE OF PARAMETERS BIASED (%)	NO. OF RESULTS RANKED	NO. OF FLAGS ASSIGNED	PERCENTAGE OF RESULTS FLAGGED (%)	SUM OF % BIAS AND % FLAGS SCORE
F001	1	0	0.00	10	0	0.00	0.00
F003	1	0	0.00	10	0	0.00	0.00
F004	1	0	0.00	9	0	0.00	0.00
F010	1	0	0.00	8	0	0.00	0.00
F011	1	0	0.00	10	0	0.00	0.00
F013	1	0	0.00	9	0	0.00	0.00
F014	1	0	0.00	8	0	0.00	0.00
F020	1	0	0.00	8	0	0.00	0.00
F025	1	0	0.00	8	0	0.00	0.00
F030	1	0	0.00	7	0	0.00	0.00
F032	1	0	0.00	10	0	0.00	0.00
F036	1	0	0.00	10	0	0.00	0.00
F038	1	0	0.00	10	0	0.00	0.00
F048	1	0	0.00	8	0	0.00	0.00
F063	1	0	0.00	10	0	0.00	0.00
F035	1	0	0.00	10	1	10.00	10.00
F042	1	0	0.00	10	1	10.00	10.00
F069	1	0	0.00	10	1	10.00	10.00
F007	1	0	0.00	9	1	11.11	11.11
F075	1	0	0.00	10	2	20.00	20.00
F008	1	0	0.00	10	3	30.00	30.00
F046	1	0	0.00	8	4	50.00	50.00
F015	1	1	100.00	9	0	0.00	100.00
F002	1	1	100.00	9	1	11.11	111.11
F033	1	1	100.00	10	4	40.00	140.00
F058	1	1	100.00	10	4	40.00	140.00
F006	1	1	100.00	8	6	75.00	175.00
F009	1	1	100.00	5	4	80.00	180.00
F016	1	1	100.00	10	10	100.00	200.00
F064	1	1	100.00	10	10	100.00	200.00

Table 3a

SUMMARY OF STUDY TO STUDY PERFORMANCE

Major Ions & Nutrients

LAB CODE	%BIAS AND %FLAGS ON STUDIES 0062	0063	0064	MEDIAN SCORE	COMMENTS
F001	25.0	21.8	15.3	21.8	SATISFACTORY
F002	33.4	30.8	30.8	30.8	MODERATE
F003	10.1	13.2	11.1	11.1	SATISFACTORY
F004	30.2	46.3	0.0	30.2	MODERATE
F006	33.9	39.1	70.9	39.1	MODERATE
F007	22.3	38.3	10.9	22.3	SATISFACTORY
F008	29.1	31.4	21.7	29.1	MODERATE
F009	14.6	31.9	60.2	31.9	MODERATE
F010	40.2	35.2	40.0	40.0	MODERATE
F011	35.0	117.6	89.4	89.4	POOR
F013	39.1	57.0	25.1	39.1	MODERATE
F014	47.4	41.6	47.3	47.3	MODERATE
F015	43.5	29.3	21.1	29.3	MODERATE
F016	76.0	46.6	62.9	62.9	POOR
F020	21.1	28.3	6.8	21.1	SATISFACTORY
F023	-	55.6	-	-	-
F025	39.5	40.1	16.7	39.5	MODERATE
F030	81.3	54.8	87.8	81.3	POOR
F031	-	14.0	7.0	10.5	SATISFACTORY
F032	16.7	9.6	8.4	9.6	SATISFACTORY, WELL DONE
F033	26.8	48.0	41.5	41.5	MODERATE
F034	63.4	41.7	63.1	63.1	POOR
F035	57.4	16.6	26.8	26.8	MODERATE
F036	22.1	38.0	6.3	22.1	SATISFACTORY
F037	133.0	47.3	76.0	76.0	POOR
F038	48.9	35.0	22.4	35.0	MODERATE
F039	52.8	-	-	-	-
F040	-	-	22.0	-	-
F042	22.8	17.1	15.4	17.1	SATISFACTORY
F043	97.0	16.7	-	56.8	MODERATE
F046	75.1	35.3	28.7	35.3	MODERATE
F048	-	19.2	16.1	17.7	SATISFACTORY
F055	39.1	-	-	-	-
F056	52.0	-	-	-	-
F057	79.7	-	57.9	68.8	POOR
F058	-	20.0	13.0	16.5	SATISFACTORY
F059	-	84.9	63.3	74.1	POOR
F060	-	108.8	72.0	90.4	POOR
F061	-	99.0	-	-	-
F062	-	62.6	-	-	-
F063	-	-	22.7	-	-
F064	-	-	130.0	-	-
F066	-	-	71.6	-	-
F067	-	-	21.8	-	-
F068	-	-	2.4	-	-
F069	-	-	25.3	-	-
F071	-	-	41.5	-	-
F073	-	-	49.1	-	-
F075	-	-	29.4	-	-
MEDIAN	39.1	38.0	26.8		

STUDY DATES: 0062(11-JAN-93),0063(05-JUL-93),0064(07-JAN-94)

Table 5b SUMMARY of Interlaboratory MEDIAN VALUES for Total Phosphorus - STUDY 64

PARAMETER		SAMPLE NUMBER						
		ION-91TP SAMPLE 1	ION-95TP SAMPLE 2	SYNTP-01 SAMPLE 3	SYNTP-02 SAMPLE 4	SYNTP-03 SAMPLE 5	SYNTP-04 SAMPLE 6	SYNTP-05 SAMPLE 7
Total Phosphorus	MG P/L	.0020	.0030	.0060	.0160	.0310	.0525	.0900

PARAMETER		SAMPLE NUMBER		
		SYNTP-06 SAMPLE 8	SYNTP-07 SAMPLE 9	SYNTP-08 SAMPLE 10
Total Phosphorus	MG P/L	.1145	.1500	.1955

Appendix A

Glossary of Terms

GLOSSARY OF TERMS

Appendix A:

Used for the Evaluation of Interlaboratory Results

Satisfactory: Quite acceptable, "good results".

Erratic: A set of results for a given characteristic is deemed erratic when both high and low flags are assigned.

Out of Control: An analytical system is said to be out of control when it has demonstrated the ability to perform adequately and produces an extreme result or results. For an example, consider a set of results obtained by laboratory on Vanadium in Study FP62:

Sample No.	Result	Median	Difference
1	0.21	0.2010	-0.009
2	0.13	0.1300	0.0
3	0.49	0.4800	-0.01
4	0.091	0.8505	0.7595
5	0.22	0.2065	-0.013
6	0.005	0.0050	0.0
7	0.002	0.0022	0.0002
8	0.016	0.0151	-0.0009
9	0.007	0.0069	-0.0001
10	0.012	0.0123	0.0003

Given the excellent results obtained on samples 1 through 10, the result on sample 4 indicates that the analytical system was out of control.

Bias: A set of results is said to be biased when that set exhibits a tendency to be either higher or lower than some standard. The ranking procedure employed in testing for bias is described in W.J. Youden's paper, "Ranking Laboratories by Round-Robin Tests" from Precision Measurement and Calibration, H.H. Ku, Editor, NBS Special Publication 300-Volume 1, U.S. Government Printing Office, Washington, D.C., 1969. In this paper, Youden established the rationale for evaluating laboratories' performance by ranking results. In our use of the procedure there is about 1 chance in 20 of deeming a set of results biased when in fact it is not, (α=0.05).

W or T Code: A "W" or "T" code is used with a reported result as also described in ASTM. These codes may be used in the FP/GLAP studies, but may result in flagging difficulties. "Less than" values are normally used when reporting the results.

LLBAE Lower Limit for Use of Basic Acceptable Error, Basic Acceptable Error, and
BAE Concentration Error Increment:
CEI:

These terms define the acceptable differences from median of results (target value) that is allowed without a result being flagged either low or high. For a sample whose target value is at or below the lower limit for use of basic acceptable error, the basic acceptable error is used to determine the range of acceptable deviations.

For example: Suppose that the lower limit for use of the basic acceptable error has been set as 10 µg/L and the basic acceptable error is 1.0 µg/L, if a target (median) value for a sample is 5 µg/L, then any reported result within the range 5 ± 1.0 or 4.0 to 6.0 µg/L would be considered acceptable. The BAE would define the acceptable result within the 0-10 µg/L range.

For results above the *lower limit for use of basic acceptable error*, an allowance is made for the increased variability due to concentration. (For almost all substances it appears that the variability of results increases with concentration.) The allowance is added to the *basic acceptable error*. It is calculated by multiplying the *concentration error increment* (as a percentage) by the difference between the target value and the *lower limit for use of basic acceptable error*.

For example: If a target value for a sample is 21 µg/L, and the *lower limit for use of basic acceptable error* is 10 µg/L, the difference between them is 21-10 = 11 µg/L. Multiplying the difference by the *concentration increment*, say 0.10, which gives 11 µg/L x 0.10, resulting in 1.1 µg/L to determine the acceptable difference 21.0 ± 2.1. Thus the range 18.9 to 23.1 µg/L would be considered acceptable and would not be flagged.

In general, for the FP/GLAP studies, the values chosen for the *basic acceptable error* and the *concentration error increment* are selected so that good precision may be inferred. Historically, for the FP QA Program, for moderate ranges, this has been achieved with the 10% Deviation Rule. To be consistent in the FP/GLAP studies, Performance Ratings with the LRTAP type evaluation program should generally remain the same; eg. Very Good = approximately 5% of data flagged. In a sense these evaluations represent state of the art for analysis of the Round-Robin samples.

Flag: A result is flagged high ("H") when its value is greater than the median (target value) plus the acceptable difference, (but not greater than the median plus 1.5 times). A result greater than 1.5 times the acceptable difference is flagged very high ("VH"). Similarly, a result lower than the median by the acceptable difference (but not minus 1.5 times the acceptable difference) is flagged low ("L"). A still lower result is flagged very low ("VL"). Extremely different values are those that deviate more than twice the acceptable difference from the median. These results are flagged - "EL" or "EH".

Acceptable Difference: The absolute value of the maximum difference between a result and
(or Acceptable Deviation) the target value which will not be flagged.

Sept, 1993

Reference: ASTM, 1983, Volume 11.01, Water 1, Section II, pg D4210-83

Appendix B

Laboratory Results

1) Major Ions & Nutrients
2) Total Phosphorus

Table 3b

SUMMARY OF STUDY TO STUDY PERFORMANCE

Total Phosphorus

LAB CODE	%BIAS AND %FLAGS ON STUDIES 0062	0063	0064	MEDIAN SCORE	COMMENTS
F001	0.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F002	20.0	30.0	111.1	30.0	MODERATE
F003	0.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F004	110.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F006	180.0	75.0	175.0	175.0	POOR
F007	0.0	10.0	11.1	10.0	SATISFACTORY, WELL DONE
F008	180.0	0.0	30.0	30.0	MODERATE
F009	-	-	180.0	-	-
F010	10.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F011	20.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F013	10.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F014	20.0	0.0	0.0	0.0	SATISFACTORY, WELL DONE
F015	20.0	0.0	100.0	20.0	SATISFACTORY
F016	-	30.0	200.0	115.0	POOR
F020	10.0	40.0	0.0	10.0	SATISFACTORY, WELL DONE
F025	50.0	-	0.0	25.0	MODERATE
F030	190.0	150.0	0.0	150.0	POOR
F032	0.0	171.4	0.0	0.0	SATISFACTORY, WELL DONE
F033	0.0	120.0	140.0	120.0	POOR
F034	-	10.0	-	-	-
F035	0.0	30.0	10.0	10.0	SATISFACTORY, WELL DONE
F036	0.0	10.0	0.0	0.0	SATISFACTORY, WELL DONE
F038	50.0	50.0	0.0	50.0	MODERATE
F039	90.0	-	-	-	-
F042	0.0	20.0	10.0	10.0	SATISFACTORY, WELL DONE
F046	50.0	190.0	50.0	50.0	MODERATE
F048	-	-	0.0	-	-
F055	188.9	-	-	-	-
F058	-	0.0	140.0	70.0	POOR
F062	-	190.0	-	-	-
F063	-	-	0.0	-	-
F064	-	-	200.0	-	-
F069	-	-	10.0	-	-
F075	-	-	20.0	-	-
INTERLAB MEDIAN	20.0	10.0	10.0		

STUDY DATES: 0062(11-JAN-93),0063(05-JUL-93),0064(07-JAN-94)

Table 4a

Sample Design - FP/GLAP 64 - January '94

Major Ions & Nutrients

Sample No.	Sample Name	Source (Prov)	Conductance (Expected)
1	MIRAM-01	Miramichi R. (NB)	48.
2	GRM-02	Grimsby Rain	49.
3	ION-911	Lake Superior	96.
4	CRAN-01	Cranberry Lake	158.
5	HURON-03	Lake Huron	210.
6	ION-95	Lake Ontario	294.
7	EDMON-01	Edmonton Tapwater	246.
8	LETH-01	Lethbridge Tapwater	409.
9	VANNAM-02	Fraser R. (North Arm)	176.
10	SWIFT-01	Swift Current Tapwater	798.

Table 4b

Sample Design - FP/GLAP 64 - Jan '93

Total Phosphorus

Sample No.	Sample Name	Conc'n (expected)
1	ION-91	0.0012
2	ION-95	0.0034
3	SYN-01	0.071
4	SYN-02	0.019
5	SYN-03	0.033
6	SYN-04	0.055
7	SYN-05	0.091
8	SYN-06	0.115
9	SYN-07	0.149
10	SYN-08	0.194

Table 5a SUMMARY of Interlaboratory MEDIAN VALUES for Major Ion & Nutrients - STUDY 64

PARAMETER		SAMPLE NUMBER						
		MIRAM-01 SAMPLE 1	GRM-02 SAMPLE 2	ION-911 SAMPLE 3	CRAN-01 SAMPLE 4	HURON-03 SAMPLE 5	ION-95 SAMPLE 6	EDMON-01 SAMPLE 7
Turbidity	JTU	.1250	.1100	.1400	.1500	.1400	.1050	.1000
Colour	HAZEN UNIT	10.500	2.0000	2.0000	10.000	3.0000	4.0000	2.0000
Specific Conductance	UMHO/CM	48.000	49.050	97.000	159.000	210.000	296.000	247.000
pH	PH UNITS	7.2150	4.6600	7.6800	7.5500	7.9700	7.9750	7.7900
Boron	MG/L	.0090	.0120	.0070	.0130	.0164	.0230	.0115
Diss Organic Carbon	MG C/L	1.8000	1.0345	1.2600	4.4000	2.1000	1.5500	.5500
Total Alkalinity	MG/LCACO3	15.100	.5400	42.130	33.000	81.200	77.700	50.128
Diss Inorg Carbon	MG C/L	3.4000	.2035	9.8320	7.5000	19.300	18.000	11.800
Nitrate + Nitrite	MG N/L	.2065	2.4500	.4235	.0105	.3510	.3315	.1630
Ammonia	MG N/L	.0050	.5200	.0073	.0100	.0075	.0100	.4220
Total N	mg N/L	.2660	3.0500	.5000	.2670	.4600	.4560	.6320
Total Kjeldahl N	MG N/L	.1050	.6200	.1000	.2800	.1300	.1300	.4350
Fluoride	MG/L	.0900	.0470	.0400	.1800	.0815	.5715	1.0150
Total Hardness	mg/L	16.000	13.100	46.000	50.000	99.000	108.000	113.000
Sodium	MG/L	2.9000	.2100	1.3500	10.900	3.5310	15.000	3.2000
Magnesium	MG/L	.8400	1.1000	2.8200	5.0000	7.4175	6.5415	11.645
Silicates	mg SiO2/L	9.2600	.1725	2.4800	.3800	1.5500	2.1800	3.5300
Sulfate (All Methods)	MG/L	3.5060	6.8415	3.3300	14.900	16.000	29.870	62.370
Chloride (All Methods)	MG/L	2.5000	.5700	1.3500	17.100	5.9000	23.870	3.0000
Potassium	MG/L	.4155	.2000	.5005	.5505	.8955	3.2000	.6540
Calcium	MG/L	4.9880	3.4000	13.500	11.800	27.500	32.780	26.480

PARAMETER		LETH-01 SAMPLE 8	VANMA-02 SAMPLE 9	SWIFT-01 SAMPLE 10
Turbidity	JTU	.1500	.1300	.2600
Colour	HAZEN UNIT	5.4000	10.050	6.5000
Specific Conductance	UMHO/CM	410.000	178.000	802.000
pH	PH UNITS	7.8850	7.3500	8.1050
Boron	MG/L	.0160	.0030	.0670
Diss Organic Carbon	MG C/L	4.0000	1.8500	5.8000
Total Alkalinity	MG/LCACO3	99.400	16.900	194.150
Diss Inorg Carbon	MG C/L	23.900	3.7900	45.790
Nitrate + Nitrite	MG N/L	.4625	.2000	.2905
Ammonia	MG N/L	.6200	.0295	.0200
Total N	mg N/L	1.4100	.3000	.7030
Total Kjeldahl N	MG N/L	.9900	.1300	.4750
Fluoride	MG/L	.9400	.0685	.8700
Total Hardness	mg/L	166.000	59.200	310.000
Sodium	MG/L	16.100	9.2000	56.000
Magnesium	MG/L	11.890	1.1160	36.250
Silicates	mg SiO2/L	4.6000	7.6450	11.800
Sulfate (All Methods)	MG/L	95.000	56.000	220.700
Chloride (All Methods)	MG/L	5.8000	2.3800	11.000
Potassium	MG/L	7.4100	.6690	11.300
Calcium	MG/L	47.150	21.950	64.840

PARAMETER: 00192 Turbidity JTU

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .2000 BASIC ACCEPTABLE ERROR= .2500 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F003	.20	16.00	.12	12.00	.18	12.00	.20	14.00	.20	15.00	.15	12.00
F004	.21	19.00	.06	5.50	.07	4.00	.21	16.00	.12	11.00	<.09	0.00
F006	.07	4.00	.06	5.50	.03	2.00	.07	4.00	.08	4.50	.06	3.50
F008	.08	6.00	.06	5.50	.04	3.00	.07	4.00	.08	4.50	.07	5.00
F010	.2	16.00	.2	17.50	.2	14.00	.2	14.00	.2	15.00	.2	16.50
F011	.2	16.00	.1	10.00	.1	7.00	.1	7.50	.1	7.50	.1	8.50
F016	.08	6.00	.10	10.00		0.00	.07	4.00	.05	2.00		0.00
F020	.2	16.00	.3	19.00	.2	14.00	.2	14.00	.2	15.00	.2	16.50
F030	1.2 EH	22.00	1.1 EH	21.00	.8 EH	19.00	.5 H	21.00	.4 H	22.00	1.0 EH	20.00
F031	.05	3.00	.02	3.00	<.02	0.00	.08	6.00	.10	7.50	.09	6.00
F032	.02T	1.00	.01W	1.00	.01W	0.00	.03T	1.00	.04T	1.00	.02T	1.00
F033	.18	13.00	.06	5.50	.15	11.00	.54 VH	22.00	.27	18.00	.20	16.50
F034	.10	9.00	.10	10.00	.10	7.00	.10	7.50	.10	7.50	.10	8.50
F035	.045	2.00	.015	2.00	.005	1.00	.046	2.00	.078	3.00	.029	2.00
F038	<.10	0.00	<.10	0.00	<.10	0.00	<.10	0.00	.1	7.50	<.10	0.00
F042	.14	12.00	.13	14.00	.09	5.00	.15	11.50	.14	12.00	.11	11.00
F046	.11	10.50	.17	16.00	.10	7.00	.14	10.00	.11	10.00	.10	8.50
F048	.09	8.00	.08	8.00	.11	9.00	.11	9.00	.43 H	23.00	.06	3.50
F060	.20	16.00	.20	17.50	.20	14.00	.30	18.00	.30	19.50	.20	16.50
F063	.11	10.50	.37 H	20.00	.14	10.00	.26	17.00	.23	17.00	.19	14.00
F066	.282	20.00	.126	13.00	.620 VH	18.00	.388	19.00	.317	21.00	.827 EH	19.00
F067	.55 VH	21.00	1.29 EH	22.00	.32	16.00	.44 H	20.00	.17	13.00	.18	13.00
F075	.08	6.00	.15	15.00	.4 H	17.00	.15	11.50	.3	19.50	.1	8.50
MEDIAN CONC.	.1250		.1100		.1400		.1500		.1400		.1050	

PARAMETER: 00192 Turbidity JTU

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F003	.15	13.00	.15	13.00	.22	20.00	.30	17.50
F004	0.0	1.00	.19	15.00	.16	15.00	.14	3.00
F006	.04	5.00	.08	5.50	.07	6.00	.19	6.00
F008	.03	4.00	.09	7.00	.08	7.00	.21	9.50
F010	.2	14.50	.2	17.50	.2	17.00	.2	7.50
F011	.1	10.00	.1	8.00	.1	9.50	.3	17.50
F016		0.00	.01	1.00	.04	3.50	.24	11.00
F020	.2	14.50	.2	17.50	.2	17.00	.3	17.50
F030	.7 EH	20.00	.5 H	22.00	.4 H	22.00	.4	21.00
F031	.02	2.00	.05	3.00	.04	3.50	.17	4.50
F032	.01W	0.00	.04T	2.00	.03T	1.00	.12	1.00
F033	.05	6.00	.11	9.50	.09	8.00	.26	12.00
F034	.10	10.00	.15	13.00	.15	13.00	.20	7.50
F035	.024	3.00	.063	4.00	.037	2.00	.135	2.00
F038	<.10	0.00	.11	9.50	<.10	0.00	.21	9.50
F042	.10	10.00	.14	11.00	.13	11.50	.28	14.50
F046	.10	10.00	.15	13.00	.13	11.50	.28	14.50
F048	.09	7.00	.08	5.50	.06	5.00	.17	4.50
F060	.10	10.00	.20	17.50	.20	17.00	.30	17.50
F063	.21	16.00	.37	21.00	.21	19.00	.27	13.00
F066	.555 VH	19.00	.265	20.00	.152	14.00	.302	20.00
F067	.43 H	18.00	.58 VH	23.00	.30	21.00	.59 H	23.00
F075	.4 H	17.00	.2	17.50	.1	9.50	.55 H	22.00
MEDIAN CONC.	.1000		.1500		.1300		.2600	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F003	144.50	14.450	10			METER
F004	89.50	9.944	9			02081
F006	46.00	4.600	10		BIASED LOW	
F008	55.50	5.550	10		BIASED LOW	METER
F010	149.50	14.950	10			
F011	101.50	10.150	10			
F016	37.50	5.357	7			METER
F020	161.00	16.100	10			02074
F030	210.00	21.000	10	EHEHEHH H EHEHH H	BIASED HIGH	NEPH.
F031	38.50	4.278	9		BIASED LOW	
F032	9.00	1.125	8		BIASED LOW	NTU
F033	121.50	12.150	10	VH		Nephl
F034	93.00	9.300	10			
F035	23.00	2.300	10		BIASED LOW	NTU
F038	26.50	8.833	3		INSUFFICIENT DATA	Turbidimetric
F042	112.50	11.250	10			NEPHELOMETRIC
F046	111.00	11.100	10			Meter
F048	82.50	8.250	10	H		NEPHLOMETER
F060	163.50	16.350	10			HACH RATIO TURB.
F063	157.50	15.750	10	H		TURBIDIMETER
F066	183.00	18.300	10	VH EHVH	BIASED HIGH	NEPH.
F067	190.00	19.000	10	VHEH H H VH H	BIASED HIGH	NEPHELOMETRY
F075	143.50	14.350	10	H H H		NEPHELOMETRIC

OVERALL AVERAGE RANK IS 11.343

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F032	9.00	1.125	8		BIASED LOW	NTU
F035	23.00	2.300	10		BIASED LOW	NTU
F031	38.50	4.278	9		BIASED LOW	
F006	46.00	4.600	10		BIASED LOW	
F016	37.50	5.357	7			METER
F008	55.50	5.550	10		BIASED LOW	METER
F048	82.50	8.250	10	H		NEPHLOMETER
F038	26.50	8.833	3		INSUFFICIENT DATA	Turbidimetric
F034	93.00	9.300	10			
F004	89.50	9.944	9			02081
F011	101.50	10.150	10			
F046	111.00	11.100	10			Meter
F042	112.50	11.250	10			NEPHELOMETRIC
F033	121.50	12.150	10	VH		Nephl
F075	143.50	14.350	10	HHH		NEPHELOMETRIC
F003	144.50	14.450	10			METER
F010	149.50	14.950	10			
F063	157.50	15.750	10	H		TURBIDIMETER
F020	161.00	16.100	10			02074
F060	163.50	16.350	10			HACH RATIO TURB.
F066	183.00	18.300	10	VHEHVH	BIASED HIGH	NEPH.
F067	190.00	19.000	10	VHEHHHVHH	BIASED HIGH	NEPHELOMETRY
F030	210.00	21.000	10	EHEHEHHHEHEHHH	BIASED HIGH	NEPH.

OVERALL AVERAGE RANK IS 11.343

PARAMETER: 00292 Colour HAZEN UNIT

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 5.0000 BASIC ACCEPTABLE ERROR= 5.0000 CONCENTRATION ERROR INCREMENT= .1500

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F002	13.	18.00	2.	6.50	1.	2.50	10.	10.50	3.	9.50	5.	12.50
F003	10.	9.00	5.	13.00	5.	11.00	10.	10.50	10. H	14.50	5.	12.50
F004	7.5	4.00	<5.	0.00	<5.	0.00	5.	3.00	<5.	0.00	<5.	0.00
F007	13.	18.00	2.T	6.50	2.T	6.50	3.T L	1.00	2.T	6.50	5.	12.50
F008	5.	1.50	<5.	0.00	<5.	0.00	5.	3.00	<5.	0.00	<5.	0.00
F010	8.	6.00	<1.	0.00	<1.	0.00	8.	5.50	<1.	0.00	2.	3.50
F011	8.	6.00	5.	13.00	<5.	0.00	10.	10.50	<5.	0.00	5.	12.50
F016	7.	3.00	2.	6.50	2.	6.50	11.	14.00	2.	6.50	2.	3.50
F030	20. VH	22.00	10. VH	15.00	10. VH	13.00	20. VH	22.00	10. H	14.50	10. H	16.00
F031	13.	18.00	2.	6.50	<1.	0.00	12.	17.00	1.	5.00	2.	3.50
F032	11.	13.50	.8T	1.00	.2W	1.00	12.2	19.00	.2	2.00	2.8	8.00
F034	15.	20.50	5.	13.00	5.	11.00	15.	20.00	3.	9.50	7.	15.00
F035	10.1	11.00	1.6	2.00	1.0	2.50	10.3	13.00	.5	3.00	2.1	6.00
F038	8.	6.00	<5.	0.00	<5.	0.00	8.	5.50	<5.	0.00	<5.	0.00
F042	12.	15.50	2.	6.50	2.	6.50	12.	17.00	3.	9.50	4.	9.50
F046	5.	1.50	5.W	0.00	5.W	0.00	5.	3.00	5.W	0.00	.5W	0.00
F058	10.9	12.00	1.9	3.00	1.9	4.00	11.2	15.00	.8	4.00	2.2	7.00
F060	15.	20.50	4.	11.00	5.	11.00	18. H	21.00	8.	13.00	12. VH	17.00
F063	10.	9.00	<2.	0.00	<2.	0.00	9.	7.50	<2.	0.00	2.	3.50
F066	12.	15.50	<2.	0.00	<2.	0.00	10.	10.50	4.	12.00	<2.	0.00
F067	10.	9.00	2.	6.50	2.	6.50	12.	17.00	0.	1.00	0.	1.00
F075	11.	13.50	3.0	10.00	3.0	9.00	9.0	7.50	3.0	9.50	4.0	9.50
MEDIAN CONC.	10.5000		2.0000		2.0000		10.0000		3.0000		4.0000	

PARAMETER: 00292 Colour HAZEN UNIT

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F002	1.	4.00	6.	12.50	12.	16.00	7.	11.50
F003	5.	8.50	5.	7.00	10.	9.50	10.	17.00
F004	<5.	0.00	<5.	0.00	7.5	3.00	<5.	0.00
F007	2.T	5.50	5.	7.00	13.	18.50	9.	15.00
F008	<5.	0.00	<5.	0.00	5.	1.50	<5.	0.00
F010	<1.	0.00	5.	7.00	8.	4.50	4.	2.00
F011	<5.	0.00	5.	7.00	10.	9.50	7.	11.50
F016		0.00	2.	1.00	9.	6.00	6.	7.00
F030	5.	8.50	15. VH	18.50	20. VH	21.50	15. VH	19.00
F031	<1.	0.00	6.	12.50	13.	18.50	4.	2.00
F032	.2W	0.00	6.2	15.00	11.6	14.00	6.4	8.00
F034	2.	5.50	3.	2.00	12.	16.00	5.	4.50
F035	<.5	0.00	5.4	10.00	10.1	12.00	5.8	6.00
F038	<5.	0.00	<5.	0.00	8.	4.50	5.	4.50
F042	0.	1.50	6.	12.50	12.	16.00	9.	15.00
F046	.5W	0.00	5.	7.00	5.	1.50	5.W	0.00
F058	.8	3.00	6.3	16.00	10.7	13.00	6.5	9.50
F060	8. H	10.00	15. VH	18.50	20. VH	21.50	12. H	18.00
F063	<2.	0.00	6.	12.50	10.	9.50	9.	15.00
F066	4.	7.00	12. H	17.00	14.	20.00	8.	13.00
F067	0.	1.50	4.	3.00	10.	9.50	4.	2.00
F075	<3.	0.00	4.5	4.00	9.5	7.00	6.5	9.50
MEDIAN CONC.	2.0000		5.4000		10.0500		6.5000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F002	103.50	10.350	10			02011
F003	112.50	11.250	10	H		COMP
F004	10.00	3.333	3		INSUFFICIENT DATA	02021
F007	97.00	9.700	10	L		
F008	6.00	2.000	3		INSUFFICIENT DATA	VISUAL
F010	28.50	4.750	6		BIASED LOW	
F011	70.00	10.000	7			
F016	54.00	6.000	9			METER
F030	170.00	17.000	10	VHVHVHVHH H VHVHVH	BIASED HIGH	VISUAL
F031	83.00	10.375	8			
F032	81.50	9.056	9			COLOURIMETRY
F034	117.00	11.700	10			
F035	65.50	7.278	9			COLOURIMETRIC
F038	20.50	5.125	4		INSUFFICIENT DATA	Meter
F042	109.50	10.950	10			COLOROMETRIC
F046	13.00	3.250	4		INSUFFICIENT DATA	Meter
F058	86.50	8.650	10			COLORIMETRIC
F060	161.50	16.150	10	H VHH VHVHH	BIASED HIGH	VISUAL, CHLOROPLAT
F063	57.00	9.500	6			COLORIMETRY
F066	95.00	13.571	7	H		VISUAL
F067	57.00	5.700	10			MAN. COLOURIMETRY
F075	79.50	8.833	9			VISUAL

OVERALL AVERAGE RANK IS 9.644

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F008	6.00	2.000	3		INSUFFICIENT DATA	VISUAL
F046	13.00	3.250	4		INSUFFICIENT DATA	Meter
F004	10.00	3.333	3		INSUFFICIENT DATA	02021
F010	28.50	4.750	6		BIASED LOW	
F038	20.50	5.125	4		INSUFFICIENT DATA	Meter
F067	57.00	5.700	10			MAN. COLOURIMETRY
F016	54.00	6.000	9			METER
F035	65.50	7.278	9			COLOURIMETRIC
F058	86.50	8.650	10			COLORIMETRIC
F075	79.50	8.833	9			VISUAL
F032	81.50	9.056	9			COLOURIMETRY
F063	57.00	9.500	6			COLORIMETRY
F007	97.00	9.700	10	L		
F011	70.00	10.000	7			02011
F002	103.50	10.350	10			
F031	83.00	10.375	8			COLOROMETRIC
F042	109.50	10.950	10			COMP
F003	112.50	11.250	10	H		
F034	117.00	11.700	10			VISUAL
F066	95.00	13.571	7	H	BIASED HIGH	VISUAL, CHLOROPLAT
F060	161.50	16.150	10	HVHHVHVHH	BIASED HIGH	VISUAL
F030	170.00	17.000	10	VHVHVHVHHHVHVHVH		

OVERALL AVERAGE RANK IS 9.644

Colour

PARAMETER: 00392 Specific Conductance UMHO/CM

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= 2.0000 CONCENTRATION ERROR INCREMENT= .0500

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	49.5	26.00	47.7	12.00	95.1	12.00	157.	14.00	208.	16.00	296.	19.50
F002	44.	3.50	45.	5.00	87. L	2.00	141. VL	3.00	190. VL	2.00	267. VL	3.00
F003	48.8	24.00	50.2	28.50	97.6	25.00	162.	30.00	215.	31.50	296.	19.50
F004	48.7	23.00	50.2	28.50	98.0	27.00	160.	23.50	213.	26.50	299.	27.00
F006	51.	34.50	53.	36.00	99.	30.00	163.	34.00	224. H	38.00	303.	35.00
F007	46.4	9.00	49.6	22.00	93.7	9.00	154.3	9.00	203.8	9.00	289.2	11.00
F008	50.2	32.00	53.1	37.00	99.8	34.00	162.	30.00	216.	33.50	302.	33.50
F009	48.	18.00	48.	13.50	98.	27.00	158.	17.00	205.	10.50	294.	17.00
F010	46.8	10.00	48.6	16.00	96.	15.00	157.	14.00	203.	8.00	288.	9.00
F011	49.8	27.50	52.3	35.00	97.5	23.50	163.	34.00	214.	29.50	297.	22.00
F014	48.6	22.00	51.5	33.00	99.2	33.00	162.	30.00	213.	26.50	301.	31.00
F015	48.	18.00	50.	25.50	98.	27.00	160.	23.50	210.	19.00	292.	15.50
F016	48.	18.00	49.	19.00	92.	8.00	150.	5.50	200.	5.00	284.	5.00
F020	45.	5.00	47.	7.50	99.	30.00	163.	34.00	216.	33.50	302.	33.50
F025	48.5	21.00	49.8	23.00	97.0	20.50	158.	17.00	210.	19.00	299.	27.00
F030	55.7 VH	38.00	43.2 L	3.00	87.2 L	4.00	136. EL	1.00	181. EL	1.00	258. EL	1.00
F031	51.0	34.50	51.1	31.50	99.1	32.00	161.	26.00	212.	24.00	299.	27.00
F032	49.	25.00	47.	7.50	96.	15.00	160.	23.50	213.	26.50	298.	24.50
F033	46.0	7.50	46.2	6.00	90.9	5.00	150.	5.50	202.	6.00	286.	7.00
F034	50.	30.00	52.	34.00	99.	30.00	164.	36.50	219.	36.00	304.	36.00
F035	50.5	33.00	53.3	38.00	100.	35.50	164.	36.50	218.	35.00	309.	37.00
F036	47.6	13.00	49.3	21.00	94.7	10.50	157.	14.00	207.	14.00	289.	10.00
F037	47.8	14.50	49.1	20.00	96.8	17.00	154.1	8.00	210.0	19.00	300.0	29.00
F038	48.	18.00	48.7	17.00	97.	20.50	160.	23.50	207.	14.00	292.	15.50
F042	45.4	6.00	47.5	9.50	91.7	6.00	149. L	4.00	198.	4.00	279. L	4.00
F046	42.6 L	1.00	23.6 EL	1.00	91.8	7.00	151.	7.00	206.	12.00	291.	13.50
F048	47.8	14.50	51.1	31.50	96.9	18.00	159.	20.00	211.	22.50	297.	22.00
F057	51.8	36.00	47.5	9.50	97.5	23.50	161.5	27.00	214.	29.50	301.	31.00
F058	47.	12.00	48.4	15.00	95.2	13.00	158.	17.00	205.	10.50	287.	8.00
F059	43.2 L	2.00	42.7 L	2.00	87.1 L	3.00	154.6	10.00	190.6 VL	3.00	265.7 VL	2.00
F060	50.	30.00	50.	25.50	100.	35.50	170. H	38.00	220.	37.00	310.	38.00
F063	54. H	37.00	51.	30.00	104. H	37.00	162.	30.00	211.	22.50	297.	22.00
F066	50.	30.00	48.	13.50	97.	20.50	159.	20.00	210.	19.00	290.	12.00
F067	48.	18.00	50.	25.50	97.	20.50	159.	20.00	213.	26.50	298.	24.50
F069	49.8	27.50	48.9	18.00	117. EH	38.00	162.	30.00	215.	31.50	301.	31.00
F071	46.9	11.00	47.6	11.00	94.7	10.50	156.5	12.00	207.0	14.00	291.0	13.50
F073	46.	7.50	50.	25.50	96.	15.00	155.	11.00	210.	19.00	295.	18.00
F075	44.	3.50	43.5 L	4.00	86. VL	1.00	140. VL	2.00	202.5	7.00	285.	6.00
MEDIAN CONC.	48.0000		49.0500		97.0000		159.0000		210.0000		296.0000	

PARAMETER: 00392 Specific Conductance UMHO/CM

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	246.	18.00	410.	18.00	179.	23.50	800.	17.00
F002	223. VL	3.00	372. VL	3.00	158. VL	2.50	730. VL	3.00
F003	248.	21.00	413.	22.50	178.	20.00	806.	22.00
F004	242.	11.50	418.	29.00	178.	20.00	820.	31.50
F006	255.	35.00	422.	34.50	184.	35.50	813.	27.50
F007	241.0	8.50	401.5	10.00	172.4	10.00	789.0	13.00
F008	254.	34.00	421.	32.00	183.	34.00	811.	25.00
F009	245.	15.50	410.	18.00	172.	9.00	798.	15.00
F010	240.	7.00	410.	18.00	176.	17.00	800.	17.00
F011	251.	29.50	413.5	24.00	181.	31.50	784.3	10.00
F014	253.	32.00	421.	32.00	180.	28.00	823.	35.00
F015	248.	21.00	424.	36.00	180.	28.00	818.	30.00
F016	242.	11.50	400.	8.00	170.	8.00	770.	6.00
F020	227. L	4.00	376. VL	4.00	165. L	5.00	724. VL	2.00
F025	250.	26.00	418.	29.00	179.	23.50	812.	26.00
F030	213. EL	1.00	361. EL	1.00	155. EL	1.00	708. EL	1.00
F031	250.	26.00	418.	29.00	180.	28.00	822.	34.00
F032	251.	29.50	417.	26.50	179.	23.50	810.	23.50
F033	242.	11.50	402.	11.00	174.	11.00	781.	8.50
F034	256.	36.00	421.	32.00	184.	35.50	803.	20.50
F035	260.	37.50	430.	37.50	187.	37.00	827.	36.00
F036	245.	15.50	406.	14.00	176.	17.00	781.	8.50
F037	250.0	26.00	410.	18.00	175.1	15.00	780.0	7.00
F038	246.	18.00	407.	15.00	175.	13.50	801.	19.00
F042	235.	6.00	390.	5.00	167. L	6.50	763.	5.00
F046	241.	8.50	401.	9.00	167. L	6.50	788.	12.00
F048	248.	21.00	416.	25.00	178.	20.00	813.	27.50
F057	253.	32.00	422.	34.50	182.	33.00	821.	33.00
F058	242.	11.50	404.	12.00	175.	13.50	795.	14.00
F059	220.8 VL	2.00	368.6 VL	2.00	158. VL	2.50	732. VL	4.00
F060	260.	37.50	430.	37.50	190. H	38.00	830.	37.00
F063	249.	23.00	413.	22.50	180.	28.00	803.	20.50
F066	246.	18.00	410.	18.00	180.	28.00	800.	17.00
F067	250.	26.00	417.	26.50	179.	23.50	820.	31.50
F069	253.	32.00	405.	13.00	181.	31.50	817.	29.00
F071	244.0	14.00	396.0	7.00	174.7	12.00	786.0	11.00
F073	250.	26.00	412.	21.00	176.	17.00	810.	23.50
F075	232. L	5.00	392.	6.00	162.5 L	4.00	851.5 H	38.00
MEDIAN CONC.	247.0000		410.0000		178.0000		802.0000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	176.00	17.600	10			COND. METER
F002	30.00	3.000	10	L VLVLVLVLVLVLVL	BIASED LOW	02041
F003	244.00	24.400	10			COND. METER
F004	247.50	24.750	10			02041
F006	340.00	34.000	10	H	BIASED HIGH	
F007	110.50	11.050	10			
F008	325.00	32.500	10		BIASED HIGH	METER
F009	160.50	16.050	10			25C
F010	131.00	13.100	10			
F011	266.50	26.650	10			
F014	302.50	30.250	10			RADIOMETER
F015	243.50	24.350	10			COND. METER
F016	94.00	9.400	10			COND. METER
F020	158.50	15.850	10	L VLL VL		02041
F025	232.00	23.200	10			COND. METER
F030	52.00	5.200	10	VHL L ELELELELELELEL	BIASED LOW	METER
F031	292.00	29.200	10			
F032	225.00	22.500	10			25C
F033	79.00	7.900	10		BIASED LOW	COND. METER
F034	326.50	32.650	10		BIASED HIGH	
F035	363.00	36.300	10		BIASED HIGH	METER
F036	137.50	13.750	10			RADIOMETER
F037	173.50	17.350	10			
F038	174.00	17.400	10			Cond. Meter
F042	56.00	5.600	10	L L L	BIASED LOW	COND. METER
F046	77.50	7.750	10	L EL L	BIASED LOW	Meter
F048	222.00	22.200	10			COND. METER
F057	289.00	28.900	10			
F058	126.50	12.650	10			COND METER
F059	32.50	3.250	10	L L L VLVLVLVLVLVL	BIASED LOW	RESISTIVITY METER
F060	354.00	35.400	10	H H	BIASED HIGH	COND. METER
F063	272.50	27.250	10	H H		COND. METER
F066	196.00	19.600	10			WHEATSTONE
F067	242.50	24.250	10			CONDUCTOMETRY
F069	281.50	28.150	10	EH		WHEATSTONE BRIDGE
F071	116.00	11.600	10			COND. METER
F073	183.50	18.350	10			
F075	76.50	7.650	10	L VLVL L L H	BIASED LOW	METER

OVERALL AVERAGE RANK IS 19.500

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F002	30.00	3.000	10	LVLVLVLVLVLVLVL	BIASED LOW	02041
F059	32.50	3.250	10	LLLVLVLVLVLVLVL	BIASED LOW	RESISTIVITY METER
F030	52.00	5.200	10	VHLLELELELELELELEL	BIASED LOW	METER
F042	56.00	5.600	10	LLL	BIASED LOW	COND. METER
F075	76.50	7.650	10	LVLVLLLH	BIASED LOW	METER
F046	77.50	7.750	10	LELL	BIASED LOW	Meter
F033	79.00	7.900	10		BIASED LOW	COND. METER
F016	94.00	9.400	10			COND. METER
F007	110.50	11.050	10			
F071	116.00	11.600	10			COND. METER
F058	126.50	12.650	10			COND METER
F010	131.00	13.100	10			
F036	137.50	13.750	10			RADIOMETER
F020	158.50	15.850	10	LVLLVL		02041
F009	160.50	16.050	10			25C
F037	173.50	17.350	10			
F038	174.00	17.400	10			Cohd. Meter
F001	176.00	17.600	10			COND. METER
F073	183.50	18.350	10			
F066	196.00	19.600	10			WHEATSTONE
F048	222.00	22.200	10			COND. METER
F032	225.00	22.500	10			25C
F025	232.00	23.200	10			COND. METER
F067	242.50	24.250	10			CONDUCTOMETRY
F015	243.50	24.350	10			COND. METER
F003	244.00	24.400	10			COND. METER
F004	247.50	24.750	10			02041
F011	266.50	26.650	10			
F063	272.50	27.250	10	HH		COND. METER
F069	281.50	28.150	10	EH		WHEATSTONE BRIDGE
F057	289.00	28.900	10			
F031	292.00	29.200	10			
F014	302.50	30.250	10			RADIOMETER
F008	325.00	32.500	10		BIASED HIGH	METER
F034	326.50	32.650	10		BIASED HIGH	
F006	340.00	34.000	10	H	BIASED HIGH	
F060	354.00	35.400	10	HH	BIASED HIGH	COND. METER
F035	363.00	36.300	10		BIASED HIGH	METER

OVERALL AVERAGE RANK IS 19.500

Specific Conductance

PARAMETER: 05091 Boron MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0050 BASIC ACCEPTABLE ERROR= .0050 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.001 L	1.00	.004 L	1.00	.005	1.00	.013	4.50	.015	4.00	.022	4.50
F008	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00
F010	<.01	0.00	<.01	0.00	<.01	0.00	.01	1.50	.02	8.00	.03 H	9.50
F016		0.00		0.00		0.00	.010	1.50	.02	8.00	.01 VL	1.50
F020	<.008	0.00	<.008	0.00	<.008	0.00	.011	3.00	.012	2.00	.022	4.50
F030	.04 EH	5.00	.03 EH	5.00	<.03	0.00	<.03	0.00	.03 EH	10.00	.03 H	9.50
F033	.009	3.00	.012	3.00	.007	2.50	.013	4.50	.015	4.00	.024	7.00
F038	<.10	0.00	<.10	0.00	<.10	0.00	<.10	0.00	<.10	0.00	<.10	0.00
F046	.004	2.00	.008	2.00	.007	2.50	.014	6.00	.015	4.00	.025	8.00
F059	<.01	0.00	<.01	0.00	<.01	0.00	<.01	0.00	.02	8.00	<.01 VL	0.00
F060	<.01	0.00	<.01	0.00	<.01	0.00	<.01	0.00	<.01 L	0.00	.01 VL	1.50
F066	<.1	0.00	<.1	0.00	<.1	0.00	<.1	0.00	<.1	0.00	<.1	0.00
F067	<.01	0.00	<.01	0.00	<.01	0.00	<.01	0.00	.01 L	1.00	.02	3.00
F069	.0147 H	4.00	.0178 H	4.00	.0146 H	4.00	.0213 H	7.00	.0178	6.00	.0239	6.00
F075	<.02	0.00	<.02	0.00	<.02	0.00	<.02	0.00	<.02	0.00	<.02	0.00
MEDIAN CONC.	.0090		.0120		.0070		.0130		.0164		.0230	

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.012	5.50	.015	3.00	.002	1.00	.071	10.00
F008	<.05	0.00	<.05	0.00	<.05	0.00	.08 H	12.00
F010	.02 VH	8.00	.02	6.00	<.01	0.00	.10 EH	13.00
F016	.01	2.00	.01	2.00		0.00	.06	4.00
F020	.010	2.00	.016	4.00	<.008	0.00	.067	7.50
F030	<.03	0.00	<.03	0.00	<.03	0.00	.07	9.00
F033	.011	4.00	.008 L	1.00	<.005	0.00	.059	1.00
F038	<.10	0.00	<.10	0.00	<.10	0.00	<.10	0.00
F046	.012	5.50	.017	5.00	.003	2.00	.067	7.50
F059	<.01	0.00	<.01	0.00	<.01	0.00	.06	4.00
F060	<.01	0.00	<.01	0.00	<.01	0.00	.06	4.00
F066	<.1	0.00	<.1	0.00	<.1	0.00	<.1	0.00
F067	.01	2.00	<.01	0.00	<.01	0.00	.06	4.00
F069	.0182 H	7.00	.0236 H	7.00	.0121 VH	3.00	.0745	11.00
F075	<.02	0.00	<.02	0.00	<.02	0.00	.06	4.00
MEDIAN CONC.	.0115		.0160		.0030		.0670	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	35.50	3.550	10	L L	BIASED LOW	ICP
F008	12.00	12.000	1	H	INSUFFICIENT DATA	Azo
F010	46.00	7.667	6	H VH EH	BIASED HIGH	ICP
F016	19.00	3.167	6	VL	BIASED LOW	ICP
F020	23.00	3.833	6			05107
F030	38.50	7.700	5	EHEH EHH	BIASED HIGH	ICAP
F033	30.00	3.333	9	L	BIASED LOW	ICP
F038	0.00	*******	0		INSUFFICIENT DATA	ICP
F046	44.50	4.450	10			ICP
F059	12.00	6.000	2	VL	INSUFFICIENT DATA	ICP
F060	5.50	2.750	2	L VL	INSUFFICIENT DATA	ICP, DISSOLVED
F066	0.00	*******	0		INSUFFICIENT DATA	ICP
F067	10.00	2.500	4	L	INSUFFICIENT DATA	ICAP
F069	59.00	5.900	10	H H H H H H VH		DCP
F075	4.00	4.000	1		INSUFFICIENT DATA	ICP

OVERALL AVERAGE
RANK IS 4.708

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F038	0.00	*******	0		INSUFFICIENT DATA	ICP
F066	0.00	*******	0		INSUFFICIENT DATA	ICP
F067	10.00	2.500	4	L	INSUFFICIENT DATA	ICAP
F060	5.50	2.750	2	LVL	INSUFFICIENT DATA	ICP, DISSOLVED
F016	19.00	3.167	6	VL	BIASED LOW	ICP
F033	30.00	3.333	9	L	BIASED LOW	ICP
F001	35.50	3.550	10	LL	BIASED LOW	ICP
F020	23.00	3.833	6			05107
F075	4.00	4.000	1		INSUFFICIENT DATA	ICP
F046	44.50	4.450	10			ICP
F069	59.00	5.900	10	HHHHHHVH		DCP
F059	12.00	6.000	2	VL	INSUFFICIENT DATA	ICP
F010	46.00	7.667	6	HVHEH	BIASED HIGH	ICP
F030	38.50	7.700	5	EHEHEHH	BIASED HIGH	ICAP
F008	12.00	12.000	1	H	INSUFFICIENT DATA	Azo

OVERALL AVERAGE
RANK IS 4.708

Boron

PARAMETER: 01092 pH PH UNITS

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 5.5000 BASIC ACCEPTABLE ERROR= .2000 CONCENTRATION ERROR INCREMENT= 0.0000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	7.07	14.00	4.85	41.00	7.65	19.50	7.46	14.00	7.91	16.00	7.98	22.00
F002	7.34	32.00	4.71	33.00	7.85	37.00	7.63	32.50	8.09	38.00	8.05	35.50
F003	7.15	17.00	4.54	6.00	7.67	21.00	7.62	31.00	7.97	21.50	7.92	16.00
F004	7.36	35.50	4.73	35.00	7.85	37.00	7.68	37.00	8.08	35.50	8.10	39.00
F006	7.0 L	10.00	4.6	9.00	7.5	10.00	7.4	10.50	7.9	13.50	7.9	12.00
F007	7.32	28.50	4.62	11.50	7.62	18.00	7.51	20.00	7.95	19.00	7.91	15.00
F008	7.26	24.00	4.63	13.50	7.69	22.00	7.47	15.00	7.98	24.00	7.94	19.00
F009	7.45 H	40.00	4.74	37.00	7.89 H	40.50	7.72	41.00	8.14	41.00	8.17	42.00
F010	7.32	28.50	4.65	19.00	7.85	37.00	7.67	36.00	8.09	38.00	8.03	32.00
F011	6.94 L	8.50	4.49	3.50	7.38 L	5.00	7.18 VL	5.00	7.64 VL	4.00	7.63 VL	3.00
F013	7.14	16.00	4.44 L	2.00	7.73	27.00	7.55	22.00	7.98	24.00	7.99	23.50
F014	7.31	27.00	4.64	16.00	7.83	34.00	7.71	39.00	8.15	42.00	8.03	32.00
F015	7.23	22.00	4.67	25.50	7.72	25.00	7.59	26.50	7.98	24.00	8.01	27.50
F016	6.05 EL	1.00	3.72 EL	1.00	7.24 EL	3.00	7.15 EL	4.00	7.68 L	5.00	7.72 L	4.00
F020	6.9 VL	6.50	4.6	9.00	7.4 L	6.50	7.2 VL	6.00	7.9	13.50	7.9	12.00
F025	6.38 EL	2.00	4.58	7.00	6.73 EL	1.00	6.68 EL	1.00	7.54 EL	3.00	7.52 EL	2.00
F030	7.3	26.00	4.7	31.00	7.7	23.00	7.6	28.50	8.0	27.50	8.0	25.50
F031	6.94 L	8.50	4.65	19.00	7.58	13.00	7.49	16.00	8.00	27.50	7.90	12.00
F032	7.42 H	39.00	4.67	25.50	7.88 H	39.00	7.74	42.00	8.1	40.00	8.09	38.00
F033	7.33	30.00	4.74	37.00	7.84	35.00	7.63	32.50	8.07	34.00	8.11	40.50
F034	6.9 VL	6.50	4.8	40.00	7.4 L	6.50	7.4	10.50	7.9	13.50	7.9	12.00
F035	7.28	25.00	4.65	19.00	7.72	25.00	7.50	18.00	8.00	27.50	7.99	23.50
F036	7.05	12.00	4.69	29.00	7.47 L	9.00	7.44	13.00	7.92	17.00	7.93	17.50
F037	7.18	19.00	4.67	25.50	7.60	16.00	7.59	26.50	7.96	20.00	7.96	20.00
F038	7.08	15.00	4.74	37.00	7.44 L	8.00	7.34 L	9.00	7.79	7.00	7.82	5.50
F040	7.34	32.00	4.64	16.00	7.79	30.50	7.55	22.00	8.00	27.50	7.86	8.00
F042	7.06	13.00	4.66	22.00	7.79	30.50	7.57	24.50	7.77	6.00	7.93	17.50
F046	7.50 H	41.50	4.66	22.00	7.81	33.00	7.66	35.00	8.08	35.50	8.11	40.50
F048	7.25	23.00	4.67	25.50	7.59	14.00	7.57	24.50	7.94	18.00	8.03	32.00
F057	7.20	20.50	4.62	11.50	7.65	19.50	7.55	22.00	7.97	21.50	8.04	34.00
F058	7.35	34.00	4.49	3.50	7.89 H	40.50	7.71	39.00	8.09	38.00	8.08	37.00
F059	7.01 L	11.00	4.63	13.50	7.02 EL	2.00	6.99 EL	2.00	7.29 EL	2.00	7.88	9.00
F060	7.2	20.50	4.7	31.00	7.6	16.00	7.5	18.00	7.8	8.00	7.9	12.00
F063	7.37	37.00	4.52	5.00	7.72	25.00	7.64	34.00	8.03	31.00	8.05	35.50
F064	6.56 EL	3.00	8.60 EH	42.00	7.37 VL	4.00	7.08 EL	3.00	6.75 EL	1.00	6.62 EL	1.00
F066	6.82 VL	4.00	4.68	28.00	7.56	12.00	7.29 L	8.00	7.86	10.50	7.97	21.00
F067	6.83 VL	5.00	4.60	9.00	7.53	11.00	7.27 L	7.00	7.86	10.50	7.82	5.50
F068	7.167	18.00	4.791	39.00	7.801	32.00	7.608	30.00	8.045	32.00	8.017	29.00
F069	7.36	35.50	4.66	22.00	7.95 H	42.00	7.43	12.00	7.85	9.00	7.85	7.00
F071	7.40	38.00	4.64	16.00	7.77	29.00	7.60	28.50	8.01	30.00	8.01	27.50
F073	7.5 H	41.50	4.7	31.00	7.6	16.00	7.5	18.00	7.9	13.50	8.0	25.50
F075	7.34	32.00	4.72	34.00	7.75	28.00	7.71	39.00	8.05	33.00	8.02	30.00
MEDIAN CONC.	7.2150		4.6600		7.6800		7.5500		7.9700		7.9750	

PARAMETER: 01092 pH PH UNITS

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	7.69	8.00	7.95	28.00	7.10 L	8.50	8.17	28.50
F002	7.88	33.50	7.92	23.50	7.41	28.50	8.16	26.50
F003	7.84	28.00	8.02	36.00	7.65 VH	42.00	8.31 H	40.00
F004	7.86	30.50	7.99	31.50	7.39	24.00	8.12	23.00
F006	7.6	6.00	7.8	8.50	7.1 L	8.50	8.0	8.50
F007	7.74	14.50	7.98	30.00	7.32	19.00	8.16	26.50
F008	7.75	16.50	7.74	5.00	7.20	10.50	7.97	5.00
F009	7.95	42.00	8.11 H	40.50	7.43	32.50	8.18	31.00
F010	7.87	32.00	7.83	14.00	7.42	30.50	8.03	13.50
F011	7.46 VL	3.00	7.44 EL	2.00	6.93 EL	4.50	7.65 EL	2.00
F013	7.85	29.00	7.93	25.00	7.31	17.50	8.10	19.50
F014	7.90	37.00	8.05	38.00	7.45	35.00	8.30	39.00
F015	7.80	24.50	7.92	23.50	7.34	20.50	8.10	19.50
F016	7.57 L	4.00	7.73	4.00	7.05 L	7.00	8.00	8.50
F020	7.7	10.50	8.0	34.00	6.9 EL	3.00	8.2	35.50
F025	7.20 EL	2.00	7.68 L	3.00	6.45 EL	1.00	8.11	22.00
F030	7.8	24.50	8.0	34.00	7.4	26.00	8.2	35.50
F031	7.81	27.00	7.95	28.00	7.40	26.00	8.14	24.00
F032	7.94	41.00	8.04	37.00	7.47	37.00	8.2	35.50
F033	7.93	40.00	7.99	31.50	7.48	38.50	8.18	31.00
F034	7.7	10.50	8.1 H	39.00	7.2	10.50	8.5 VH	42.00
F035	7.80	24.50	7.84	16.00	7.30	15.50	8.02	12.00
F036	7.78	20.00	7.86	20.00	7.36	22.00	8.10	19.50
F037	7.76	18.50	7.78	7.00	7.31	17.50	7.95	4.00
F038	7.58 L	5.00	7.8	8.50	7.21	12.00	8.	8.50
F040	7.80	24.50	7.81	10.50	7.52	41.00	8.00	8.50
F042	7.70	10.50	7.82	12.50	7.37	23.00	7.92	3.00
F046	7.91	39.00	8.11 H	40.50	7.43	32.50	8.23	38.00
F048	7.72	13.00	7.95	28.00	7.24	13.00	8.19	33.00
F057	7.79	21.50	7.85	18.50	7.44	34.00	8.06	15.00
F058	7.90	37.00	7.84	16.00	7.34	20.50	8.03	13.50
F059	7.75	16.50	7.75	6.00	6.93 EL	4.50	8.09	16.00
F060	7.7	10.50	8.0	34.00	7.3	15.50	8.2	35.50
F063	7.79	21.50	8.14 H	42.00	7.41	28.50	8.34 H	41.00
F064	6.64 EL	1.00	6.61 EL	1.00	6.72 EL	2.00	6.47 EL	1.00
F066	7.63	7.00	7.84	16.00	7.29	14.00	8.17	28.50
F067	7.74	14.50	7.85	18.50	7.03 VL	6.00	8.18	31.00
F068	7.889	35.00	7.933	26.00	7.469	36.00	8.098	17.00
F069	7.76	18.50	7.81	10.50	7.4	26.00	8.00	8.50
F071	7.86	30.50	7.82	12.50	7.42	30.50	8.00	8.50
F073	7.9	37.00	7.9	22.00	7.5	40.00	8.1	19.50
F075	7.88	33.50	7.87	21.00	7.48	38.50	8.15	25.00
MEDIAN CONC.	7.7900		7.8850		7.3500		8.1050	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	199.50	19.950	10	L		PH METER
F002	320.00	32.000	10			PH METER
F003	258.50	25.850	10	VHH		ISFET
F004	328.00	32.800	10			10301
F006	96.50	9.650	10	L L		
F007	202.00	20.200	10			
F008	154.50	15.450	10			PH METER
F009	387.50	38.750	10	H H H	BIASED HIGH	STIRRED
F010	280.50	28.050	10			
F011	40.50	4.050	10	L L VLVLVLVLELELEL	BIASED LOW	
F013	205.50	20.550	10	L		Stirred
F014	339.00	33.900	10		BIASED HIGH	RADIOMETER
F015	238.50	23.850	10			PH METER
F016	41.50	4.150	10	ELELELELL L L L	BIASED LOW	PH METER
F020	136.50	13.650	10	VL L VL EL		10301
F025	44.00	4.400	10	EL ELELELELELL EL	BIASED LOW	PH METER
F030	281.50	28.150	10			METER
F031	201.00	20.100	10	L		
F032	374.00	37.400	10	H H	BIASED HIGH	
F033	350.00	35.000	10		BIASED HIGH	PH METER
F034	191.00	19.100	10	VL L H VH		
F035	206.00	20.600	10			STIRRED
F036	179.00	17.900	10	L		RADIOMETER
F037	174.00	17.400	10			
F038	115.50	11.550	10	L L L		pH Meter
F040	220.50	22.050	10			
F042	162.50	16.250	10			CLOSED CELL
F046	357.50	35.750	10	H H	BIASED HIGH	Stirred
F048	224.00	22.400	10			GLASS ELECTRODE
F057	218.00	21.800	10			STIRRED
F058	279.00	27.900	10	H		PH METER
F059	82.50	8.250	10	L ELELEL EL	BIASED LOW	PH METER - STIRRED
F060	201.00	20.100	10			PH METER
F063	300.50	30.050	10	H H		PH METER
F064	59.00	5.900	10	ELEHVLELELELELELELEL	BIASED LOW	Unstirred
F066	149.00	14.900	10	VL L		ELECTRO
F067	118.00	11.800	10	VL L VL		POTENTIOMETRY
F068	294.00	29.400	10			Stirred
F069	191.00	19.100	10	H		ELECTROMETRIC
F071	251.00	25.100	10			ION ALYZER
F073	264.00	26.400	10	H		
F075	314.00	31.400	10			METER, UNSTIRRED

OVERALL AVERAGE RANK IS 21.500

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F011	40.50	4.050	10	LLVLVLVLVLELELEL	BIASED LOW	
F016	41.50	4.150	10	ELELELELLLLL	BIASED LOW	PH METER
F025	44.00	4.400	10	ELELELELELELLEL	BIASED LOW	PH METER
F064	59.00	5.900	10	ELEHVLELELELELELELEL	BIASED LOW	Unstirred
F059	82.50	8.250	10	LELELELEL	BIASED LOW	PH METER - STIRRED
F006	96.50	9.650	10	LL		
F038	115.50	11.550	10	LLL		pH Meter
F067	118.00	11.800	10	VLLVL		POTENTIOMETRY
F020	136.50	13.650	10	VLLVLEL		10301
F066	149.00	14.900	10	VLL		ELECTRO
F008	154.50	15.450	10			PH METER
F042	162.50	16.250	10			CLOSED CELL
F037	174.00	17.400	10			
F036	179.00	17.900	10	L		RADIOMETER
F034	191.00	19.100	10	VLLHVH		
F069	191.00	19.100	10	H		ELECTROMETRIC
F001	199.50	19.950	10	L		PH METER
F031	201.00	20.100	10	L		
F060	201.00	20.100	10			PH METER
F007	202.00	20.200	10			
F013	205.50	20.550	10	L		Stirred
F035	206.00	20.600	10			STIRRED
F057	218.00	21.800	10			STIRRED
F040	220.50	22.050	10			
F048	224.00	22.400	10			GLASS ELECTRODE
F015	238.50	23.850	10			PH METER
F071	251.00	25.100	10			ION ALYZER
F003	258.50	25.850	10	VHH		ISFET
F073	264.00	26.400	10	H		
F058	279.00	27.900	10	H		PH METER
F010	280.50	28.050	10			
F030	281.50	28.150	10			METER
F068	294.00	29.400	10			Stirred
F063	300.50	30.050	10	HH		PH METER
F075	314.00	31.400	10			METER, UNSTIRRED
F002	320.00	32.000	10			PH METER
F004	328.00	32.800	10			10301
F014	339.00	33.900	10		BIASED HIGH	RADIOMETER
F033	350.00	35.000	10		BIASED HIGH	PH METER
F046	357.50	35.750	10	HH	BIASED HIGH	Stirred
F032	374.00	37.400	10	HH	BIASED HIGH	
F009	387.50	38.750	10	HHH	BIASED HIGH	STIRRED

OVERALL AVERAGE RANK IS 21.500

pH

PARAMETER: 06002 Diss Organic Carbon MG C/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 2.0000 BASIC ACCEPTABLE ERROR= .8000 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	2.0	19.50	1.4	20.50	2.0	22.00	4.7	17.00	2.3	17.00	2.2	20.50
F002	1.7	11.00	.8	4.00	1.1	5.00	3.8	6.00	1.7	2.00	1.3	5.00
F003	1.9	16.00	.8	4.00	1.1	5.00	3.4	1.00	2.4	19.00	1.7	15.00
F004	1.69	10.00	1.10	14.00	1.40	16.00	4.20	10.00	2.21	15.00	1.73	16.50
F006	2.13	22.00	1.34	19.00	1.53	18.00	5.32	24.00	2.63	22.00	3.92 EH	23.00
F008	<5.0	0.00	<5.0	0.00	<5.0	0.00	5.5 H	25.00	<5.0	0.00	<5.0	0.00
F010	1.4	1.50	.8	4.00	1.0	1.50	3.8	6.00	1.8	4.00	1.2	3.00
F014	2.0	19.50	1.0	11.50	1.7	20.00	4.8	19.50	2.6	21.00	2.2	20.50
F015	2.0	19.50	1.4	20.50	<.5	0.00	5.1	21.50	<.5 VL	0.00	<.5 L	0.00
F016	1.97	17.00	1.31	18.00	1.44	17.00	4.74	18.00	2.04	9.50	1.16	1.00
F025	1.8	13.00	1.0	11.50	1.3	13.00	5.1	21.50	2.4	19.00	1.8	18.00
F030	2.3	23.00	1.5	23.00	1.7	20.00	4.6	16.00	2.4	19.00	1.4	7.50
F032	1.5	6.00	.9	7.00	1.2	10.00	3.9	8.00	1.8	4.00	1.4	7.50
F036	1.63	7.00	.955	9.00	1.18	8.00	4.06	9.00	1.96	8.00	1.50	10.50
F038	1.48	5.00	.93	8.00	1.26	12.00	3.73	3.00	1.87	6.00	1.48	9.00
F042	1.82	15.00	1.28	16.00	1.33	15.00	4.45	15.00	2.10	13.00	1.67	14.00
F046	1.68	9.00	1.20	15.00	1.10	5.00	4.21	11.00	2.09	11.00	1.62	13.00
F060	2.0	19.50	1.7	24.00	1.7	20.00	5.3	23.00	3.0 H	23.00	2.0	19.00
F063	1.80	13.00	.96	10.00	1.20	10.00	4.80	19.50	2.04	9.50	1.55	12.00
F066	1.41	3.00	.84	6.00	1.03	3.00	3.8	6.00	1.9	7.00	1.2	3.00
F067	1.4	1.50	.6	1.00	1.0	1.50	3.6	2.00	1.8	4.00	1.2	3.00
F069	1.8	13.00	1.3	17.00	1.2	10.00	4.4	13.00	2.1	13.00	1.5	10.50
F071	1.654	8.00	1.410	22.00	1.320	14.00	4.428	14.00	2.242	16.00	1.730	16.50
F073	1.447	4.00	1.069	13.00	1.128	7.00	3.794	4.00	1.582	1.00	1.384	6.00
F075	2.55	24.00	.75	2.00	2.4 H	23.00	4.3	12.00	2.1	13.00	2.3	22.00
MEDIAN CONC.	1.8000		1.0345		1.2600		4.4000		2.1000		1.5500	

PARAMETER: 06002 Diss Organic Carbon MG C/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.8	19.00	4.3	16.50	1.9	16.00	6.5	20.00
F002	.5	6.00	3.8	9.00	1.4	1.50	5.3	7.00
F003	.7	15.50	3.6	4.00	1.4	1.50	6.1	16.50
F004	.700	15.50	4.32	18.00	1.78	10.00	6.32	18.00
F006	<1.	0.00	4.79	20.00	2.17	23.00	6.82	23.00
F008	<5.0	0.00	5.0	24.00	<5.0	0.00	5.0	4.00
F010	.4	3.00	3.7	6.50	1.6	7.00	5.5	10.50
F014	<1.0	0.00	4.0	13.00	1.9	16.00	7.6 VH	25.00
F015	<.5	0.00	1.3 EL	1.00	2.0	20.50	1.3 EL	1.00
F016	.51	8.00	3.91	11.00	2.19	24.00	4.83	3.00
F025	.5	6.00	4.8	21.00	2.0	20.50	6.9	24.00
F030	1.0	21.00	4.3	16.50	1.9	16.00	6.1	16.50
F032	.3T	2.00	3.7	6.50	1.6	7.00	5.4	8.00
F036	.514	9.00	3.96	12.00	1.80	11.00	5.71	12.00
F038	.55	11.00	3.79	8.00	1.65	9.00	5.44	9.00
F042	.62	13.00	4.10	14.50	1.88	13.00	5.91	14.00
F046	.54	10.00	3.90	10.00	1.82	12.00	5.05	5.00
F060	.7	15.50	5.1 H	25.00	2.1	22.00	6.7	21.00
F063	.61	12.00	4.42	19.00	1.90	16.00	6.49	19.00
F066	.41	4.00	3.6	4.00	1.53	5.00	5.5	10.50
F067	.2	1.00	3.6	4.00	1.6	7.00	4.8	2.00
F069	.5	6.00	4.1	14.50	1.9	16.00	5.8	13.00
F071	.823	20.00	4.847	22.00	1.999	19.00	5.933	15.00
F073	.705	18.00	3.495	2.00	1.52	4.00	5.261	6.00
F075	.7	15.50	4.9	23.00	1.5	3.00	6.8	22.00
MEDIAN CONC.	.5500		4.0000		1.8500		5.8000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	188.00	18.800	10			AUTO UV COLOR
F002	56.50	5.650	10		BIASED LOW	06107
F003	97.50	9.750	10			IR UV COLOR
F004	143.00	14.300	10			06104
F006	194.00	21.556	9	EH	BIASED HIGH	
F008	53.00	17.667	3	H	INSUFFICIENT DATA	Calcd
F010	47.00	4.700	10		BIASED LOW	CONDUCT.
F014	166.00	18.444	9	VH		AUTO ANALYZER
F015	84.00	14.000	6	VLL EL EL		AUTO
F016	126.50	12.650	10			UV PER
F025	167.50	16.750	10			IR
F030	178.50	17.850	10			PERSULFATE
F032	66.00	6.600	10			COLOURIMETRY
F036	95.50	9.550	10			AUTOANALYZER
F038	80.00	8.000	10			Auto-Analyser
F042	142.50	14.250	10			PERSULF. OXID. IR
F046	101.00	10.100	10			TOC
F060	212.00	21.200	10	H H	BIASED HIGH	PERSULFATE/UV, IR
F063	140.00	14.000	10			UV PERSULPHATE
F066	51.50	5.150	10		BIASED LOW	UV DIG. AUTO
F067	27.00	2.700	10		BIASED LOW	AUTO COLOURIMETRY
F069	126.00	12.600	10			WET OXIDATION C AN
F071	166.50	16.650	10			PERSULFATE OXIDATI
F073	65.00	6.500	10			UV PERSULFATE
F075	159.50	15.950	10	H		AUTO GAS DIALYSIS

OVERALL AVERAGE RANK IS 12.380

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F067	27.00	2.700	10		BIASED LOW	AUTO COLOURIMETRY
F010	47.00	4.700	10		BIASED LOW	CONDUCT.
F066	51.50	5.150	10		BIASED LOW	UV DIG. AUTO
F002	56.50	5.650	10		BIASED LOW	06107
F073	65.00	6.500	10			UV PERSULFATE
F032	66.00	6.600	10			COLOURIMETRY
F038	80.00	8.000	10			Auto-Analyser
F036	95.50	9.550	10			AUTOANALYZER
F003	97.50	9.750	10			IR UV COLOR
F046	101.00	10.100	10			TOC
F069	126.00	12.600	10			WET OXIDATION C AN
F016	126.50	12.650	10			UV PER
F063	140.00	14.000	10			UV PERSULPHATE
F015	84.00	14.000	6	VLLELEL		AUTO
F042	142.50	14.250	10			PERSULF. OXID. IR
F004	143.00	14.300	10			06104
F075	159.50	15.950	10	H		AUTO GAS DIALYSIS
F071	166.50	16.650	10			PERSULFATE OXIDATI
F025	167.50	16.750	10			IR
F008	53.00	17.667	3	H	INSUFFICIENT DATA	Calcd
F030	178.50	17.850	10			PERSULFATE
F014	166.00	18.444	9	VH		AUTO ANALYZER
F001	188.00	18.800	10			AUTO UV COLOR
F060	212.00	21.200	10	HH	BIASED HIGH	PERSULFATE/UV, IR
F006	194.00	21.556	9	EH	BIASED HIGH	

OVERALL AVERAGE RANK IS 12.380

Diss Organic Carbon

PARAMETER: 06592 Diss Inorg Carbon MG C/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .5000 BASIC ACCEPTABLE ERROR= .5000 CONCENTRATION ERROR INCREMENT= .1250

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	3.5	13.00		0.00	9.7	9.00	7.3	5.50	20.3	15.00	18.9	15.00
F002	2.8	2.00	0.	1.00	10.2	12.00	7.7	12.00	20.0	14.00	18.0	9.50
F003	3.5	13.00	<.1	0.00	9.5	4.50	7.6	11.00	18.4	6.00	17.4	6.50
F008	<5.0	0.00	<5.0	0.00	10.5	16.00	7.5	10.00	19.5	11.50	18.5	12.50
F010	3.6	15.00	.2	5.50	10.4	15.00	8.0	14.00	19.2	9.00	18.3	11.00
F015	3.5	13.00	<.5	0.00	11.7 H	18.00	8.3	17.00	22.4 H	19.00	21.2 H	19.00
F016	4.10	18.00	.35	9.00	11.6 H	17.00	8.92 H	18.00	22.0	17.00	20.9 H	18.00
F025	3.0	4.50	<.5	0.00	9.5	4.50	7.3	5.50	19.5	11.50	18.5	12.50
F030	2.4 L	1.00	.12	4.00	7.7 L	1.00	6.1 L	1.00	14.3 VL	1.00	14.5 L	2.00
F032	3.4	9.50	.2W	0.00	9.6	7.00	7.4	8.00	18.8	8.00	17.8	8.00
F036	3.62	16.00	.207	7.00	10.32	14.00	8.04	15.00	20.34	16.00	19.26	16.00
F042	3.80	17.00	.40	10.00	10.23	13.00	8.24	16.00	19.79	13.00	18.67	14.00
F046	3.33	8.00	.34	8.00	9.58	6.00	7.36	7.00	18.57	7.00	17.40	6.50
F058	3.49	11.00	.42	11.00	10.01	11.00	7.95	13.00	18.20	4.00	16.71	4.00
F060	3.3	7.00	1.8 EH	12.00	8.4	2.00	6.3	2.50	17.9	3.00	16.4	3.00
F067	3.4	9.50	<.2	0.00	17.0 EH	19.00	12.5 EH	19.00	19.3	10.00	18.0	9.50
F069	3.0	4.50	.2	5.50	8.5	3.00	6.3	2.50	15. VL	2.00	14. L	1.00
F071	3.262	6.00	.106	3.00	9.684	8.00	7.412	9.00	18.30	5.00	17.04	5.00
F073	2.845	3.00	.104	2.00	9.832	10.00	7.298	4.00	22.03	18.00	20.63	17.00
MEDIAN CONC.	3.4000		.2035		9.8320		7.5000		19.3000		18.0000	

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	11.8	10.00	24.6	15.00	3.4	5.50	45.8	11.00
F002	12.1	15.00	23.9	10.00	3.3	4.00	36.0 VL	1.50
F003	11.3	7.00	23.2	9.00	4.2	17.00	47.9	15.00
F008	12.0	13.50	24.0	12.50	<5.0	0.00	48.0	16.00
F010	12.0	13.50	24.	12.50	4.0	14.50	47.	13.00
F015	13.8 H	19.00	27.3	18.00	4.0	14.50	52.4 H	19.00
F016	13.5	18.00	26.8	17.00	4.44	18.00	52.3 H	18.00
F025	11.2	6.00	24.2	14.00	3.4	5.50	46.6	12.00
F030	10.4	4.00	17.9 VL	1.00	2.8 L	1.00	36.9 L	3.00
F032	11.4	9.00	23.	8.00	3.6	7.00	45.2	8.00
F036	12.33	17.00	24.66	16.00	3.99	13.00	47.16	14.00
F042	12.11	16.00	23.92	11.00	4.17	16.00	45.79	10.00
F046	11.38	8.00	22.57	6.00	3.78	9.00	43.88	5.00
F058	11.87	11.00	22.41	4.00	3.94	12.00	45.31	9.00
F060	10.2	3.00	22.1	3.00	3.7	8.00	43.2	4.00
F067	11.1	5.00	22.9	7.00	3.8	10.00	44.0	6.00
F069	9.4 L	2.00	19. L	2.00	3.2	2.00	36. VL	1.50
F071	6.317 EL	1.00	22.50	5.00	3.81	11.00	44.31	7.00
F073	11.94	12.00	27.87 H	19.00	3.229	3.00	50.2	17.00
MEDIAN CONC.	11.8000		23.9000		3.7900		45.7900	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	99.00	11.000	9			AUTO COLOR
F002	81.00	8.100	10	VL		06154
F003	89.00	9.889	9			IR
F008	92.00	13.143	7			IR
F010	123.00	12.300	10			CONDUCTIVIMETRIE
F015	156.50	17.389	9	H H H H H	BIASED HIGH	AUTO
F016	168.00	16.800	10	H H H H	BIASED HIGH	UV PER
F025	76.00	8.444	9			IR
F030	19.00	1.900	10	L L L VLL VLL L	BIASED LOW	PERSULFATE
F032	72.50	8.056	9			COLOURIMETRY
F036	144.00	14.400	10			AUTOANALYZER
F042	136.00	13.600	10			PERSULF. OXID. IR
F046	70.50	7.050	10			AUTO COLOR
F058	90.00	9.000	10			COLORIMETRIC
F060	47.50	4.750	10	EH	BIASED LOW	PURGE, IR
F067	95.00	10.556	9	EHEH		AUTO COLOURIMETRY
F069	26.00	2.600	10	VLL L L VL	BIASED LOW	ACID PURGE ANALYZE
F071	60.00	6.000	10	EL		CO2 GENERATION
F073	105.00	10.500	10	H		UV PERSULFATE

OVERALL AVERAGE RANK IS 9.669

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F030	19.00	1.900	10	LLLVLLVLLL	BIASED LOW	PERSULFATE
F069	26.00	2.600	10	VLLLLVL	BIASED LOW	ACID PURGE ANALYZE
F060	47.50	4.750	10	EH	BIASED LOW	PURGE, IR
F071	60.00	6.000	10	EL		CO2 GENERATION
F046	70.50	7.050	10			AUTO COLOR
F032	72.50	8.056	9			COLOURIMETRY
F002	81.00	8.100	10	VL		06154
F025	76.00	8.444	9			IR
F058	90.00	9.000	10			COLORIMETRIC
F003	89.00	9.889	9			IR
F073	105.00	10.500	10	H		UV PERSULFATE
F067	95.00	10.556	9	EHEH		AUTO COLOURIMETRY
F001	99.00	11.000	9			AUTO COLOR
F010	123.00	12.300	10			CONDUCTIVIMETRIE
F008	92.00	13.143	7			IR
F042	136.00	13.600	10			PERSULF. OXID. IR
F036	144.00	14.400	10			AUTOANALYZER
F016	168.00	16.800	10	HHHH	BIASED HIGH	UV PER
F015	156.50	17.389	9	HHHHH	BIASED HIGH	AUTO

OVERALL AVERAGE RANK IS 9.669

PARAMETER: 06192 Total Alkalinity MG/LCACO3

RESEARCH AND APPLICATIONS BRANCH
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NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= .5000 CONCENTRATION ERROR INCREMENT= .0700

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	16.	26.00		0.00	43.	26.50	34.	27.00	82.	22.50	78.	21.50
F002	13.4 L	5.00	-1.1	4.00	39.7	2.00	31.3	3.00	77.6	2.00	73.6	3.00
F003	13.0 L	4.00	<.1	0.00	40.9	5.50	31.7	5.50	78.2	5.00	75.6	7.50
F006	16.	26.00	<4.	0.00	42.	13.50	34.	27.00	84.	31.50	78.	21.50
F007	13.8	8.00	.1W	0.00	41.6	9.00	32.4	8.00	80.9	14.00	77.2	12.00
F008	15.1	17.00	<1.	0.00	43.2	29.00	33.5	20.50	80.0	10.00	78.7	25.50
F010	14.4	15.00	<.1	0.00	42.	13.50	33.	15.50	84.	31.50	79.	27.00
F011	13.5 L	6.00	<.3	0.00	40.5	4.00	31.4	4.00	78.7	7.00	74.9	6.00
F013	12.94 L	3.00	<1.	0.00	39.8	3.00	30.85	2.00	78.11	4.00	74.63	4.00
F014	13.9	10.00	-1.31	1.00	41.8	10.00	32.3	7.00	81.2	17.50	77.7	17.00
F015	13.7	7.00	<1.0	0.00	40.9	5.50	31.7	5.50	79.8	8.50	75.6	7.50
F016	11. EL	2.00		0.00	41.	7.00	33.	15.50	82.	22.50	78.	21.50
F020	15.5	20.50	<.5	0.00	42.8	22.00	33.6	22.50	81.4	19.00	77.7	17.00
F025	16.0	26.00	.3 EH	8.00	43.0	26.50	34.0	27.00	80.1	11.00	77.6	14.00
F030	27. EH	33.00	7.0 EH	17.00	51. EH	32.00	39. EH	33.00	87.	33.00	80.	30.50
F031	16.	26.00	<1.	0.00	42.	13.50	33.	15.50	78.	3.00	73.	2.00
F032	15.3	18.50	.54T EH	9.00	42.9	23.50	33.6	22.50	81.6	21.00	77.6	14.00
F033	15.3	18.50	.72 EH	12.00	42.7	21.00	33.5	20.50	80.8	13.00	76.6	10.50
F034	16.3	30.50	1.8 EH	14.00	42.9	23.50	34.1	30.00	81.2	17.50	77.6	14.00
F036	13.840	9.00	-1.1100T	3.00	41.990	11.00	32.765	11.00	81.490	20.00	77.70	17.00
F038	16.	26.00	<1.0	0.00	42.	13.50	32.7	10.00	83.7	30.00	81.3	32.00
F042	14.2	13.50	-1.3	2.00	42.4	20.00	33.1	18.00	82.3	25.00	78.2	24.00
F046	14.2	13.50	.20 EH	7.00	41.1	8.00	32.8	12.00	78.5	6.00	74.8	5.00
F048	16.7 H	32.00	1.2 EH	13.00	42.2	18.50	33.8	24.00	83.2	28.00	79.8	29.00
F058	15.02	16.00	0. EH	6.00	42.11	16.00	32.96	13.00	80.34	12.00	76.38	9.00
F059	1.9 EL	1.00	4.3 EH	16.00	4.7 EL	1.00	3.8 EL	1.00	8.6 EL	1.00	8.2 EL	1.00
F060	16.	26.00	<1.	0.00	43.	26.50	34.	27.00	81.	15.50	78.	21.50
F064	16.3	30.50		0.00	45.0	30.50	36.7 H	32.00	81.0	15.50		0.00
F066	16.	26.00	2. EH	15.00	43.	26.50	34.	27.00	83.	26.50	80.	30.50
F067	15.6	22.00	.7 EH	11.00	42.2	18.50	33.3	19.00	79.8	8.50	76.6	10.50
F069	15.5	20.50	.55 EH	10.00	143. EH	33.00	34.2	31.00	83.0	26.50	78.7	25.50
F071	14.11	12.00	-1.081	5.00	42.13	17.00	32.62	9.00	82.02	24.00	77.97	19.00
F075	14.0	11.00	<1.0	0.00	45.0	30.50	33.0	15.50	83.5	29.00	79.5	28.00
MEDIAN OR *TARGET CONC.	15.1000		*-1.1800		42.1300		33.0000		81.2000		77.7000	

PARAMETER: 06192 Total Alkalinity MG/LCACO3

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	51.	24.00	100.	21.00	18.	26.00	195.	19.50
F002	48.1	7.50	95.1	2.00	16.5	13.00	186.2	3.00
F003	46.5	3.00	97.2	8.00	16.2	10.50	194.	15.50
F006	52.	30.00	100.	21.00	18.	26.00	196.	21.00
F007	49.1	11.50	99.5	17.00	15.8	6.00	196.3	22.00
F008	51.5	28.00	100.	21.00	16.9	16.50	195.	19.50
F010	51.	24.00	101.	28.00	16.	8.50	201.	32.00
F011	48.1	7.50	96.4	5.00	15.2 L	3.00	189.9	6.00
F013	48.01	6.00	95.28	3.00	14.93 L	2.00	189.8	5.00
F014	48.0	5.00	100.	21.00	16.6	14.50	197.	25.50
F015	48.7	9.00	97.1	7.00	15.4	4.00	192.	12.00
F016	51.	24.00	102.	30.00	16.0	8.50	198.	29.50
F020	51.8	29.00	99.3	16.00	19.3 H	32.00	193.	14.00
F025	50.0	15.50	97.7	9.00	17.9	23.00	191.	8.00
F030	53.	32.00	106.	32.00	19. H	31.00	198.	29.50
F031	50.	15.50	97.	6.00	18.	26.00	190.	7.00
F032	50.5	19.00	99.7	18.00	17.3	19.50	194.3	17.00
F033	49.8	13.00	98.1	11.00	17.3	19.50	191.2	9.50
F034	50.9	21.00	98.9	14.00	18.2	30.00	192.9	13.00
F036	50.255	17.00	100.205	24.00	15.960	7.00	197.250	28.00
F038	47.6	4.00	103.	31.00	16.6	14.50	199.	31.00
F042	50.3	18.00	101.	28.00	16.2	10.50	197.	25.50
F046	49.0	10.00	95.7	4.00	16.9	16.50	186.	2.00
F048	50.6	20.00	100.3	25.00	18.1	29.00	194.9	18.00
F058	49.82	14.00	97.93	10.00	16.98	18.00	191.2	9.50
F059	10.5 EL	1.00	10.5 EL	1.00	2.2 EL	1.00	20.0 EL	1.00
F060	51.	24.00	99.	15.00	18.	26.00	194.	15.50
F064		0.00		0.00	18.0	26.00	196.7	23.00
F066	51.	24.00	100.	21.00	20. VH	33.00	197.	25.50
F067	49.1	11.50	98.2	12.00	17.4	21.00	191.4	11.00
F069	51.1	27.00	101.	28.00	17.6	22.00	197.	25.50
F071	45.59 L	2.00	100.45	26.00	16.27	12.00		0.00
F075	52.5	31.00	98.5	13.00	15.5	5.00	187.5	4.00
MEDIAN OR *TARGET CONC.	50.1275		99.4000		16.9000		194.1500	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	214.00	23.778	9			AUTO TITRATION
F002	44.50	4.450	10	L	BIASED LOW	10110
F003	64.50	7.167	9	L	BIASED LOW	POT TITRN
F006	217.50	24.167	9			
F007	107.50	11.944	9			
F008	187.00	20.778	9			POT
F010	195.00	21.667	9			TITRATION COND.
F011	48.50	5.389	9	L L	BIASED LOW	
F013	32.00	3.556	9	L L	BIASED LOW	Titrn
F014	128.50	12.850	10			POTENTIOMETRIC
F015	66.00	7.333	9		BIASED LOW	AUTO TITRATION
F016	160.50	17.833	9	EL		TITRN
F020	192.00	21.333	9	H		10101
F025	168.00	16.800	10	EH		TITRN
F030	303.00	30.300	10	EHEHEHEH H	BIASED HIGH	CALC. FROM T-PP
F031	114.50	12.722	9			
F032	182.00	18.200	10	EH		TITRATION
F033	148.50	14.850	10	EH		AUTO TITRATION
F034	207.50	20.750	10	EH		
F036	147.00	14.700	10			TITROPROCESSOR
F038	192.00	21.333	9			Titrimetric
F042	184.50	18.450	10			GRAN TITRATION
F046	84.00	8.400	10	EH		TITRN
F048	236.50	23.650	10	H EH		TITRATION
F058	123.50	12.350	10	EH		AUTO TITRAT.
F059	25.00	2.500	10	ELEHELELELELELELELEL	BIASED LOW	TITRATION
F060	197.00	21.889	9			TITRATION, AUTO
F064	157.50	26.250	6	H		Titrn
F066	255.00	25.500	10	EH VH	BIASED HIGH	TIT'N
F067	145.00	14.500	10	EH		TITRIMETRY
F069	249.00	24.900	10	EHEH		FIXED ENDPOINT
F071	126.00	14.000	9	L		AUTOMATIC TITRATOR
F075	167.00	18.556	9			BROMOPHENOL BLUE

OVERALL AVERAGE RANK IS 16.355

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F059	25.00	2.500	10	ELEHELELELELELELELEL	BIASED LOW	TITRATION
F013	32.00	3.556	9	LL	BIASED LOW	Titrn
F002	44.50	4.450	10	L	BIASED LOW	10110
F011	48.50	5.389	9	LL	BIASED LOW	
F003	64.50	7.167	9	L	BIASED LOW	POT TITRN
F015	66.00	7.333	9		BIASED LOW	AUTO TITRATION
F046	84.00	8.400	10	EH		TITRN
F007	107.50	11.944	9			
F058	123.50	12.350	10	EH		AUTO TITRAT.
F031	114.50	12.722	9			
F014	128.50	12.850	10			POTENTIOMETRIC
F071	126.00	14.000	9	L		AUTOMATIC TITRATOR
F067	145.00	14.500	10	EH		TITRIMETRY
F036	147.00	14.700	10			TITROPROCESSOR
F033	148.50	14.850	10	EH		AUTO TITRATION
F025	168.00	16.800	10	EH		TITRN
F016	160.50	17.833	9	EL		TITRN
F032	182.00	18.200	10	EH		TITRATION
F042	184.50	18.450	10			GRAN TITRATION
F075	167.00	18.556	9			BROMOPHENOL BLUE
F034	207.50	20.750	10	EH		
F008	187.00	20.778	9			POT
F020	192.00	21.333	9	H		10101
F038	192.00	21.333	9			Titrimetric
F010	195.00	21.667	9			TITRATION COND.
F060	197.00	21.889	9			TITRATION, AUTO
F048	236.50	23.650	10	HEH		TITRATION
F001	214.00	23.778	9			AUTO TITRATION
F006	217.50	24.167	9			
F069	249.00	24.900	10	EHEH		FIXED ENDPOINT
F066	255.00	25.500	10	EHVH	BIASED HIGH	TIT'N
F064	157.50	26.250	6	H		Titrn
F030	303.00	30.300	10	EHEHEHEHH	BIASED HIGH	CALC. FROM T-PP

OVERALL AVERAGE RANK IS 16.355

Total Alkalinity

PARAMETER: 07092 Nitrate + Nitrite MG N/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0200 BASIC ACCEPTABLE ERROR= .0200 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.201	17.00	2.43	16.50	.417	10.50	.007	3.50	.352	21.00	.337	22.00
F002	.21	24.50	2.49	29.00	.44	33.50		0.00	.35	14.50	.35	30.50
F003	.217	31.00	2.71 H	36.00	.419	12.50	<.005	0.00	.360	22.50	.314	5.00
F004	.208	20.00	2.48	27.50	.424	20.50	.011	12.00	.347	9.50	.333	21.00
F006	.21	24.50	2.47	24.00	.43	26.50	<.02	0.00	.35	14.50	.33	15.00
F007	.22	32.50	2.56	35.00	.45	36.00	.03	20.00	.37	29.00	.35	30.50
F008	.20	13.00	2.47	24.00	.42	15.50	<.01	0.00	.35	14.50	.32	8.50
F009	.20	13.00	2.4	12.00	.42	15.50	.02	18.50	.35	14.50	.33	15.00
F010	.200	13.00	2.5	31.00	.425	22.00	<.010	0.00	.335	5.50	.315	6.00
F011	.198	7.00	2.810 VH	37.00	.423	19.00	<.008	0.00	.335	5.50	.331	18.50
F013	.19	3.00	2.45	19.50	.40	4.50	.006	2.00	.32	3.00	.28 L	2.00
F014	.23	35.00	2.51	33.00	.43	26.50	<.05	0.00	.37	29.00	.35	30.50
F015	.215	29.50	2.4	12.00	.43	26.50	.01	9.50	.37	29.00	.355	33.00
F016	.2	13.00	2.16 L	4.00	.40	4.50	.01	9.50	.28 VL	1.00	.30	3.00
F020	.21	24.50	2.40	12.00	.41	7.50	<.02	0.00	.35	14.50	.32	8.50
F025	.196	5.50	2.37	7.00	.424	20.50	.010	9.50	.351	19.50	.331	18.50
F030	.19	3.00	1.99 EL	2.00	.40	4.50	.01	9.50	.34	7.00	.32	8.50
F031	.25 H	36.00	2.0 EL	3.00	.44	33.50	<.01	0.00	.45 EH	35.00	.38 H	35.00
F032	.215	29.50	2.47	24.00	.44	33.50	.015T	14.00	.37	29.00	.345	28.00
F033	.209	21.00	2.35	6.00	.436	31.00	.012	13.00	.362	26.00	.339	23.50
F034	.22	32.50	2.50	31.00	.44	33.50	<.02	0.00	.38	33.00	.36	34.00
F035	.20	13.00	2.50	31.00	.41	7.50	<.01	0.00	.37	29.00	.33	15.00
F036	.211	28.00	2.52	34.00	.430	26.50	.008	5.00	.361	24.50	.342	27.00
F037	.182	1.00	2.172 L	5.00	.316 EL	1.00	.067 EH	21.00	.474 EH	36.00	.261 VL	1.00
F038	.223	34.00	2.45	19.50	.419	12.50	.016	15.00	.361	24.50	.34	25.50
F042	.196	5.50	2.39	9.00	.413	9.00	0.	1.00	.332	4.00	.308	4.00
F046	.21	24.50	2.40	12.00	.43	26.50	.05W	0.00	.35	14.50	.32	8.50
F058	.210	24.50	2.375	8.00	.430	26.50	.009T	6.50	.350	14.50	.330	15.00
F060	.190	3.00	1.80 EL	1.00	.390	2.00	.100 EH	22.00	.300 L	2.00	.350	30.50
F063	.20	13.00	2.48	27.50	.42	15.50	<.10	0.00	.36	22.50	.34	25.50
F064	.50 EH	37.00	2.43	16.50	.61 EH	37.00	.02	18.50	.57 EH	37.00	.57 EH	37.00
F066	.202	18.00	2.41	15.00	.417	10.50	<.01	0.00	.345	8.00	.330	15.00
F067	.205	19.00	2.46	22.00	.427	23.00	.007	3.50	.350	14.50	.332	20.00
F068	.199	8.50	2.474	26.00	.420	15.50	.009	6.50	.347	9.50	.339	23.50
F069	.210	24.50	2.45	19.50	.434	30.00	.018	16.50	.372	32.00	.328	12.00
F071	.199	8.50	2.45	19.50	.422	18.00	.018	16.50	.351	19.50	.327	11.00
F073	1.185 EH	38.00	10.81 EH	38.00	2.015 EH	38.00	<.05	0.00	1.712 EH	38.00	1.628 EH	38.00
F075	.2	13.00	2.4	12.00	.4	4.50	<.05	0.00	.4 H	34.00	.4 VH	36.00
MEDIAN CONC.	.2065		2.4500		.4235		.0105		.3510		.3315	

PARAMETER: 07092 Nitrate + Nitrite MG N/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.156	8.00	.462	19.00	.200	16.50	.289	16.50
F002	.17	25.00	.48	29.00	.22	32.00	.30	28.00
F003	.181	29.00	.475	26.00	.211	29.00	.291	20.50
F004	.164	20.00	.466	22.00	.207	27.00	.294	23.00
F006	.19	30.50	.45	13.00	.20	16.50	.27	6.50
F007	.17	25.00	.44	8.00	.20	16.50	.27	6.50
F008	.15	6.00	.45	13.00	.19	5.50	.29	18.50
F009	.22 VH	36.00	.46	17.50	.20	16.50	.28	10.50
F010	.210 H	34.00	.405 L	4.00	.210	28.00	.250	5.00
F011	.160	13.50	.460	17.50	.202	21.00	.288	15.00
F013	.14	3.00	.41	5.00	.18	3.00	.23 L	3.50
F014	.19	30.50	.47	23.00	.24 H	35.00	.31	32.00
F015	.17	25.00	.487	33.00	.221	34.00	.312	33.00
F016	.20 H	32.50	.38 L	3.00	.19	5.50	.23 L	3.50
F020	.15	6.00	.45	13.00	.19	5.50	.28	10.50
F025	.148	4.00	.473	24.50	.191	8.00	.286	14.00
F030	.15	6.00	.45	13.00	.19	5.50	.28	10.50
F031	.18	28.00	.44	8.00	.26 VH	36.50	.33	35.00
F032	.165	21.50	.485	32.00	.215T	30.00	.3	28.00
F033	.162	19.00	.473	24.50	.206	26.00	.293	22.00
F034	.16	13.50	.48	29.00	.22	32.00	.32	34.00
F035	.16	13.50	.49	34.00	.22	32.00	.30	28.00
F036	.161	17.50	.480	29.00	.204	22.50	.301	30.00
F037	.036 EL	1.00	.352 VL	2.00	.168	1.00	.212 VL	2.00
F038	.218 VH	35.00	.495	35.00	.196	9.50	.308	31.00
F042	.165	21.50	.444	10.00	.196	9.50	.276	8.00
F046	.16	13.50	.44	8.00	.20	16.50	.29	18.50
F058	.160	13.50	.465	21.00	.205	24.50	.295	24.00
F060	.130 L	2.00	.350 EL	1.00	.170	2.00	.210 VL	1.00
F063	.17	25.00	.45	13.00	.20	16.50	.28	10.50
F064	.24 EH	37.00	.67 EH	37.00	.26 VH	36.50	.51 EH	37.00
F066	.160	13.50	.463	20.00	.205	24.50	.291	20.50
F067	.158	10.00	.484	31.00	.199	12.00	.296	25.00
F068	.170	25.00	.479	27.00	.197	11.00	.289	16.50
F069	.161	17.50	.438	6.00	.204	22.50	.297	26.00
F071	.157	9.00	.458	16.00	.200	16.50	.285	13.00
F073	1.089 EH	38.00	2.186 EH	38.00	1.164 EH	38.00	1.495 EH	38.00
F075	.2 H	32.50	.5	36.00	.2	16.50	.35 H	36.00
MEDIAN CONC.	.1630		.4625		.2000		.2905	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	150.50	15.050	10			CD REDN AUTO COLOR
F002	246.00	27.333	9			07315
F003	211.50	23.500	9	H		CD REDN AUTO
F004	202.50	20.250	10			07110
F006	171.00	19.000	9			
F007	239.00	23.900	10			
F008	118.50	13.167	9			CD AUTO
F009	169.00	16.900	10	VH		TRAACS
F010	148.50	16.500	9	H L		COND. HYD. SUL.
F011	154.00	17.111	9	VH		
F013	48.50	4.850	10	L L	BIASED LOW	Cd AA2
F014	274.50	30.500	9	H	BIASED HIGH	CD REDUCTION
F015	264.50	26.450	10			CD REDN AUTO
F016	79.50	7.950	10	L VL H L L	BIASED LOW	CD REDN COLOR
F020	102.00	11.333	9			07110
F025	131.00	13.100	10			CD REDN
F030	69.50	6.950	10	EL	BIASED LOW	CADMIUM RED.
F031	250.00	27.778	9	H EL EHH VH		IC
F032	269.50	26.950	10			COLOURIMETRY
F033	212.00	21.200	10			AUTO COLOR
F034	272.50	30.278	9		BIASED HIGH	
F035	203.00	22.556	9			COLOURIMETRY
F036	244.00	24.400	10			AUTOANALYZER
F037	71.00	7.100	10	L ELEHEHVLELVL VL	BIASED LOW	
F038	241.50	24.150	10	VH		Colourimetric
F042	81.50	8.150	10		BIASED LOW	IC
F046	142.50	15.833	9			CD REDN
F058	178.00	17.800	10			COLORIMETRIC
F060	66.50	6.650	10	EL EHL L EL VL	BIASED LOW	AUTO COLORIMETRY
F063	169.00	18.778	9			ION CHROMATOGRAPHY
F064	330.50	33.050	10	EH EH EHEHEHEHVHEH	BIASED HIGH	SIE
F066	145.00	16.111	9			IC
F067	180.00	18.000	10			IC
F068	169.00	16.900	10			IC
F069	206.50	20.650	10			AUTO CD REDUCTION
F071	147.50	14.750	10			COLORIMETRIC
F073	342.00	38.000	9	EHEHEH EHEHEHEHEHEH	BIASED HIGH	IC - DIONEX
F075	220.50	24.500	9	H VHH H		HYDRAZINE

OVERALL AVERAGE RANK IS 19.016

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F013	48.50	4.850	10	LL	BIASED LOW	Cd AA2
F060	66.50	6.650	10	ELEHLLELVL	BIASED LOW	AUTO COLORIMETRY
F030	69.50	6.950	10	EL	BIASED LOW	CADMIUM RED.
F037	71.00	7.100	10	LELEHEHVLELVLVL	BIASED LOW	
F016	79.50	7.950	10	LVLHLL	BIASED LOW	CD REDN COLOR
F042	81.50	8.150	10		BIASED LOW	IC
F020	102.00	11.333	9			07110
F025	131.00	13.100	10			CD REDN
F008	118.50	13.167	9			CD AUTO
F071	147.50	14.750	10			COLORIMETRIC
F001	150.50	15.050	10			CD REDN AUTO COLOR
F046	142.50	15.833	9			CD REDN
F066	145.00	16.111	9			IC
F010	148.50	16.500	9	HL		COND. HYD. SUL.
F009	169.00	16.900	10	VH		TRAACS
F068	169.00	16.900	10			IC
F011	154.00	17.111	9	VH		
F058	178.00	17.800	10			COLORIMETRIC
F067	180.00	18.000	10			IC
F063	169.00	18.778	9			ION CHROMATOGRAPHY
F006	171.00	19.000	9			
F004	202.50	20.250	10			07110
F069	206.50	20.650	10			AUTO CD REDUCTION
F033	212.00	21.200	10			AUTO COLOR
F035	203.00	22.556	9			COLOURIMETRY
F003	211.50	23.500	9	H		CD REDN AUTO
F007	239.00	23.900	10			
F038	241.50	24.150	10	VH		Colourimetric
F036	244.00	24.400	10			AUTOANALYZER
F075	220.50	24.500	9	HVHHH		HYDRAZINE
F015	264.50	26.450	10			CD REDN AUTO
F032	269.50	26.950	10			COLOURIMETRY
F002	246.00	27.333	9			07315
F031	250.00	27.778	9	HELEHHVH		IC
F034	272.50	30.278	9		BIASED HIGH	
F014	274.50	30.500	9	H	BIASED HIGH	CD REDUCTION
F064	330.50	33.050	10	EHEHEHEHEHEHVHEH	BIASED HIGH	SIE
F073	342.00	38.000	9	EHEHEHEHEHEHEHEHEH	BIASED HIGH	IC - DIONEX

OVERALL AVERAGE RANK IS 19.016

Nitrate + Nitrite

PARAMETER: 07192 Ammonia MG N/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0040 BASIC ACCEPTABLE ERROR= .0040 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.007	9.00	.510	12.50	.006	5.50	.012	13.00	.003	5.00	.004	5.50
F003	.004	5.50	.529	22.00	.003	3.00	.010	9.50	.001	2.00	.001	2.00
F004	<.005	0.00	.524	21.00	<.005	0.00	.009	6.00	<.005	0.00	<.005	0.00
F006	<.02	0.00	.54	27.50	<.02	0.00	<.02	0.00	<.02	0.00	.02 EH	11.00
F008	.005	7.50	.562	29.00	.004	4.00	.011	12.00	.005	6.00	.004	5.50
F010	<.010	0.00	.505	10.00	.020 EH	12.50	<.010	0.00	.010 VH	7.50	<.010	0.00
F011	.002	3.00	.585 H	30.00	.002	2.00	.005 L	1.00	<.002	0.00	<.002	0.00
F014	<.01	0.00	.52	17.50	.018 EH	11.00	.022 EH	18.00	<.01	0.00	.015 EH	9.00
F015	.004	5.50	.501	9.00	<.002	0.00	.013	14.00	<.002	0.00	<.002	0.00
F016	.02 EH	12.00	.54	27.50	.02 EH	12.50	.02 EH	16.50	.01 VH	7.50	.02 EH	11.00
F020	<.005	0.00	.499	5.00	<.005	0.00	.008	4.50	<.005	0.00	<.005	0.00
F030	<.05	0.00	.51	12.50	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00
F031	<.05	0.00	.52	17.50	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00
F032	.002T	3.00	.52	17.50	.006T	5.50	.01	9.50	.002T	3.00	.002T	3.00
F033	<.01	0.00	.52	17.50	<.01	0.00	.01	9.50	<.01	0.00	<.01	0.00
F034	<.01	0.00	.53	23.50	<.01	0.00	<.01	0.00	<.01	0.00	<.01	0.00
F035	.005	7.50	.52	17.50	.008	8.00	.010	9.50	<.005	0.00	<.005	0.00
F036	.0102 H	10.00	.5130	14.00	.0066	7.00	.0094	7.00	.0027	4.00	.0023	4.00
F038	<.005	0.00	.473	3.00	<.005	0.00	.006	2.00	<.005	0.00	<.005	0.00
F042	<.039	0.00	.50	7.00	<.039	0.00	<.039	0.00	<.039	0.00	<.039	0.00
F046	.02W	0.00	.43 VL	2.00	.02W	0.00	.02W	0.00	.02W	0.00	.02W	0.00
F057	<.1	0.00	.52	17.50	<.1	0.00	<.1	0.00	<.1	0.00	<.1	0.00
F058	.002T	3.00	.530	23.50	.002W	0.00	.008	4.50	.001W	0.00	.001W	0.00
F060	.023 EH	13.00	.600 H	31.00	.017 EH	10.00	.027 EH	19.00	.023 EH	11.00	.010 H	7.00
F064	.28 EH	14.00	.40 EL	1.00	.041 EH	14.00	.089 EH	20.00	.046 EH	12.00	.063 EH	13.00
F066	<.02	0.00	.48	4.00	<.02	0.00	<.02	0.00	.02 EH	10.00	<.02	0.00
F067	<.02	0.00	.50	7.00	<.02	0.00	.02 EH	16.50	<.02	0.00	.02 EH	11.00
F068		0.00	.532	25.00		0.00		0.00		0.00		0.00
F069	.013 VH	11.00	.535	26.00	.011 VH	9.00	.016 H	15.00	.014 EH	9.00	.012 VH	8.00
F071	0.0 L	1.00	.508	11.00	0.0	1.00	.007	3.00	0.0	1.00	0.0	1.00
F075	<.05	0.00	.5	7.00	<.05	0.00	<.05	0.00	<.05	0.00	<.05	0.00
MEDIAN OR CONC.	*TARGET .0050		.5200		*.0040		.0100		*.0030		*.0040	

PARAMETER: 07192 Ammonia MG N/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.385	6.00	.620	17.50	.026	6.00	.020	10.50
F003	.418	12.00	.606	11.00	.026	6.00	.020	10.50
F004	.382	5.00	.675	26.00	.029	12.00	.025	15.00
F006	.47 H	26.50	.63	21.00	.03	13.00	<.02	0.00
F008	.520 EH	29.00	.647	25.00	.038 H	17.00	.018	6.50
F010	.420	14.00	.600	9.50	.025	3.50	.020	10.50
F011	.487 H	28.00	.645	24.00	.026	6.00	.007 EL	1.50
F014	.44	22.00	.62	17.50	.035	16.00	.021	13.00
F015	.603 EH	30.00	.677	27.00	.027	9.50	.026 H	16.00
F016	.43	20.50	.61	13.00	.05 EH	23.00	.03 VH	18.50
F020	.470 H	26.50	.587	4.00	.027	9.50	.015	5.00
F030	.42	14.00	.63	21.00	<.05	0.00	<.05	0.00
F031	.33 EL	1.00	.59	5.50	<.05	0.00	<.05	0.00
F032	.428	18.50	.618	15.00	.028	11.00	.024	14.00
F033	.45	24.50	.62	17.50	.031	14.50	.019	8.00
F034	.43	20.50	.63	21.00	.04 VH	19.50	.02	10.50
F035	.412	10.00	.61	13.00	.039 H	18.00	.028 H	17.00
F036	.4220	16.00	.6200	17.50	.0267	8.00	.0146	4.00
F038	.424	17.00	.57	2.00	.025	3.50	.013 L	3.00
F042	.38	3.50	.61	13.00	<.039	0.00	<.039	0.00
F046	.38	3.50	.59	5.50	.02W	0.00	.02W	0.00
F057	.37 L	2.00	.56	1.00	<.1	0.00	<.1	0.00
F058	.445	23.00	.635	23.00	.031	14.50	.018	6.50
F060	.450	24.50	.700 H	29.00	.047 EH	22.00	.033 EH	20.50
F064	.73 EH	31.00	1.05 EH	31.00	.072 EH	24.00	.064 EH	23.00
F066	.42	14.00	.68	28.00	.02 L	1.00	.05 EH	22.00
F067	.39	7.00	.58	3.00	.04 VH	19.50	.03 VH	18.50
F068	.428	18.50	.740 VH	30.00		0.00		0.00
F069	.414	11.00	.597	8.00	.045 EH	21.00	.033 EH	20.50
F071	.411	9.00	.591	7.00	.021 L	2.00	.007 EL	1.50
F075	.4	8.00	.6	9.50	<.05	0.00	<.05	0.00
MEDIAN OR *TARGET CONC.	.4220		.6200		.0295		.0200	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	90.50	9.050	10			AUTO COLOR
F003	83.50	8.350	10			Indo Phen
F004	85.00	14.167	6			07540
F006	99.00	19.800	5	EHH		
F008	141.50	14.150	10	EH H		Phen AUTO
F010	67.50	9.643	7	EH VH		COLORIM. BERTH
F011	95.50	11.938	8	H L H EL		
F014	124.00	15.500	8	EHEH EH		AUTO ANALYZER
F015	111.00	15.857	7	EH H		Phen AUTO
F016	162.00	16.200	10	EH EHEHVHEH EHVH		AUTO COLOR
F020	54.50	9.083	6	H		07555
F030	47.50	15.833	3		INSUFFICIENT DATA	COLOURIMETRIC
F031	24.00	8.000	3	EL	INSUFFICIENT DATA	ISE
F032	100.00	10.000	10			COLOURIMETRY
F033	91.50	15.250	6			AUTO COLOR
F034	95.00	19.000	5	VH		
F035	100.50	12.563	8	H H		COLOURIMETRY
F036	91.50	9.150	10	H		AUTOANALYZER
F038	30.50	5.083	6	L	BIASED LOW	Colourimetric
F042	23.50	7.833	3		INSUFFICIENT DATA	COLOROMETRIC
F046	11.00	3.667	3	VL	INSUFFICIENT DATA	AUTO COLOR
F057	20.50	6.833	3	L	INSUFFICIENT DATA	ISE
F058	98.00	14.000	7			COLORIMETRIC
F060	187.00	18.700	10	EHH EHEHEHH H EHEH		AUTO COLORIMETRY
F064	183.00	18.300	10	EHELEHEHEHEHEHEHEHEH		SIE
F066	79.00	13.167	6	EH L EH		AUTOPHENATE
F067	82.50	11.786	7	EH EH VHVH		AUTO COLORIMETRY
F068	73.50	24.500	3	VH	INSUFFICIENT DATA	IC
F069	138.50	13.850	10	VH VHH EHVH EHEH		AUTO COLORIMETRIC
F071	37.50	3.750	10	L L EL	BIASED LOW	COLORIMETRIC
F075	24.50	8.167	3		INSUFFICIENT DATA	PHENATE

OVERALL AVERAGE RANK IS 12.455

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F046	11.00	3.667	3	VL	INSUFFICIENT DATA	AUTO COLOR
F071	37.50	3.750	10	LLEL	BIASED LOW	COLORIMETRIC
F038	30.50	5.083	6	L	BIASED LOW	Colourimetric
F057	20.50	6.833	3	L	INSUFFICIENT DATA	ISE
F042	23.50	7.833	3		INSUFFICIENT DATA	COLOROMETRIC
F031	24.00	8.000	3	EL	INSUFFICIENT DATA	ISE
F075	24.50	8.167	3		INSUFFICIENT DATA	PHENATE
F003	83.50	8.350	10			Indo Phen
F001	90.50	9.050	10			AUTO COLOR
F020	54.50	9.083	6	H		07555
F036	91.50	9.150	10	H		AUTOANALYZER
F010	67.50	9.643	7	EHVH		COLORIM. BERTH
F032	100.00	10.000	10			COLOURIMETRY
F067	82.50	11.786	7	EHEHVHVH		AUTO COLORIMETRY
F011	95.50	11.938	8	HLHEL		
F035	100.50	12.563	8	HH		COLOURIMETRY
F066	79.00	13.167	6	EHLEH		AUTOPHENATE
F069	138.50	13.850	10	VHVHHEHVHEHEH		AUTO COLORIMETRIC
F058	98.00	14.000	7			COLORIMETRIC
F008	141.50	14.150	10	EHH		Phen AUTO
F004	85.00	14.167	6			07540
F033	91.50	15.250	6			AUTO COLOR
F014	124.00	15.500	8	EHEHEH		AUTO ANALYZER
F030	47.50	15.833	3		INSUFFICIENT DATA	COLOURIMETRIC
F015	111.00	15.857	7	EHH		Phen AUTO
F016	162.00	16.200	10	EHEHEHVHEHEHVH		AUTO COLOR
F064	183.00	18.300	10	EHELEHEHEHEHEHEHEHEH		SIE
F060	187.00	18.700	10	EHHEHEHEHHHEHEH		AUTO COLORIMETRY
F034	95.00	19.000	5	VH		
F006	99.00	19.800	5	EHH		
F068	73.50	24.500	3	VH	INSUFFICIENT DATA	IC

OVERALL AVERAGE RANK IS 12.455

Ammonia

PARAMETER: 07293 Total N mg N/L

RESEARCH AND APPLICATIONS BRANCH
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BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0500 BASIC ACCEPTABLE ERROR= .0500 CONCENTRATION ERROR INCREMENT= .1500

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F003	.266	6.00	3.69 H	11.00	.512	9.00	.261	5.00	.432	4.00	.438	5.00
F004	.263	5.00	2.84	3.00	.478	4.00	.267	6.00	.438	5.00	.422	3.00
F010	.21	2.00	2.9	4.00	.49	5.00	.19	2.00	.40	2.00	.38	1.00
F030	.19	1.00	2.59	2.00	.40	1.00	.41 VH	9.00	.64 VH	11.00	.52	8.00
F036	.269	7.00	3.06	7.00	.509	8.00	.282	7.00	.511	8.00	.456	6.00
F038	.38 H	9.00	3.13	10.00	.59	11.00	.49 EH	10.00	.57	10.00	.56	10.00
F042	.278	8.00	3.02	5.00	.503	7.00	.182 L	1.00	.474	7.00	.462	7.00
F046	.42 VH	10.00	3.08	8.50	.54	10.00	.33	8.00	.35	1.00	.53	9.00
F060	.45 EH	11.00	.91 EL	1.00	.45	2.00	.53 EH	11.00	.53	9.00	.72 EH	11.00
F067	.25	4.00	3.05	6.00	.50	6.00	.26	4.00	.46	6.00	.43	4.00
F075	.249	3.00	3.08	8.50	.475	3.00	.208	3.00	.405	3.00	.395	2.00
MEDIAN CONC.	.2660		3.0500		.5000		.2670		.4600		.4560	

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F003	.664	8.00	1.41	6.00	.207 L	1.00	.665	3.00
F004	.603	4.50	1.35	3.50	.298	4.50	.703	6.00
F010	.59	3.00	1.07 L	1.00	.25	2.00	.47 VL	1.00
F030	.55	1.00	1.45	8.00	.39 H	8.50	.68	4.00
F036	.632	6.00	1.49	10.50	.340	7.00	.749	8.00
F038	.7	10.00	1.47	9.00	.39 H	8.50	.78	9.50
F042	.682	9.00	1.356	5.00	.298	4.50	.729	7.00
F046	.66	7.00	1.43	7.00	.43 H	10.00	.79	11.00
F060	.76	11.00	1.28	2.00	.92 EH	11.00	.70	5.00
F067	.56	2.00	1.49	10.50	.30	6.00	.78	9.50
F075	.603	4.50	1.35	3.50	.271	3.00	.499 L	2.00
MEDIAN CONC.	.6320		1.4100		.3000		.7030	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F003	58.00	5.800	10	H L		Hyd BLOCK DIG
F004	44.50	4.450	10			07657
F010	23.00	2.300	10	L VL	BIASED LOW	COLOR. HYD. SUL.
F030	53.50	5.350	10	VHVH H		CALC FROM NO2+NO3
F036	74.50	7.450	10			AUTOCLAVE DIG.
F038	97.00	9.700	10	H EH H	BIASED HIGH	Colourimetric
F042	60.50	6.050	10	L		PERSULF. DIGEST AA
F046	81.50	8.150	10	VH H		AUTO BLOCK DIG
F060	74.00	7.400	10	EHEL EH EH EH		BLOCK DIG, AUTOCOL
F067	58.00	5.800	10			CALCULATION
F075	35.50	3.550	10	L		UV DIGN

OVERALL AVERAGE
RANK IS 6.000

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F010	23.00	2.300	10	LVL	BIASED LOW	COLOR. HYD. SUL.
F075	35.50	3.550	10	L		UV DIGN
F004	44.50	4.450	10			07657
F030	53.50	5.350	10	VHVHH		CALC FROM NO2+NO3
F067	58.00	5.800	10			CALCULATION
F003	58.00	5.800	10	HL		Hyd BLOCK DIG
F042	60.50	6.050	10	L		PERSULF. DIGEST AA
F060	74.00	7.400	10	EHELEHEHEH		BLOCK DIG, AUTOCOL
F036	74.50	7.450	10			AUTOCLAVE DIG.
F046	81.50	8.150	10	VHH		AUTO BLOCK DIG
F038	97.00	9.700	10	HEHH	BIASED HIGH	Colourimetric

OVERALL AVERAGE
RANK IS 6.000

Total N

PARAMETER: 07392 Total Kjeldahl N MG N/L

RESEARCH AND APPLICATIONS BRANCH
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BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0500 BASIC ACCEPTABLE ERROR= .0500 CONCENTRATION ERROR INCREMENT= .1500

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.12	10.00	.62	10.50	.08	5.50	.26	7.00	.12	8.50	.10	2.50
F003	.16	11.50	.619	9.00	.092	7.00	.259	5.00	.056 L	1.00	.133	11.00
F006	<.1	0.00	.5	1.00	<.1	0.00	.1 EL	1.00	.1	5.00	.1	2.50
F008	.43 EH	14.00	.52	2.00	<.2	0.00	<.2	0.00	<.2	0.00	<.2	0.00
F014	<.2	0.00	.72	17.00	.26 EH	14.00	.39 H	14.00	.20 H	14.50	.23 VH	17.00
F016	.11	9.00	.63	12.00	.11	10.50	.26	7.00	.14	11.50	.11	5.50
F020	.07	5.00	.62	10.50	.08	5.50	.26	7.00	.12	8.50	.11	5.50
F030	<.1	0.00	.6	6.50	<.1	0.00	.4 H	15.00	.3 EH	17.00	.2 H	14.00
F032	.08T	6.50	.64	13.00	.12	12.00	.3	11.00	.14	11.50	.12	8.50
F033	.08	6.50	.65	14.00	.10	8.50	.27	9.00	.13	10.00	.13	10.00
F036	.059	3.00	.568	3.00	.071	3.00	.303	12.00	.143	13.00	.100	2.50
F038	.16	11.50	.68	15.50	.17 H	13.00	.47 EH	17.00	.21 H	16.00	.22 H	16.00
F046	.21 VH	13.00	.68	15.50	.11	10.50	.33	13.00	.20 H	14.50	.21 H	15.00
F060	.45 EH	15.00	.91 EH	18.00	.45 EH	15.00	.53 EH	18.00	.53 EH	18.00	.72 EH	18.50
F063	.06	4.00	.61	8.00	.07	1.50	.24	3.00	.09	3.00	.14	12.00
F064	.90 EH	16.00	1.38 EH	20.00	.80 EH	17.00	1.16 EH	19.00	.91 EH	19.00	.72 EH	18.50
F066	<.1	0.00	.97 EH	19.00	.74 EH	16.00	.42 VH	16.00	.10	5.00	.12	8.50
F067	.05	1.50	.59	5.00	.07	1.50	.25	4.00	.11	7.00	.10	2.50
F069	.050	1.50	.570	4.00	.075	4.00	.208	2.00	.082	2.00	.117	7.00
F075	.10	8.00	.60	6.50	.10	8.50	.28	10.00	.10	5.00	.18	13.00
MEDIAN CONC.	.1050		.6200		.1000		.2800		.1300		.1300	

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.43	9.00	1.02	15.00	.12	7.50	.44	6.50
F003	.403	6.00	.990	10.50	.039 L	1.00	.365	3.00
F006	.3 L	1.00	.9	3.00	.1	4.50	.5	14.00
F008	.43	9.00	.90	3.00	<.2	0.00	.33 L	1.00
F014	.53	18.00	1.12	18.00	.27 EH	16.00	.55	16.00
F016	.42	7.00	.92	5.00	.14	11.00	.42	5.00
F020	.49	15.00	.97	8.50	.12	7.50	.44	6.50
F030	.4	4.50	1.0	12.50	.2 H	14.00	.4	4.00
F032	.46	12.50	1.1	17.00	.14	11.00	.5	14.00
F033	.44	11.00	1.00	12.50	.12	7.50	.46	8.00
F036	.383	2.00	.940	6.00	.092	3.00	.470	9.50
F038	.48	14.00	.97	8.50	.19	13.00	.47	9.50
F046	.50	16.50	.99	10.50	.23 VH	15.00	.50	14.00
F060	.76 EH	19.00	1.28 VH	19.00	.92 EH	18.00	.70 VH	18.00
F063	.46	12.50	1.09	16.00	.14	11.00	.66 VH	17.00
F064	1.19 EH	20.00	1.59 EH	20.00	.78 EH	17.00	1.10 EH	20.00
F066	.50	16.50	.95	7.00	<.1	0.00	.97 EH	19.00
F067	.40	4.50	1.01	14.00	.10	4.50	.48	11.00
F069	.385	3.00	.800	1.00	.090	2.00	.364	2.00
F075	.43	9.00	.90	3.00	.12	7.50	.49	12.00
MEDIAN CONC.	.4350		.9900		.1300		.4750	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	82.00	8.200	10			AUTO COLOR, BLOCK
F003	65.00	6.500	10	L L		BLOCK DIG
F006	32.00	4.000	8	EL L	BIASED LOW	
F008	29.00	5.800	5	EH L		Phen AUTO
F014	144.50	16.056	9	EHH H VH EH	BIASED HIGH	AUTO ANALYZER
F016	83.50	8.350	10			AUTO COLOR
F020	79.50	7.950	10			07016
F030	87.50	10.938	8	H EHH H		COLOURIMETRIC
F032	117.00	11.700	10			COLOURIMETRY
F033	97.00	9.700	10			AUTO COLOR
F036	57.00	5.700	10			BLOCK DIG.
F038	134.00	13.400	10	H EHH H		Colourimetric
F046	137.50	13.750	10	VH H H VH		AUTO BLOCK DIG
F060	176.50	17.650	10	EHEHEHEHEHEHEHVHEHVH	BIASED HIGH	BLOCK DIG, AUTOCOL
F063	88.00	8.800	10	VH		BI. DIG. AUTOPHEN.
F064	186.50	18.650	10	EHEHEHEHEHEHEHEHEHEH	BIASED HIGH	SIE
F066	107.00	13.375	8	EHEHVH EH		AUTO COL.
F067	55.50	5.550	10			AUTO COLORIMETRY
F069	28.50	2.850	10		BIASED LOW	AUTO COLORIMETRIC
F075	82.50	8.250	10			BLOCK DIG.

OVERALL AVERAGE RANK IS 9.947

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F069	28.50	2.850	10		BIASED LOW	AUTO COLORIMETRIC
F006	32.00	4.000	8	ELL	BIASED LOW	
F067	55.50	5.550	10			AUTO COLORIMETRY
F036	57.00	5.700	10			BLOCK DIG.
F008	29.00	5.800	5	EHL		Phen AUTO
F003	65.00	6.500	10	LL		BLOCK DIG
F020	79.50	7.950	10			07016
F001	82.00	8.200	10			AUTO COLOR, BLOCK
F075	82.50	8.250	10			BLOCK DIG.
F016	83.50	8.350	10			AUTO COLOR
F063	88.00	8.800	10	VH		BI. DIG. AUTOPHEN.
F033	97.00	9.700	10			AUTO COLOR
F030	87.50	10.938	8	HEHHH		COLOURIMETRIC
F032	117.00	11.700	10			COLOURIMETRY
F066	107.00	13.375	8	EHEHVHEH		AUTO COL.
F038	134.00	13.400	10	HEHHH		Colourimetric
F046	137.50	13.750	10	VHHHVH		AUTO BLOCK DIG
F014	144.50	16.056	9	EHHHVHEH	BIASED HIGH	AUTO ANALYZER
F060	176.50	17.650	10	EHEHEHEHEHEHEHVHEHVH	BIASED HIGH	BLOCK DIG, AUTOCOL
F064	186.50	18.650	10	EHEHEHEHEHEHEHEHEHEH	BIASED HIGH	SIE

OVERALL AVERAGE RANK IS 9.947

Total Kjeldahl N

PARAMETER: 09092 Fluoride MG/L

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NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0300 BASIC ACCEPTABLE ERROR= .0300 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.08	8.00	.04	7.00	.04	11.50	.18	15.00	.08	11.50	.59	22.50
F003	.08	8.00	.04	7.00	.04	11.50	.19	21.00	.08	11.50	.59	22.50
F006	.12	25.00	.06	18.50	.06	20.50	.18	15.00	.09	18.00	.57	14.50
F008	.10	20.50	<.10	0.00	<.10	0.00	.18	15.00	<.10	0.00	.56	10.00
F009	.08	8.00	.06	18.50	.04	11.50	.20	25.50	.09	18.00	.62	29.00
F010	.09	16.50	.05	15.00	.04	11.50	.21	28.50	.09	18.00	.63	30.00
F011	.09	16.50	.04	7.00	.03	4.50	.17	8.00	.08	11.50	.53	5.50
F014	.13 H	27.00	<.1	0.00	<.1	0.00	.19	21.00	.13 H	25.50	.54	7.00
F015	.085	14.00	.047	13.00	.041	16.00	.200	25.50	.083	15.00	.61	26.50
F016	.096	19.00	.052	17.00	.044	17.00	.192	23.00	.105	22.00	.610	26.50
F020	.10	20.50	<.10	0.00	<.10	0.00	.18	15.00	<.10	0.00	.56	10.00
F025	.13 H	27.00	.07	20.50	.05	19.00	.18	15.00	.10	21.00	.58	20.00
F030	.058	2.00	.044	11.00	.040	11.50	.122 L	1.00	.064	3.00	.573	17.00
F031	.08	8.00	.03	2.50	.03	4.50	.17	8.00	.07	5.00	.57	14.50
F032	.08	8.00	.08 H	22.00	.06	20.50	.2	25.50	.12 H	24.00	.58	20.00
F033	<.10	0.00	<.10	0.00	<.10	0.00	.19	21.00	<.10	0.00	.51	2.00
F034	.16 VH	29.00	.10 VH	24.50	.10 VH	23.00	.23 H	31.00	.14 VH	27.00	.60	24.00
F035	<.10	0.00	<.10	0.00	<.10	0.00	.17	8.00	<.10	0.00	.61	26.50
F037	.818 EH	30.00	.043	10.00	.036	7.00	.160	4.50	.075	8.00	.578	18.00
F038	.09	16.50	.05	15.00	.04	11.50	.18	15.00	.08	11.50	.57	14.50
F046	.05W L	1.00	.05W	0.00	.05W	0.00	.15	2.00	.05	2.00	.58	20.00
F048	.08	8.00	.04	7.00	.02	1.00	.18	15.00	.08	11.50	.56	10.00
F058	.078	4.00	.039	4.00	.035	6.00	.167	6.00	.072	7.00	.542	8.00
F060	.13 H	27.00	.10 VH	24.50	.09 VH	22.00	.20	25.50	.13 H	25.50	.49	1.00
F063	.09	16.50	<.05	0.00	<.05	0.00	.16	4.50	.07	5.00	.53	5.50
F064	.11	23.00	.07	20.50	.04	11.50	.22	30.00	.11	23.00	.61	26.50
F066	.083	13.00	.045	12.00	.048	18.00	.177	10.00	.090	18.00	.512	3.00
F067	.08	8.00	.04	7.00	.04	11.50	.18	15.00	.08	11.50	.52	4.00
F068	.101	22.00	.050	15.00	.029	3.00	.153	3.00	.027 VL	1.00	.566	12.00
F069	.082	12.00	.03	2.50	.025	2.00	.18	15.00	.09	18.00	.57	14.50
F073	.115	24.00	.095 VH	23.00	.110 EH	24.00	.280 EH	32.00	.201 EH	28.00	.673 H	32.00
F075	.07	3.00	.01 L	1.00	<.01	0.00	.21	28.50	.07	5.00	.64	31.00
MEDIAN CONC.	.0900		.0470		.0400		.1800		.0815		.5715	

PARAMETER: 09092 Fluoride MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	1.01	15.00	.92	12.00	.06	8.00	.87	17.00
F003	1.04	21.00	.94	17.00	.07	15.00	.87	17.00
F006	1.01	15.00	.96	25.50	.10	20.00	.88	20.50
F008	1.00	10.50	.92	12.00	<.10	0.00	.85	12.50
F009	1.1	30.50	.95	22.00	.07	15.00	.91	27.50
F010	1.05	24.50	.95	22.00	.06	8.00	.90	25.00
F011	.90	1.50	.84	3.00	.06	8.00	.78	5.00
F014	.97	6.50	.90	9.00	.13 VH	23.50	.82	8.00
F015	1.04	21.00	.95	22.00	.067	12.50	.91	27.50
F016	1.07	28.00	.931	15.00	.074	18.00	.840	10.00
F020	.96	5.00	.82	2.00	<.10	0.00	.87	17.00
F025	1.00	10.50	.98	28.00	.13 VH	23.50	.90	25.00
F030	1.033	19.00	.940	17.00	.062	11.00	.885	22.00
F031	1.00	10.50	.92	12.00	.05	3.50	.86	14.50
F032	1.02	17.00	.9	9.00	.08	19.00	.8	6.50
F033	1.00	10.50	.95	22.00	<.10	0.00	.86	14.50
F034	1.05	24.50	.99	29.50	.12 VH	22.00	.92	29.00
F035	1.11	32.00	1.01	31.00	<.10	0.00	.94	30.00
F037	1.05	24.50	.943	19.00	.072	17.00	.0873 EL	1.00
F038	1.04	21.00	.94	17.00	.06	8.00	.88	20.50
F046	1.00	10.50	.86	5.50	.05W	0.00	.74 L	3.00
F048	.97	6.50	.88	7.00	.03 L	1.50	.84	10.00
F058	.954	4.00	.856	4.00	.055	5.00	.800	6.50
F060	.90	1.50	.86	5.50	.14 EH	25.00	.77	4.00
F063	1.05	24.50	.95	22.00	.07	15.00	.85	12.50
F064	1.10	30.50	.99	29.50	.11 H	21.00	.90	25.00
F066	.908	3.00	.800 L	1.00	.067	12.50	.713 L	2.00
F067	1.01	15.00	.96	25.50	.05	3.50	.89	23.00
F068	1.029	18.00	.925	14.00		0.00	.875	19.00
F069	1.00	10.50	.90	9.00	.06	8.00	.84	10.00
F073	1.073	29.00	1.042	32.00	.158 EH	26.00	1.205 EH	32.00
F075	1.06	27.00	.97	27.00	.03 L	1.50	.96	31.00
MEDIAN CONC.	1.0150		.9400		.0685		.8700	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	127.50	12.750	10			SELECT ION ELECTRO
F003	151.50	15.150	10			SIE
F006	192.50	19.250	10			
F008	80.50	13.417	6			ISE
F009	205.50	20.550	10			TECHNICON
F010	199.00	19.900	10			COLOR. ALIZARIN
F011	70.50	7.050	10		BIASED LOW	
F014	127.50	15.938	8	H H VH		ISE
F015	193.00	19.300	10			SIE
F016	195.50	19.550	10			SIE
F020	69.50	11.583	6			09105
F025	209.50	20.950	10	H VH		SIE
F030	114.50	11.450	10	L		ELECTRODE
F031	83.00	8.300	10			ISE
F032	171.50	17.150	10	H H		COLOURIMETRY
F033	70.00	14.000	5			SIE
F034	263.50	26.350	10	VHVHVHH VH VH	BIASED HIGH	
F035	127.50	25.500	5		BIASED HIGH	ELECTRODE
F037	139.00	13.900	10	EH EL		
F038	150.50	15.050	10			ISE
F046	44.00	6.286	7	L L	BIASED LOW	SIE
F048	77.50	7.750	10	L		ION SELECT/SPIKEK
F058	54.50	5.450	10		BIASED LOW	SIE AUTOMATED
F060	161.50	16.150	10	H VHVH H EH		ISE
F063	105.50	13.188	8			F ELECTRODE
F064	240.50	24.050	10	H	BIASED HIGH	SIE
F066	92.50	9.250	10	L L		IC
F067	124.00	12.400	10			ELECTRODE
F068	107.00	11.889	9	VL		IC
F069	101.50	10.150	10			ISE
F073	282.00	28.200	10	VHEHEHEHH EHEH	BIASED HIGH	IC - DIONEX
F075	155.00	17.222	9	L L		SPANDS

OVERALL AVERAGE RANK IS 15.314

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F058	54.50	5.450	10		BIASED LOW	SIE AUTOMATED
F046	44.00	6.286	7	LL	BIASED LOW	SIE
F011	70.50	7.050	10		BIASED LOW	
F048	77.50	7.750	10	L		ION SELECT/SPIKEK
F031	83.00	8.300	10			ISE
F066	92.50	9.250	10	LL		IC
F069	101.50	10.150	10			ISE
F030	114.50	11.450	10	L		ELECTRODE
F020	69.50	11.583	6			09105
F068	107.00	11.889	9	VL		IC
F067	124.00	12.400	10			ELECTRODE
F001	127.50	12.750	10			SELECT ION ELECTRO
F063	105.50	13.188	8			F ELECTRODE
F008	80.50	13.417	6			ISE
F037	139.00	13.900	10	EHEL		
F033	70.00	14.000	5			SIE
F038	150.50	15.050	10			ISE
F003	151.50	15.150	10			SIE
F014	127.50	15.938	8	HHVH		ISE
F060	161.50	16.150	10	HVHVHHEH		ISE
F032	171.50	17.150	10	HH		COLOURIMETRY
F075	155.00	17.222	9	LL		SPANDS
F006	192.50	19.250	10			
F015	193.00	19.300	10			SIE
F016	195.50	19.550	10			SIE
F010	199.00	19.900	10			COLOR. ALIZARIN
F009	205.50	20.550	10			TECHNICON
F025	209.50	20.950	10	HVH		SIE
F064	240.50	24.050	10	H	BIASED HIGH	SIE
F035	127.50	25.500	5		BIASED HIGH	ELECTRODE
F034	263.50	26.350	10	VHVHVHHVHVH	BIASED HIGH	
F073	282.00	28.200	10	VHEHEHEHHEHEH	BIASED HIGH	IC - DIONEX

OVERALL AVERAGE RANK IS 15.314

Fluoride

PARAMETER: 10692 Total Hardness mg/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= 1.0000 CONCENTRATION ERROR INCREMENT= .0700

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	15.	6.50	11. L	1.00	43.	4.00	48.	4.50	98.	9.50	107.	12.50
F003	15.4	9.00	12.6	7.00	45.	8.50	49.1	10.00	96.4	7.00	105.	8.00
F006	21. EH	27.00	18. EH	27.00	51. H	26.00	56. H	26.00	99.	15.00	110.	18.00
F008	15.9	13.00	13.1	14.50	45.2	10.50	49.9	12.00	98.0	9.50	103.	4.00
F011	15.	6.50	12.	5.00	45.	8.50	48.	4.50	96.	4.50	104.	6.00
F013	16.52	17.00	13.47	20.00	47.34	21.00	50.82	18.00	101.8	20.00	110.2	20.00
F014	13.4 L	2.00	12.3	6.00	43.9	6.00	49.6	11.00	97.4	8.00	105.	8.00
F016	20.0 VH	24.00	16.0 VH	25.50	48.	23.00	50.	13.50	96.	4.50	106.	10.50
F020	16.2	15.50	13.2	16.50	46.1	15.00	50.2	15.50	102.	21.00	113.	22.00
F025	13.8 L	3.00	11.6	3.00	44.2	7.00	49.0	8.00	100.	17.50	110.	18.00
F030	16.2	15.50	13.5	21.00	46.7	18.00	50.7	17.00	108. H	25.00	114.	24.00
F031	17.	20.50	16. VH	25.50	48.	23.00	50.	13.50	99.	15.00	108.	14.00
F032	15.3	8.00	12.9	10.50	45.2	10.50	49.	8.00	98.5	12.00	107.	12.50
F033	18.	22.50	13.	12.50	46.	14.00	49.	8.00	99.	15.00	106.	10.50
F034	20.6 EH	26.00	15.0 H	22.50	47.3	20.00	52.8	24.00	98.3	11.00	101.4	3.00
F035	17.	20.50	13.	12.50	48.	23.00	52.	23.00	103.	22.00	113.	22.00
F037	16.62	18.00	13.31	18.00	49.10	25.00	53.56	25.00	109.75 H	26.00	123.03 VH	26.00
F038	16.7	19.00	13.4	19.00	46.2	16.50	51.2	20.00	94.6	2.00	93.2 VL	1.00
F042	15.87	12.00	12.83	9.00	45.5	12.00	51.6	21.00	98.7	13.00	110.	18.00
F046	16.0	14.00	13.1	14.50	46.2	16.50	50.2	15.50	100.0	17.50	109.	15.50
F048	20.2 EH	25.00	15.6 H	24.00	45.9	13.00	51.1	19.00	100.4	19.00	109.0	15.50
F059	14.0	4.00	11.6	3.00	42.6	2.50	46.7	2.00	103.5	23.00	115.1	25.00
F060	15.8	11.00	13.2	16.50	46.9	19.00	51.9	22.00	105.	24.00	113.	22.00
F064	13.27 L	1.00	11.60	3.00	39.17 VL	1.00	43.63 L	1.00	82.22 EL	1.00	94.26 VL	2.00
F066	18.0	22.50	15.0 H	22.50	52.5 VH	27.00	56.9 VH	27.00	113. VH	27.00	124. VH	27.00
F067	14.3	5.00	12.9	10.50	42.6	2.50	46.8	3.00	96.1	6.00	105.	8.00
F075	15.45	10.00	12.69	8.00	43.88	5.00	48.11	6.00	95.34	3.00	103.63	5.00
MEDIAN CONC.	16.0000		13.1000		46.0000		50.0000		99.0000		108.0000	

PARAMETER: 10692 Total Hardness mg/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	112.	11.00	163.	8.50	57.	3.50	310.	13.50
F003	110.	4.00	163.	8.50	57.4	7.00	318.	20.00
F006	116.	19.00	167.	15.50	63.	23.00	315.	17.00
F008	111.	8.00	161.	5.00	57.	3.50	295.	4.00
F011	110.	4.00	158.	3.00	57.0	3.50	292.	3.00
F013	116.6	20.00	168.5	18.00	60.85	20.00	308.3	12.00
F014	113.	13.50	165.	13.00	57.5	8.00	311.	15.50
F016	112.	11.00	162.	6.00	60.	17.00	298.	5.00
F020	118.	22.00	174.	22.50	60.5	18.50	319.	22.50
F025	114.	16.00	168.	17.00	58.6	12.00	310.	13.50
F030	123. H	26.00	183. H	26.00	64.8 H	25.00	337. H	27.00
F031	113.	13.50	164.	11.00	59.	13.00	306.	8.50
F032	111.	8.00	163.	8.50	58.3	11.00	306.	8.50
F033	111.	8.00	166.	14.00	58.	9.00	325.	24.00
F034	114.2	17.00	171.1	20.00	59.5	15.50	318.9	21.00
F035	119.	23.00	174.	22.50	62.	21.00	311.	15.50
F037	120.60	25.00	173.35	21.00	65.00 H	26.00	325.25	25.00
F038	103. L	2.00	150. L	2.00	57.	3.50	307.	10.00
F042	112.	11.00	169.	19.00	62.7	22.00	319.	22.50
F046	115.	18.00	167.	15.50	59.2	14.00	316.	18.00
F048	113.6	15.00	164.7	12.00	59.5	15.50	307.8	11.00
F059	117.9	21.00	175.5	24.00	63.3	24.00	226. EL	1.00
F060	120.	24.00	176.	25.00	60.5	18.50	317.	19.00
F064	94.36 EL	1.00	127.66 EL	1.00	43.19 EL	1.00	268.15 VL	2.00
F066	131. EH	27.00	189. VH	27.00	66.4 H	27.00	331.	26.00
F067	110.	4.00	163.	8.50	58.2	10.00	303.	7.00
F075	110.35	6.00	159.83	4.00	57.33	6.00	300.2	6.00
MEDIAN CONC.	113.0000		166.0000		59.2000		310.0000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	74.50	7.450	10	L		CALC.
F003	89.00	8.900	10			CALC.
F006	213.50	21.350	10	EHEHH H		
F008	84.00	8.400	10			CALC.
F011	48.50	4.850	10		BIASED LOW	
F013	186.00	18.600	10			Calcd
F014	91.00	9.100	10	L		CALCULATED
F016	140.00	14.000	10	VHVH		TITRN
F020	191.00	19.100	10			10602
F025	115.00	11.500	10	L		CALCD
F030	224.50	22.450	10	H H H H H	BIASED HIGH	CALC. FROM CA AND
F031	157.50	15.750	10	VH		
F032	97.50	9.750	10			ATOMIC ABSORPTION
F033	137.50	13.750	10			CALC.
F034	180.00	18.000	10	EHH		
F035	205.00	20.500	10			CALCULATED
F037	235.00	23.500	10	H VH H	BIASED HIGH	Calcd
F038	95.00	9.500	10	VLL L		Calculation
F042	159.50	15.950	10			CALCULATION
F046	159.00	15.900	10			CALCD
F048	169.00	16.900	10	EHH		EDTA TITRATION
F059	129.50	12.950	10	EL		ICP, CALCULATION
F060	201.00	20.100	10			CALCULATION CA+MG
F064	14.00	1.400	10	L VLL ELVLELELELVL	BIASED LOW	Calcd
F066	260.00	26.000	10	H VHVHVHVHEHVHH	BIASED HIGH	ICP
F067	64.50	6.450	10		BIASED LOW	CALCULATION
F075	59.00	5.900	10		BIASED LOW	CALCULATION

OVERALL AVERAGE RANK IS 14.000

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F064	14.00	1.400	10	LVLLELVLELELELVL	BIASED LOW	Calcd
F011	48.50	4.850	10		BIASED LOW	
F075	59.00	5.900	10		BIASED LOW	CALCULATION
F067	64.50	6.450	10		BIASED LOW	CALCULATION
F001	74.50	7.450	10	L		CALC.
F008	84.00	8.400	10			CALC.
F003	89.00	8.900	10			CALC.
F014	91.00	9.100	10	L		CALCULATED
F038	95.00	9.500	10	VLLL		Calculation
F032	97.50	9.750	10			ATOMIC ABSORPTION
F025	115.00	11.500	10	L		CALCD
F059	129.50	12.950	10	EL		ICP, CALCULATION
F033	137.50	13.750	10			CALC.
F016	140.00	14.000	10	VHVH		TITRN
F031	157.50	15.750	10	VH		
F046	159.00	15.900	10			CALCD
F042	159.50	15.950	10			CALCULATION
F048	169.00	16.900	10	EHH		EDTA TITRATION
F034	180.00	18.000	10	EHH		
F013	186.00	18.600	10			Calcd
F020	191.00	19.100	10			10602
F060	201.00	20.100	10			CALCULATION CA+MG
F035	205.00	20.500	10			CALCULATED
F006	213.50	21.350	10	EHEHHH		
F030	224.50	22.450	10	HHHHH	BIASED HIGH	CALC. FROM CA AND
F037	235.00	23.500	10	HVHH	BIASED HIGH	Calcd
F066	260.00	26.000	10	HVHVHVHVHEHVHH	BIASED HIGH	ICP

OVERALL AVERAGE RANK IS 14.000

Total Hardness

PARAMETER: 11091 Sodium MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= .5000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	3.	30.50		0.00		0.00	10.	5.00	3.	3.00	15.	19.00
F002	2.9	18.50	.2	10.50	1.4	22.50	11.	25.00	3.6	23.50	15.3	26.50
F003	2.85	15.50	.26	28.00	1.32	15.00	10.4	10.00	3.46	12.50	14.9	14.50
F006	3.	30.50	<1.	0.00	2. H	34.50	12.	39.00	4.	37.50	15.	19.00
F007	2.93	26.00	.192	5.00	1.31	14.00	10.8	18.50	3.37	9.00	14.9	14.50
F008	2.74	6.00	.22	21.00	1.23	2.00	10.3	8.00	3.32	8.00	14.1	6.00
F009	2.58	2.00	.19	4.00	1.24	3.00	10.1	6.00	3.30	6.00	14.0	5.00
F010	2.67	3.00	.20	10.50	1.22	1.00	9.61	4.00	3.26	4.00	13.58	4.00
F011	.48 EL	1.00	.27	29.00	2.80 EH	36.00	.61 EL	1.00	.92 EL	1.00	3.10 EL	2.00
F013	3.06	33.00	.23	22.50	1.43	24.50	11.37	31.00	3.74	31.00	15.85	33.00
F014	2.80	10.50	.39	31.00	1.76	32.00	11.8	36.00	3.96	36.00	16.3	37.00
F015	2.9	18.50	.2	10.50	1.3	9.50	11.	25.00	3.6	23.50	15.3	26.50
F016	2.92	23.00	.24	25.50	1.39	21.00	11.0	25.00	3.61	25.00	15.3	26.50
F020	2.92	23.00	.24	25.50	1.35	19.50	10.9	20.50	3.59	22.00	15.3	26.50
F025	2.90	18.50	.24	25.50	1.30	9.50	10.6	14.50	3.50	16.00	15.0	19.00
F030	2.8	10.50	<1.0	0.00	1.8	33.00	11.0	25.00	3.7	28.00	14.7	10.00
F031	2.80	10.50	.16	2.00	1.28	4.00	10.42	11.00	3.46	12.50	14.95	16.00
F032	2.91	21.00	.21	19.00	1.35	19.50	10.95	22.00	3.53	19.00	15.03	22.00
F033	3.10	35.00	.2	10.50	1.43	24.50	11.7	34.00	3.8	33.50	16.2	36.00
F034	3.5	37.00	.9 H	33.00	1.6	31.00	11.5	32.50	5.5 EH	39.00	15.1	23.00
F035	2.9	18.50	.1	1.00	1.3	9.50	11.1	29.50	3.5	16.00	15.7	32.00
F036	2.82	13.00	.23	22.50	11.37 EH	38.00	11.81	37.00	3.41	11.00	17.95 VH	39.00
F037	3.53	38.00	.21	19.00	1.29	5.50	11.02	28.00	3.51	18.00	15.66	31.00
F038	2.73	5.00	.2	10.50	1.3	9.50	10.8	18.50	3.5	16.00	15.	19.00
F042	2.93	26.00	.21	19.00	1.34	17.50	11.1	29.50	3.66	27.00	15.4	29.00
F046	2.92	23.00	.20	10.50	1.29	5.50	10.67	16.00	3.55	21.00	14.87	13.00
F048	2.99	28.00	.57	32.00	1.44	26.50	5.43 EL	3.00	3.79	32.00	9.96 EL	3.00
F057	3.	30.50	1. VH	34.00	2. H	34.50	11.	25.00	4.	37.50	16.	34.50
F058	2.93	26.00	.203	16.00	1.33	16.00	10.7	17.00	3.72	29.50	14.8	11.00
F059	2.7	4.00	.2	10.50	1.3	9.50	10.2	7.00	3.3	6.00	14.3	7.00
F060	3.0	30.50	<.6	0.00	1.5	30.00	11.5	32.50	3.8	33.50	16.0	34.50
F063	3.08	34.00	.33	30.00	1.45	28.00	10.35	9.00	3.65	26.00	14.81	12.00
F064	7.06 EH	39.00	3.43 EH	35.00	3.03 EH	37.00	1.91 EL	2.00	2.62 L	2.00	1.25 EL	1.00
F066	3.14	36.00	.20	10.50	1.48	29.00	11.9	38.00	3.86	35.00	16.7 H	38.00
F067	2.8	10.50	.2	10.50	1.3	9.50	10.9	20.50	3.4	10.00	15.0	19.00
F068	2.794	8.00	.204	17.00	1.309	13.00	10.558	13.00	3.531	20.00	14.613	9.00
F069	2.83	14.00	.24	25.50	1.34	17.50	10.6	14.50	3.48	14.00	15.2	24.00
F071	2.79	7.00	.182	3.00	1.44	26.50	11.72	35.00	3.72	29.50	15.56	30.00
F075	2.85	15.50	.20	10.50	1.4	22.50	10.55	12.00	3.3	6.00	14.5	8.00
MEDIAN CONC.	2.9000		.2100		1.3500		10.9000		3.5310		15.0000	

PARAMETER: 11091 Sodium MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	3.	6.00	16.	16.00	9.	13.50	56.	21.50
F002	3.2	21.50	16.5	28.00	9.2	19.00	59.	34.50
F003	3.16	15.00	15.9	13.50	9.05	15.00	56.0	21.50
F006	4. H	37.50	17.	34.50	10.	34.00	55.	16.00
F007	3.18	17.00	15.8	10.50	9.28	24.00	56.1	24.00
F008	2.93	3.00	15.3	6.00	8.95	11.00	52.7	7.00
F009	3.00	6.00	16.1	20.00	8.6	5.00	50. L	4.50
F010	2.97	4.00	15.08	4.00	8.73	7.00	56.	21.50
F011	.69 EL	1.00	7.80 EL	2.00	.84 EL	1.00	12.50 EL	2.00
F013	3.36	28.50	16.75	32.00	9.88	32.00	57.63	30.00
F014	3.61	34.00	17.7	39.00	10.1	36.50	61.8 H	39.00
F015	3.2	21.50	16.2	24.50	9.5	29.00	58.1	31.00
F016	3.27	27.00	16.7	31.00	.97 EL	2.00	55.7	19.00
F020	3.24	26.00	16.4	27.00	9.46	28.00	57.4	29.00
F025	3.20	21.50	16.0	16.00	9.30	25.00	54.8	14.50
F030	3.7	35.50	15.6	9.00	9.2	19.00	54.3	10.00
F031	3.12	14.00	16.25	26.00	8.87	8.00	54.35	11.00
F032	3.18	17.00	16.1	20.00	9.41	26.50	54.6	12.00
F033	3.4	31.00	17.2	37.00	10.	34.00	59.	34.50
F034	3.7	35.50	16.1	20.00	10.1	36.50	56.5	27.00
F035	3.2	21.50	16.9	33.00	9.7	30.00	58.3	32.00
F036	3.07	10.00	16.63	30.00	10.69 H	39.00	50.00 L	4.50
F037	3.20	21.50	16.18	23.00	9.24	23.00	60.31	37.00
F038	3.1	12.50	16.	16.00	9.	13.50	54.8	14.50
F042	3.20	21.50	16.2	24.50	9.23	22.00	57.0	28.00
F046	3.18	17.00	15.83	12.00	9.22	21.00	56.15	25.00
F048	4.11 H	39.00	10.43 EL	3.00	4.57 EL	4.00	34.46 EL	3.00
F057	4. H	37.50	17.	34.50	10.	34.00	56.	21.50
F058	3.40	31.00	15.9	13.50	9.07	16.00	59.8	36.00
F059	3.0	6.00	15.4	7.00	8.9	9.00	52.	6.00
F060	3.4	31.00	17.1	36.00	9.8	31.00	58.7	33.00
F063	3.22	25.00	15.80	10.50	8.91	10.00	53.38	9.00
F064	2.13 VL	2.00	3.03 EL	1.00	2.52 EL	3.00	2.42 EL	1.00
F066	3.46	33.00	17.6	38.00	10.3	38.00	61.6 H	38.00
F067	3.1	12.50	16.1	20.00	9.2	19.00	56.3	26.00
F068	3.015	8.00	15.229	5.00	8.964	12.00	52.878	8.00
F069	3.08	11.00	16.1	20.00	9.12	17.00	55.4	18.00
F071	3.36	28.50	16.54	29.00	9.41	26.50	54.74	13.00
F075	3.05	9.00	15.5	8.00	8.7	6.00	55.3	17.00
MEDIAN CONC.	3.2000		16.1000		9.2000		56.0000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO. OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	114.50	14.313	8			FLAME EMISSION
F002	229.50	22.950	10			11103
F003	160.50	16.050	10			FLAME EMISSION
F006	282.50	31.389	9	H H	BIASED HIGH	
F007	162.50	16.250	10			
F008	78.00	7.800	10		BIASED LOW	ICP
F009	61.50	6.150	10	L	BIASED LOW	ICP
F010	63.00	6.300	10		BIASED LOW	ICP
F011	76.00	7.600	10	EL EHELELELELELELEL	BIASED LOW	
F013	297.50	29.750	10			ICP
F014	331.00	33.100	10	H	BIASED HIGH	ICP
F015	219.50	21.950	10			ICP
F016	225.00	22.500	10	EL		ICP
F020	247.00	24.700	10			11111
F025	180.00	18.000	10			FLAME EMISSION
F030	180.00	20.000	9			FLAME PHOTO.
F031	115.00	11.500	10			AA FLAME
F032	198.00	19.800	10			ATOMIC ABSORPTION
F033	310.00	31.000	10		BIASED HIGH	ICP
F034	314.50	31.450	10	H EH	BIASED HIGH	
F035	223.00	22.300	10			ICP-AES
F036	244.00	24.400	10	EH VH H L		FLAME AA
F037	244.00	24.400	10			ICP
F038	135.00	13.500	10			ICP
F042	244.00	24.400	10			FLAME AA
F046	164.00	16.400	10			ICP
F048	173.50	17.350	10	EL ELH ELELEL		IC
F057	323.50	32.350	10	VHH H	BIASED HIGH	ICP
F058	212.00	21.200	10			AAS
F059	72.00	7.200	10		BIASED LOW	FLAME, AE
F060	292.00	32.444	9		BIASED HIGH	ICP, DISSOLVED
F063	193.50	19.350	10			FLAME AA
F064	123.00	12.300	10	EHEHEHELL ELVLELELEL		AAS
F066	333.50	33.350	10	H H	BIASED HIGH	ICP
F067	157.50	15.750	10			ICAP
F068	113.00	11.300	10			IC
F069	175.50	17.550	10			ICP
F071	228.00	22.800	10			FLAME-AA
F075	114.50	11.450	10			AA

OVERALL AVERAGE RANK IS 19.769

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F009	61.50	6.150	10	L	BIASED LOW	ICP
F010	63.00	6.300	10		BIASED LOW	ICP
F059	72.00	7.200	10		BIASED LOW	FLAME, AE
F011	76.00	7.600	10	ELEHELELELELELELEL	BIASED LOW	
F008	78.00	7.800	10		BIASED LOW	ICP
F068	113.00	11.300	10			IC
F075	114.50	11.450	10			AA
F031	115.00	11.500	10			AA FLAME
F064	123.00	12.300	10	EHEHEHELLELVLELELEL		AAS
F038	135.00	13.500	10			ICP
F001	114.50	14.313	8			FLAME EMISSION
F067	157.50	15.750	10			ICAP
F003	160.50	16.050	10			FLAME EMISSION
F007	162.50	16.250	10			
F046	164.00	16.400	10			ICP
F048	173.50	17.350	10	ELELHELELEL		IC
F069	175.50	17.550	10			ICP
F025	180.00	18.000	10			FLAME EMISSION
F063	193.50	19.350	10			FLAME AA
F032	198.00	19.800	10			ATOMIC ABSORPTION
F030	180.00	20.000	9			FLAME PHOTO.
F058	212.00	21.200	10			AAS
F015	219.50	21.950	10			ICP
F035	223.00	22.300	10			ICP-AES
F016	225.00	22.500	10	EL		ICP
F071	228.00	22.800	10			FLAME-AA
F002	229.50	22.950	10			11103
F036	244.00	24.400	10	EHVHHL		FLAME AA
F042	244.00	24.400	10			FLAME AA
F037	244.00	24.400	10			ICP
F020	247.00	24.700	10			11111
F013	297.50	29.750	10			ICP
F033	310.00	31.000	10		BIASED HIGH	ICP
F006	282.50	31.389	9	HH	BIASED HIGH	
F034	314.50	31.450	10	HEH	BIASED HIGH	
F057	323.50	32.350	10	VHHH	BIASED HIGH	ICP
F060	292.00	32.444	9		BIASED HIGH	ICP, DISSOLVED
F014	331.00	33.100	10	H	BIASED HIGH	ICP
F066	333.50	33.350	10	HH	BIASED HIGH	ICP

OVERALL AVERAGE RANK IS 19.769

Sodium

PARAMETER: 12091 Magnesium MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .5000 BASIC ACCEPTABLE ERROR= .2000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001		0.00		0.00		0.00	5.	20.50	7.	1.00	6.	2.00
F002	.8	6.50	1.1	19.50	2.9	27.00	4.9	17.00	7.4	19.00	6.5	17.50
F003	.81	10.50	1.07	11.00	2.75	11.00	4.77	7.00	7.11	3.00	6.32	7.00
F006	2. EH	39.00	2. EH	39.00	4. EH	39.00	6. VH	40.00	8.	36.00	7.	33.50
F007	.834	19.00	1.12	26.00	2.82	19.50	4.95	19.00	7.38	18.00	5.54 L	1.00
F008	.90	33.50	1.19	34.00	2.98	32.00	5.21	33.00	7.74	30.00	6.72	28.00
F009	.88	25.50	1.2	36.50	3.0	34.50	5.4	37.50	8.1	38.50	7.2	39.00
F010	.84	21.00	1.10	19.50	2.80	15.50	4.89	16.00	7.36	17.00	6.65	23.00
F011	.76	3.00	1.00	4.50	2.80	15.50	4.80	10.00	7.30	13.50	6.30	5.50
F013	.87	23.50	1.15	28.50	2.93	31.00	5.03	22.50	7.59	26.00	6.67	24.00
F014	.81	10.50	1.09	13.50	2.85	22.00	5.08	25.00	7.58	25.00	6.70	26.00
F015	.8	6.50	1.1	19.50	2.9	27.00	5.1	26.50	7.6	27.00	6.7	26.00
F016	.87	23.50	1.15	28.50	3.00	34.50	5.38	36.00	7.91	35.00	7.17	38.00
F020	.89	29.50	1.16	30.50	2.89	23.00	5.03	22.50	7.64	28.00	6.75	29.00
F025	.68	2.00	.94	2.00	2.55	1.00	4.80	10.00	7.50	22.50	6.50	17.50
F030	.896	31.00	1.18	32.00	2.92	30.00	5.14	30.00	7.65	29.00	6.93	32.00
F031	.84	21.00	1.08	12.00	2.76	12.00	4.92	18.00	7.27	11.00	6.51	19.00
F032	.83	17.50	1.1	19.50	2.79	13.50	4.87	15.00	7.33	15.50	6.49	16.00
F033	.88	25.50	1.14	27.00	2.9	27.00	5.1	26.50	7.8	32.50	7.0	33.50
F034	1.0	38.00	1.1	19.50	2.7	7.00	4.6	2.00	7.2	7.50	6.4	11.00
F035	.9	33.50	1.1	19.50	2.9	27.00	5.0	20.50	7.5	22.50	6.7	26.00
F036	.65	1.00	0.00 EL	1.00	2.81	17.50	4.80	10.00	7.43	21.00	6.44	13.00
F037	.823	16.00	1.020	6.00	2.829	21.00	5.124	29.00	7.744	31.00	7.047	35.00
F038	.914	36.00	1.19	34.00	3.04	37.00	5.33	35.00	7.51	24.00	6.07	3.00
F040	.84	21.00	.98	3.00	2.74	10.00	4.80	10.00	7.20	7.50	6.45	14.00
F042	.81	10.50	1.06	9.00	2.81	17.50	4.84	14.00	7.28	12.00	6.48	15.00
F046	.79	4.00	1.03	7.00	2.66	3.00	4.72	3.00	7.14	5.00	6.33	8.50
F048	.90	33.50	1.19	34.00	2.68	4.00	5.07	24.00	7.80	32.50	6.89	30.00
F057	.9	33.50	1.2	36.50	3.0	34.50	5.4	37.50	8.1	38.50	7.1	37.00
F058	.82	14.00	1.10	19.50	2.57	2.00	4.55	1.00	7.02	2.00	6.23	4.00
F059	.8	6.50	1.0	4.50	2.7	7.00	4.8	10.00	7.3	13.50	6.3	5.50
F060	.8	6.50	1.1	19.50	2.9	27.00	5.2	32.00	7.9	34.00	6.9	31.00
F063	.89	29.50	1.10	19.50	2.79	13.50	5.19	31.00	7.33	15.50	6.60	22.00
F064	.82	14.00	1.06	9.00	2.71	9.00	4.83	13.00	7.17	6.00	6.52	20.00
F066	.96	37.00	1.29	38.00	3.34 H	38.00	5.75 H	39.00	8.66 VH	40.00	7.77 VH	40.00
F067	.82	14.00	1.09	13.50	2.70	7.00	4.75	6.00	7.24	10.00	6.42	12.00
F068	.886	28.00	1.110	25.00	2.895	24.00	5.105	28.00	7.405	20.00	6.563	21.00
F069	.83	17.50	1.10	19.50	2.82	19.50	4.73	4.50	7.23	9.00	6.35	10.00
F071	.882	27.00	1.16	30.50	3.00	34.50	5.30	34.00	8.03	37.00	7.09	36.00
F075	.81	10.50	1.06	9.00	2.69	5.00	4.73	4.50	7.12	4.00	6.33	8.50
MEDIAN CONC.	.8400		1.1000		2.8200		5.0000		7.4175		6.5415	

PARAMETER: 12091 Magnesium MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	12.	28.50	12.	24.50		0.00	36.	17.00
F002	11.9	24.50	12.0	24.50	1.1	14.00	35.9	15.50
F003	11.2	7.00	11.3	4.00	1.21	32.50	38.8	32.00
F006	12.	28.50	12.	24.50	2. EH	38.00	38.	29.50
F007	11.2	7.00	11.6	14.00	1.09	9.00	35.2	8.00
F008	11.9	24.50	12.1	27.00	1.18	28.00	34.9	5.00
F009	12.7	37.00	12.8	36.00	1.2	30.00	38.	29.50
F010	11.69	21.00	11.82	19.00	1.21	32.50	37.	25.50
F011	11.30	11.50	11.40	7.00	1.00	4.50	37.10	27.50
F013	11.89	22.00	11.88	20.00	1.14	22.00	35.01	6.00
F014	12.0	28.50	12.3	31.00	1.11	17.50	37.0	25.50
F015	11.9	24.50	12.0	24.50	1.1	14.00	36.2	19.50
F016	12.8 H	38.00	13.0	38.00	1.22	34.00	3.61 EL	1.00
F020	12.0	28.50	12.2	29.50	1.11	17.50	36.3	21.00
F025	11.6	20.00	11.9	21.00	.93	3.00	36.4	22.00
F030	12.13	32.00	12.60	33.00	1.20	30.00	39.05	36.00
F031	11.58	19.00	11.91	22.00	1.09	9.00	38.9	33.50
F032	11.3	11.50	11.4	7.00	1.09	9.00	35.6	13.00
F033	13.0 H	39.00	13.2 H	39.00	1.15	24.00	39.	35.00
F034	11.0	3.00	11.6	14.00	1.3	36.00	33.8	2.00
F035	11.9	24.50	12.2	29.50	1.1	14.00	36.2	19.50
F036	11.27	9.00	11.63	16.00	1.14	22.00	42.12 VH	40.00
F037	11.448	17.00	11.704	17.00	1.378 H	37.00	35.396	10.00
F038	11.1	5.00	11.4	7.00	1.16	26.00	37.1	27.50
F040	11.35	15.00	11.50	9.50	<.1 EL	0.00	35.4	11.00
F042	11.3	11.50	11.8	18.00	1.10	14.00	34.1	3.00
F046	11.45	18.00	11.58	12.00	1.04	6.00	36.13	18.00
F048	12.09	31.00	12.19	28.00	.56 EL	1.00	36.84	24.00
F057	12.4	36.00	12.7	34.00	1.2	30.00	39.7 H	37.00
F058	12.3	34.50	12.9	37.00	1.16	26.00	35.9	15.50
F059	11.3	11.50	11.2	3.00	1.0	4.50	38.9	33.50
F060	12.3	34.50	12.5	32.00	1.1	14.00	36.6	23.00
F063	10.75	1.00	10.91	1.00	1.12	20.00	35.75	14.00
F064	10.95	2.00	11.11	2.00	.92	2.00	35.44	12.00
F066	13.7 VH	40.00	13.9 VH	40.00	1.28	35.00	41.2 VH	38.00
F067	11.4	16.00	11.6	14.00	1.14	22.00	35.1	7.00
F068	11.015	4.00	11.344	5.00	1.112	19.00	38.061	31.00
F069	11.2	7.00	11.5	9.50	1.09	9.00	34.3	4.00
F071	12.27	33.00	12.73	35.00	1.16	26.00	41.86 VH	39.00
F075	11.34	14.00	11.54	11.00	1.09	9.00	35.28	9.00
MEDIAN CONC.	11.6450		11.8900		1.1160		36.2500	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	93.50	15.583	6			AUTO AA
F002	185.00	18.500	10			12107
F003	125.00	12.500	10			AAS
F006	347.00	34.700	10	EHEHEHVH EH	BIASED HIGH	
F007	140.50	14.050	10	L		
F008	275.00	27.500	10			AA / ICP
F009	344.00	34.400	10		BIASED HIGH	ICP
F010	210.00	21.000	10			ICP
F011	102.50	10.250	10			
F013	225.50	22.550	10			ICP
F014	224.50	22.450	10			ICP
F015	215.00	21.500	10			ICP
F016	306.50	30.650	10	H EL		ICP
F020	259.00	25.900	10			12111
F025	121.00	12.100	10			AA
F030	315.00	31.500	10			ICP
F031	176.50	17.650	10			AA FLAME
F032	137.50	13.750	10			ATOMIC ABSORPTION
F033	309.00	30.900	10	H H		ICP
F034	140.00	14.000	10			
F035	236.50	23.650	10			ICP-AES
F036	150.50	15.050	10	EL VH		FLAME AA
F037	219.00	21.900	10	H		ICP
F038	234.50	23.450	10			ICP
F040	101.00	11.222	9	EL		FLAME AAS
F042	124.50	12.450	10			FLAME AA
F046	84.50	8.450	10		BIASED LOW	ICP
F048	242.00	24.200	10	EL		IC
F057	354.50	35.450	10	H	BIASED HIGH	ICP
F058	155.50	15.550	10			AAS
F059	99.50	9.950	10			ICP
F060	253.50	25.350	10			ICP, DISSOLVED
F063	167.00	16.700	10			FLAME AA
F064	89.00	8.900	10		BIASED LOW	AAS
F066	385.00	38.500	10	H H VHVHVHVH VH	BIASED HIGH	ICP
F067	121.50	12.150	10			ICAP
F068	205.00	20.500	10			IC
F069	109.50	10.950	10			ICP
F071	332.00	33.200	10	VH	BIASED HIGH	FLAME-AA
F075	84.50	8.450	10		BIASED LOW	ICP

OVERALL AVERAGE RANK IS 20.256

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F046	84.50	8.450	10		BIASED LOW	ICP
F075	84.50	8.450	10		BIASED LOW	ICP
F064	89.00	8.900	10		BIASED LOW	AAS
F059	99.50	9.950	10			ICP
F011	102.50	10.250	10			
F069	109.50	10.950	10			ICP
F040	101.00	11.222	9	EL		FLAME AAS
F025	121.00	12.100	10			AA
F067	121.50	12.150	10			ICAP
F042	124.50	12.450	10			FLAME AA
F003	125.00	12.500	10			AAS
F032	137.50	13.750	10			ATOMIC ABSORPTION
F034	140.00	14.000	10			
F007	140.50	14.050	10	L		
F036	150.50	15.050	10	ELVH		FLAME AA
F058	155.50	15.550	10			AAS
F001	93.50	15.583	6			AUTO AA
F063	167.00	16.700	10			FLAME AA
F031	176.50	17.650	10			AA FLAME
F002	185.00	18.500	10			12107
F068	205.00	20.500	10			IC
F010	210.00	21.000	10			ICP
F015	215.00	21.500	10			ICP
F037	219.00	21.900	10	H		ICP
F014	224.50	22.450	10			ICP
F013	225.50	22.550	10			ICP
F038	234.50	23.450	10			ICP
F035	236.50	23.650	10			ICP-AES
F048	242.00	24.200	10	EL		IC
F060	253.50	25.350	10			ICP, DISSOLVED
F020	259.00	25.900	10			12111
F008	275.00	27.500	10			AA / ICP
F016	306.50	30.650	10	HEL		ICP
F033	309.00	30.900	10	HH		ICP
F030	315.00	31.500	10			ICP
F071	332.00	33.200	10	VH	BIASED HIGH	FLAME-AA
F009	344.00	34.400	10		BIASED HIGH	ICP
F006	347.00	34.700	10	EHEHEHVHEH	BIASED HIGH	
F057	354.50	35.450	10	H	BIASED HIGH	ICP
F066	385.00	38.500	10	HHVHVHVHVHVH	BIASED HIGH	ICP

OVERALL AVERAGE RANK IS 20.256

Magnesium

PARAMETER: 14091 Silicates mg SiO2/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .1000 BASIC ACCEPTABLE ERROR= .0250 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	9.2	12.00		0.00	2.4	6.50	.3 VL	4.00	1.5	8.00	2.1	5.50
F002	9.42	20.00	.23 VH	19.00	2.53	20.00	.47 VH	22.50	1.62	21.00	2.24	18.00
F003	9.26	14.00	.18	12.50	2.50	17.00	.38	12.50	1.55	14.50	2.19	15.00
F008	9.9	24.00	.2	16.50	2.6	24.50	.4	18.00	1.6	19.00	2.3	22.50
F009	10.1 H	25.00	<.2	0.00	2.5	17.00	.2 EL	2.00	1.4 L	2.00	2.1	5.50
F010	9.5	21.00	.15	5.00	2.48	14.50	.38	12.50	1.55	14.50	2.20	16.50
F011	8.40 L	2.00	.164	7.00	2.25 L	3.00	.378	11.00	1.480	3.00	2.05	3.00
F015	9.09	9.00	.15	5.00	2.46	12.50	.36	6.50	1.54	12.50	2.18	14.00
F016	9.30	16.00	.19	14.00	2.56	22.00	.47 VH	22.50	1.84 EH	25.00	2.31	24.00
F020	9.06	7.00	.15	5.00	2.44	10.50	.368	8.00	1.49	4.50	2.14	11.00
F025	9.39	18.00	.17	8.00	2.60	24.50	.41	19.50	1.64	22.00	2.32	25.00
F030	19.6 EH	27.00	.68 EH	20.00	5.40 EH	27.00	1.07 EH	24.00	3.35 EH	27.00	4.66 EH	27.00
F032	9.28	15.00	.171T	9.50	2.44	10.50	.385	14.50	1.54	12.50	2.14	11.00
F033	9..	5.00	.13 L	1.00	2.4	6.50	.36	6.50	1.5	8.00	2.1	5.50
F036	9.52	22.00	.174	11.00	2.52	19.00	.397	17.00	1.59	17.00	2.25	19.00
F038	9.7	23.00	.14 L	2.00	2.59	23.00	.37	9.50	1.6	19.00	2.28	21.00
F042	9.40	19.00	.171	9.50	2.50	17.00	.385	14.50	1.56	16.00	2.20	16.50
F046	9.08	8.00	.20	16.50	2.48	14.50	.39	16.00	1.52	11.00	2.15	13.00
F048	8.574	3.00	<1.00	0.00	2.317	4.00	<1.00	0.00	1.683	23.00	2.119	9.00
F059	8.7	4.00	<.2	0.00	2.1 VL	2.00	.2 EL	2.00	1.5	8.00	2.3	22.50
F060	9.1	10.50	<.1 EL	0.00	2.4	6.50	.2 EL	2.00	1.3 VL	1.00	2.0	2.00
F064	7.49 EL	1.00	<1.0	0.00	1.07 EL	1.00	<1.0	0.00	2.14 EH	26.00	1.07 EL	1.00
F066	10.6 VH	26.00	.18	12.50	2.85 VH	26.00	.41	19.50	1.76 H	24.00	2.50 VH	26.00
F067	9.36	17.00	.20	16.50	2.54	21.00	.42	21.00	1.60	19.00	2.26	20.00
F069	9.05	6.00	.20	16.50	2.46	12.50	.37	9.50	1.50	8.00	2.11	8.00
F071	9.250	13.00	.142	3.00	2.430	9.00	.346	5.00	1.490	4.50	2.140	11.00
F075	9.1	10.50	<.5	0.00	2.4	6.50	<.5	0.00	1.5	8.00	2.1	5.50
MEDIAN CONC.	9.2600		.1725		2.4800		.3800		1.5500		2.1800	

PARAMETER: 14091 Silicates mg SiO2/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	3.3	4.00	4.6	13.00	7.7	14.50	11.8	14.00
F002	3.53	14.50	4.65	16.00	7.76	16.50	12.1	21.00
F003	3.57	17.50	4.67	19.50	7.59	12.50	11.8	14.00
F008	3.8	25.00	2.8 EL	1.00		0.00	12.1	21.00
F009	3.6	19.50	4.6	13.00	8.1	22.00	12.	18.50
F010	3.55	16.00	4.65	16.00	7.8	18.50	11.9	16.50
F011	3.13 L	2.00	4.310	4.00	7.31	5.00	11.50	7.00
F015	3.53	14.50	4.67	19.50	7.53	10.00	11.8	14.00
F016	3.78	24.00	5.26 VH	25.00	8.40 H	24.00	12.6	25.00
F020	3.40	6.50	4.55	8.50	7.49	8.00	11.6	9.50
F025	3.60	19.50	4.65	16.00	7.80	18.50	11.3	4.00
F030	7.47 EH	27.00	9.90 EH	27.00	16.05 EH	26.00	25.08 EH	27.00
F032	3.47	11.00	4.58	10.50	7.57	11.00	11.68	12.00
F033	3.4	6.50	4.5	5.50	7.3	3.50	10.9	2.00
F036	3.68	22.50	4.87	24.00	8.13	23.00	11.61	11.00
F038	3.68	22.50	4.83	23.00	8.05	21.00	12.3	24.00
F042	3.57	17.50	4.66	18.00	7.76	16.50	12.00	18.50
F046	3.51	13.00	4.55	8.50	7.44	6.00	11.55	8.00
F048	3.267	3.00	3.743 EL	3.00	6.634 VL	2.00	11.064	3.00
F059	3.4	6.50	4.7	21.00	7.3	3.50	11.9	16.50
F060	3.5	12.00	4.6	13.00	7.7	14.50	12.1	21.00
F064	2.14 EL	1.00	3.21 EL	2.00	4.28 EL	1.00	9.63 EL	1.00
F066	4.02 VH	26.00	5.29 VH	26.00	8.60 VH	25.00	13.3 VH	26.00
F067	3.64	21.00	4.81	22.00	7.81	20.00	12.2	23.00
F069	3.45	9.00	4.51	7.00	7.47	7.00	11.4	5.50
F071	3.460	10.00	4.580	10.50	7.590	12.50	11.600	9.50
F075	3.4	6.50	4.5	5.50	7.5	9.00	11.4	5.50
MEDIAN CONC.	3.5300		4.6000		7.6450		11.8000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	81.50	9.056	9	VL		AUTO COLOR
F002	188.50	18.850	10	VH VH		14109
F003	149.00	14.900	10			Moly AA
F008	171.50	19.056	9	EL		Moly AUTO
F009	124.50	13.833	9	H ELL		ICP
F010	151.00	15.100	10			COLORIMETRIE
F011	47.00	4.700	10	L L L	BIASED LOW	
F015	117.50	11.750	10			ICP
F016	221.50	22.150	10	VHEH VHH	BIASED HIGH	ICP
F020	78.50	7.850	10			14105
F025	175.00	17.500	10			COLOR
F030	259.00	25.900	10	EHEHEHEHEHEHEHEHEHEH	BIASED HIGH	ICP
F032	117.50	11.750	10			COLOURIMETRY
F033	50.00	5.000	10	L	BIASED LOW	AUTO COLOR
F036	185.50	18.550	10			AUTOANALYZER
F038	188.00	18.800	10	L		Colourimetric
F042	163.00	16.300	10			COLOROMETRIC
F046	114.50	11.450	10			ICP
F048	50.00	6.250	8	ELVL		IC
F059	86.00	9.556	9	VLEL		ICP
F060	82.50	9.167	9	EL ELVL		ICP, EXTRACTABLE
F064	34.00	4.250	8	EL EL EHELELELELEL	BIASED LOW	AAS
F066	237.00	23.700	10	VH VH H VHVHVHVHVH	BIASED HIGH	ICP
F067	200.50	20.050	10			ICAP
F069	89.00	8.900	10			ICP
F071	88.00	8.800	10			COLORIMETRIC
F075	57.00	7.125	8			ASCORBIC ACID

OVERALL AVERAGE RANK IS 13.541

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F064	34.00	4.250	8	ELELEHELELELELEL	BIASED LOW	AAS
F011	47.00	4.700	10	LLL	BIASED LOW	
F033	50.00	5.000	10	L	BIASED LOW	AUTO COLOR
F048	50.00	6.250	8	ELVL		IC
F075	57.00	7.125	8			ASCORBIC ACID
F020	78.50	7.850	10			14105
F071	88.00	8.800	10			COLORIMETRIC
F069	89.00	8.900	10			ICP
F001	81.50	9.056	9	VL		AUTO COLOR
F060	82.50	9.167	9	ELELVL		ICP, EXTRACTABLE
F059	86.00	9.556	9	VLEL		ICP
F046	114.50	11.450	10			ICP
F032	117.50	11.750	10			COLOURIMETRY
F015	117.50	11.750	10			ICP
F009	124.50	13.833	9	HELL		ICP
F003	149.00	14.900	10			Moly AA
F010	151.00	15.100	10			COLORIMETRIE
F042	163.00	16.300	10			COLOROMETRIC
F025	175.00	17.500	10			COLOR
F036	185.50	18.550	10			AUTOANALYZER
F038	188.00	18.800	10	L		Colourimetric
F002	188.50	18.850	10	VHVH		14109
F008	171.50	19.056	9	EL		Moly AUTO
F067	200.50	20.050	10			ICAP
F016	221.50	22.150	10	VHEHVHH	BIASED HIGH	ICP
F066	237.00	23.700	10	VHVHHVHVHVHVHVH	BIASED HIGH	ICP
F030	259.00	25.900	10	EHEHEHEHEHEHEHEHEHEH	BIASED HIGH	ICP

OVERALL AVERAGE RANK IS 13.541

Silicates

PARAMETER: 16092 Sulfate (All Methods) MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= .5000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001		0.00	6.	3.00		0.00	13. L	2.00	15.	6.50	29.	13.00
F002	3.4	11.00	6.7	9.50	3.2	11.50	15.0	24.00	16.1	26.00	30.0	23.00
F003	3.4	11.00	6.8	15.00	2.4 L	1.00	15.7	37.00	17.2	38.00	30.6	28.50
F006	10. EH	38.00	<10.	0.00	<10.	0.00	15.	24.00	11. EL	1.00	23. EL	3.00
F007	3.9	32.00	6.9	23.00	3.6	31.50	15.7	37.00	16.9	32.00	30.7	30.00
F008	3.54	22.00	6.80	15.00	3.22	13.00	14.	5.00	14. L	2.50	27. L	6.00
F009	3.3	5.00	6.7	9.50	3.2	11.50	15.	24.00	16.	21.50	30.	23.00
F010	3.8	31.00	7.0	28.00	3.4	22.50	14.9	20.50	15.9	19.00	29.4	18.00
F011	6.0 EH	37.00	7.0	28.00	10. EH	37.00	13.5	3.00	15.0	6.50	30.0	23.00
F013	3.47	16.00	6.74	11.00	3.30	15.50	14.59	14.00	15.54	11.00	28.87	11.00
F014	4.26 H	36.00	5.64 L	1.00	2.56 L	2.00	14.9	20.50	17.1	37.00	31.7	37.00
F015	3.7	28.50	6.6	8.00	3.0	4.00	14.7	18.00	15.8	17.00	30.6	28.50
F016	3.4	11.00	6.8	15.00	3.4	22.50	14.6	15.50	14.0 L	2.50	21.2 EL	2.00
F020	3.7	28.50	6.8	15.00	3.5	28.00	14.7	18.00	16.0	21.50	31.0	31.50
F025	3.5	19.00	5.8 L	2.00	3.5	28.00	14.3	9.50	15.8	17.00	30.1	26.00
F030	3.20	3.00	6.33	4.00	3.12	7.00	14.3	9.50	14.3 L	4.00	23.7 EL	4.00
F031	2.9	2.00	6.5	5.00	2.8	3.00	14.6	15.50	15.3	9.50	28.3	8.50
F032	3.57	23.00	7.71	37.00	3.46	25.00	14.02	6.50	15.67	13.00	29.09	14.00
F033	3.4	11.00	7.1	33.00	3.3	15.50	15.0	24.00	16.0	21.50	30.0	23.00
F036	3.512	20.00	6.829	19.00	3.303	17.00	15.480	33.00	17.060	36.00	31.245	34.00
F037	3.3	5.00	7.2	34.50	3.1	5.50	13.7	4.00	14.9	5.00	26.5 L	5.00
F038	3.4	11.00	7.3	36.00	4.1 H	35.00	15.2	28.00	16.3	27.00	29.7	19.00
F040	3.37	8.00	6.54	6.00	3.19	10.00	14.02	6.50	15.24	8.00	28.84	10.00
F042	3.456	14.00	6.912	24.00	3.312	18.00	14.35	11.00	16.03	24.00	29.38	17.00
F046	3.30	5.00	8.10 H	38.00	3.10	5.50	14.2	8.00	15.3	9.50	28.3	8.50
F048	3.46	15.00	7.08	32.00	3.17	8.50	15.12	27.00	16.83	31.00	31.37	35.00
F057	4.1	35.00	6.8	15.00	3.6	31.50	3.6 EL	1.00	15.8	17.00	16.9 EL	1.00
F058	3.60	25.00	6.95	25.00	3.50	28.00	14.5	13.00	15.7	14.50	29.3	16.00
F059	4.	33.50	7.	28.00	4.	34.00	15.	24.00	17.	34.00	30.	23.00
F060	3.7	28.50	7.0	28.00	3.8	33.00	15.7	37.00	17.3	39.00	31.9	38.00
F063	3.7	28.50	7.2	34.50	3.5	28.00	15.4	32.00	16.6	28.50	31.2	33.00
F064	2.47 L	1.00	6.58	7.00	4.53 VH	36.00	15.23	29.00	16.05	25.00	27.16	7.00
F066	3.48	17.00	6.78	12.00	3.29	14.00	14.7	18.00	15.6	12.00	28.9	12.00
F067	3.49	18.00	6.81	18.00	3.33	19.00	15.3	30.00	16.6	28.50	31.5	36.00
F068	3.612	26.00	7.047	31.00	3.434	24.00	15.358	31.00	16.657	30.00	30.593	27.00
F069	3.59	24.00	6.86	21.00	3.38	21.00	14.4	12.00	15.7	14.50	29.2	15.00
F071	3.339	7.00	6.854	20.00	3.170	8.50	15.61	35.00	17.05	35.00	34.25 VH	39.00
F073	3.521	21.00	6.870	22.00	3.349	20.00	15.82	39.00	16.99	33.00	29.87	20.00
F075	4.0	33.50	7.0	28.00	3.5	28.00	15.5	34.00	16.0	21.50	31.0	31.50
MEDIAN CONC.	3.5060		6.8415		3.3300		14.9000		16.0000		29.8700	

PARAMETER: 16092 Sulfate (All Methods) MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	61.	13.00	94.	15.00	55.	8.50	216.	11.00
F002	62.1	19.00	98.0	31.50	57.1	28.50	230.0	33.50
F003	60.8	11.00	92.5	12.00	56.0	19.00	226.	30.00
F006	51. EL	4.00	78. EL	4.00	49. L	3.00	186. VL	4.00
F007	63.9	29.50	97.9	30.00	57.9	32.50	226.4	31.00
F008	61.	13.00	97.	28.00	56.	19.00	237.	37.00
F009	64.	31.50	109. VH	38.00	57.	27.00	230.	33.50
F010	66.	37.00	95.	19.50	56.	19.00	220.	18.00
F011	74.0 EH	38.00	102.0	37.00	64.0 VH	37.00	225.	28.00
F013	60.67	10.00	91.74	11.00	55.22	10.00	211.3	7.00
F014	62.9	22.00	95.1	22.00	56.8	26.00	232.	35.50
F015	63.5	27.00	95.7	24.00	55.6	13.00	216.	11.00
F016	2.8 EL	1.00	5.6 EL	1.00	2.4 EL	1.00	11.0 EL	1.00
F020	63.1	25.00	94.2	16.00	55.7	15.00	232.	35.50
F025	60.0	7.00	90.0	8.00	51.2	5.00	216.	11.00
F030	57.1	5.00	89.3	7.00	51.1 L	4.00	209.	6.00
F031	63.0	23.50	95.8	25.00	55.8	16.00	219.8	16.00
F032	61.36	17.00	92.58	13.00	56.36	23.00	221.96	21.00
F033	63.0	23.50	87.0	5.00	56.0	19.00	220.	18.00
F036	62.370	20.00	96.720	27.00	56.140	22.00	217.25	13.00
F037	50.7 EL	3.00	68.7 EL	3.00	45.5 EL	2.00	174.4 EL	3.00
F038	64.	31.50	97.3	29.00	57.1	28.50	219.	15.00
F040	59.34	6.00	91.21	10.00	55.23	11.00	206.89	5.00
F042	61.68	18.00	88.80	6.00	54.86	7.00	221.4	20.00
F046	60.4	8.50	91.1	9.00	55.0	8.50	214.	8.50
F048	65.64	36.00	100.67	35.00	59.86	36.00	227.4	32.00
F057	29.0 EL	2.00	60.2 EL	2.00	92.9 EH	39.00	54.6 EL	2.00
F058	65.1	34.00	98.4	34.00	58.0	34.50		0.00
F059	65.	33.00	98.	31.50	58.	34.50	220.	18.00
F060	65.4	35.00	101.	36.00	57.5	31.00	225.	28.00
F063	63.4	26.00	95.	19.50	57.9	32.50	222.	23.00
F064	63.78	28.00	95.06	21.00	56.38	24.00	218.10	14.00
F066	60.4	8.50	93.7	14.00	54.4	6.00	214.	8.50
F067	63.9	29.50	98.3	33.00	57.4	30.00	225.	28.00
F068	62.583	21.00	94.482	17.00	55.483	12.00	223.93	26.00
F069	61.2	16.00	94.6	18.00	56.0	19.00	222.	23.00
F071	77.60 EH	39.00	121.6 EH	39.00	69.28 EH	38.00	294.2 EH	38.00
F073	61.02	15.00	96.02	26.00	55.68	14.00	223.15	25.00
F075	61.0	13.00	95.5	23.00	56.5	25.00	222.0	23.00
MEDIAN CONC.	62.3700		95.0000		56.0000		220.7000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	72.00	9.000	8	L		AUTO COLOR
F002	217.50	21.750	10			16309
F003	202.50	20.250	10	L		MTB AA
F006	81.00	10.125	8	EH ELELELELL VL		
F007	308.50	30.850	10		BIASED HIGH	
F008	160.50	16.050	10	L L		MTB AUTO
F009	224.50	22.450	10	VH		DIONEX
F010	232.50	23.250	10			CALMAGITE
F011	274.50	27.450	10	EH EH EH VH		
F013	116.50	11.650	10			ICP
F014	239.00	23.900	10	H L L		DIONEX IC
F015	179.00	17.900	10			MTB AUTO
F016	72.50	7.250	10	L ELELELELEL	BIASED LOW	IC
F020	234.00	23.400	10			16309
F025	132.50	13.250	10	L		IC
F030	53.50	5.350	10	L EL L	BIASED LOW	IC
F031	124.00	12.400	10			IC
F032	192.50	19.250	10			ION CHROMATOGRAPHY
F033	193.50	19.350	10			IC
F036	241.00	24.100	10			DIONEX - IC
F037	70.00	7.000	10	L ELELELEL	BIASED LOW	
F038	260.00	26.000	10	H		Gravimetric
F040	80.50	8.050	10		BIASED LOW	IC
F042	159.00	15.900	10			IC
F046	109.00	10.900	10	H		ICP
F048	287.50	28.750	10			IC
F057	145.50	14.550	10	EL ELELELEHEL		IC
F058	224.00	24.889	9			IC
F059	293.50	29.350	10			ION CHROMATOGRAPHY
F060	333.50	33.350	10		BIASED HIGH	ICP, DISSOLVED
F063	285.50	28.550	10			ION CHROMATOGRAPHY
F064	192.00	19.200	10	L VH		Grav
F066	122.00	12.200	10			IC
F067	270.00	27.000	10			IC
F068	245.00	24.500	10			IC
F069	183.50	18.350	10			IC
F071	298.50	29.850	10	VHEHEHEHEH		ION CHROMATOGRAPHY
F073	235.00	23.500	10			IC - DIONEX
F075	260.50	26.050	10			METHYLTHYMOL BLUE

OVERALL AVERAGE RANK IS 19.756

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F030	53.50	5.350	10	LELL	BIASED LOW	IC
F037	70.00	7.000	10	LELELELEL	BIASED LOW	
F016	72.50	7.250	10	LELELELELEL	BIASED LOW	IC
F040	80.50	8.050	10		BIASED LOW	IC
F001	72.00	9.000	8	L		AUTO COLOR
F006	81.00	10.125	8	EHELELELELLVL		
F046	109.00	10.900	10	H		ICP
F013	116.50	11.650	10			ICP
F066	122.00	12.200	10			IC
F031	124.00	12.400	10			IC
F025	132.50	13.250	10	L		IC
F057	145.50	14.550	10	ELELELELEHEL		IC
F042	159.00	15.900	10			IC
F008	160.50	16.050	10	LL		MTB AUTO
F015	179.00	17.900	10			MTB AUTO
F069	183.50	18.350	10			IC
F064	192.00	19.200	10	LVH		Grav
F032	192.50	19.250	10			ION CHROMATOGRAPHY
F033	193.50	19.350	10			IC
F003	202.50	20.250	10	L		MTB AA
F002	217.50	21.750	10			16309
F009	224.50	22.450	10	VH		DIONEX
F010	232.50	23.250	10			CALMAGITE
F020	234.00	23.400	10			16309
F073	235.00	23.500	10			IC - DIONEX
F014	239.00	23.900	10	HLL		DIONEX IC
F036	241.00	24.100	10			DIONEX - IC
F068	245.00	24.500	10			IC
F058	224.00	24.889	9			IC
F038	260.00	26.000	10	H		Gravimetric
F075	260.50	26.050	10			METHYLTHYMOL BLUE
F067	270.00	27.000	10			IC
F011	274.50	27.450	10	EHEHEHVH		
F063	285.50	28.550	10			ION CHROMATOGRAPHY
F048	287.50	28.750	10			IC
F059	293.50	29.350	10			ION CHROMATOGRAPHY
F071	298.50	29.850	10	VHEHEHEHEH		ION CHROMATOGRAPHY
F007	308.50	30.850	10		BIASED HIGH	
F060	333.50	33.350	10		BIASED HIGH	ICP, DISSOLVED

OVERALL AVERAGE RANK IS 19.756

Sulfate (All Methods)

PARAMETER: 17092 Chloride (All Methods) MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= .5000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	2.5	20.50	.7	29.00	1.3	14.50	17.0	18.00	5.8	13.00	23.6	17.00
F002	2.5	20.50	.5	8.00	1.4	24.50	17.1	20.50	5.9	20.00	23.6	17.00
F003	2.64	32.00	.59	20.50	1.51	34.00	17.5	25.50	5.90	20.00	24.1	30.50
F006	<2.	0.00	<2.	0.00	<2.	0.00	16.	5.00	4. EL	1.00	22.	3.00
F007	2.48	18.00	.47	4.00	1.24	9.00	17.49	23.00	5.50	6.50	22.64	7.00
F008	2.6	28.00	.6	23.50	1.5	31.00	17.	18.00	6.0	25.50	23.	11.50
F009	2.6	28.00	.7	29.00	1.3	14.50	19. H	38.50	6.0	25.50	25.	35.50
F010	2.5	20.50	.5	8.00	1.5	31.00	17.5	25.50	6.2	32.00	24.	27.50
F011	1.99	1.00	.26	1.00	.94	2.00	16.2	6.50	5.47	5.00	22.1	4.00
F013	2.8	35.50	<1.	0.00	1.5	31.00	18.0	34.50	5.7	10.50	23.9	23.50
F014	2.40	14.50	.678	27.00	1.57	35.00	16.7	11.50	6.35	34.00	22.8	10.00
F015	2.1	3.50	.5	8.00	1.1	5.00	17.6	28.00	5.8	13.00	24.0	27.50
F016	2.7	33.50	.6	23.50	1.6	36.00	16.2	6.50	6.8 H	37.00	25.6	37.00
F020	2.6	28.00	.6	23.50	1.4	24.50	17.4	22.00	5.9	20.00	23.5	14.50
F025	2.1	3.50	.8	32.00	1.0	3.00	18.0	34.50	5.5	6.50	26.5 H	38.00
F030	2.15	6.00	.45	3.00	1.19	7.00	14.9 L	4.00	5.05	2.00	23.9	23.50
F031	2.34	11.50	.48	5.00	1.30	14.50	17.0	18.00	5.84	15.00	24.0	27.50
F032	2.5	20.50	.4T	2.00	1.3	14.50	17.5	25.50	5.9	20.00	23.9	23.50
F033	2.70	33.50	.59	20.50	1.50	31.00	19.0 H	38.50	5.90	20.00	25.0	35.50
F034	6.3 EH	40.00	<1.	0.00	<1.	0.00	3.1 EL	2.00	9.5 EH	40.00	27.6 VH	39.00
F035	2.1	3.50	.5	8.00	1.1	5.00	16.4	8.00	5.2	4.00	22.7	8.50
F036	2.403	17.00	.527	12.00	1.281	11.00	16.845	15.00	6.012	28.00	23.870	21.00
F037	4.2 EH	39.00	<1.0	0.00	2.1 H	39.00	23.9 EH	41.00	9.2 EH	39.00	32.9 EH	41.00
F038	2.3	9.00	<.5	0.00	1.3	14.50	17.9	32.00	5.8	13.00	24.2	32.00
F040	2.29	7.00	.61	26.00	1.26	10.00	17.68	29.00	5.60	9.00	23.76	20.00
F042	2.34	11.50	.533	14.00	1.35	20.50	16.9	16.00	6.0	25.50	23.6	17.00
F046	2.40	14.50	.57	18.50	1.30	14.50	17.5	25.50	5.90	20.00	23.9	23.50
F048	2.81	37.00	1.53 VH	35.00	1.45	27.00	16.5	9.50	6.69	36.00	22.55	5.00
F057	2.8	35.50	.9	33.00	1.7	37.00	1.7 EL	1.00	17.4 EH	41.00	6.2 EL	2.00
F058	2.40	14.50	.56	17.00	1.35	20.50	16.7	11.50	5.70	10.50	22.6	6.00
F059	3.	38.00	<1.	0.00	2. H	38.00	18.	34.50	6.	25.50	24.	27.50
F060	2.3	9.00	.5	8.00	1.2	8.00	17.1	20.50	5.9	20.00	23.0	11.50
F063	2.6	28.00	.7	29.00	1.5	31.00	18.4	37.00	6.3	33.00	24.1	30.50
F064	2.30	9.00	.75	31.00	.68 L	1.00	3.71 EL	3.00	6.09	30.00	23.64	19.00
F066	2.40	14.50	.57	18.50	1.37	23.00	16.5	9.50	5.89	16.00	22.7	8.50
F067	2.60	28.00	.53	13.00	1.47	28.00	18.0	34.50	6.59	35.00	24.6	33.00
F068	2.598	24.00	.519	11.00	1.332	19.00	17.802	31.00	6.121	31.00	24.628	34.00
F069	2.61	31.00	.55	15.00	1.33	18.00	16.8	13.50	6.06	29.00	23.1	13.00
F071	2.599	25.00	1.057	34.00	1.442	26.00	22.19 EH	40.00	6.93 H	38.00	30.96 EH	40.00
F073	2.560	23.00	.552	16.00	1.369	22.00	17.8	30.00	5.560	8.00	.673 EL	1.00
F075	2.1	3.50	.6	23.50	1.1	5.00	16.8	13.50	5.1	3.00	23.5	14.50
MEDIAN CONC.	2.5000		.5700		1.3500		17.1000		5.9000		23.8700	

PARAMETER: 17092 Chloride (All Methods) MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	2.9	17.00	5.8	18.50	2.2	9.50	10.9	15.00
F002	2.7	7.50	5.7	14.00	2.3	15.50	10.6	9.50
F003	3.23	35.00	5.88	23.00	2.57	34.00	11.5	33.00
F006	<2. VL	0.00	4. EL	2.00	<2.	0.00	9. VL	2.00
F007	3.04	24.00	5.39	6.00	2.43	26.00	10.54	8.00
F008	3.1	28.00	6.0	28.50	2.5	31.50	11.	19.50
F009	2.8	10.00	6.0	28.50	2.5	31.50	11.	19.50
F010	3.1	28.00	8.0 EH	37.00	2.5	31.50	12.0	37.00
F011	2.65	4.00	5.37	5.00	1.98	2.00	10.40	5.50
F013	3.3	36.00	5.5	8.50	2.7	36.00	11.4	30.50
F014	3.14	32.00	6.22	34.00	2.32	17.00	12.9 H	38.00
F015	2.7	7.50	5.8	18.50	2.0	4.00	11.5	33.00
F016	56. EH	40.00	83. EH	41.00	50. EH	40.00	210. EH	41.00
F020	3.0	20.50	5.7	14.00	2.2	9.50	11.2	26.50
F025	2.9	17.00	5.5	8.50	2.1	7.00	11.2	26.50
F030	2.65	4.00	4.75 L	3.00	2.04	6.00	9.95	3.00
F031	2.65	4.00	6.12	32.00	2.18	8.00	11.5	33.00
F032	3.1	28.00	5.9	24.50	2.4	23.50	11.3	28.50
F033	3.20	34.00	5.80	18.50	2.40	23.50	11.0	19.50
F034	6.5 EH	38.00	9.8 EH	40.00	5.3 EH	38.00	16.3 EH	40.00
F035	2.6	1.50	5.1	4.00	2.0	4.00	10.2	4.00
F036	2.887	15.00	5.675	12.00	2.276	14.00	10.600	9.50
F037	5.6 EH	37.00	8.1 EH	38.00	4.1 EH	37.00	10.4	5.50
F038	3.1	28.00	5.8	18.50	2.4	23.50	10.8	12.50
F040	2.69	6.00	5.70	14.00	2.25	12.00	10.52	7.00
F042	2.80	10.00	5.57	10.00	2.27	13.00	11.11	25.00
F046	2.80	10.00	5.80	18.50	2.30	15.50	11.0	19.50
F048	2.81	12.50	5.80	18.50	2.23	11.00	11.05	23.00
F057	22.8 EH	39.00	3.2 EL	1.00	5.8 EH	39.00	2.5 EL	1.00
F058	2.81	12.50	5.93	26.00	2.37	20.00	11.3	28.50
F059	3.	20.50	6.	28.50	2.	4.00	11.	19.50
F060	3.1	28.00	5.9	24.50	2.4	23.50	11.0	19.50
F063	2.9	17.00	6.0	28.50	2.5	31.50	11.7	35.00
F064	3.13	31.00	9.10 EH	39.00	2.58	35.00	10.86	14.00
F066	2.88	14.00	5.66	11.00	2.39	21.00	10.7	11.00
F067	3.15	33.00	6.47	35.00	2.47	28.00	10.8	12.50
F068	2.904	19.00	6.009	31.00	2.336	19.00	11.710	36.00
F069	3.02	23.00	6.17	33.00	2.33	18.00	11.4	30.50
F071	3.008	22.00	6.614	36.00	2.444	27.00	13.71 EH	39.00
F073	3.041	25.00	5.841	22.00	2.495	29.00	10.98	16.00
F075	2.6	1.50	5.4	7.00	1.9	1.00	11.1	24.00
MEDIAN CONC.	3.0000		5.8000		2.3800		11.0000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	172.00	17.200	10			AUTO COLOR
F002	157.00	15.700	10			17209
F003	287.50	28.750	10			Thio AA
F006	13.00	2.600	5	EL VLEL VL	BIASED LOW	
F007	131.50	13.150	10			
F008	245.00	24.500	10			Thio FIA
F009	260.50	26.050	10	H		DIONEX
F010	278.00	27.800	10	EH		TITRN COND.
F011	36.00	3.600	10		BIASED LOW	
F013	246.00	27.333	9			Hg AA
F014	253.00	25.300	10	H		DIONEX IC
F015	148.00	14.800	10			Thio AUTO
F016	335.50	33.550	10	H EHEHEHEH	BIASED HIGH	IC
F020	203.00	20.300	10			17203
F025	176.50	17.650	10	H		COLOR
F030	61.50	6.150	10	L L	BIASED LOW	IC
F031	168.50	16.850	10			IC
F032	210.50	21.050	10			COLOURIMETRY
F033	274.50	27.450	10	H		AUTO COLOR
F034	277.00	34.625	8	EH ELEHVHEHEHEHEH	BIASED HIGH	
F035	50.50	5.050	10		BIASED LOW	COLOURIMETRY
F036	154.50	15.450	10			DIONEX - IC
F037	316.50	35.167	9	EH H EHEHEHEHEHEH	BIASED HIGH	
F038	183.00	20.333	9			Colourimetric
F040	140.00	14.000	10			IC
F042	162.50	16.250	10			IC
F046	180.00	18.000	10			ICP
F048	214.50	21.450	10	VH		IC
F057	229.50	22.950	10	ELEHELEHELEHEL		IC
F058	167.00	16.700	10			IC
F059	236.00	26.222	9	H		ION CHROMATOGRAPHY
F060	172.50	17.250	10			AUTO COLORIMETRY
F063	300.50	30.050	10			ION CHROMATOGRAPHY
F064	212.00	21.200	10	L EL EH		SIE
F066	147.00	14.700	10			IC
F067	280.00	28.000	10			IC
F068	255.00	25.500	10			IC
F069	224.00	22.400	10			IC
F071	327.00	32.700	10	EHH EH EH	BIASED HIGH	ION CHROMATOGRAPHY
F073	192.00	19.200	10	EL		IC - DIONEX
F075	96.50	9.650	10			FERRIC THIOCYANATE

OVERALL AVERAGE RANK IS 20.489

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F006	13.00	2.600	5	ELVLELVL	BIASED LOW	
F011	36.00	3.600	10		BIASED LOW	
F035	50.50	5.050	10		BIASED LOW	COLOURIMETRY
F030	61.50	6.150	10	LL	BIASED LOW	IC
F075	96.50	9.650	10			FERRIC THIOCYANATE
F007	131.50	13.150	10			
F040	140.00	14.000	10			IC
F066	147.00	14.700	10			IC
F015	148.00	14.800	10			Thio AUTO
F036	154.50	15.450	10			DIONEX - IC
F002	157.00	15.700	10			17209
F042	162.50	16.250	10			IC
F058	167.00	16.700	10			IC
F031	168.50	16.850	10			IC
F001	172.00	17.200	10			AUTO COLOR
F060	172.50	17.250	10			AUTO COLORIMETRY
F025	176.50	17.650	10	H		COLOR
F046	180.00	18.000	10			ICP
F073	192.00	19.200	10	EL		IC - DIONEX
F020	203.00	20.300	10			17203
F038	183.00	20.333	9			Colourimetric
F032	210.50	21.050	10			COLOURIMETRY
F064	212.00	21.200	10	LELEH		SIE
F048	214.50	21.450	10	VH		IC
F069	224.00	22.400	10			IC
F057	229.50	22.950	10	ELEHELEHELEHEL		IC
F008	245.00	24.500	10			Thio FIA
F014	253.00	25.300	10	H		DIONEX IC
F068	255.00	25.500	10			IC
F009	260.50	26.050	10	H		DIONEX
F059	236.00	26.222	9	H		ION CHROMATOGRAPHY
F013	246.00	27.333	9			Hg AA
F033	274.50	27.450	10	H		AUTO COLOR
F010	278.00	27.800	10	EH		TITRN COND.
F067	280.00	28.000	10			IC
F003	287.50	28.750	10			Thio AA
F063	300.50	30.050	10			ION CHROMATOGRAPHY
F071	327.00	32.700	10	EHHEHEH	BIASED HIGH	ION CHROMATOGRAPHY
F016	335.50	33.550	10	HEHEHEHEH	BIASED HIGH	IC
F034	277.00	34.625	8	EHELEHVHEHEHEHEH	BIASED HIGH	
F037	316.50	35.167	9	EHHEHEHEHEHEHEH	BIASED HIGH	

OVERALL AVERAGE RANK IS 20.489

Chloride (All Methods)

PARAMETER: 19091 Potassium MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .5000 BASIC ACCEPTABLE ERROR= .2000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.3	2.00	.3	32.00	.4	2.00	.5	5.50	.8	3.00	3.1	10.50
F002	.41	16.00	.25	28.00	.49	10.50	.57	23.00	.89	17.00	3.1	10.50
F003	.39	8.00	.20	17.50	.47	4.50	.53	10.50	.82	7.00	3.07	6.00
F006	.4	12.00	.2	17.50	.5	15.00	.5	5.50	.8	3.00	3.1	10.50
F007	.410	16.00	.176	3.00	.501	19.00	.556	21.00	.847	8.00	3.25	25.00
F008	.41	16.00	.19	10.00	.50	15.00	.56	22.00	.88	15.00	3.1	10.50
F010	.39	8.00	.19	10.00	.46	3.00	.50	5.50	.81	5.50	2.80	3.00
F011	3.00 EH	36.00	.40	34.50	1.50 EH	36.00	11.0 EH	36.00	3.70 EH	36.00	15.30 EH	37.00
F013	.46	29.50	.25	28.00	.54	29.00	.62	33.00	.94	31.50	3.24	24.00
F014	.37	4.50	.24	26.00	.52	25.00	.58	26.00	.88	15.00	2.94	5.00
F015	.4	12.00	.2	17.50	.5	15.00	.5	5.50	.9	21.50	3.2	19.00
F016	.44	25.50	.21	22.50	.64	35.00	.42	1.00	.86	10.00	3.5	34.00
F020	.6	35.00	.4	34.50	.6	33.00	.5	5.50	.9	21.50	3.2	19.00
F025	.46	29.50	.21	22.50	.48	7.50	.55	16.00	.87	12.50	3.22	22.00
F030	.5	32.00	.3	32.00	.6	33.00	.6	30.00	.9	21.50	3.1	10.50
F031	.42	19.50	.18	5.00	.50	15.00	.52	9.00	.88	15.00	3.20	19.00
F032	.427	22.00	.198	13.00	.511	24.00	.551	19.00	.891	18.00	3.236	23.00
F033	.35	3.00	.20	17.50	.48	7.50	.54	12.50	.86	10.00	3.40	31.50
F034	.5	32.00	.2	17.50	.5	15.00	.6	30.00	.9	21.50	3.1	10.50
F035	.5	32.00	.3	32.00	.6	33.00	.5	5.50	.9	21.50	3.3	26.00
F036	.42	19.50	.20	17.50	.49	10.50	.55	16.00	.87	12.50	3.19	17.00
F037	.57	34.00	<.5	0.00	.51	22.00	.55	16.00	.95	33.00	3.21	21.00
F038	.39	8.00	.18	5.00	.48	7.50	.55	16.00	.86	10.00	3.08	7.00
F042	.45	27.50	.19	10.00	.54	29.00	.62	33.00	.99	34.00	3.55	36.00
F046	.45	27.50	.22	24.50	.54	29.00	.58	26.00	.94	31.50	3.34	28.00
F048	.37	4.50	.20	17.50	.51	22.00	.58	26.00	.93	28.50	2.50 VL	2.00
F058	.411	18.00	.189	8.00	.507	20.00	.553	20.00	.912	27.00	3.12	14.00
F059	.4	12.00	.1	2.00	.5	15.00	.6	30.00	.9	21.50	3.4	31.50
F060	.43	23.00	.26	30.00	.59	31.00	.69	35.00	1.04	35.00	3.52	35.00
F063	.40	12.00	.22	24.50	.48	7.50	.53	10.50	.81	5.50	2.90	4.00
F064	.23	1.00	.054	1.00	.38	1.00	.49	2.00	.60 L	1.00	1.65 EL	1.00
F066	<1.	0.00	<1.	0.00	<1.	0.00	<1.	0.00	<1.	0.00	3.4	31.50
F067	.44	25.50	.20	17.50	.53	27.00	.62	33.00	.91	26.00	3.4	31.50
F068	.432	24.00	.188	7.00	.525	26.00	.571	24.00	.934	30.00	3.306	27.00
F069	.38	6.00	.18	5.00	.47	4.50	.54	12.50	.93	28.50	3.15	15.50
F071	.425	21.00	.192	12.00	.510	22.00	.593	28.00	.906	25.00	3.360	29.00
F075	.4	12.00	.25	28.00	.5	15.00	.55	16.00	.8	3.00	3.15	15.50
MEDIAN CONC.	.4155		.2000		.5005		.5505		.8955		3.2000	

PARAMETER: 19091 Potassium MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.6	4.00	7.1	11.00	.6	3.00	10.5	7.00
F002	.98 VH	35.00	7.1	11.00	.62	6.50	11.4	21.00
F003	.64	13.50	6.98	6.00	.64	10.50	10.6	8.50
F006	.6	4.00	7.	7.50	.6	3.00	10. L	5.00
F007	.626	10.00	7.28	16.00	.658	14.00	11.4	21.00
F008	.65	17.50	6.8	3.00		0.00	10.6	8.50
F010	.64	13.50	6.92	5.00	.66	15.50	10.64	10.00
F011	3.30 EH	36.00	16.50 EH	37.00	9.70 EH	35.00	58.00 EH	37.00
F013	.70	27.00	7.30	17.00	.71	26.00	11.11	16.00
F014	.65	17.50	7.20	14.50	.68	19.50	11.4	21.00
F015	.7	27.00	7.5	23.00	.7	23.50	11.8	27.00
F016	.60	4.00	8.00	34.00	7.40 EH	34.00	12.0	30.00
F020	.8	32.50	7.5	23.00	.8	30.50	11.2	17.50
F025	.64	13.50	7.12	13.00	.69	21.50	11.2	17.50
F030	.8	32.50	7.0	7.50	.6	3.00	10.8	11.00
F031	.63	11.00	7.46	20.50	.68	19.50	13.05 VH	36.00
F032	.648	16.00	7.569	26.00	.663	17.00	11.	14.00
F033	.61	7.00	7.80	31.50	.66	15.50	11.9	28.00
F034	.7	27.00	7.2	14.50	.9 H	33.00	4.6 EL	1.00
F035	.7	27.00	7.6	27.50	.7	23.50	11.5	23.00
F036	.64	13.50	7.46	20.50	.63	8.00	11.30	19.00
F037	.76	31.00	7.41	19.00	.61	5.00	12.00	30.00
F038	.62	8.50	7.02	9.00	.64	10.50	11.1	15.00
F042	.71	30.00	8.07	35.00	.75	28.00	8.4 EL	3.00
F046	.68	22.50	7.50	23.00	.69	21.50	11.56	24.00
F048	.66	20.00	6.88	4.00	.64	10.50	8.2 EL	2.00
F058	.658	19.00	7.62	29.00	.669	18.00	12.9 VH	35.00
F059	.7	27.00	7.9	33.00	.8	30.50	12.	30.00
F060	.82	34.00	7.65	30.00	.77	29.00	11.7	26.00
F063	.60	4.00	6.37 L	2.00	.62	6.50	10.20 L	6.00
F064	.44 L	1.00	5.27 EL	1.00	.42 L	1.00	9.51 VL	4.00
F066	<1.	0.00	8.2 H	36.00	<1.	0.00	12.7 H	32.00
F067	.68	22.50	7.6	27.50	.84	32.00	12.8 H	33.00
F068	.688	24.00	7.523	25.00	.701	25.00	11.588	25.00
F069	.62	8.50	7.35	18.00	.64	10.50	10.9	12.50
F071	.669	21.00	7.800	31.50	.713	27.00	12.88 H	34.00
F075	.6	4.00	7.1	11.00	.65	13.00	10.9	12.50
MEDIAN CONC.	.6540		7.4100		.6690		11.3000	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	80.00	8.000	10			FLAME EMISSION
F002	178.50	17.850	10	VH	BIASED LOW	19103
F003	92.00	9.200	10			FLAME EMISSION
F006	83.00	8.300	10	L	BIASED LOW	
F007	153.00	15.300	10			FLAME EMIS
F008	117.50	13.056	9		BIASED LOW	ICP
F010	79.00	7.900	10		BIASED HIGH	
F011	360.50	36.050	10	EH EHEHEHEHEHEHEHEH		ICP
F013	261.00	26.100	10			ATOMIC ABSORPTION
F014	174.00	17.400	10			ICP
F015	191.00	19.100	10			ICP
F016	230.00	23.000	10	EH		19111
F020	252.00	25.200	10			FLAME EMISSION
F025	175.50	17.550	10			FP
F030	213.00	21.300	10			AA FLAME
F031	169.50	16.950	10	VH		ATOMIC ABSORPTION
F032	192.00	19.200	10			ICP
F033	164.00	16.400	10			
F034	202.00	20.200	10	H EL		ICP-AES
F035	251.00	25.100	10			FLAME AA
F036	154.00	15.400	10			ICP
F037	211.00	23.444	9			ICP
F038	96.50	9.650	10			FLAME AA
F042	265.50	26.550	10	EL		ICP
F046	257.50	25.750	10			IC
F048	137.00	13.700	10	VL EL		AAS
F058	208.00	20.800	10	VH		FAE
F059	232.50	23.250	10			
F060	308.00	30.800	10		BIASED HIGH	AUTO, FLAME PHOTOM
F063	82.50	8.250	10	L L	BIASED LOW	FLAME AA
F064	14.00	1.400	10	L ELL ELL VL	BIASED LOW	AAS
F066	99.50	33.167	3	H H	INSUFFICIENT DATA	ICP
F067	275.50	27.550	10	H		FLAME AE
F068	237.00	23.700	10			IC
F069	121.50	12.150	10			AA (FLAME)
F071	250.50	25.050	10	H		FLAME-AA
F075	130.00	13.000	10			AA

OVERALL AVERAGE RANK IS 18.557

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F064	14.00	1.400	10	LELLELLVL	BIASED LOW	AAS
F010	79.00	7.900	10		BIASED LOW	ICP
F001	80.00	8.000	10		BIASED LOW	FLAME EMISSION
F063	82.50	8.250	10	LL	BIASED LOW	FLAME AA
F006	83.00	8.300	10	L	BIASED LOW	
F003	92.00	9.200	10			FLAME EMISSION
F038	96.50	9.650	10			ICP
F069	121.50	12.150	10			AA (FLAME)
F075	130.00	13.000	10			AA
F008	117.50	13.056	9			FLAME EMIS
F048	137.00	13.700	10	VLEL		IC
F007	153.00	15.300	10			
F036	154.00	15.400	10			FLAME AA
F033	164.00	16.400	10			ICP
F031	169.50	16.950	10	VH		AA FLAME
F014	174.00	17.400	10			ATOMIC ABSORPTION
F025	175.50	17.550	10			FLAME EMISSION
F002	178.50	17.850	10	VH		19103
F015	191.00	19.100	10			ICP
F032	192.00	19.200	10			ATOMIC ABSORPTION
F034	202.00	20.200	10	HEL		
F058	208.00	20.800	10	VH		AAS
F030	213.00	21.300	10			FP
F016	230.00	23.000	10	EH		ICP
F059	232.50	23.250	10			FAE
F037	211.00	23.444	9			ICP
F068	237.00	23.700	10			IC
F071	250.50	25.050	10	H		FLAME-AA
F035	251.00	25.100	10			ICP-AES
F020	252.00	25.200	10			19111
F046	257.50	25.750	10			ICP
F013	261.00	26.100	10			ICP
F042	265.50	26.550	10	EL		FLAME AA
F067	275.50	27.550	10	H		FLAME AE
F060	308.00	30.800	10		BIASED HIGH	AUTO, FLAME PHOTOM
F066	99.50	33.167	3	HH	INSUFFICIENT DATA	ICP
F011	360.50	36.050	10	EHEHEHEHEHEHEHEHEH	BIASED HIGH	

OVERALL AVERAGE RANK IS 18.557

Potassium

PARAMETER: 20091 Calcium MG/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab QA for Major Ions & Nutrients

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= 1.0000 BASIC ACCEPTABLE ERROR= .2000 CONCENTRATION ERROR INCREMENT= .0800

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	5.	22.00	3. L	2.00	13.	7.00	12.	24.50	28.	24.00	32.	16.00
F002	5.0	22.00	3.5	28.50	14.3	32.50	12.3	30.50	28.5	29.00	33.2	27.00
F003	4.82	12.00	3.30	10.00	13.5	18.50	11.8	19.00	26.9	12.50	31.7	15.00
F006	5.	22.00	4. VH	38.00	14.	27.50	12.	24.50	27.	14.00	33.	23.50
F007	4.95	18.00	3.40	21.00	13.5	18.50	11.8	19.00	27.5	20.00	32.4	19.00
F008	4.87	15.00	3.29	8.00	13.2	10.00	11.4	10.00	26.5	8.00	30.3	5.00
F009	5.6 H	36.00	3.9 H	36.00	15.6 VH	39.00	13.7 VH	39.00	31. VH	37.50	37. VH	37.50
F010	<1.67 EL	0.00	3.54	31.00	13.34	13.50	11.76	17.00	27.4	18.00	32.81	21.00
F011	4.80	11.00	3.30	10.00	13.30	11.50	11.40	10.00	26.60	10.00	31.10	8.50
F013	5.18	31.00	3.50	28.50	14.13	30.00	12.06	27.00	28.26	28.00	33.15	26.00
F014	4.03 VL	3.00	3.11	5.50	12.9	6.00	11.5	12.00	26.5	8.00	31.1	8.50
F015	5.0	22.00	3.4	21.00	13.9	25.50	11.9	22.50	27.9	23.00	32.9	22.00
F016	4.83	13.50	3.32	14.00	13.9	25.50	11.9	22.50	28.2	26.50	33.0	23.50
F020	5.04	26.00	3.39	18.00	13.7	23.00	11.8	19.00	28.2	26.50	34.0	30.50
F025	4.40 L	6.00	3.10	3.50	13.5	18.50	11.7	15.50	27.8	22.00	33.1	25.00
F030	5.00	22.00	3.45	24.00	13.89	24.00	11.83	21.00	30.73 H	36.00	34.20	33.00
F031	4.78	10.00	3.30	10.00	13.02	8.00	11.53	13.00	27.23	15.00	32.35	18.00
F032	4.77	9.00	3.34	15.00	13.49	16.00	11.61	14.00	27.36	17.00	32.08	17.00
F033	5.2	33.50	3.6	32.50	14.3	32.50	12.4	32.00	29.	32.00	34.	30.50
F034	6.5 EH	38.00	4.2 EH	39.00	14.5	35.00	13.6 VH	38.00	27.5	20.00	30.1	4.00
F035	5.2	33.50	3.5	28.50	14.4	34.00	12.5	33.00	28.9	31.00	34.0	30.50
F036	5.05	27.00	3.49	25.50	13.34	13.50	11.10	6.00	26.42	6.00	31.32	12.00
F037	5.3	35.00	3.65	34.00	15.00 H	37.00	13.00 H	36.00	31.18 VH	39.00	37.65 VH	39.00
F038	5.19	32.00	3.42	23.00	13.5	18.50	11.7	15.50	25.5	4.00	27.3 VL	2.00
F040	4.73	8.00	3.19	7.00	13.3	11.50	11.4	10.00	26.8	11.00	31.5	13.00
F042	5.02	25.00	3.39	18.00	13.6	21.50	12.7	34.00	27.5	20.00	33.3	28.00
F046	5.07	28.00	3.50	28.50	14.02	29.00	12.14	28.00	28.02	25.00	32.78	20.00
F048	5.13	29.00	3.94 H	37.00	13.41	15.00	12.03	26.00	27.25	16.00	31.68	14.00
F057	3.1 EL	1.00	3.6	32.50	14.2	31.00	12.2	29.00	28.8	30.00	36.8 H	36.00
F058	4.976	19.00	3.301	12.00	11.8 L	2.00	10.1 VL	2.00	24.6 L	2.00	29.3 L	3.00
F059	4.3 L	4.00	3.1	3.50	12.6	3.50	10.8	3.00	29.4	34.00	35.7 H	35.00
F060	4.9	16.00	3.4	21.00	14.0	27.50	12.3	30.50	29.1	33.00	34.0	30.50
F063	4.56	7.00	3.11	5.50	12.82	5.00	11.05	5.00	24.78 L	3.00	30.52	6.00
F064	3.96 VL	2.00	2.66 VL	1.00	11.22 VL	1.00	9.51 EL	1.00	21.11 EL	1.00	27.00 EL	1.00
F066	5.61 H	37.00	3.87 H	35.00	15.5 VH	38.00	13.3 H	37.00	31.0 VH	37.50	37.0 VH	37.50
F067	4.36 L	5.00	3.35	16.00	12.6	3.50	10.9	4.00	26.5	8.00	31.3	10.50
F069	4.94	17.00	3.39	18.00	13.6	21.50	11.2	7.00	26.9	12.50	31.3	10.50
F071	5.16	30.00	3.49	25.50	14.9 H	36.00	12.8	35.00	29.7	35.00	35.2	34.00
F075	4.83	13.50	3.31	13.00	13.07	9.00	11.36	8.00	26.27	5.00	30.90	7.00
MEDIAN CONC.	4.9880		3.4000		13.5000		11.8000		27.5000		32.7800	

PARAMETER: 20091 Calcium MG/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	26.	15.00	46.	12.50	21.	7.50	65.	22.00
F002	26.3	19.00	48.6	26.00	21.6	16.50	68.0	28.50
F003	25.7	13.00	46.7	17.00	24.6 H	37.00	63.6	11.50
F006	27.	25.00	47.	18.50	22.	21.00	64.	13.50
F007	25.6	11.50	46.1	14.00	21.4	13.00	64.3	16.50
F008	24.8	3.00	44.5	4.00	20.9	5.50	60.7	4.00
F009	30. VH	38.00	52. H	37.00	25.3 VH	38.50	71. H	34.50
F010	26.48	20.00	47.2	21.00	22.36	23.00	64.	13.50
F011	25.50	8.00	44.60	6.00	21.00	7.50	55.60 VL	2.00
F013	27.11	26.00	47.88	24.00	22.49	27.00	65.76	24.00
F014	25.5	8.00	45.7	11.00	21.2	10.50	63.6	11.50
F015	26.9	23.50	47.6	23.00	22.1	22.00	66.4	26.00
F016	26.9	23.50	47.0	18.50	24. H	35.00	64.7	18.50
F020	27.3	27.00	49.6	29.00	22.4	25.00	68.0	28.50
F025	26.7	22.00	47.5	22.00	21.9	19.00	64.2	15.00
F030	29.14 H	35.00	52.66 H	38.00	23.95 H	34.00	70.67 H	32.00
F031	26.18	17.00	45.40	9.00	21.82	18.00	63.25	9.00
F032	26.13	16.00	46.5	15.00	21.53	15.00	66.	25.00
F033	28.	32.00	51.	33.50	23.	29.00	69.	30.00
F034	27.7	29.50	49.4	27.50	21.6	16.50	72.0 H	38.00
F035	27.8	31.00	49.4	27.50	22.9	28.00	64.3	16.50
F036	25.56	10.00	42.66 L	3.00	19.94 L	3.00	64.98	21.00
F037	29.42 H	36.00	50.12	31.00	23.76	33.00	71.88 H	37.00
F038	23. VL	2.00	41.3 VL	2.00	20.9	5.50	61.6	6.00
F040	25.5	8.00	44.7	7.50	21.4	13.00	62.7	7.00
F042	26.2	18.00	48.4	25.00	23.3	30.00	71.4 H	36.00
F046	26.66	21.00	47.15	20.00	21.95	20.00	65.67	23.00
F048	25.88	14.00	46.53	16.00	19.64 L	2.00	64.84	20.00
F057	30.1 VH	39.00	51.6 H	35.00	25.3 VH	38.50	70.7 H	33.00
F058	27.4	28.00	51.0	33.50	22.4	25.00	75.0 VH	39.00
F059	28.6	34.00	51.8 H	36.00	23.7	32.00	71.0 H	34.50
F060	27.7	29.50	50.0	30.00	22.4	25.00	66.7	27.00
F063	25.04	4.00	44.54	5.00	20.44	4.00	58.80 L	3.00
F064	20.54 EL	1.00	32.81 EL	1.00	15.78 EL	1.00	48.96 EL	1.00
F066	29.9 VH	37.00	53.0 VH	39.00	24.5 H	36.00	64.7	18.50
F067	25.4	6.00	46.0	12.50	21.4	13.00	63.3	10.00
F069	25.6	11.50	45.6	10.00	21.2	10.50	62.9	8.00
F071	28.1	33.00	50.3	32.00	23.5	31.00	70.5 H	31.00
F075	25.24	5.00	44.70	7.50	21.12	9.00	61.27	5.00
MEDIAN CONC.	26.4800		47.1500		21.9500		64.8400	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	152.50	15.250	10	L		AUTO AA
F002	259.50	25.950	10			20110
F003	165.50	16.550	10	H		AUTO AA
F006	227.50	22.750	10	VH		
F007	170.50	17.050	10			
F008	72.50	7.250	10		BIASED LOW	AA / ICP
F009	373.00	37.300	10	H H VHVHVHVHVHH VHH	BIASED HIGH	ICP
F010	178.00	19.778	9	EL		ICP
F011	84.50	8.450	10	VL	BIASED LOW	
F013	271.50	27.150	10			ICP
F014	84.00	8.400	10	VL	BIASED LOW	ICP
F015	230.50	23.050	10			ICP
F016	221.00	22.100	10	H		ICP
F020	252.50	25.250	10			20103
F025	168.50	16.850	10	L		AUTO AA
F030	299.00	29.900	10	H H H H H		ICAP
F031	127.00	12.700	10			AA FLAME
F032	159.00	15.900	10			ATOMIC ABSORPTION
F033	317.50	31.750	10		BIASED HIGH	ICP
F034	285.50	28.550	10	EHEH VH H		
F035	293.50	29.350	10			ICP-AES
F036	127.00	12.700	10	L L		FLAME AA
F037	357.00	35.700	10	H H VHVHH H	BIASED HIGH	ICP
F038	110.50	11.050	10	VLVLVL		ICP
F040	96.00	9.600	10			FLAME AAS
F042	255.50	25.550	10	H		FLAME AA
F046	242.50	24.250	10			ICP
F048	189.00	18.900	10	H L		IC
F057	305.00	30.500	10	EL H VHH VHH		ICP
F058	165.50	16.550	10	L VLL L VH		AAS
F059	219.50	21.950	10	L H H H		ICP
F060	270.00	27.000	10			ICP, DISSOLVED
F063	47.50	4.750	10	L L	BIASED LOW	FLAME AA
F064	11.00	1.100	10	VLVLVLELELELELELELEL	BIASED LOW	AAS
F066	352.50	35.250	10	H H VHH VHVHVHVHH	BIASED HIGH	ICP
F067	88.50	8.850	10	L	BIASED LOW	ICAP
F069	126.50	12.650	10			ICP
F071	322.50	32.250	10	H H	BIASED HIGH	FLAME-AA
F075	82.00	8.200	10		BIASED LOW	ICP

OVERALL AVERAGE RANK IS 19.951

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F064	11.00	1.100	10	VLVLVLELELELELELELEL	BIASED LOW	AAS
F063	47.50	4.750	10	LL	BIASED LOW	FLAME AA
F008	72.50	7.250	10		BIASED LOW	AA / ICP
F075	82.00	8.200	10		BIASED LOW	ICP
F014	84.00	8.400	10	VL	BIASED LOW	ICP
F011	84.50	8.450	10	VL	BIASED LOW	
F067	88.50	8.850	10	L	BIASED LOW	ICAP
F040	96.00	9.600	10			FLAME AAS
F038	110.50	11.050	10	VLVLVL		ICP
F069	126.50	12.650	10			ICP
F031	127.00	12.700	10			AA FLAME
F036	127.00	12.700	10	LL		FLAME AA
F001	152.50	15.250	10	L		AUTO AA
F032	159.00	15.900	10			ATOMIC ABSORPTION
F003	165.50	16.550	10	H		AUTO AA
F058	165.50	16.550	10	LVLLLVH		AAS
F025	168.50	16.850	10	L		AUTO AA
F007	170.50	17.050	10			
F048	189.00	18.900	10	HL		IC
F010	178.00	19.778	9	EL		ICP
F059	219.50	21.950	10	LHHH		ICP
F016	221.00	22.100	10	H		ICP
F006	227.50	22.750	10	VH		
F015	230.50	23.050	10			ICP
F046	242.50	24.250	10			ICP
F020	252.50	25.250	10			20103
F042	255.50	25.550	10	H		FLAME AA
F002	259.50	25.950	10			20110
F060	270.00	27.000	10			ICP, DISSOLVED
F013	271.50	27.150	10			ICP
F034	285.50	28.550	10	EHEHVHH		
F035	293.50	29.350	10			ICP-AES
F030	299.00	29.900	10	HHHHH		ICAP
F057	305.00	30.500	10	ELHVHHVHH		ICP
F033	317.50	31.750	10		BIASED HIGH	ICP
F071	322.50	32.250	10	HH	BIASED HIGH	FLAME-AA
F066	352.50	35.250	10	HHVHHVHVHVHVHH	BIASED HIGH	ICP
F037	357.00	35.700	10	HHVHVHHH	BIASED HIGH	ICP
F009	373.00	37.300	10	HHVHVHVHVHVHHVHH	BIASED HIGH	ICP

OVERALL AVERAGE RANK IS 19.951

Calcium

PARAMETER: 15092 Total Phosphorus MG P/L

RESEARCH AND APPLICATIONS BRANCH
NATIONAL WATER RESEARCH INSTITUTE
BURLINGTON ONTARIO

NWRI Ecosystem Interlab for Total Phosphorus

LOWER LIMIT FOR USE OF BASIC ACCEPTABLE ERROR= .0040 BASIC ACCEPTABLE ERROR= .0040 CONCENTRATION ERROR INCREMENT= .1000

SAMPLE	1		2		3		4		5		6	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.002	8.50	.003	8.50	.006	15.00	.016	14.00	.031	16.00	.053	17.00
F002		0.00	.002	3.00	.004	4.00	.012	2.00	.025	2.50	.044	5.00
F003	.0014	5.00	.0030	8.50	.0061	18.00	.0162	16.00	.0312	18.00	.0538	19.00
F004	<.002	0.00	.002	3.00	.005	8.50	.015	9.50	.029	8.00	.050	10.00
F006	<.02	0.00	<.02	0.00	.07 EH	27.00	.07 EH	28.00	.07 EH	28.00	.06	27.00
F007	.001W	0.00	.001W	1.00	.003	2.00	.015	9.50	.030	12.00	.056	23.50
F008	.001	3.50	.003	8.50	.007	21.00	.018	20.00	.033	22.00	.054	20.50
F009	<.03	0.00	<.03	0.00	<.03	0.00	<.03	0.00	<.03	0.00	.04 L	3.00
F010	<.005	0.00	<.005	0.00	.005	8.50	.015	9.50	.030	12.00	.055	22.00
F011	.002	8.50	.003	8.50	.005	8.50	.017	18.00	.032	20.50	.052	15.00
F013	<.005	0.00	.004	14.50	.004	4.00	.013	3.50	.031	16.00	.053	17.00
F014	<.005	0.00	<.005	0.00	.005	8.50	.015	9.50	.029	8.00	.051	12.50
F015	<.002	0.00	.004	14.50	.007	21.00	.02	24.00	.035	24.50	.06	27.00
F016	.06 EH	15.00	.08 EH	20.00	.06 EH	26.00	.08 EH	29.00	.09 EH	29.00	.10 EH	30.00
F020	<.003	0.00	<.003	0.00	.006	15.00	.017	18.00	.030	12.00	.050	10.00
F025	<.003	0.00	<.005	0.00	.006	15.00	.019	22.00	.035	24.50	.054	20.50
F030	<.01	0.00	<.01	0.00	<.01	0.00	.02	24.00	.03	12.00	.06	27.00
F032	.002T	8.50	.004T	14.50	.008	23.50	.02	24.00	.034	23.00	.056	23.50
F033	.002	8.50	.003	8.50	.005	8.50	.011	1.00	.020 VL	1.00	.035 VL	1.00
F035	.002	8.50	.004	14.50	.006	15.00	.014	5.50	.027	4.00	.040 L	3.00
F036	.0009	2.00	.0034	12.00	.0068	19.00	.0184	21.00	.0318	19.00	.0513	14.00
F038	.001	3.50	.003	8.50	.006	15.00	.016	14.00	.029	8.00	.05	10.00
F042	.005	12.00	.002	3.00	.004	4.00	.017	18.00	.030	12.00	.051	12.50
F046	.02W	0.00	.02W	0.00	.04 EH	25.00	.03 EH	26.00	.04 H	26.00	.04 L	3.00
F048	<.003	0.00	<.003	0.00	.005	8.50	.016	14.00	.031	16.00	.053	17.00
F058	.0005	1.00	.0023	5.00	.0054	12.00	.0150	9.50	.0278	5.00	.0460	8.00
F063	.002	8.50	.005	17.00	.008	23.50	.014	5.50	.032	20.50	.057	25.00
F064	.123 EH	16.00	.082 EH	21.00	.123 EH	28.00	.041 EH	27.00	.041 H	27.00	.082 EH	29.00
F069	.025 EH	14.00	.007	18.00	.002	1.00	.013	3.50	.025	2.50	.045	6.50
F075	.015 EH	13.00	.014 EH	19.00	.007	21.00	.015	9.50	.028	6.00	.045	6.50
MEDIAN CONC.	.0020		.0030		.0060		.0160		.0310		.0525	

PARAMETER: 15092 Total Phosphorus MG P/L

SAMPLE	7		8		9		10	
LAB NO	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK	REPORTED VALUE	RANK
F001	.090	16.50	.117	19.00	.150	15.50	.190	9.00
F002	.075 L	2.00	.105	5.00	.135	4.00	.200	20.50
F003	.0903	21.00	.1158	17.00	.1508	18.00	.1976	17.00
F004	.088	11.00	.110	7.00	.144	10.00	.192	12.00
F006	.10	27.00	.13 H	26.00	.17 H	27.00	.14 EL	1.00
F007	.090	16.50	.116	18.00	.148	11.50	.330 EH	30.00
F008	.098	25.00	.137 H	28.00	.172 H	28.00	.223 H	27.00
F009	.07 VL	1.00	.10	3.00	.13 L	3.00	.17 L	3.00
F010	.090	16.50	.115	16.00	.150	15.50	.195	14.50
F011	.100	27.00	.120	22.00	.153	21.00	.206	25.00
F013	.094	23.00	.120	22.00	.156	22.50	.196	16.00
F014	.090	16.50	.112	10.50	.15	15.50	.19	9.00
F015	.096	24.00	.125	25.00	.161	25.00	.212	26.00
F016	.14 EH	29.00	.16 EH	29.00	.18 VH	29.00	.24 VH	28.00
F020	.087	8.50	.114	14.00	.149	13.00	.192	12.00
F025	.093	22.00	.111	8.50	.156	22.50	.195	14.50
F030	.09	16.50	.12	22.00	.15	15.50	.20	20.50
F032	.09	16.50	.12	22.00	.152	19.50	.192	12.00
F033	.082	4.00	.096 L	1.00	.125 L	2.00	.176	4.00
F035	.085	7.00	.114	14.00	.136	5.00	.200	20.50
F036	.0826	5.00	.1089	6.00	.1429	7.00	.1770	5.00
F038	.088	11.00	.112	10.50	.143	8.50	.186	7.00
F042	.087	8.50	.136 H	27.00	.168	26.00	.203	24.00
F046	.10	27.00	.120	22.00	.16	24.00	.20	20.50
F048	.090	16.50	.114	14.00	.152	19.50	.190	9.00
F058	.0753 L	3.00	.0965 L	2.00	.1235 L	1.00	.1663 L	2.00
F063	.088	11.00	.113	12.00	.148	11.50	.201	23.00
F064	.246 EH	30.00	.205 EH	30.00	.205 EH	30.00	.287 EH	29.00
F069	.084	6.00	.111	8.50	.143	8.50	.199	18.00
F075	.090	16.50	.103	4.00	.141	6.00	.179	6.00
MEDIAN CONC.	.0900		.1145		.1500		.1955	

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F001	139.00	13.900	10			Blk Dig AA
F002	48.00	5.333	9	L	BIASED LOW	15413
F003	157.50	15.750	10			SnCl2
F004	79.00	8.778	9			15423
F006	191.00	23.875	8	EHEHEH H H EL	BIASED HIGH	
F007	124.00	13.778	9	EH		104E1
F008	203.50	20.350	10	H H H		Moly AA
F009	13.00	2.600	5	L VL L L	BIASED LOW	PERS TRAACS
F010	114.50	14.313	8			COLORIMETRIE
F011	174.00	17.400	10			
F013	138.50	15.389	9			Asc AA
F014	90.00	11.250	8			AUTO ANALYZER
F015	211.00	23.444	9		BIASED HIGH	Moly AA
F016	264.00	26.400	10	EHEHEHEHEHEHEHEHVHVH	BIASED HIGH	AUTO
F020	102.50	12.813	8			15301
F025	149.50	18.688	8			Asc Acid
F030	137.50	19.643	7			PERSULFATE-SPECTRO
F032	187.00	18.700	10			COLOURIMETRY
F033	39.50	3.950	10	VLVL L L	BIASED LOW	Colour
F035	97.00	9.700	10	L		Dig Colour
F036	110.00	11.000	10			AUTOCLAVE-AUTO
F038	96.00	9.600	10			Colourimtric
F042	147.00	14.700	10	H		PER. AA
F046	173.50	21.688	8	EHEHH L		Dig Colour
F048	114.50	14.313	8			Dig Asc AA
F058	48.50	4.850	10	L L L L	BIASED LOW	COLORIMETRIC
F063	157.50	15.750	10			B.I.DIG.AUTO ASC.A
F064	267.00	26.700	10	EHEHEHEHH EHEHEHEHEH	BIASED HIGH	Colourimetry
F069	86.50	8.650	10	EH		AUTO COLORIMETRIC
F075	107.50	10.750	10	EHEH		ASCORBIC ACID

OVERALL AVERAGE RANK IS 14.535

LAB NO.	TOTAL RANK	AVERAGE RANK	NO.OF SAMPLES RANKED	SUMMARY OF FLAGGING	BIAS STATEMENT	METHOD CODING
F009	13.00	2.600	5	LVLLL	BIASED LOW	PERS TRAACS
F033	39.50	3.950	10	VLVLLL	BIASED LOW	Colour
F058	48.50	4.850	10	LLLL	BIASED LOW	COLORIMETRIC
F002	48.00	5.333	9	L	BIASED LOW	15413
F069	86.50	8.650	10	EH		AUTO COLORIMETRIC
F004	79.00	8.778	9			15423
F038	96.00	9.600	10			Colourimtric
F035	97.00	9.700	10	L		Dig Colour
F075	107.50	10.750	10	EHEH		ASCORBIC ACID
F036	110.00	11.000	10			AUTOCLAVE-AUTO
F014	90.00	11.250	8			AUTO ANALYZER
F020	102.50	12.813	8			15301
F007	124.00	13.778	9	EH		104E1
F001	139.00	13.900	10			Blk Dig AA
F048	114.50	14.313	8			Dig Asc AA
F010	114.50	14.313	8			COLORIMETRIE
F042	147.00	14.700	10	H		PER. AA
F013	138.50	15.389	9			Asc AA
F003	157.50	15.750	10			SnCl2
F063	157.50	15.750	10			B.I.DIG.AUTO ASC.A
F011	174.00	17.400	10			
F025	149.50	18.688	8			Asc Acid
F032	187.00	18.700	10			COLOURIMETRY
F030	137.50	19.643	7			PERSULFATE-SPECTRO
F008	203.50	20.350	10	HHH		Moly AA
F046	173.50	21.688	8	EHEHHL		Dig Colour
F015	211.00	23.444	9		BIASED HIGH	Moly AA
F006	191.00	23.875	8	EHEHEHHHEL	BIASED HIGH	
F016	264.00	26.400	10	EHEHEHEHEHEHEHEHVHVH	BIASED HIGH	AUTO
F064	267.00	26.700	10	EHEHEHEHHEHEHEHEHEH	BIASED HIGH	Colourimetry

OVERALL AVERAGE RANK IS 14.535

Total Phosphorus

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