



# Environment Canada Proficiency Testing Program / Environnement Canada Programme d'Essais d'Aptitude

Study / Étude 0097  
December / Décembre 2010 to March / Mars 2011

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Rain and Soft Waters /  
Eau de Pluie et Eau Douce,  
Major Ions and Nutrients in Water /  
Principaux Ions et Substances Nutritives dans l'Eau,  
Trace Elements in Water /  
Éléments Traces dans l'Eau,  
Total Phosphorus in Water /  
Phosphore Total dans l'Eau,  
Turbidity in Water /  
Turbidité dans l'Eau,  
Total Mercury in Water /  
Mercure Total dans l'Eau

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C. Tinson  
WSTD Contribution No. 10-150



Environment  
Canada

Environnement  
Canada

## Information and Quality Management

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March 28, 2011

**To:** Participants of the **Environment Canada Proficiency Testing (PT) Program**

**Re:** Distribution of the Final Report for **PT Study 0097** (December 2010 to March 2011)

Dear Participant,

We thank you for your co-operation and punctual responses with respect to this study. It is the aim of the PT Program to give prompt evaluations and reports, and effective remedial assistance. Our PT Program is accredited by the American Association for Laboratory Accreditation (A2LA) and conforms to ILAC G13:2007, Guidelines for the Requirements for the Competence of Providers of Proficiency Testing. The scope of accreditation (A2LA 2867.01) can be viewed on the A2LA website (<http://www.a2la.org/scopepdf/2867-01.pdf>).

This final report includes results and evaluations for **inorganic parameters in rain and soft waters (RN)**, **major ions and nutrients in natural waters (MI)**, **trace elements in water (TE)**, **total phosphorus in water (TP)**, **turbidity in water (TU)** and **total mercury in water (HG)**. The evaluation includes systemic bias and precision, a laboratory proficiency appraisal and a summary of z-scores. The flagging criteria, stipulated in ISO 13528:2005, Annex C, are calculated separately for each study. Each laboratory is encouraged to compare its results and evaluations with others. A complete listing of all laboratory results is included.

Laboratory managers are encouraged to discuss the attached report openly with those who manage their programs and those who use their laboratory data. Systemic bias is a major fault whose root cause can be uncovered. Systemic bias and its degree are given for each parameter in the Data Summary. In the event you disagree with any of our data evaluations, please contact us and we will discuss the item with you. The matter may also be brought forward to our annual Advisory Group meeting.

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 only possible through the relevant laboratories or program authorities.

Should you have any questions or comments regarding this study, please contact us at your earliest convenience. Your comments are instrumental to the continued improvement of our PT Program.

Sincerely,

Cheryl Tinson

Study Coordinator

Enclosures (2)

- 1) Laboratory Proficiency Appraisal
- 2) Z-Score Summary



Information and Quality Management  
Proficiency Testing Program  
Inorganic Environmental Substances

Canada

# **Environment Canada Proficiency Testing Program**

## **Final Report**

**for**

**Rain and Soft Waters  
Major Ions and Nutrients in Natural Waters  
Trace Elements in Water  
Total Phosphorus in Water  
Turbidity in Water  
Total Mercury in Water**

**EC PT Study 0097 – December 2010 to March 2011**

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March 2011

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## **TABLE OF CONTENTS**

Abstract

Management Perspective

Program Description

Glossary of Terms and Definitions

Section 1 – Rain and Soft Waters

Section 2 – Major Ions and Nutrients in Natural Waters

Section 3 – Trace Elements in Water

Section 4 – Total Phosphorus in Water

Section 5 – Turbidity in Water

Section 6 – Total Mercury in Water

*Each of the above sections contains the following,*

*Table 1-Participating Laboratories*

*Table 2-Laboratory Performance Scores*

*Table 3-Five-Year Historical Laboratory Performance*

*Table 4-Sample Design*

*Table 5-Summary of Interlaboratory Median Values*

*Appendix A - Data Summary*

## Abstract

Interlaboratory proficiency testing (PT) studies are an important part of assuring the accuracy and comparability of analytical results.

In this study, results are evaluated for systemic bias and precision. Systemic bias is tested with the non-parametric method of Youden and precision is tested with the “robust analysis algorithm A” found in Annex C of ISO 13528:2005. The total of flagged results and biased methods gives the proficiency rating for each laboratory. The former is extremely important for comparing data sets from different origins and the latter measures the reliability of the data.

Proficiency ratings for laboratories are given in relative terms. In real terms, laboratories with good performance have few flagged results and laboratories with poor performance may have many flagged results. Results are summarized in individual laboratory appraisals and z-score summaries, which are sent to the laboratory managers. The PT program provides an objective, third-party performance assessment as a tool to help laboratories generate reliable and accurate analytical measurements.

## Résumé

Les programmes d'essais d'aptitude (EA) sont un élément important de l'assurance de l'exactitude et de la comparabilité des résultats d'analyse.

Dans le cadre de ces études, les résultats font l'objet d'une évaluation de leur biais systémique et de leur exactitude. Le biais systémique est testé par la méthode non paramétrique de Youden et l'exactitude par l'algorithme A d'analyse robuste présenté dans l'annexe C de la norme ISO 13528:2005. La cote des compétences, ou d'aptitude, de chaque laboratoire est donnée par le total des résultats recensés anormaux et des méthodes biaisées. Le premier élément est extrêmement important pour la comparaison des ensembles de données d'origines diverses et le second détermine la fiabilité des données.

Les cotes des compétences des laboratoires sont assignées de façon relative. Concrètement, les laboratoires dont la performance est bonne présentent peu de résultats anormaux tandis que les laboratoires dont la performance est mauvaise présentent plusieurs résultats anormaux. Les résultats de chaque laboratoire sont résumés par des évaluations individuelles et un résumé des scores z est communiqué aux gestionnaires du laboratoire. Le programme EA est un outil objectif d'évaluation de la performance par un tiers qui aide les laboratoires à effectuer des mesures d'analyse fiables et exactes.

## Management Perspective

The Information and Quality Management Group of Environment Canada (EC) provides a Proficiency Testing (PT) program for inorganic substances in water at environmental levels. This program offers parameters and concentration ranges not covered by any other PT program in Canada. Participation in these PT studies assists laboratories in assuring the quality of analytical results. Quality assured analytical results are critical when providing scientific advice.

Laboratories receive a preliminary data assessment which discloses systemic bias and precision. The final reports provide a complete listing of current and historical performance. Individual proficiency appraisals indicate areas and parameters where remedial action is required to improve accuracy and performance. In this way, the PT studies are an effective means to improve data quality.

Participants include EC laboratories, public and private laboratories in Canada and around the world.

## Perspective de gestion

Le Groupe de la gestion de l'information et de la qualité d'Environnement Canada (EC) offre un programme d'essais d'aptitude (EA) pour l'analyse des substances inorganiques présentes dans l'eau aux concentrations normales dans l'environnement. Ce programme vise des paramètres et des gammes de concentrations dont l'analyse n'est offerte par aucun autre programme du genre au Canada. La participation à ces études de EA aide les laboratoires à garantir la qualité de leurs résultats d'analyse. L'assurance de la qualité des résultats d'analyse est un élément essentiel de la prestation d'avis scientifiques.

Les laboratoires reçoivent tout d'abord une évaluation préliminaire des données qui fait état des biais systémiques et des erreurs. Les rapports finaux donnent un état détaillé de la performance actuelle et antérieure. Des évaluations individuelles de la performance précisent les secteurs et les paramètres pour lesquels des mesures correctives doivent être prises pour améliorer l'exactitude et la performance. Les études de EA constituent ainsi un moyen efficace d'améliorer la qualité des données.

Des laboratoires d'EC de même que des laboratoires publics et privés au Canada et à l'étranger participent à ce programme.



## Environment Canada Proficiency Testing Program

### Program Description:

Environment Canada (EC) provides accredited proficiency testing (PT) studies for a wide range of inorganic constituents in water and in sediment. These PT Studies are designed to quantify laboratory performance and improve the quality of environmental data. Reports produced from the client data provide a powerful tool for the continual improvement of the quality of analytical results.

The EC PT program includes:

- all lab codes are strictly confidential
- two months to analyze and submit laboratory data
- preliminary data assessment is sent three weeks after results are due
- laboratory proficiency appraisals are sent to participants
- z-score summaries are sent to participants
- a final report is mailed to participants and concludes the study

The studies are offered twice a year and consist of six 'sample sets' per study with ten samples in each set (see Table 1). The samples are prepared in natural background waters from lakes, rivers or rainwater, and are fortified or preserved as necessary. The trace elements in water samples are generally divided to reflect both low and high concentration ranges. Participating laboratories submit results for parameters they routinely analyze. Analytical results are submitted electronically for assessment.

Table 1 'Sample Sets' offered in the Summer and Winter Studies

SUMMER STUDY	WINTER STUDY
<ol style="list-style-type: none"><li>1. rain and soft waters (RN)</li><li>2. major ions and nutrients (MI)</li><li>3. trace elements in water (TE)</li><li>4. total phosphorus in water (TP)</li><li>5. turbidity in water (TU)</li><li>6. (a)trace elements in sediment (SED)*</li></ol>	<ol style="list-style-type: none"><li>1. rain and soft waters (RN)</li><li>2. major ions and nutrients (MI)</li><li>3. trace elements in water (TE)</li><li>4. total phosphorus in water (TP)</li><li>5. turbidity in water (TU)</li><li>6. (b)total mercury in water (HG)</li></ol>

\*five samples per set

PT study reports feature tabulation of all results and provide extensive evaluations. All analytical and data results are listed in the data summary. Of particular interest to laboratories, proficiency is ranked in terms of the number of biased parameters (systemic bias) and flagged results (precision measurement). Each laboratory receives a formal appraisal and z-score summary indicating the proficiency for each parameter submitted.

The Environment Canada PT program conforms to the requirements of the American Association for Laboratory Accreditation (A2LA). The program meets the ILAC G-13:2007 Guidelines for the Requirements for the Competence of Providers of Proficiency Testing. Environment Canada is the A2LA accredited Proficiency Testing Provider with scope of accreditation 2867.01.





## Programme d'essais d'aptitude d'Environnement Canada

### Description du programme:

Environnement Canada offre un programme accrédité d'études d'essais d'aptitude (EA) pour un large éventail de substances inorganiques présentes dans l'eau et dans les sédiments. Ces études sont conçues de façon à quantifier la performance des laboratoires et à améliorer la qualité des données sur l'environnement. Les rapports établis à partir des données des clients constituent un outil très puissant d'amélioration permanente de la qualité des résultats d'analyse.

Le programme de EA d'Environnement Canada prévoit :

- la stricte confidentialité de tous les codes de laboratoire;
- une période de deux mois pour l'analyse et la présentation des données de laboratoire;
- la communication d'une évaluation préliminaire des données trois semaines après la date prévue de présentation des résultats;
- la communication aux participants des évaluations de compétences;
- la communication aux participants des résumés des scores z;
- l'envoi par la poste d'un rapport final des données, qui met fin à l'étude.

Les études peuvent être réalisées deux fois par an et chaque étude comporte six « ensembles d'échantillons » formés de dix échantillons (voir le tableau 1). Les échantillons sont préparés à l'aide d'eau de lacs, de cours d'eau ou de pluie représentative des conditions naturelles de fond et sont au besoin enrichis ou préservés. Les éléments traces des échantillons sont généralement répartis de façon à refléter des gammes de concentrations faibles et élevées. Les laboratoires participants présentent les résultats obtenus pour les paramètres qu'ils analysent généralement. Les résultats d'analyse sont soumis par voie électronique aux fins d'évaluation.

Tableau 1 « Ensembles d'échantillons » offerts pour les études d'été et d'hiver

ÉTUDE D'ÉTÉ	ÉTUDE D'HIVER
1. eau de pluie et eau douce (EP-ED) 2. principaux ions et substances nutritives (PI) 3. éléments traces dans l'eau (ET) 4. phosphore total dans l'eau (PT) 5. turbidité dans l'eau (TU) 6. (a)éléments traces dans les sédiments (ETS)*	1. eau de pluie et eau douce (EP-ED) 2. principaux ions et substances nutritives (PI) 3. éléments traces dans l'eau (ET) 4. phosphore total dans l'eau (PT) 5. turbidité dans l'eau (TU) 6. (b)mercure total dans l'eau (MT)

\*cinq échantillons par ensemble

Les rapports des études de EA présentent tous les résultats sous forme de tableaux et des évaluations détaillées. Tous les résultats obtenus pour les analyses et les données sont présentés dans l'annexe des données. Le niveau d'aptitude est indiqué en fonction du nombre de paramètres présentant un biais (biais systématique) et de résultats anormaux (mesure de l'exactitude), ce qui est particulièrement intéressant pour les laboratoires. Chaque laboratoire reçoit une évaluation formelle et un résumé du score z indiquant le niveau d'aptitude pour chacun des paramètres présentés.

Le programme EA d'Environnement Canada satisfait aux exigences du ILAC G13:2007 du l'association américaine pour l'accréditation de laboratoire (A2AL). Environnement Canada est le fournisseur de services d'essais d'aptitude avec la portée d'accréditation 2867.01.



# Environment Canada Proficiency Testing Program

## Glossary of Terms and Definitions

### A. Statistics listed in Data Summary (Appendix B)

- |                      |  |
|----------------------|--|
| 1. Assigned Value    | The <u>median</u> value of test results for a parameter and sample   |
| 2. R-Std Dev         | Robust Standard Deviation [1]  |
| 3. Acceptable Limits | See 'Limits & Flags' and Table 1                                     |
| 4. Warning Limits    | See 'Limits & Flags' and Table 1                                     |
| 5. Action Limits     | See 'Limits & Flags' and Table 1                                     |
| 6. N                 | The number of usable test results for calculating the assigned value |

### B. Calculation of Performance Statistics (Appendix B)

**Laboratory Bias:** Laboratory Bias [2]  $D = x - X$ , where D is the deviation, x is the test result and X is the assigned value. This deviation is normalized with the robust standard deviation (R-Std Dev) and evaluated by the z-score [3] (see enclosed Z-Score Summary).

**Limits & Flags:** Acceptable Limits/No Flags: When a test result is within 2 R-Std Dev of the assigned value, flags are not assigned (see Table 1 below).

Warning Limits/Warning Flags: When a test result is between 2 and 3 R-Std Dev, the flags 'WH' or 'WL' indicate a WARNING flag, for a high or low result respectively (see Table 1 below).

Action Limits/Action Flags: When a test result deviates by more than 3 R-Std Dev from the assigned value, the flags 'AH' or 'AL' indicate an ACTION flag, high or low respectively (see Table 1 below).

Table 1 Evaluating test results, determining limits and assigning flags [2]

Criteria	Limits	Flags
$\text{Assigned value} \pm 2 \sigma^*$	Acceptable Limits	No Flag
$2 \sigma - 3 \sigma$ from assigned value	Warning Limits	Warning Flag (W)
$> 3 \sigma$ from assigned value	Action Limits	Action Flag (A)

\*  $\sigma$  is the R-Std Dev

### **Systemic Bias:**

Systemic bias is indicated when a laboratory's test results (ranked by the Youden non-parametric analysis [4] for an individual parameter) are consistently higher or lower than the assigned value. Ranks are assigned to each test result for each sample, from 1 for the lowest, to N for the highest, where N is the number of usable test results. These ranks are totalled for each laboratory (Total Rank), and divided by the number of samples ranked (No. Samples Ranked). **Total Rank** and **Average Rank** for each laboratory, are displayed on page 2 of the Data Summary. The **Overall Average Rank** for each parameter is shown at the bottom of the same page. Systemic bias is identified when **Average Rank** falls outside of the 95% confidence interval for the **Overall Average Rank**. Systemic bias may be indicated by the Youden rankings even when the test results have not been flagged (W or A) for deviation from the assigned value.

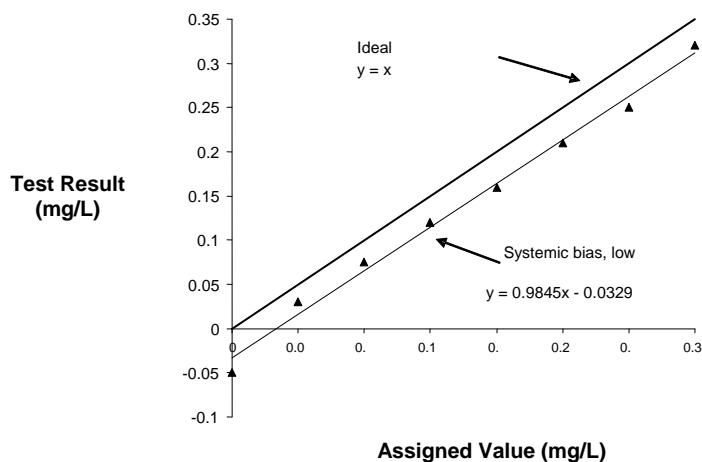
### **No. Samples Ranked:**

This is the number of test results used to calculate systemic bias. A laboratory must report five or more test results (not including '<') and there must be ten or more participating laboratories.

The two measured components of 'systemic' bias are 1) Bias Blank and 2) Bias % Slope. These components are illustrated in Figure 1: Parameter Performance. All 'systemic' biases are correctable with the investigation of the following two analytical components.

- 1) Bias Blank:** The first component is the y-intercept of the linear regression plot (-0.0329 in Figure 1). These bias blanks are stated in the Data Summary and Evaluations for each parameter.
- 2) Bias % Slope:** The second measured component is the % deviation of the laboratory test results versus the assigned values for a parameter. This is calculated as [  $(m-1) \times 100$  ], where  $1$  is the slope of the "ideal" line (assigned values) and  $m$  is the slope of the linear regression plot (laboratory test results). The Bias % Slope in Figure 1 below is minus 1.55 per cent (-1.55%). For most parameters, a Bias % Slope greater than the absolute value of 5 is considered unacceptable and requires action.

**Figure 1: Parameter Performance**



**Bias Statement:** Systemic bias is noted with the 'BIASED HIGH' or 'BIASED LOW' notations. An asterisk with the statement indicates that the bias is considered minor, yet worthy of evaluation. The minor biases are not recorded in the database and are not noted in the laboratory proficiency appraisal (see enclosed Laboratory Proficiency Appraisal). In Table 2 of the Final Report (Laboratory Performance Scores), systemic biases are calculated as the equivalent of five flagged values.

**Method Coding:** Method codes are an important part of quality assurance. These definitions are provided on the Data Reporting Forms to assist with uniform descriptions.

### **C. Enclosures with the Final Report**

1. Laboratory Proficiency Appraisal (see Table 2 in the Final Report for definitions)
2. Z-Score Summary [3]

#### References:

- [1] ISO 13528:2005(E), Statistical Methods for the use in Proficiency Testing by Interlaboratory Comparisons, Annex C, Robust Analysis, Section C.1: Algorithm A, p64.
- [2] ISO 13528:2005(E), Statistical Methods for the use in Proficiency Testing by Interlaboratory Comparisons, Calculation of Performance Statistics, Section 7.1.1 and 7.1.2, p18-19.
- [3] ISO 13528:2005(E), Statistical Methods for the use in Proficiency Testing by Interlaboratory Comparisons, z-scores, Section 7.4.1 and 7.4.2, p25-26.
- [4] Ranking Laboratories by Round-Robin Tests, W.J. Youden, Precision Measurement and Calibration, H.H. Ku, Editor, NBS Special Publication 300-Volume 1, U.S. Government Printing Office, Washington, D.C., 1969.

## **Section 1 – Rain and Soft Waters**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

**Program Name:** FPRAIN

**Study Code:** 0097

Range of Samples: 1 to 10

**Table 1**      **Participating Laboratories - EC PT for Rain & Soft Waters**

Adirondack Lakes Survey Corporation, DEC, Ray Brook, NY, US  
Capital Regional District (CRD) Water Services, Victoria, BC  
Department of Fisheries & Oceans, Freshwater, Winnipeg, MB  
Environment Canada, AAQS, Ottawa, ON  
Environment Canada, ALET, Moncton, NB  
Environment Canada, CAPMON, Toronto, ON  
Environment Canada, NLET, Saskatoon, SK  
Environment Canada, PYLET, Vancouver, BC  
Environment New Brunswick, Fredericton, NB  
Environnement Canada, QLET, Montreal, QC  
Environnement Quebec, CEAEQ, Laval, QC  
Environnement Quebec, CEAEQ, Ste-Foy, QC  
Harvard School of Public Health, Boston, MA, US  
Illinois State Water Survey, Champaign, IL, US  
MACTEC Engineering & Consulting, Newberry, FL, US  
Maxxam Analytics Incorporated, Burnaby, BC  
Natural Resources Canada-CFS-GL, Sault Ste. Marie, ON  
NYS Dept. of Environmental Conservation, Renssalaer, NY, US  
Ontario Ministry of Environment, Dorset, ON  
Ontario Ministry of Environment, LSB, Etobicoke, ON  
Pennsylvania State University, University Park, PA, US  
Petróleo Brasileiro S.A. - PETROBRAS, Brazil  
State of Vermont, DEC, Waterbury, VT, US  
U.S. Environmental Protection Agency, Corvallis, OR, US  
U.S. Geological Survey, Troy, NY, US  
Universidade da Coruña, A Coruña, Spain  
University of New Hampshire, Durham, NH, US  
University of Virginia, Charlottesville, VA, US

## 28 Laboratories.

Program Name: FPRAIN

Number of Labs: 33

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Rain & Soft Waters**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F017	9	0	0.00	71	0	0.00		0.00
F026b	4	0	0.00	40	0	0.00		0.00
F053	10	0	0.00	100	0	0.00		0.00
F068b	4	0	0.00	40	0	0.00		0.00
F110b	5	0	0.00	10	0	0.00		0.00
F118	2	0	0.00	20	0	0.00		0.00
F156	10	0	0.00	100	0	0.00		0.00
F115	13	0	0.00	129	1	0.39		0.39
F183	17	0	0.00	170	2	0.59		0.59
F032	8	0	0.00	80	1	0.63		0.63
F122	5	0	0.00	50	1	1.00		1.00
F007	16	0	0.00	160	4	1.25		1.25
F302	14	0	0.00	140	4	1.43		1.43
F026	16	0	0.00	160	6	1.88		1.88
F204	11	0	0.00	110	5	2.27		2.27
F007b	2	0	0.00	20	1	2.50		2.50
F110	13	1	3.85	130	2	0.77		4.62
F036	17	1	2.94	169	8	2.37		5.31
F014	14	1	3.57	140	8	2.86		6.43
F021	15	1	3.33	150	11	3.67		7.00
F071	14	1	3.57	140	12	4.29		7.86
F112	16	2	6.25	160	6	1.88		8.13
F004	5	1	10.00	50	0	0.00		10.00
F010	10	1	5.00	100	12	6.00		11.00
F113	10	1	5.00	95	13	6.84		11.84
F020	22	2	4.55	220	33	7.50		12.05
F109	14	2	7.14	140	16	5.71		12.86
F074	15	2	6.67	150	26	8.67		15.33
F015	20	3	7.50	200	34	8.50		16.00
F068	7	0	0.00	70	23	16.43		16.43
F015b	2	0	0.00	20	10	25.00		25.00
F159	4	1	12.50	36	10	13.89		26.39
F009	10	6	30.00	100	41	20.50		50.50

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

Program Name: FPRAIN

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Rain & Soft Waters**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F004	0.0	0.0	1.0	1.0	0.0	0.0	11.0	5.0	0.0	10.0	0.5	Good
F007	9.3	10.0	15.7	7.7	7.3	3.3	5.0	4.7	7.3	1.3	7.3	Satisfactory
F007b								3.3	0.0	2.5	2.5	Good
F009	9.6	12.7	20.0	2.5	14.5	10.5	5.5	10.0	37.5	50.5	11.6	Satisfactory
F010	10.5	17.5	21.0	25.7	9.5	18.5	13.5	5.0	12.5	11.0	13.0	Moderate
F014	5.7	14.7	3.0		12.0		3.3			6.4	6.1	Satisfactory
F015	17.1	13.8	10.0	20.2	13.8	5.2	10.3	8.3	14.0	16.0	13.8	Moderate
F015b				7.5	0.0	65.0	2.5	7.5	35.0	25.0	7.5	Satisfactory
F017	0.7	1.4	1.3	0.6	0.7	2.5	0.6	0.0	2.0	0.0	0.7	Good
F020	6.7	3.1	17.5	10.3	5.0	12.6	6.6	6.1	10.0	12.1	8.3	Satisfactory
F021	2.0	5.3	5.7	6.7	6.3	4.3	8.0	10.7	6.7	7.0	6.5	Satisfactory
F026	4.0	10.0	4.4	5.9	0.6	5.0	0.9	3.3	5.0	1.9	4.2	Good
F026b		0.0	2.5	23.3	0.0	1.3	0.0	12.5	13.8	0.0	1.3	Good
F032	4.3	10.8	10.4	87.0	2.5	36.0	14.6	2.7	3.8	0.6	7.3	Satisfactory
F036	3.5	5.9	6.2	13.2	23.3	5.6	7.1	1.8	8.6	5.3	6.0	Satisfactory
F053	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F068		34.3	0.0	1.4	2.9	4.3	5.0	13.6	8.6	16.4	5.0	Good
F068b	12.5	21.3	0.0	3.8	5.0		0.0	13.8	0.0	0.0	3.8	Good
F071	15.7	10.5	30.3	13.7	24.7	14.4	14.6	16.4	13.2	7.9	14.5	Moderate
F074		6.9	9.0		2.5		15.7			15.3	9.0	Satisfactory
F109	9.3	14.6	7.5	17.3	10.8	15.0	7.5	7.0	9.0	12.9	10.0	Satisfactory
F110	0.8	5.7	1.1	1.4	20.7	3.5	6.8	7.9	0.4	4.6	4.0	Good
F110b								8.5	0.7	0.0	0.7	Good
F112	11.9	7.8	6.3	9.4	9.3	16.3	13.8	4.2	14.3	8.1	9.4	Satisfactory
F113	5.3	1.9	4.7	2.1	9.4	9.5	6.4	14.5	6.1	11.8	6.3	Satisfactory
F115		5.6		5.4		0.8		0.9		0.4	0.9	Good
F118	20.0	1.7	30.0	0.0	0.0	92.5	0.0	0.0	47.5	0.0	0.8	Good

Program Name: FPRAIN

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Rain & Soft Waters**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F122	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	Good
F156	0.5	1.0	1.0	3.0	0.0	0.0	5.0	2.0	5.0	0.0	1.0	Good
F159	38.8	22.8	43.6	38.1	13.1			43.2		26.4	38.1	Poor
F183						13.8	5.6	11.1	8.1	0.6	8.1	Satisfactory
F204	14.4	20.9	22.7	20.9	14.1	17.3	24.1	15.9	9.1	2.3	16.6	Moderate
F302							8.9	21.9	21.5	1.4	15.2	Moderate
Interlab Median	6.2	7.3	6.2	6.7	5.7	5.4	6.4	7.0	8.1	4.6		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPRAIN

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Rain & Soft Waters Study**

Sample Number	Sample Name	Province	Conductivity ( $\mu\text{S}/\text{cm}$ )
1	GGR-3	Ontario	29.0
2	GRM-07A	Ontario	31.2
3	PERADE-09	Quebec	40.1
4	HARP-85	Ontario	34.2
5	AES-06	Ontario	10.40
6	TOMIKO-01	Ontario	42.4
7	TRKY-08	Ontario	21.6
8	GGR-2	Ontario	41.1
9	MAURI-MX	Quebec	32.0
10	KEJIM-02	Nova Scotia	32.0

Program Name: FPRAIN

Range of Samples: 1 to 10

2011-03-11

Study Code: 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Rain & Soft Waters**

Parameters	GGR-3 Sample 1	GRM-07A Sample 2	PERADE-09 Sample 3	HARP-85 Sample 4	AES-06 Sample 5	TOMIKO-01 Sample 6	TRKY-08 Sample 7	GGR-2 Sample 8	MAURI-MX Sample 9	KEJIM-02 Sample 10
Acidity to pH 8.3 (mg/L CaCO <sub>3</sub> )	3.0	1.8	1.2	1.4	1.8	1.6	1.4	2.2	1.2	3.2
Alkalinity Fixed End Pt pH 4.5 (mg/L)	0.31	7.80	8.83	6.01	1.16	8.05	5.95	0.70	5.30	1.54
Alkalinity Gran Titn (mg/L CaCO <sub>3</sub> )	-1.455	6.50	9.75	4.20	-0.740	6.26	4.50	-1.465	5.68	0.360
Aluminum (mg/L)	0.015	0.048	0.073	0.018	0.006	0.070	0.032	0.017	0.052	0.166
Ammonia (mg/L N)	0.0670	0.418	0.0050	0.00800	0.278	0.0295	0.0380	0.218	0.0060	0.0330
Calcium (mg/L)	1.82	2.81	4.15	3.04	0.152	3.90	2.60	2.91	3.01	0.855
Chloride (mg/L)	0.320	0.550	1.89	1.27	0.150	3.44	0.191	0.518	2.12	5.79
Colour (Units)	1.30	3.40	23.0	10.3	0.70	38.8	11.4	1.70	20.0	70.0
Conductivity @ 25C (uS/cm)	29.0	31.2	40.1	34.2	10.40	42.4	21.6	41.1	32.0	32.0
Diss Inorg Carbon (mg/L C)	0.332	1.71	2.40	1.170	0.420	1.53	1.30	0.336	1.48	0.382
Diss Organic Carbon (mg/L C)	0.370	0.634	3.64	3.99	0.255	7.21	3.97	0.575	3.18	6.98
Fluoride (mg/L)	0.0200	0.0300	0.0400	0.0400	0.010	0.0500	0.0300	0.0300	0.0307	0.0200
Magnesium (mg/L)	0.460	1.070	0.810	0.935	0.0330	1.050	0.418	0.657	0.560	0.470
Nitrate + Nitrite (mg/L N)	1.30	0.610	0.354	0.0010	0.229	0.108	0.0300	1.95	0.182	0.0040
pH (pH Units)	4.60	6.94	7.10	6.81	4.90	6.86	6.82	4.55	6.86	5.36
Potassium (mg/L)	0.110	0.169	0.500	0.548	0.0387	0.486	0.182	0.286	0.369	0.230
Reactive Silica (mg/L Si)	0.028	0.106	3.09	1.030	0.0100	1.34	0.290	0.0400	2.28	0.780
Sodium (mg/L)	0.0600	0.299	2.10	1.23	0.0696	2.50	0.558	0.144	2.05	3.80
Sulfate (mg/L)	3.14	4.03	3.83	7.46	1.34	5.56	3.76	5.010	3.84	2.40
Total Hardness (mg/L)	6.90	12.3	14.8	12.2	0.56	15.4	8.90	10.6	10.4	4.7
Total Kjeldahl N (mg/L N)	0.030	0.476	0.118	0.174	0.279	0.274	0.244	0.150	0.099	0.226
Total N (mg/L N)	1.38	1.08	0.450	0.172	0.510	0.361	0.260	2.13	0.267	0.220
Turbidity (JTU/NTU)	0.10	0.11	0.12	0.10	0.10	0.11	0.12	0.10	0.11	0.13

PARAMETER: 01090 Acidity to pH 8.3 mg/L CaCO<sub>3</sub>WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F015	2.6	1.2	1.2	1.2	1.4	1.3	1.2	2.4	1.2	3.3
F020	3.4	2.5	1.1	1.5	2.1	2.	1.7	2.	1.1	3.
ASSIGNED VALUE *	3.0	1.8	1.2	1.4	1.8	1.6	1.4	2.2	1.2	3.2
R-STD DEV *	-	-	-	-	-	-	-	-	-	-
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	2	2	2	2	2	2	2	2	2	2

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
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F015 14.0 1.4

F020 16.0 1.6

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

Titration

PC Titrate

OVERALL AVERAGE RANK IS 1.5

PARAMETER: 06193 Alkalinity Fixed End mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	0.49	8.62	11.5	6.01	1.16	8.42	6.26	0.32	7.58	2.18
F015	<0.5	7.1	8.4	3.6	<0.5	9.9	9.	0.7	4.7	0.8
F020	0.31	8.01	8.15	11.3	11.3	5.98	5.79	1.14	1.01	1.17
F032	<2.5	6.11	8.83	4.06	<2.5	6.14	4.44	<2.5	5.3	<2.5
F036	0.25	7.8	11.1	7.	0.85	8.05	5.95		7.1	1.9
ASSIGNED VALUE *	0.31	7.80	8.83	6.01	1.16	8.05	5.95	0.70	5.30	1.54
R-STD DEV *	0.142	1.090	1.793	3.488	6.743	1.870	1.805	0.465	2.950	0.723
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	3	5	5	5	3	5	5	3	5	4

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	36.0	3.6			10			Potentiometer
F015	20.0	2.5			8			Titration < 20 mg
F020	24.0	2.4			10			Titration to end poi
F032	12.0	2.0			6			PC titr-E3218
F036	26.0	2.8			9			Titration

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 2.7

PARAMETER: 06282 Alkalinity Gran Titn mg/L CaCO<sub>3</sub>WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	-1.4	6.51	9.86	4.11	-0.71	6.51	4.48	-1.57	5.79	0.33
F014	-6.3 AL	6.67	10.	4.72	-0.91	6.29	4.5	-1.3	5.85	0.671
F020	-1.4	6.13	6.27 AL	9.21 AH	9.18 AH	4.1 AL	3.86	-0.5	-0.63 AL	-0.63 WL
F021	<0.	6.71	10.2	4.64	<0.	6.99	4.87	<0.	6.1	0.9
F026	-0.633	4.83 AL	8.42 WL	3.75	0.48	5.22	4.15	-1.1	4.85	0.521
F036	-1.43	6.05	9.33	3.96	-0.72	6.16	4.28	-0.2	5.46	0.13
F071	-1.53	6.41	9.5	4.	-1.35	6.24	4.33	-2.01	5.58	0.36
F074	1.4 AH	6.51	9.76	4.05	0.55	6.16	4.6	1.75 AH	5.91	0.15
F109	-0.471 WH	5.53 WL	9.49	4.37	-0.068	6.1	4.5	-0.575	5.22	0.781
F110	-1.48	7.51 WH	9.73	4.28	-0.74	6.68	4.51	-1.68	5.86	0.34
F112	-1.82	6.5	9.84	4.49	-0.75	6.81	4.57	-1.49	5.57	0.51
F113	-1.51	6.08	9.1	3.63	-0.896	5.93	3.93	-1.67	5.25	0.013
F115	-1.27	6.77	10.2	4.46	-0.608	6.93	4.77	-1.44	6.08	0.673
F122	-1.66	6.12	9.06	3.7	-1.1	6.03	4.16	3.55 AH	5.33	-0.008
F302	-1.50	6.71	10.1	4.31	-0.780	6.91	4.69	-1.66	5.99	0.481
ASSIGNED VALUE *	-1.455	6.50	9.75	4.20	-0.740	6.26	4.50	-1.465	5.68	0.360
R-STD DEV *	0.4396	0.449	0.560	0.429	0.6769	0.550	0.318	0.8395	0.449	0.3492
ACCEPTABLE LIMITS(+-) *	0.8792	0.898	1.120	0.858	1.3538	1.100	0.636	1.6790	0.898	0.6984
WARNING LIMITS(+-) *	.8792- 1.318.898- 1.347	1.120- 1.680.858- 1.287	1.3538- 2.031.100- 1.650.636- .954	1.6790- 2.51.898- 1.347	.6984- 1.047					
ACTION LIMITS(<>) *	1.3188	1.347	1.680	1.287	2.0307	1.650	0.954	2.5185	1.347	1.0476
N *	14	15	15	15	14	15	15	14	15	15

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	83.0	8.3			10			Gran titration
F014	88.5	8.8	AL		10			PC Titrate
F020	60.5	6.0	ALAHAHAL	ALWL	10			Titration to end poi
F021	100.0	14.2		BIASED HIGH*	7	-0.4	0.4807	PC Titrate
F026	57.0	5.7	ALWL		10			PC Titrate
F036	61.5	6.1			10			Gran titration
F071	55.0	5.5			10			Radiometer
F074	100.0	10.0	AH	AH	10			Gran titration
F109	82.5	8.2	WHWL		10			PC Titrate
F110	86.0	8.6	WH		10			Gran titration
F112	84.0	8.4			10			Gran titration
F113	33.0	3.3		BIASED LOW*	10	-3.5	-0.2603	Gran titration
F115	122.5	12.2		BIASED HIGH*	10	3.9	0.1604	Gran titration
F122	44.0	4.4		AH	10			Gran titration
F302	97.5	9.7			10			Radiometer

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
 PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 7.8

PARAMETER: 13091 Aluminum

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F009	0.021 WH	0.054 WH	0.08	0.021	0.008	0.074	0.04 WH	0.022	0.061	0.193
F014	0.015	0.048	0.073	0.018	0.007	0.066	0.031	0.017	0.05	0.15
F015	<0.05	<0.05	0.07	<0.05	<0.05	0.07	<0.05	<0.05	0.05	0.16
F020	0.016	0.052	0.079	0.02	0.007	0.071	0.035	0.019	0.058	0.166
F026	0.015	0.05	0.075	0.018	0.006	0.068	0.032	0.018	0.052	0.158
F071	0.013	0.047	0.079	0.014	0.015 AH	0.082 WH	0.036	0.015	0.059	0.145
F109	<0.027	0.048	0.08	<0.027	0.049 AH	0.07	0.034	<0.027	0.118 AH	0.177
F110	0.015	0.048	0.072	0.018	<0.010	0.066	0.032	0.017	0.051	0.155
F110b					0.006					
F112	0.008 WL	0.042 WL	0.069	0.012	<0.001 WL	0.064	0.028	0.011	0.047	0.178
F183	0.014	0.047	0.073	0.017	0.006	0.066	0.03	0.016	0.05	0.167
F302	0.017	0.050	0.073	0.021	0.006	0.071	0.033	0.02	0.053	0.167
ASSIGNED VALUE *	0.015	0.048	0.073	0.018	0.006	0.070	0.032	0.017	0.052	0.166
R-STD DEV *	0.0024	0.0029	0.0046	0.0032	0.0022	0.0040	0.0033	0.0031	0.0060	0.0141
ACCEPTABLE LIMITS(+-) *	0.0048	0.0058	0.0092	0.0064	0.0044	0.0080	0.0066	0.0062	0.0120	0.0282
WARNING LIMITS(+-) *	.0048- .0072 .0058- .0087 .0092- .0138 .0064- .0096 .0044- .0066 .0080- .0120 .0066- .0099 .0062- .0093 .0120- .0180 .0282- .0423									
ACTION LIMITS(<>) *	0.0072	0.0087	0.0138	0.0096	0.0066	0.0120	0.0099	0.0093	0.0180	0.0423
N *	9	10	11	9	9	11	10	9	11	11

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F009	95.0	9.5	WHWH	WH	BIASED HIGH	10	13.7	0.0006 ICP-MS
F014	41.0	4.1				10		ICP-MS
F015	16.5	4.1			INSUFFICIENT DATA	4		ICP-AES
F020	74.5	7.4				10		ICP-MS
F026	52.5	5.2				10		ICP-AES
F071	55.0	5.5		AHWH		10		GFAAS
F109	58.0	8.2		AH	AH	7		ICP-AES
F110	38.0	4.2				9		ICP-MS
F110b	2.5	2.5			INSUFFICIENT DATA	1		ICP-MS
F112	18.0	2.0	WLWL	WL	BIASED LOW	9	11.8	-0.0100 GFAAS
F183	34.5	3.4				10		ICP-MS
F302	68.5	6.8				10		ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 5.5

PARAMETER: 07192 Ammonia

mg/L N

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F004	0.068	0.412	<0.005	0.008	0.277	0.028	0.038	0.215	<0.005	0.032
F007	0.069	0.421	<0.003	0.006	0.276	0.03	0.038	0.217	<0.003	0.033
F010	0.06	0.5 AH	<0.01	0.02 AH	0.3	0.04	0.05	0.2	0.02 WH	0.03
F014	0.067	0.53 AH	<0.010	<0.010	0.3	0.028	0.037	0.223	<0.010	0.034
F015	0.067	0.421	<0.002	0.006	0.275	0.027	0.035	0.215	0.003	0.03
F017	0.068	0.418	0.005	0.01	0.282	0.035	0.043	0.223	0.006	0.041
F020	0.042	0.4	<0.005	<0.005	0.24	0.014	0.024	0.19	<0.005	0.013 WL
F021	0.017 AL	0.38	<0.002	<0.002	0.23 WL	0.012	0.023	0.124 AL	<0.002	0.014 WL
F026	0.064	0.422	<0.01	<0.01	0.279	0.027	0.038	0.218	<0.01	0.033
F036	0.079	0.436	0.005	0.015	0.304	0.037	0.048	0.242	0.006	0.04
F053	0.0706	0.419	<0.010	<0.010	0.281	0.0302	0.0396	0.219	<0.010	0.0364
F068	0.04	0.454	<0.003	0.006	0.294	0.029	0.021	0.229	<0.003	0.029
F068b	0.051	0.43	<0.006	<0.006	0.29	0.015	0.022	0.218	<0.006	0.021
F071	0.033 WL	0.416	<0.007	<0.007	0.247	0.027	0.035	0.141 AL	<0.007	0.031
F074	0.077	0.411	<0.002	0.012	0.27	0.041	0.049	0.215	0.01	0.04
F109	0.077	0.435	<0.028	<0.028	0.283	0.044	0.049	0.233	<0.028	0.0512
F112	0.052	0.387	<0.003	<0.003	0.257	0.018	0.025	0.186	0.004	0.021
F113	0.037	0.352 WL	<0.002	0.008	0.22 WL	0.025	0.034	0.165 WL	<0.002	0.028
F115	0.0631	0.405	<0.0028	0.00772	0.273	0.0323	0.0404	0.207	<0.0028	0.0379
F156	0.0732	0.417	<0.02	<0.02	0.286	0.0356	0.0441	0.222	<0.02	0.0414
F183	0.068	0.438	<0.020	<0.020	0.296	0.036	0.041	0.224	<0.020	0.037
F204	0.059	0.397	0.	0.01	0.27	0.039	0.037	0.2	0.	0.05
ASSIGNED VALUE *	0.0670	0.418	0.0050	0.00800	0.278	0.0295	0.0380	0.218	0.0060	0.0330
R-STD DEV *	0.01592	0.0247	0.00000	0.003820	0.0213	0.00950	0.01017	0.0201	0.00527	0.00932
ACCEPTABLE LIMITS(+-) *	0.03184	0.0494	-	0.007640	0.0426	0.01900	0.02034	0.0402	0.01054	0.01864
WARNING LIMITS(+-) *	.03184-	.047.	.0494-	.0741	-	.007640-	.01.0426-	.0639.01900-	.028.02034-	.030.0402-
ACTION LIMITS(<>) *	0.04776	0.0741	-	-	0.011460	0.0639	0.02850	0.03051	0.0603	0.01581
N *	22	22	3	11	22	22	22	22	7	22

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F004	81.0	10.1			8			Salicylate/nitroprus
F007	90.0	11.2			8			Colorimetry
F010	124.5	13.8	AH AH	WH	9			ammonia electrode
F014	104.5	14.9	AH		7			Technicon
F015	71.0	7.8			9			Colorimetry
F017	123.0	12.3			10			Colorimetry
F020	25.0	3.5		WL	BIASED LOW*	7	-2.3	Colorimetry
F021	12.0	1.7	AL WL	AL WL	BIASED LOW	7	-8.1	Flow injection
F026	82.0	11.7				7		Technicon
F036	155.5	15.5			10			Phenate
F053	99.0	14.1				7		
F068	82.0	10.2				8		IC Dionex
F068b	61.0	8.7				7		IC Dionex
F071	40.5	5.7	WL	AL		7		Phenate
F074	118.0	13.1				9		Technicon
F109	138.0	19.7			BIASED HIGH*	7	-0.3	Phenate
F112	34.5	4.3			BIASED LOW	8	-6.0	Phenate
F113	29.5	3.6	WL WL	WL	BIASED LOW	8	-17.5	Flow injection
F115	81.0	10.1				8		IC Dionex
F156	115.0	16.4				7		Colorimetry
F183	120.0	17.1			BIASED HIGH*	7	4.2	Colorimetry
F204	84.0	8.4				10		IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 10.6

PARAMETER: 20091 Calcium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	1.82	2.84	4.24	3.07	0.15	3.89	2.63	2.91	3.01	0.86
F007b	1.80	2.90	4.27	3.10	0.14	3.92	2.68	2.88	3.07	0.849
F009	2.3 AH	3.33 AH	4.77 AH	3.53 AH	0.21	4.47 AH	3.27 AH	3.53 AH	3.74 AH	1.09 AH
F010	1.78	2.72	4.06	3.01	0.236	3.79	2.58	2.94	2.91	0.853
F014	1.8	2.8	4.3	3.1	0.15	4.	2.6	2.9	3.1	0.86
F015	1.9	3.	4.4	3.2	0.2	4.2	2.8	3.	3.2	0.9
F017	1.84				0.153					0.855
F020	1.76	2.77	4.11	2.93	0.16	3.64	2.52	2.78	2.93	0.86
F021	1.84	2.91	4.09	3.16	0.13	3.97	2.65	2.94	3.09	0.88
F026	1.9	2.94	4.31	3.18	0.16	4.	2.74	3.08	3.13	0.862
F036	1.8	2.66	4.04	2.88	0.14	3.74	2.48	2.88	2.84	0.92
F053	1.80	2.74	4.16	3.01	0.156	3.84	2.56	2.89	2.94	0.842
F068	1.71 WL	2.3 AL	3.77 WL	2.99	0.423 AH	3.31 AL	2.31 WL	3.4 AH	2.39 AL	1.11 AH
F071	1.81	2.65	3.85	2.99	0.125	3.92	2.69	2.74	2.91	0.79
F074	1.84	2.8	4.02	3.04	0.15	3.71	2.55	2.9	2.92	0.83
F109	1.82	2.77	4.15	3.04	0.25 WH	3.81	2.6	2.88	3.15	0.913
F110	1.78	2.71	3.98	2.92	0.14	3.69	2.52	2.78	2.88	0.81
F112	1.84	2.86	4.04	3.05	0.299 AH	3.84	2.65	2.96	2.94	0.832
F115	1.82	2.69	4.05	2.99	0.231	3.7	2.53	2.97	2.84	0.896
F156	1.85	2.82	4.24	3.03	0.147	3.90	2.54	2.97	3.02	0.853
F183	1.91	2.9	4.28	3.12	0.159	3.94	2.66	3.08	3.04	0.886
F204	1.81	3.03	4.57 WH	3.26	0.138	4.16	2.84	2.91	3.25	0.85
F302	1.85	2.89	4.22	3.14	0.152	3.93	2.66	2.94	3.04	0.852
ASSIGNED VALUE *	1.82	2.81	4.15	3.04	0.152	3.90	2.60	2.91	3.01	0.855
R-STD DEV *	0.048	0.137	0.186	0.110	0.0443	0.178	0.113	0.108	0.148	0.0384
ACCEPTABLE LIMITS(+-) *	0.096	0.274	0.372	0.220	0.0886	0.356	0.226	0.216	0.296	0.0768
WARNING LIMITS(+-) *	.096- .144	.274- .411	.372- .558	.220- .330	.0886- .1329	.356- .534	.226- .339	.216- .324	.296- .444	.0768- .1152
ACTION LIMITS(<>) *	0.144	0.411	0.558	0.330	0.1329	0.534	0.339	0.324	0.444	0.1152
N *	23	22	22	22	23	22	22	22	22	23

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	119.0	11.9			10			ICP-AES
F007b	115.0	11.5			10			IC Dionex
F009	217.0	21.7	AHAHAHAH AHAAHAAHAAH	BIASED HIGH	10	13.7	0.1452	ICP-MS
F010	89.0	8.9			10			ICP-AES
F014	126.0	12.6			10			ICP-MS
F015	195.5	19.5		BIASED HIGH*	10	5.8	0.0007	ICP-AES
F017	38.5	12.8		INSUFFICIENT DATA	3			AAS absorption
F020	68.0	6.8			10			ICP-MS
F021	138.0	13.8			10			ICP-AES
F026	183.0	18.3		BIASED HIGH*	10	3.8	0.0035	ICP-AES
F036	57.5	5.7			10			AAS absorption
F053	85.0	8.5			10			
F068	78.0	7.8	WLALWL AHALWLAHALAH		10			IC Dionex
F071	58.5	5.8			10			AAS absorption
F074	80.0	8.0			10			AAS absorption
F109	125.5	12.5	WH		10			ICP-AES
F110	33.5	3.3		BIASED LOW*	10	-4.7	0.0078	ICP-MS
F112	120.5	12.0	AH		10			AAS absorption
F115	93.0	9.3			10			IC Dionex
F156	117.0	11.7			10			ICP-AES
F183	167.0	16.7			10			ICP-MS
F204	155.0	15.5	WH		10			IC Dionex
F302	139.5	13.9			10			IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 11.6

PARAMETER: 17092 Chloride

mg/L

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT										
F007	0.31	0.54	1.92	1.31	0.18	3.58	0.3 AH	0.51	2.15	6.11										
F009	0.32	0.55	1.87	1.26	0.16	3.44	0.19	0.53	2.12	5.85										
F010	0.32	0.53	1.91	1.28	0.14	3.72 WH	0.21	0.53	2.2	6.77 AH										
F014	0.378 WH	0.635 WH	1.91	1.3	0.18	3.54	0.266 WH	0.578 WH	2.18	5.98										
F015	0.3	0.6	1.9	1.3	0.1 WL	3.6	0.2	0.5	2.2	6.2										
F017	0.33	0.571	1.90	1.28	0.163	3.45	0.202	0.524	2.14	5.75										
F020	1. AH	0.7 AH	1.8	1.5 AH	<0.5	3.1 AL	<0.5	0.5	4.9 AH	5.8										
F021	0.31	0.54	1.85	1.23	0.15	3.37	0.18	0.51	2.1	5.73										
F026	3.13 AH	0.531	1.83	1.22	<0.2	3.36	0.192	0.507	2.08	5.81										
F036	0.35	0.6	1.92	1.32	0.18	3.46	0.21	0.54	2.16	5.71										
F053	0.322	0.542	1.81	1.23	0.153	3.32	0.182	0.536	2.07	5.59										
F068	0.3	0.52	1.79	1.19	0.17	3.28	0.19	0.49	2.04	5.6										
F068b	0.3	0.55	1.87	1.26	0.15	3.47	0.19	0.53	2.18	5.88										
F071	0.32	0.52	1.83	1.24	0.15	3.41	0.2	0.5	2.08	7.11 AH										
F074	0.34	0.55	2.	1.25	0.57 AH	3.86 AH	0.27 AH	0.49	2.18	6.35 WH										
F109	0.297	0.515	1.81	1.2	0.145	3.44	0.173	0.49	2.07	5.34										
F110	0.3	0.54	1.91	1.28	<0.20	3.45	<0.20	0.5	2.07	5.52										
F110b					0.15		0.19													
F112	0.324	0.572	1.90	1.34	0.156	3.33	0.197	0.54	2.19	5.79										
F113	0.272	0.499	1.84	1.2	0.121	3.41	0.153	0.471	2.09	5.8										
F115	0.305	0.548	1.9	1.27	0.141	3.42	0.176	0.521	2.12	5.79										
F156	0.323	0.564	1.90	1.28	0.168	3.45	0.197	0.541	2.16	5.88										
F159	0.33	1.38 AH	1.77 WL	1.14 WL	0.14		0.18	0.45 WL	2.09	5.72										
F183	0.341	0.555	1.95	1.28	0.195	3.42	0.225	0.527	2.23	5.68										
F204	0.3	0.557	1.89	1.27	0.139	3.43	0.17	0.518	2.13	5.78										
F302	0.366	0.571	1.80	1.21	0.229 AH	3.36	0.263 WH	0.547	2.03	5.97										
ASSIGNED VALUE *	0.320	0.550	1.89	1.27	0.150	3.44	0.191	0.518	2.12	5.79										
R-STD DEV *	0.0273	0.0341	0.059	0.050	0.0244	0.106	0.0250	0.0245	0.066	0.237										
ACCEPTABLE LIMITS(+-) *	0.0546	0.0682	0.118	0.100	0.0488	0.212	0.0500	0.0490	0.132	0.474										
WARNING LIMITS(+-) *	.0546-	.0819	.0682-	.1023	.118-	.177	.100-	.150	.0488-	.0732	.212-	.318	.0500-	.0750	.0490-	.0735	.132-	.198	.474-	.711
ACTION LIMITS(<>) *	0.0819	0.1023	0.177	0.150	0.0732	0.318	0.0750	0.0735	0.198	0.711										
N *	25	25	25	25	23	24	24	25	25	25										

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F007	173.5	17.3		AH	10			Thiocyanate	
F009	130.5	13.0			10			IC Dionex	
F010	164.5	16.4		WH AH	10			IC Dionex	
F014	211.5	21.1	WHHW	WHHW	BIASED HIGH*	10	2.0	0.0363	IC Dionex
F015	153.5	15.3		WL	10			IC	
F017	155.0	15.5			10			IC Dionex	
F020	123.5	15.4	AHAH AH AL AH		8			IC LL	
F021	86.5	8.6			10			IC Dionex	
F026	93.5	10.3	AH		9			IC Dionex	
F036	187.5	18.7			10			IC Dionex	
F053	86.0	8.6			10			IC Dionex	
F068	51.0	5.1			BIASED LOW*	10	-3.7	-0.0091	IC Dionex
F068b	133.5	13.3				10			IC Dionex
F071	104.5	10.4		AH		10			IC Dionex
F074	183.0	18.3	AHAHAH	WH		10			IC
F109	45.5	4.5			BIASED LOW	10	-6.1	0.0210	IC Dionex
F110	79.5	9.9				8			IC Dionex
F110b	19.0	9.5			INSUFFICIENT DATA	2			IC Dionex
F112	160.5	16.0				10			IC Dionex
F113	50.0	5.0			BIASED LOW*	10	0.7	-0.0528	IC Dionex
F115	106.0	10.6				10			IC Dionex
F156	167.5	16.7				10			IC Dionex
F159	71.0	7.8	AHWLWL	WL		9			IC Dionex
F183	172.5	17.2				10			IC
F204	100.5	10.0				10			IC Dionex
F302	141.5	14.1		AH WH		10			IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 12.8

PARAMETER: 00292 Colour

Units

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	<3.	<3.	23.	10.	<3.	40.	11.	3.	20.	74.
F015	<2.5	5.	20.	10.	<2.5	45. WH	10.	<2.5	17.5	75.
F020	<5.	<5.	15. AL	5.	<5.	30. AL	5. AL	<5.	20.	70.
F021	<5.	26. AH	35. AH	16.	<5.	37.	12.	<5.	23. WH	64.
F032	0.2	2.1	23.	10.3	0.2	38.9	10.2	1.2	19.6	68.2
F036	1.4	2.8	23.4	9.8	<0.2	38.6	11.6	0.6	20.	70.6
F110	5.	5.	22.5	15.	7.5	40.	15. WH	7.5	20.	75.
F122	1.2	3.4	23.2	11.3	0.7	38.1	11.3	1.7	20.8	70.
F183	<4.96	<4.96	23.6	11.2	<4.96	37.5	11.4	<4.96	21.6	64.5
ASSIGNED VALUE *	1.30	3.40	23.0	10.3	0.70	38.8	11.4	1.70	20.0	70.0
R-STD DEV *	2.381	2.367	1.97	3.15	4.624	2.16	1.36	2.577	1.24	4.67
ACCEPTABLE LIMITS(+-) *	-	4.734	3.94	6.30	-	4.32	2.72	-	2.48	9.34
WARNING LIMITS(+-) *	-	4.734- 7.1013.94- 5.91	6.30- 9.45	-	4.32- 6.48	2.72- 4.08	-	2.48- 3.72	9.34- 14.01	
ACTION LIMITS(<>) *	-	7.101	5.91	9.45	-	6.48	4.08	-	3.72	14.01
N *	4	6	9	9	3	9	9	5	9	9

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	35.0	5.0			7			True
F015	30.5	4.3		WH	7			True
F020	13.0	2.1		AL ALAL	6			Hellige
F021	44.0	6.2	AHAH	WH	7			Appar-Flow injection
F032	28.5	2.8			10			auto analy-E3219
F036	37.5	4.1			9			True
F110	57.0	5.7		WH	10			Hellige
F122	43.5	4.3			10			True
F183	33.0	5.5			6			Spectrophotometry

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 4.4

PARAMETER: 00392 Conductivity @ 25C uS/cm

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F004	30.1	32.2	41.1	34.9	11.2	44.3	22.	42.9	32.8	32.7
F007	28.7	30.1	38.6	32.8	9.83	41.8	21.0	39.7	30.4	31.9
F009	31.	32.	42.	35.	11.	42.	22.	41.	33.	33.
F010	29.	30.1	38.7	33.7	10.4	42.3	21.3	41.6	30.9	31.8
F014	28.2	32.3	41.5	35.3	10.3	44.3	22.2	40.7	33.	32.9
F015	29.	31.	40.	33.	9.7	42.	22.	37. WL	32.	33.
F015b	40. AH	40. AH	50. AH	40. AH	20. AH	50. AH	30. AH	50. AH	40. AH	40. AH
F020	29.	29.	38.	33.	10.	41.	21.	40.	31.	31.
F021	30.5	31.2	40.5	34.5	11.1	43.6	21.4	43.3	32.1	32.2
F026	28.6	31.3	40.7	35.	10.4	43.8	21.6	41.1	32.	31.9
F032	28.8	31.8	41.2	35.2	10.5	44.1	21.9	42.1	32.8	32.6
F036	27.2	29.8	38.4	32.4	8.8	42.2	20. WL	40.	29.6 WL	30.4
F053	30.6	31.3	40.4	34.7	10.9	43.3	21.7	42.	32.1	32.5
F071	30.4	31.2	40.2	35.2	10.2	43.5	22.0	41.5	32.3	32.6
F074	22. AL	28. WL	36. WL	31. WL	7. AL	41.	22.	33. AL	31.	30.
F109	26.8	29.5	37.3	31.9	10.1	40.3	20.2	37.6	29.7 WL	30.8
F110	26.9	30.3	38.8	33.	10.1	41.7	20.7	39.2	30.9	30.6
F112	29.9	31.9	40.7	34.8	11.1	44.0	21.7	41.8	32.7	32.4
F113	28.3	30.1	39.3	33.2	10.5	42.2	20.3	41.	30.6	30.9
F115	30.2	31.9	40.7	34.8	11.2	43.8	22.	42.6	32.5	32.5
F122	27.9	31.6	40.6	34.2	9.79	42.5	22.1	39.4	31.9	31.9
F156	29.9	31.4	39.3	34.2	11.3	42.4	21.6	41.6	32.1	31.7
F183	31.4	31.8	41.1	35.1	11.6	44.4	22.2	43.4	32.8	33.1
F204	28.8	30.9	39.9	33.8	9.2	43.	20.9	41.7	32.4	32.1
F302	28.2	30.0	37.9	31.8	10.2	41.9	20.0 WL	39.6	30.6	30.6
ASSIGNED VALUE *	29.0	31.2	40.1	34.2	10.40	42.4	21.6	41.1	32.0	32.0
R-STD DEV *	1.60	1.14	1.58	1.39	0.825	1.34	0.80	1.86	1.15	1.07
ACCEPTABLE LIMITS(+-) *	3.20	2.28	3.16	2.78	1.650	2.68	1.60	3.72	2.30	2.14
WARNING LIMITS(+-) *	3.20- 4.80	2.28- 3.42	3.16- 4.74	2.78- 4.17	1.650- 2.475	2.68- 4.02	1.60- 2.40	3.72- 5.58	2.30- 3.45	2.14- 3.21
ACTION LIMITS(<>) *	4.80	3.42	4.74	4.17	2.475	4.02	2.40	5.58	3.45	3.21
N *	25	25	25	25	25	25	25	25	25	25

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F004	205.0	20.5		BIASED HIGH*	10	3.0	0.0316	Radiometer
F007	67.5	6.7			10			Cond. meter
F009	190.0	19.0			10			Cond. meter
F010	102.5	10.2			10			Cond. meter
F014	190.0	19.0			10			PC Titrate
F015	110.0	11.0	WL		10			Cond. meter
F015b	250.0	25.0	AHAHAHAHAHAHAHAHAH	BIASED HIGH*	10	-3.7	9.7204	Cond. meter
F020	68.0	6.8			10			PC Titrate
F021	160.0	16.0			10			PC Titrate
F026	140.0	14.0			10			PC Titrate
F032	185.5	18.5			10			PC titr-E3218
F036	41.5	4.1	WL WL	BIASED LOW*	10	2.1	-2.2275	Cond. meter
F053	160.5	16.0			10			
F071	161.5	16.1			10			Cond. meter
F074	36.5	3.6	ALWLWLWLAL AL	BIASED LOW	10	-6.6	-1.2727	Cond. meter
F109	32.5	3.2	WL	BIASED LOW	10	-7.7	0.4071	PC Titrate
F110	58.5	5.8		BIASED LOW*	10	-2.7	-0.3717	Cond. meter
F112	176.5	17.6			10			YSI
F113	84.5	8.4			10			automated probe
F115	188.0	18.8			10			Cond. meter
F122	116.5	11.6			10			Radiometer
F156	138.5	13.8			10			Cond. meter
F183	224.5	22.4		BIASED HIGH*	10	2.2	0.5517	Cond. meter
F204	113.5	11.3			10			Cond. meter
F302	48.5	4.8	WL	BIASED LOW*	10	-3.2	-0.3743	Cond. meter

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
 PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 13.0

PARAMETER: 06592 Diss Inorg Carbon mg/L C

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	0.38	1.9	2.47	1.18	0.42	1.59	1.34	0.4	1.61	0.46
F015	<0.5	1.7	2.4	1.	<0.5	1.5	1.3	<0.5	1.4	<0.5
F020	<0.5	1.7	5.3 AH	4.3 AH	0.5	8.1 AH	3.9 AH	<0.5	3.6 AH	5.
F026	<0.5	1.66	2.34	0.961	<0.5	1.41	1.14	<0.5	1.42	<0.5
F032	<1.	1.3	1.8	<1.	<1.	<1. WL	<1.	<1.	<1.	<1.
F036	0.24	1.44	2.	0.76	0.24	1.12	0.9	0.24	1.16	0.28
F074	0.516	2.12	2.8	1.4	0.528	1.84	1.62	0.648	1.85	0.6
F112	0.284	1.86	2.54	1.17	0.291	1.56	1.28	0.273	1.57	0.303
F113		1.9	2.5	1.17		1.57	1.32		1.55	
F183	<1.	1.72	1.97	<1.	<1.	1.39	<1.	<1.	1.32	<1.
ASSIGNED VALUE *	0.332	1.71	2.40	1.170	0.420	1.53	1.30	0.336	1.48	0.382
R-STD DEV *	0.1386	0.257	0.431	0.2954	0.1436	0.277	0.314	0.2100	0.287	0.3808
ACCEPTABLE LIMITS(+-) *	-	0.514	0.862	0.5908	-	0.554	0.628	-	0.574	-
WARNING LIMITS(+-) *	-	.514- .771	.862- 1.293	.5908- .8862	-	.554- .831	.628- .942	-	.574- .861	-
ACTION LIMITS(<>) *	-	0.771	1.293	0.8862	-	0.831	0.942	-	0.861	-
N *	4	10	10	8	5	9	8	4	9	5

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	52.5	5.2			10			Carbon analyser
F015	23.5	3.9			6			Carbon analyser
F020	57.5	7.1	AHAHAHAHAH		8			Colorimetric Analyze
F026	18.0	3.0			6			Colorimetry
F032	2.0	1.0	WL		2			colorim-E3370
F036	13.0	1.3			10			Shimadzu
F074	66.0	6.6			10			Shimadzu
F112	41.5	4.1			10			Dohrmann
F113	36.0	6.0			6			IR detection
F183	12.0	3.0			4			Shimadzu

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 4.4

PARAMETER: 06002 Diss Organic Carbon mg/L C

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F004	0.365	0.634	3.53	3.99	0.271	7.18	3.81	0.614	3.08	6.76
F007	0.39	0.64	3.59	3.95	0.25	7.11	3.86	0.58	3.17	6.76
F014	<1.0	<1.0	3.7	4.1	<1.0	7.5	4.2	<1.0	3.2	7.1
F015	<0.5	0.9	3.9	4.4	<0.5	7.8	4.4	0.6	3.4	7.5 WH
F020	0.7	0.9	3.1 WL	3.8	<0.5	7.	3.3 WL	<0.5	2.6 WL	5.6 AL
F021	0.3	0.7	3.9	4.4	<0.2	7.7	4.4	0.5	3.5	7.1
F026	<0.4	0.567	3.45	3.59	<0.4	6.97	3.82	0.453	3.13	6.63
F032	<0.5	<0.5	3.7	3.9	<0.5	7.1	3.8	<0.5	3.3	6.8
F036	<0.25	0.52	3.6	3.8	<0.25	7.3	4.	0.38	3.1	7.
F074	0.66	0.876	3.47	3.96	0.336	6.97	4.1	0.708	3.14	6.54
F109	<0.492	0.582	3.43	3.84	<0.492	6.95	3.62	0.554	3.	6.64
F112	0.301	0.565	3.71	4.18	0.113	7.58	3.92	0.516	3.30	7.07
F113	0.613	0.88	3.82	4.19		7.43	4.04	0.861 WH	3.42	7.07
F115	0.351	0.622	3.66	4.07	0.202	7.41	4.01	0.596	3.28	7.16
F183	<1.	<1.	3.63	3.99	<1.	6.96	4.03	<1.	2.82	6.7
F302	0.37	0.62	3.69	4.00	0.26	7.24	3.94	0.57	3.28	6.98
ASSIGNED VALUE *	0.370	0.634	3.64	3.99	0.255	7.21	3.97	0.575	3.18	6.98
R-STD DEV *	0.1815	0.1622	0.182	0.205	0.0852	0.306	0.243	0.1046	0.201	0.283
ACCEPTABLE LIMITS(+-) *	0.3630	0.3244	0.364	0.410	0.1704	0.612	0.486	0.2092	0.402	0.566
WARNING LIMITS(+-) *	.3630-	.5445	.3244-	.4866	.364-	.546	.410-	.615	.1704-	.2556
ACTION LIMITS(<>) *	0.5445	0.4866	0.546	0.615		0.2556	0.918	0.729	.2092-	.3138
N *	9	13	16	16		6	16	16	12	16
										16

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	WL	WH	WLAL	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F004	62.0	6.2						10			TOC analyser
F007	63.5	6.3						10			Carbon analyser
F014	73.0	12.1					BIASED HIGH	6	5.0	-0.0901	Shimadzu
F015	114.0	14.2					BIASED HIGH	8	7.3	0.0749	Carbon analyser
F020	33.0	4.1	WL	WL	WH			8			Colorimetric Analyze
F021	104.0	11.5						9			Carbon analyser
F026	26.5	3.3					BIASED LOW*	8	-2.6	-0.0884	UV digested, colorim
F032	46.0	7.6						6			E3370 automated
F036	45.5	5.6						8			Shimadzu
F074	71.5	7.1						10			Carbon analyser
F109	25.0	3.1					BIASED LOW*	8	-3.4	-0.0595	Dohrmann
F112	80.0	8.0						10			UV IR
F113	108.5	12.0		WH			BIASED HIGH*	9	-1.1	0.2427	TOC analyser
F115	85.5	8.5						10			Shimadzu
F183	36.5	6.0						6			TOC analyser
F302	76.5	7.6						10			

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 7.7

PARAMETER: 09092 Fluoride

mg/L

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F015	0.02	0.03	0.04	0.04	<0.01	0.05	0.03	0.03	0.03	0.02
F020	0.02	0.03	0.04	0.04	0.01	0.05	0.03	0.03	0.04	0.02
F071	0.03	0.03	0.05	0.03	<0.01	0.05	0.03	0.03	0.04	0.03
F112	0.0238	0.0154	0.0445	0.0418	<0.003	0.0403	0.0226	0.0315	0.0307	0.0252
F159	<0.10	<0.10	<0.10	<0.10	<0.10		<0.10	<0.10	<0.10	<0.10
F183	<0.05	<0.05	<0.05	<0.05	<0.05	0.053	<0.05	<0.05	<0.05	<0.05
F204	0.019	0.021	0.032	0.027	<0.010	0.037	0.016	0.02	0.024	0.01
ASSIGNED VALUE *	0.0200	0.0300	0.0400	0.0400	0.010	0.0500	0.0300	0.0300	0.0307	0.0200
R-STD DEV *	0.00486	0.00000	0.00752	0.00766	-	0.00730	0.00000	0.00000	0.00788	0.00844
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	0.01460	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	.01460-.021	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	0.02190	-	-	-	-
N *	5	5	5	5	1	6	5	5	5	5

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F015	28.0	3.1			9			IC
F020	31.5	3.1			10			ISE
F071	36.5	4.0			9			IC Dionex
F112	30.0	3.3			9			IC Dionex
F159	0.0	0.0			0			IC Dionex
F183	6.0	6.0			1			IC
F204	10.0	1.1			9			IC Dionex

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 3.0

PARAMETER: 12091 Magnesium

mg/L

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	0.454	1.07	0.835	0.952	0.032	1.06	0.42	0.657	0.562	0.475
F007b	0.449	1.09	0.833	0.968	0.049 WH	1.07	0.421	0.672	0.569	0.465
F009	0.63 AH	1.27 AH	0.96 AH	1.07 AH	<0.05	1.24 AH	0.54 AH	0.78 AH	0.69 AH	0.58 AH
F010	0.448	1.05	0.819	0.94	0.039	1.05	0.42	0.672	0.553	0.467
F014	0.46	1.1	0.79	0.93	<0.05	1.	0.41	0.64	0.56	0.47
F015	0.5 WH	1.1	0.9 WH	1. WH	<0.1	1.1	0.4	0.7	0.6 WH	0.5
F017	0.475		0.824	0.95	0.035		0.432	0.683	0.573	0.483
F020	0.48	1.09	0.83	0.97	<0.05	1.06	0.43	0.68	0.57	0.49
F021	0.46	1.09	0.8	0.95	<0.05	1.05	0.42	0.66	0.56	0.48
F026	0.465	1.11	0.842	0.972	0.033	1.08	0.422	0.682	0.57	0.473
F036	0.475	1.06	0.8	0.92	0.035	1.04	0.41	0.655	0.545	0.485
F053	0.463	1.05	0.816	0.929	0.032	1.04	0.416	0.655	0.549	0.47
F068	0.451	0.931 AL	0.805	0.871 WL	0.106 AH	0.926 AL	0.432	0.714	0.495 AL	0.452
F071	0.44	1.03	0.76	0.91	0.037	1.04	0.41	0.62	0.53	0.45
F074	0.47	1.12	0.85	0.93	0.03	1.1	0.44	0.07 AL	0.58	0.48
F109	0.447	1.02	0.801	0.914	0.033	1.02	0.402	0.649	0.548	0.457
F110	0.47	1.06	0.76	0.95	0.03	1.08	0.42	0.65	0.56	0.47
F112	0.450	1.03	0.792	0.908	0.0458	1.01	0.405	0.641	0.541	0.455
F115	0.458	1.04	0.8	0.915	0.0422	1.02	0.409	0.657	0.535	0.457
F156	0.460	1.07	0.834	0.941	0.0321	1.07	0.405	0.676	0.563	0.470
F183	0.47	1.11	0.844	0.977	0.033	1.08	0.423	0.692	0.565	0.484
F204	0.424 WL	1.08	0.801	0.925	0.023	1.03	0.398	0.607	0.535	0.446
F302	0.451	1.07	0.804	0.929	0.028	1.04	0.408	0.643	0.542	0.46
ASSIGNED VALUE *	0.460	1.070	0.810	0.935	0.0330	1.050	0.418	0.657	0.560	0.470
R-STD DEV *	0.0150	0.0371	0.0285	0.0293	0.00701	0.0360	0.0131	0.0302	0.0194	0.0161
ACCEPTABLE LIMITS(+-) *	0.0300	0.0742	0.0570	0.0586	0.01402	0.0720	0.0262	0.0604	0.0388	0.0322
WARNING LIMITS(+-) *	.0300-	.0450.	.0742-	.1113.	.0570-	.0855.	.0586-	.0879.	.01402-	.021.
ACTION LIMITS(<>) *	0.0450	0.1113	0.0855	0.0879	0.02103	0.1080	0.0393	0.0906	0.0388-	.0582.
N *	23	22	23	23	18	22	23	23	23	23

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	128.0	12.8			10			ICP-AES
F007b	142.0	14.2	WH		10			IC Dionex
F009	205.0	22.7	AHAHAHAH	AHAHAHAAH	BIASED HIGH	9	8.2	ICP-MS
F010	108.0	10.8			10			ICP-AES
F014	81.5	9.0			9			ICP-MS
F015	171.0	19.0	WH WHHW	WH	BIASED HIGH	9	5.3	ICP-AES
F017	137.5	17.1			8			AAS absorption
F020	159.0	17.6			9			ICP-MS
F021	114.5	12.7			9			ICP-AES
F026	168.0	16.8			10			ICP-AES
F036	105.5	10.5			10			AAS absorption
F053	96.0	9.6			10			
F068	86.0	8.6	AL WLALAL	AL				IC Dionex
F071	47.5	4.7			BIASED LOW*	10	-3.1	-0.0048
F074	154.0	15.4		AL	BIASED LOW*	10		AAS absorption
F109	54.5	5.4			BIASED LOW*	10	-3.5	AAS absorption
F110	108.5	10.8			10			ICP-AES
F112	53.0	5.3			BIASED LOW*	10	-4.7	ICP-MS
F115	73.0	7.3			10			AAS absorption
F156	122.5	12.2			10			IC Dionex
F183	177.5	17.7			10			ICP-AES
F204	44.0	4.4	WL		BIASED LOW*	10	1.4	ICP-MS
F302	72.5	7.2			10			-0.0296
								IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 11.6

PARAMETER: 07092 Nitrate + Nitrite mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F004	1.36	0.625	0.366	<0.010	0.241	0.116	0.032	2.05	0.19	<0.010
F007	1.31	0.62	0.36	<0.02	0.23	0.11	0.03	2.01	0.18	<0.02
F009	1.32	0.61	0.36	<0.05	0.22	0.11	<0.05	1.97	0.19	<0.05
F010	1.3	0.6	0.35	<0.014	0.25 WH	0.14 AH	0.07 AH	2.07	0.2	<0.014
F014	1.3	0.62	0.35	<0.05	0.23	0.1	<0.05	1.9	0.18	<0.05
F015	1.33	0.67 AH	0.384 WH	<0.002	0.267 AH	0.113	0.043 AH	2.16 AH	0.201 WH	<0.002
F017	1.30	0.613	0.356	<0.004	0.229	0.109	0.03	1.95	0.176	<0.004
F020	1.27	0.597	0.347	<0.002	0.229	0.111	0.031	1.94	0.184	0.014
F021	1.31	0.61	0.35	<0.02	0.22	0.11	0.03	1.98	0.18	<0.02
F026	1.32	0.601	0.329	<0.04	0.221	0.099	<0.04	1.96	0.171	<0.04
F026b	1.27	0.588	0.335	<0.045	0.22	0.1	<0.045	1.92	0.175	<0.045
F036	1.3	0.608	0.332	<0.002	0.23	0.102	0.03	1.98	0.178	<0.002
F053	1.28	0.600	0.355	<0.005	0.230	0.108	0.0295	1.91	0.182	<0.005
F068	1.27	0.573 WL	0.323 WL	<0.005	0.207 AL	0.102	0.039 WH	1.93	0.168	<0.005
F068b	1.3	0.608	0.349	<0.002	0.228	0.109	0.028	2.01	0.187	<0.002
F071	1.27	0.601	0.36	<0.002	0.23	0.108	0.034	1.94	0.181	<0.002
F074	1.29	0.613	0.362	0.003	0.235	0.112	0.028	2.01	0.192	0.004
F109	1.27	0.616	0.353	<0.028	0.226	0.106	0.0298	1.89	0.182	<0.028
F110	1.24	0.61	0.35	<0.02	0.22	0.11	0.03	1.85	0.18	<0.02
F110b				0.					0.	
F112	1.26	0.632	0.358	<0.001	0.228	0.102	0.0247	1.89	0.168	<0.001
F113	1.22 WL	0.543 AL	0.296 AL	<0.002	0.182 AL	0.081 AL	0.021 WL	1.86	0.144 AL	<0.002
F115	1.3	0.612	0.356	0.0089	0.226	0.105	0.0321		0.183	0.0087
F118	1.31	0.62	0.37	<0.05	0.23	0.11	<0.05	1.94	0.19	<0.05
F156	1.31	0.616	0.357	<0.008	0.230	0.107	0.0302	1.98	0.185	<0.008
F159	0.71 AL	0.4 AL	0.28 AL	<0.10	0.12 AL		<0.1	1.1 AL	0.16 WL	<0.10
F183	1.31	0.578	0.348	<0.036	0.227	0.109	0.047 AH	1.95	0.184	<0.036
F204	1.32	0.603	0.348	0.	0.229	0.106	0.028	1.95	0.184	0.
F302	1.20 AL	0.630	0.359	0.001	0.229	0.107	0.029	1.88	0.185	<0.001
ASSIGNED VALUE *	1.30	0.610	0.354	0.0010	0.229	0.108	0.0300	1.95	0.182	0.0040
R-STD DEV *	0.032	0.0169	0.0137	0.00343	0.0071	0.0053	0.00384	0.066	0.0090	0.00683
ACCEPTABLE LIMITS(+-) *	0.064	0.0338	0.0274	-	0.0142	0.0106	0.00768	0.132	0.0180	-
WARNING LIMITS(+-) *	.064- .096	.0338- .0507	.0274- .0411	-	.0142-	.0213.0106-	.0159.00768-	.011.132- .198	.0180- .0270	-
ACTION LIMITS(<>) *	0.096	0.0507	0.0411	-	0.0213	0.0159	0.01152	0.198	0.0270	-
N *	28	28	28	5	28	27	22	27	28	5

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F004	196.0	24.5		BIASED HIGH	8	5.0	-0.0022	AA Cadmium redn
F007	152.5	19.0			8			AA Cadmium redn
F009	130.5	18.6			7			IC Dionex
F010	164.5	20.5	WHAH		8			IC Dionex
F014	93.0	13.2			7			Flow injection Cd
F015	211.0	26.3	AHWAH AHAWH	BIASED HIGH	8	8.2	0.0020	IC
F017	116.0	14.5			8			IC Dionex
F020	109.5	12.1			9			AA Cadmium redn
F021	115.5	14.4			8			IC Dionex
F026	70.5	10.0			7			AA Cadmium redn
F026b	43.0	6.1		BIASED LOW*	7	-1.3	-0.0087	IC Dionex
F036	99.0	12.3			8			AA Hydrazine redn
F053	98.5	12.3			8			
F068	55.5	6.9	WLWLAL WH		8			IC Dionex
F068b	115.5	14.4			8			IC Dionex
F071	118.0	14.7			8			IC Dionex
F074	164.5	16.4			10			AA Cadmium redn
F109	90.5	11.3			8			IC Dionex
F110	80.5	10.0			8			
F110b	3.0	1.5		INSUFFICIENT DATA	2			IC Dionex
F112	81.5	10.1			8			IC Dionex
F113	15.0	1.8	WLALALALAIWL AL	BIASED LOW*	8	-3.5	-0.0308	IC Dionex
F115	109.5	12.1			9			IC Dionex
F118	148.0	21.1			7			IC Dionex
F156	147.5	18.4			8			IC Dionex
F159	7.0	1.1	ALALALAL ALWL	BIASED LOW	6	-46.9	0.0528	IC Dionex
F183	114.5	14.3	AH		8			Colorimetry
F204	109.5	10.9			10			IC Dionex
F302	109.5	12.1	AL		9			IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 13.5

PARAMETER: 01092 pH

pH Units

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	4.61	7.09	7.23	7.02	4.91	7.04	6.91	4.56	6.98	5.37
F009	3.52 AL	6.54	6.64 WL	6.65	4.68 WL	6.8	6.66	4.44	6.77	5.24
F010	4.62	7.03	7.16	6.81	4.91	6.91	6.81	4.53	6.94	3.4 AL
F014	4.77 WH	7.1	7.3	6.91	4.97	7.06	6.96	4.87 WH	7.08	5.44
F015	4.6	7.2	7.36	6.96	5.01	7.1	7.11	4.97 AH	7.2	5.52
F015b	4.57	7.07	7.13	6.93	4.85	6.85	6.82	4.49	6.83	5.36
F017	4.58				4.87			4.55		5.36
F020	4.7	6.91	7.15	6.81	4.92	6.84	6.85	4.89 WH	6.8	5.36
F021	4.57	7.15	7.31	6.93	4.86	7.07	6.98	4.5	7.09	5.38
F026	4.99 AH	6.74	6.93	6.64	5.34 AH	6.74	6.66	4.93 AH	6.75	5.54
F032	4.6	7.14	7.31	6.95	4.93	7.08	6.98	4.56	7.1	5.38
F036	4.57	6.36 WL	6.53 WL	6.27 AL	4.8	6.41 WL	6.3 AL	4.42	6.38 WL	5.2
F053	4.57	6.94	7.15	6.78	4.85	6.89	6.84	4.54	6.94	5.37
F071	4.45	6.91	7.11	6.77	4.87	6.88	6.81	4.55	6.9	5.34
F074	5.24 AH	7.04	7.3	6.94	5.88 AH	7.06	7.12	6.34 AH	7.11	6.06 AH
F109	5.04 AH	6.35 WL	6.54 WL	6.24 AL	5.22 WH	6.36 WL	6.29 AL	4.94 AH	6.32 WL	5.4
F110	4.57	7.	7.1	6.78	4.9	6.95	6.82	4.56	6.91	5.35
F112	4.60	7.03	7.20	6.90	4.87	6.99	6.92	4.51	6.99	5.35
F113	4.48	6.88	7.09	6.72	4.7 WL	6.87	6.74	4.45	6.86	5.21
F115	4.58	6.97	7.07	6.72	4.86	6.79	6.7	4.54	6.8	5.31
F122	4.61	6.83	7.01	6.81	4.94	6.74	6.76	4.56	6.73	5.35
F156	4.63	6.94	6.99	6.76	4.95	6.64	6.73	4.57	6.76	5.5
F183	4.64	6.52	6.79	6.67	4.98	6.54	6.62	4.56	6.48	5.47
F204	4.65	6.61	6.87	6.86	5.21 WH	6.62	6.73	4.57	6.61	5.68 WH
F302	4.56	6.89	6.98	6.73	4.86	6.86	6.75	4.53	6.85	5.35
ASSIGNED VALUE *	4.60	6.94	7.10	6.81	4.90	6.86	6.82	4.55	6.86	5.36
R-STD DEV *	0.081	0.235	0.216	0.138	0.103	0.201	0.158	0.114	0.209	0.116
ACCEPTABLE LIMITS(+-) *	0.162	0.470	0.432	0.276	0.206	0.402	0.316	0.228	0.418	0.232
WARNING LIMITS(+-) *	.162-.243	.470-.705	.432-.648	.276-.414	.206-.309	.402-.603	.316-.474	.228-.342	.418-.627	.232-.348
ACTION LIMITS(<>) *	0.243	0.705	0.648	0.414	0.309	0.603	0.474	0.342	0.627	0.348
N *	25	24	24	24	25	24	24	25	24	25

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	176.5	17.6			10			pH Stirred
F009	40.5	4.0	AL WL WL	BIASED LOW	10	9.3	-0.8519	pH Stirred
F010	131.5	13.1		AL	10			pH Stirred
F014	200.0	20.0	WH	WH	BIASED HIGH*	10	-0.1	PC-Titrate
F015	222.0	22.2		AH	BIASED HIGH*	10	3.8	-0.0127
F015b	116.5	11.6			10			pH Stirred
F017	44.0	11.0			INSUFFICIENT DATA	4		pH unstirred
F020	145.5	14.5		WH		10		pH Stirred
F021	165.0	16.5				10		pH Stirred
F026	124.0	12.4	AH AH AH			10		pH Stirred
F032	193.5	19.3				10		pH stirr-E3218
F036	24.0	2.4	WLWLAL WLAL WL	BIASED LOW	10	-19.9	0.8498	pH Stirred
F053	122.5	12.2			10			
F071	103.5	10.3			10			pH unstirred
F074	227.0	22.7	AH AH AH AH	BIASED HIGH	10	-41.5	3.0524	pH unstirred
F109	95.0	9.5	AHWLWLALWHLALAHWL		10			pH unstirred
F110	127.5	12.7			10			pH Stirred
F112	145.0	14.5			10			pH Stirred
F113	71.5	7.1	WL		10			pH Stirred
F115	86.0	8.6			10			pH unstirred
F122	108.5	10.8			10			pH Stirred
F156	124.5	12.4			10			pH Stirred
F183	95.0	9.5			10			pH unstirred
F204	126.0	12.6	WH	WH	10			pH unstirred
F302	85.0	8.5			10			pH Stirred

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 12.7

PARAMETER: 19091 Potassium

mg/L

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT	
F007	0.104	0.173	0.505	0.555	0.038	0.486	0.181	0.283	0.358	0.223	
F009	0.16 AH	0.22 AH	0.59 AH	0.66 AH	<0.10	0.56 WH	0.25 AH	0.36 AH	0.46 AH	0.29 WH	
F010	0.102	0.168	0.535	0.57	0.056	0.523	0.195	0.293	0.378	0.241	
F014	0.12	0.18	0.51	0.56	0.06	0.5	0.19	0.29	0.37	0.23	
F015	<0.1	0.2 WH	0.5	0.5 WL	<0.1	0.5	0.2	0.3	0.4	0.3 AH	
F017	0.102	0.159	0.497	0.539	0.034	0.469	0.173	0.267	0.35	0.21	
F020	0.11	0.17	0.53	0.54	0.06	0.48	0.19	0.29	0.37	0.23	
F021	0.16 AH	0.16	0.45	0.53	<0.10	0.49	0.19	0.33 WH	0.46 AH	0.33 AH	
F026	0.114	0.175	0.519	0.569	0.04	0.491	0.191	0.295	0.371	0.231	
F036	0.12	0.175	0.5	0.56	0.04	0.49	0.19	0.295	0.37	0.23	
F053	0.109	0.166	0.499	0.551	0.038	0.476	0.181	0.279	0.356	0.217	
F071	0.12	0.18	0.55	0.56	0.05	0.54 WH	0.22 WH	0.29	0.41	0.31 AH	
F074	0.14	0.19	0.47	0.55	0.06	0.47	0.18	0.29	0.36	0.23	
F109	0.085	0.144 WL	0.48	0.524	0.019	0.456	0.161	0.258	0.377	0.234	
F110	0.11	0.16	0.47	0.54	<0.05	0.44	0.18	0.27	0.33	0.21	
F110b					0.043						
F112	0.107	0.165	0.495	0.542	0.0335	0.470	0.173	0.270	0.349	0.219	
F115	0.108	0.171	0.501	0.551	0.0384	0.477	0.182	0.283	0.355	0.222	
F156	0.112	0.171	0.526	0.547	0.0351	0.507	0.181	0.290	0.374	0.238	
F183	0.11	0.168	0.508	0.569	0.039	0.493	0.185	0.283	0.369	0.243	
F204	0.09	0.157	0.48	0.527	0.034	0.45	0.16	0.26	0.336	0.203	
F302	0.092	0.159	0.48	0.528	0.034	0.459	0.166	0.263	0.339	0.214	
ASSIGNED VALUE *	0.110	0.169	0.500	0.548	0.0387	0.486	0.182	0.286	0.369	0.230	
R-STD DEV *	0.0149	0.0120	0.0271	0.0187	0.01196	0.0264	0.0135	0.0168	0.0256	0.0216	
ACCEPTABLE LIMITS(+-) *	0.0298	0.0240	0.0542	0.0374	0.02392	0.0528	0.0270	0.0336	0.0512	0.0432	
WARNING LIMITS(+-) *	.0298- .0447	.0240- .0360	.0542- .0813	.0374- .0561	.02392- .0270	.035- .0528-	.0792- .0720-	.0405- .0336-	.0504- .0512-	.0768- .0432-	.0648
ACTION LIMITS(<>) *	0.0447	0.0360	0.0813	0.0561	0.03588	0.0792	0.0405	0.0504	0.0768	0.0648	
N *	20	21	21	21	18	21	21	21	21	21	

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	99.5	9.9			10			IC Dionex
F009	184.0	20.4	AHAHAHAAH	WHAHAHAHWH	BIASED HIGH	9	10.9	ICP-MS
F010	154.0	15.4			10			ICP-AES
F014	148.0	14.8			10			ICP-MS
F015	123.0	15.3	WH WL	AH	BIASED LOW*	8		ICP-AES
F017	47.0	4.7			10	-0.7	-0.0106	AAS absorption
F020	124.5	12.4			10			ICP-MS
F021	119.5	13.2	AH	WHAHAH		9		ICP-AES
F026	151.0	15.1			10			ICP-AES
F036	136.5	13.6			10			AAS absorption
F053	82.0	8.2			10			
F071	175.5	17.5	WHWH	AH	BIASED HIGH*	10	4.0	0.0186
F074	113.0	11.3			10			AAS emission
F109	46.0	4.6	WL		BIASED LOW*	10	-0.4	AAS absorption
F110	43.0	4.7			BIASED LOW	9	-6.2	ICP-AES
F110b	13.0	13.0			INSUFFICIENT DATA	1		ICP-MS
F112	58.5	5.8			10			AAS absorption
F115	96.0	9.6			10			IC Dionex
F156	128.5	12.8			10			ICP-AES
F183	126.0	12.6			10			ICP-MS
F204	24.0	2.4			BIASED LOW*	10	-3.2	IC Dionex
F302	36.5	3.6			BIASED LOW*	10	-3.1	IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 10.8

PARAMETER: 14092 Reactive Silica mg/L Si

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F020	<0.100	0.109	3.01	0.989	<0.100	1.26	0.294	<0.100	2.21	0.762
F026	<0.12	<0.12	3.07	1.03	<0.12	1.33	0.28	<0.12	2.27	0.78
F026b	<0.1	0.111	3.01	0.973	<0.1	1.26	0.276	<0.1	2.19	0.742
F032	<0.1	0.11	3.17	1.07	<0.1	1.36	0.32	<0.1	2.33	0.83
F036	<0.1	<0.1	3.12	1.02	<0.1	1.32	0.28	<0.1	2.28	0.76
F071	0.02	0.08	3.02	0.1 AL	<0.007	1.27	0.27	0.03	2.21	0.76
F109	<0.169	<0.169	3.06	1.03	<0.169	1.34	0.278	<0.169	2.25	0.773
F110	<0.09	<0.09	3.12	1.05	<0.09	1.37	0.29	<0.09	2.31	0.79
F110b	0.03	0.08			0.01			0.04		
F112	0.028	0.074	3.11	1.02	<0.025	1.38	0.309	<0.025	2.36	0.855
F115	0.059 AH	0.106	3.07	1.04	<0.0208	1.33	0.307	0.0432	2.24	0.78
F183	0.03	0.114	3.14	1.07	<0.010	1.37	0.294	0.036	2.3	0.833
F302	0.02	0.08	3.16	1.07	<0.01	1.38	0.29	0.04	2.32	0.81
ASSIGNED VALUE *	0.028	0.106	3.09	1.030	0.0100	1.34	0.290	0.0400	2.28	0.780
R-STD DEV *	0.0094	0.0191	0.064	0.0412	-	0.052	0.0161	0.00575	0.061	0.0379
ACCEPTABLE LIMITS(+-) *	0.0188	0.0382	0.128	0.0824	-	0.104	0.0322	-	0.122	0.0758
WARNING LIMITS(+-) *	.0188- .0282	.0382- .0573	.128- .192	.0824- .1236	-	.104- .156	.0322- .0483	-	.122- .183	.0758- .1137
ACTION LIMITS(<>) *	0.0282	0.0573	0.192	0.1236	-	0.156	0.0483	-	0.183	0.1137
N *	6	9	12	12	1	12	12	5	12	12

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F020	27.0	3.8			7			
F026	34.5	5.7			6			Molybdate
F026b	17.0	2.4		BIASED LOW*	7	-2.9	-0.0138	ICP-AES
F032	71.0	10.1		BIASED HIGH*	7	1.8	0.0156	E3370
F036	31.0	5.1			6			Molybdate
F071	18.5	2.0	AL	BIASED LOW*	9	-2.5	-0.1116	Auto Molybdate
F109	30.5	5.0			6			ICP-AES
F110	50.5	8.4			6			Auto Molybdate
F110b	12.0	3.0		INSUFFICIENT DATA	4			Auto Molybdate
F112	62.0	7.7			8			Molybdate
F115	55.5	6.1	AH		9			Molybdate
F183	73.5	8.1			9			ICP-MS
F302	67.0	7.4			9			Auto Molybdate

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS

PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 5.9

PARAMETER: 11091 Sodium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	0.062	0.307	2.17	1.27	0.067	2.56	0.568	0.149	2.10	3.85
F009	<0.20	0.37 AH	2.39 AH	1.43 AH	<0.20	2.87 AH	0.72 AH	<0.20	2.43 AH	4.57 AH
F010	0.066	0.313	2.04	1.22	0.09 AH	2.33	0.58	0.189 AH	1.92	3.4
F014	0.06	0.31	2.1	1.2	0.07	2.5	0.55	0.15	2.	3.8
F015	<0.1	0.3	2.1	1.3	<0.1	2.6	0.6	0.1 AL	2.1	3.8
F017	0.058	0.296		1.22	0.061		0.555	0.144		
F020	0.06	0.29	1.99	1.18	0.07	2.36	0.55	0.14	1.93	3.58
F021	0.06	0.3	2.15	1.29	0.06	2.59	0.56	0.14	2.1	3.9
F026	0.068	0.32	2.2	1.29	0.072	2.62	0.593	0.162	2.14	3.98
F036	0.07	0.305	2.09	1.22	0.07	2.48	0.56	0.155	2.04	3.85
F053	0.062	0.3	2.08	1.21	0.066	2.50	0.546	0.151	2.03	3.61
F068	0.035 AL	0.266 WL	2.07	1.21	0.037 AL	2.44	0.515	0.115 WL	2.01	3.72
F071	0.06	0.28	1.95 WL	1.21	0.07	2.27 WL	0.52	0.15	1.88 WL	3.41
F074	0.11 AH	0.4 AH	2.1	1.3	0.13 AH	2.51	0.59	0.2 AH	2.11	3.81
F109	0.057	0.292	2.11	1.25	0.063	2.52	0.548	0.141	2.07	3.73
F110	0.06	0.27	2.09	1.25	0.07	2.5	0.56	0.14	2.03	3.68
F112	0.0666	0.293	2.27 WH	1.22	0.0696	2.65	0.537	0.144	2.16	4.52 AH
F115	0.0643	0.311	2.17	1.28	0.07	2.56	0.573	0.153	2.09	3.95
F156	0.0624	0.296	2.16	1.24	0.0633	2.54	0.537	0.148	2.09	3.87
F183	0.059	0.321	2.18	1.29	0.067	2.66	0.581	0.139	2.16	4.18
F204	0.055	0.289	2.08	1.22	0.06	2.46	0.54	0.13	2.02	3.72
F302	0.058	0.298	2.09	1.23	0.070	2.49	0.558	0.142	2.03	3.76
ASSIGNED VALUE *	0.0600	0.299	2.10	1.23	0.0696	2.50	0.558	0.144	2.05	3.80
R-STD DEV *	0.00502	0.0167	0.071	0.044	0.00573	0.106	0.0263	0.0118	0.084	0.211
ACCEPTABLE LIMITS(+-) *	0.01004	0.0334	0.142	0.088	0.01146	0.212	0.0526	0.0236	0.168	0.422
WARNING LIMITS(+-) *	.01004- .015.0334- .0501.142- .213	.088- .132	.01146- .017.212- .318	.0526- .0789.0236- .0354.168- .252					.422- .633	
ACTION LIMITS(<>) *	0.01506	0.0501	0.213	0.132	0.01719	0.318	0.0789	0.0354	0.252	0.633
N *	20	22	21	22	20	21	22	21	21	21

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	138.5	13.8			10			IC Dionex
F009	149.0	21.2	AHAH AHAH AHAH	BIASED HIGH	7	17.9	-0.0053	ICP-MS
F010	106.0	10.6	AH AH		10			ICP-AES
F014	98.5	9.8			10			ICP-MS
F015	108.0	13.5			8			ICP-AES
F017	45.5	7.5			6			AAS absorption
F020	54.5	5.4		BIASED LOW	10	-6.1	0.0095	ICP-MS
F021	121.5	12.1			10			ICP-AES
F026	185.0	18.5		BIASED HIGH*	10	4.3	0.0047	ICP-AES
F036	123.5	12.3			10			AAS absorption
F053	84.0	8.4			10			
F068	29.5	2.9	ALWL AL WL	BIASED LOW*	10	-1.3	-0.0262	IC Dionex
F071	51.5	5.1	WL WL WL	BIASED LOW	10	-10.1	0.0256	AAS emission
F074	173.5	17.3	AHAH AH AH	BIASED HIGH*	10	-1.8	0.0647	AAS absorption
F109	86.5	8.6			10			ICP-AES
F110	87.5	8.7			10			ICP-MS
F112	134.5	13.4	WH AH		10			AAS absorption
F115	155.5	15.5			10			IC Dionex
F156	111.5	11.1			10			ICP-AES
F183	151.0	15.1			10			ICP-MS
F204	47.5	4.7		BIASED LOW*	10	-1.7	-0.0045	IC Dionex
F302	91.5	9.1			10			IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 11.0

PARAMETER: 16092 Sulfate

mg/L

EC PT for Rain &amp; Soft Waters

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F007	2.94	4.02	4.29 AH	7.73	1.56 AH	5.9	3.81	4.85	3.98	3.09 AH
F009	4.04 AH	4.14	3.95	7.69	1.35	5.74	3.87	5.22	3.97	2.51
F010	3.17	4.08	3.98	8.16 AH	1.34	5.9	3.89	5.23	3.94	2.5
F014	3.22	4.15	3.96	7.76	1.35	5.77	3.91	5.21	3.97	2.52
F015	2.6 AL	3.7 AL	3.5 WL	7. WL	1.1 AL	5.1 WL	3.5 WL	4.2 AL	3.5 WL	2.1 WL
F017	3.14	4.03	3.83	7.56	1.34	5.58	3.78	5.01	3.85	2.43
F020	2.8 WL	4.1	3.9	6.9 WL	1. AL	5. AL	3.5 WL	4. AL	3.3 AL	1.9 AL
F021	3.13	3.95	3.8	7.45	1.31	5.5	3.72	5.	3.8	2.39
F026	3.11	3.94	3.79	7.42	1.28	5.49	3.72	4.91	3.8	2.34
F036	3.1	3.95	3.8	7.4	1.35	5.5	3.75	4.9	3.8	2.35
F053	3.14	3.88	3.67	7.39	1.32	5.44	3.68	4.99	3.75	2.41
F068	2.91	3.89	3.71	7.39	1.16 WL	5.44	3.61	4.69	3.73	2.27
F068b	3.08	4.	3.76	7.58	1.29	5.59	3.81	5.1	3.84	2.37
F071	3.13	4.03	3.89	7.46	1.35	5.53	3.75	4.98	3.83	2.6
F074	3.34	4.22	4.11 WH	8.01 WH	1.58 AH	5.92	4.04 WH	5.34	4.11 WH	2.66
F109	3.43	3.92	3.75	7.46	1.36	5.44	3.66	5.34	3.76	2.39
F110	3.13	3.99	3.83	7.6	1.34	5.55	3.8	5.	3.85	2.42
F112	3.20	3.98	3.76	7.29	1.31	5.65	3.74	5.23	3.81	2.36
F113	3.05	3.88	3.8	7.43	1.18 WL	5.48	3.68	4.92	3.74	2.29
F115	3.12	4.04	3.88	7.51	1.29	5.58	3.8	5.02	3.89	2.42
F118	3.21	4.22	4.04	7.77	1.41	5.82	3.97	5.27	4.03	2.56
F156	3.16	4.03	3.87	7.54	1.32	5.59	3.80	5.03	3.87	2.42
F159	3.27	4.1	3.73	7.23	1.41		3.56	5.24	4.	2.36
F183	3.38	4.05	3.9	7.18	1.36	5.4	3.83	4.98	3.9	2.71 WH
F204	3.24	4.07	3.94	7.5	1.35	5.57	3.77	0.094 AL	3.84	2.39
F302	3.07	3.94	3.80	7.56	1.27	5.56	3.71	4.95	3.77	2.34
ASSIGNED VALUE *	3.14	4.03	3.83	7.46	1.34	5.56	3.76	5.010	3.84	2.40
R-STD DEV *	0.153	0.105	0.124	0.224	0.069	0.182	0.120	0.2312	0.116	0.133
ACCEPTABLE LIMITS(+-) *	0.306	0.210	0.248	0.448	0.138	0.364	0.240	0.4624	0.232	0.266
WARNING LIMITS(+-) *	.306-.459	.210-.315	.248-.372	.448-.672	.138-.207	.364-.546	.240-.360	.4624-.6936	.232-.348	.266-.399
ACTION LIMITS(<>) *	0.459	0.315	0.372	0.672	0.207	0.546	0.360	0.6936	0.348	0.399
N *	26	26	26	26	26	25	26	26	26	26

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING			BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F007	187.0	18.7	AH	AH	AH	BIASED HIGH*	10			Auto MTB
F009	212.5	21.2	AH			BIASED HIGH	10	0.4	0.1928	IC Dionex
F010	207.0	20.7		AH		BIASED HIGH	10	10.8	-0.2537	IC Dionex
F014	213.5	21.3				BIASED HIGH*	10	4.2	-0.0259	IC Dionex
F015	17.5	1.7	ALALWLWLALWLALWLWL			BIASED LOW*	10	-4.9	-0.2082	IC
F017	153.5	15.3					10			IC Dionex
F020	50.5	5.0	WL	WLALALWLALALAL		BIASED LOW	10	-6.2	-0.1489	IC LL
F021	105.0	10.5					10			IC Dionex
F026	77.5	7.7					10			IC Dionex
F036	97.0	9.7					10			IC Dionex
F053	79.5	7.9					10			
F068	38.5	3.8	WL			BIASED LOW*	10	0.8	-0.1897	IC Dionex
F068b	130.5	13.0					10			IC Dionex
F071	143.5	14.3					10			IC Dionex
F074	251.0	25.1	WHWHAH	WH	WH	BIASED HIGH*	10	4.8	0.1002	IC
F109	122.5	12.2					10			IC Dionex
F110	144.5	14.4					10			IC Dionex
F112	120.0	12.0					10			IC Dionex
F113	61.5	6.1	WL			BIASED LOW*	10	1.4	-0.1506	IC Dionex
F115	148.0	14.8					10			IC Dionex
F118	234.0	23.4				BIASED HIGH*	10	3.8	0.0370	IC Dionex
F156	158.0	15.8					10			IC Dionex
F159	133.5	14.8					9			IC Dionex
F183	163.5	16.3		WH			10			IC
F204	146.5	14.6		AL			10			IC Dionex
F302	88.0	8.8					10			IC Dionex

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 13.4

PARAMETER: 10692 Total Hardness mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F015	6.9	12.3	15.2	12.2	0.6	15.4	9.	10.6	10.7	5.2
F020	7.1	12.7	14.8	12.5	<0.5	16.2	8.9	10.9	106.	4.7
F026b	6.66	11.9	14.2	11.9	0.53	14.4	8.59	10.5	10.2	4.1
ASSIGNED VALUE *	6.90	12.3	14.8	12.2	0.56	15.4	8.90	10.6	10.4	4.7
R-STD DEV *	0.250	0.45	0.57	0.34	-	1.02	0.242	0.24	11.41	0.62
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	3	3	3	3	2	3	3	3	3	3

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F015	23.0	2.3			10			calculated
F020	24.0	2.6			9			calculated
F026b	10.0	1.0			10			calculated ICP

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 1.9

PARAMETER: 07392 Total Kjeldahl N mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F020	0.03	0.403	0.103	0.16	0.261	0.209	0.219	0.15	0.126	0.226
F026b	0.022	0.441	0.118	0.174	0.279	0.274	0.226	0.11	0.099	0.233
F032	0.11	0.5	0.17	0.19	0.3	0.29	0.25	0.3	0.14	0.23
F036	0.118	0.476	0.129	0.18	0.294	0.272	0.244	0.28	0.091	0.213
F074	0.008	0.571	0.056	0.172	0.278	0.308	0.294	0.112	0.037	0.175
ASSIGNED VALUE *	0.030	0.476	0.118	0.174	0.279	0.274	0.244	0.150	0.099	0.226
R-STD DEV *	0.0592	0.0720	0.0469	0.0125	0.0173	0.0424	0.0333	0.1050	0.0451	0.0215
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	5	5	5	5	5	5	5	5	5	5

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F020	20.0	2.0			10			calculated ICP
F026b	27.0	2.7			10			calculated
F032	45.0	4.5			10			E3367
F036	33.0	3.3			10			
F074	25.0	2.5			10			Calc from Total N

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 3.0

PARAMETER: 07293 Total N

mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F004	1.42	1.1	0.479	0.185	0.536	0.395	0.288	2.23	0.277	0.223
F007	1.4	1.09	0.49	0.17	0.54	0.35	0.26	2.05	0.26	0.28
F014	1.4	1.1	0.4	<0.3	0.5	0.3	<0.3	2.2	<0.3	<0.3
F015	1.38	0.83 AL	0.35 WL	0.12 WL	0.38 AL	0.28	0.4 AH	2.18	0.3	0.15
F020	1.3	1.	0.45	0.16	0.49	0.32	0.25	2.09	0.31	0.24
F021	1.26	1.08	0.5	0.19	0.48	0.37	0.27	2.09	0.32	0.22
F026	1.34	1.04	0.447	0.182	0.5	0.373	0.258	2.07	0.27	0.243
F074	1.3	1.18	0.418	0.175	0.513	0.42	0.322	2.13	0.229	0.179
F113	1.44	1.13	0.468	0.186	0.529	0.409	0.28	2.27	0.263	0.221
F183	1.35	1.06	0.47	0.15	0.51	0.36	0.25	2.11	0.25	0.19
F302	1.40	1.03	0.439	0.156	0.510	0.361	0.252	2.16	0.264	0.210
ASSIGNED VALUE *	1.38	1.08	0.450	0.172	0.510	0.361	0.260	2.13	0.267	0.220
R-STD DEV *	0.063	0.064	0.0411	0.0193	0.0255	0.0485	0.0306	0.078	0.0319	0.0372
ACCEPTABLE LIMITS(+-) *	0.126	0.128	0.0822	0.0386	0.0510	0.0970	0.0612	0.156	0.0638	0.0744
WARNING LIMITS(+-) *	.126-.189	.128-.192	.0822-.1233.0386-	.0579.0510-.0765.0970-.1455.0612-.0918.156-.234	.0638-.0957.0744-.1116					
ACTION LIMITS(<>) *	0.189	0.192	0.1233	0.0579	0.0765	0.1455	0.0918	0.234	0.0957	0.1116
N *	11	11	11	10	11	11	10	11	10	10

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F004	86.5	8.6		BIASED HIGH*	10	3.7	0.0045	Persulfate dig.
F007	64.0	6.4			10			Hydrazine/copper sul
F014	34.0	5.6			6			Flow injection
F015	38.0	3.8	ALWLWLAL AH		10			autoclaved
F020	42.5	4.2			10			Persulfate dig.
F021	61.5	6.1			10			Flow injection
F026	53.5	5.3			10			autoclaved
F074	59.5	5.9			10			UV digestion
F113	84.0	8.4			10			persulfat digestion/
F183	43.0	4.3			10			Flow injection
F302	49.5	4.9			10			Combustion, Shimadzu

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 5.8

PARAMETER: 00192 Turbidity

JTU/NTU

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Rain &amp; Soft Waters

SAMPLE LAB NO	1= GGR-3 LAB RESULT	2= GRM-07A LAB RESULT	3= PERADE-09 LAB RESULT	4= HARP-85 LAB RESULT	5= AES-06 LAB RESULT	6= TOMIKO-01 LAB RESULT	7= TRKY-08 LAB RESULT	8= GGR-2 LAB RESULT	9= MAURI-MX LAB RESULT	10= KEJIM-02 LAB RESULT
F015	0.06	0.09	0.12	0.09	0.06	0.11	0.08	0.06	0.08	0.13
F021	<0.1	<0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	0.1
F122	0.15	0.13	0.15	0.2	0.14	0.21	0.15	0.13	0.13	0.17
ASSIGNED VALUE *	0.10	0.11	0.12	0.10	0.10	0.11	0.12	0.10	0.11	0.13
R-STD DEV *	-	-	0.029	0.069	0.045	0.069	-	-	-	0.040
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	2	2	3	3	3	3	2	2	2	3

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F015	13.0	1.3			10			Nephelometry
F021	7.0	1.4			5			Nephelometry
F122	25.0	2.5			10			Turbidimeter

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 1.8

## **Section 2 – Major Ions and Nutrients in Natural Waters**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

Program Name: FPMI

Study Code: 0097

Range of Samples: 1 to 10

**Table 1 Participating Laboratories - EC PT for Major Ions & Nutrients**

Accutest Labs Southeast, Orlando, FL, US  
 AECL, Chalk River, ON  
 ALS Laboratory Group, Environmental Division, Edmonton, AB  
 ALS Laboratory Group, MB Technology Centre Ltd., Winnipeg, MB  
 Bay of Plenty Regional Council, Whakatane, New Zealand  
 Capital District Health Authority, QEII Lab, Halifax, NS  
 Collier County PCPD Lab, Naples, FL, US  
 Columbia Analytical Services, Jacksonville, FL, US  
 Dade County DERM Lab, Miami, FL, US  
 DB Environmental Labs, Rockledge, FL, US  
 Environment Canada, ALET, Moncton, NB  
 Environment Canada, NLET, Burlington, ON  
 Environment Canada, NLET, Saskatoon, SK  
 Environment Canada, PYLET, Vancouver, BC  
 Environment New Brunswick, Fredericton, NB  
 Environnement Quebec, CEAEQ, Laval, QC  
 Environnement Quebec, CEAEQ, Ste-Foy, QC  
 Florida DEP Central Lab, Tallahassee, FL, US  
 Int. Center for Chem & Biolog. Sci. (ICCBS), Sindh, Pakistan  
 Kinetrics Inc., Toronto, ON  
 Ministry of ND & Mines, Geoscience Laboratories, Sudbury, ON  
 Natural Resources Canada-CFS-GL, Sault Ste. Marie, ON  
 NIWA, Hamilton, New Zealand  
 Ontario Ministry of Environment, Dorset, ON  
 Ontario Ministry of Environment, LSB, Etobicoke, ON  
 Petróleo Brasileiro S.A. - PETROBRAS, Brazil  
 RMB Environmental Laboratories, Detroit Lakes, MN, US  
 Santé Canada - DSPA, Longueuil, QC  
 Saskatchewan Disease Control Laboratory, Regina, SK  
 South Florida Water Management Dist., West Palm Beach, FL, US  
 TAIGA Environmental Laboratory, Yellowknife, NT  
 TestAmerica, Savannah, GA, US  
 TestAmerica, Tallahassee, FL, US  
 U of Maine, Sawyer Environmental Centre, Orono, ME, US  
 U.S. Environmental Protection Agency, Corvallis, OR, US  
 Universidade da Coruña, A Coruña, Spain  
 Ville de Montreal, Montreal, QC

38 Laboratories (1 laboratory name unpublished).

Program Name: FPMI

Number of Labs: 44

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Major Ions & Nutrients**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F003	19	0	0.00	190	0	0.00		0.00
F004	5	0	0.00	50	0	0.00		0.00
F090	3	0	0.00	30	0	0.00		0.00
F154b	1	0	0.00	10	0	0.00		0.00
F207	16	0	0.00	160	0	0.00		0.00
F221	7	0	0.00	70	0	0.00		0.00
F304	4	0	0.00	40	0	0.00		0.00
F009	11	0	0.00	110	2	0.91		0.91
F011	18	0	0.00	180	5	1.39		1.39
F139	9	0	0.00	90	4	2.22		2.22
F158	19	1	2.63	190	1	0.26		2.89
F183	17	0	0.00	170	10	2.94		2.94
F032	17	1	2.94	170	0	0.00		2.94
F015	19	1	2.63	189	5	1.32		3.95
F026	16	1	3.13	160	3	0.94		4.06
F014	12	1	4.17	120	0	0.00		4.17
F193	14	1	3.57	140	3	1.07		4.64
F248	11	1	4.55	110	1	0.45		5.00
F293	18	2	5.56	180	1	0.28		5.83
F021	15	1	3.33	150	9	3.00		6.33
F280	3	0	0.00	30	4	6.67		6.67
F094	3	0	0.00	30	4	6.67		6.67
F036	16	2	6.25	160	7	2.19		8.44
F042	14	2	7.14	140	4	1.43		8.57
F022	18	3	8.33	180	12	3.33		11.67
F154	20	2	5.00	200	28	7.00		12.00
F158b	5	1	10.00	50	2	2.00		12.00
F324	7	1	7.14	70	9	6.43		13.57
F032h	4	1	12.50	40	1	1.25		13.75
F015b	2	0	0.00	20	6	15.00		15.00
F228	5	1	10.00	50	6	6.00		16.00
F010	16	4	12.50	160	13	4.06		16.56
F159	8	1	6.25	80	17	10.63		16.88
F292	20	4	10.00	200	28	7.00		17.00
F113	10	2	10.00	98	15	7.65		17.65
F299	14	1	3.57	140	41	14.64		18.21
F309	17	3	8.82	170	40	11.76		20.59
F317	21	6	14.29	210	28	6.67		20.95
F026b	4	2	25.00	40	1	1.25		26.25
F305	17	5	14.71	170	60	17.65		32.35
F073	8	4	25.00	80	14	8.75		33.75
F006	1	1	50.00	10	0	0.00		50.00

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

**Program Name:** FPMI      **Number of Labs:** 44  
**Study Code:** 0097      **Range of Samples:** 1 to 10

**Table 2      Laboratory Performance Scores - EC PT for Major Ions & Nutrients**

<u>Lab Code</u>	<b>Systemic Bias</b>			<b>Flagged Results</b>				<u>% Score (Sum of Parameters Biased &amp; Results Flagged)</u>
	<u>No. of Parameters Analyzed</u>	<u>No. of Parameters Biased</u>	<u>Parameters Biased (50%)</u>	<u>No. of Results Reported</u>	<u>No. of Flags Assigned</u>	<u>Results Flagged (50%)</u>		
F283	15	7	23.33	150	82	27.33		50.67
F032g	4	4	50.00	40	27	33.75		83.75

**Laboratory Performance Rating**

<b>Rating</b>	<b>% Score*</b>
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased & Results Flagged

Program Name: FPMI

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Major Ions & Nutrients**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F003	0.5	0.3	2.5	0.8	0.8	2.5	2.5	0.0	0.8	0.0	0.8	Good
F004	0.0	0.8	0.0	0.8	0.8	0.8	0.0	0.0	1.0	0.0	0.4	Good
F006		10.0	15.0	0.0	0.0	0.0	15.0	0.0	10.0	50.0	10.0	Satisfactory
F009	12.9	4.6	14.1	18.6	0.9	6.4	0.9	0.9	1.8	0.9	3.2	Good
F010	15.6	15.9	11.7	9.6	10.9	18.4	10.3	10.9	38.2	16.6	13.6	Moderate
F011	23.9	21.1	19.4	22.5	15.6	35.6	16.5	15.8	22.2	1.4	20.3	Moderate
F014	7.1	5.3	9.4	10.0	8.8	0.0	7.2	0.0	0.0	4.2	6.2	Satisfactory
F015	14.7	15.0	3.4	20.5	2.4	12.4	5.5	11.6	10.3	4.0	10.9	Satisfactory
F015b				0.0	100.0	27.5	2.5	0.0	40.0	15.0	15.0	Moderate
F021	6.3	11.3	12.0	8.3	5.3	1.3	11.3	5.4	2.3	6.3	6.3	Satisfactory
F022	8.6	11.4	6.7	1.9	1.4	1.4	5.6	17.2	10.3	11.7	7.6	Satisfactory
F026	22.6	3.8	7.5	5.3	0.3	8.8	0.3	4.0	0.3	4.1	4.0	Good
F026b		0.0	37.5	0.0	27.5	17.5	0.0	15.1	15.0	26.3	15.1	Moderate
F032	2.9	12.8	9.2	23.0	6.1	0.0	1.4	0.0	5.0	2.9	4.0	Good
F032g										83.8	83.8	Poor
F032h										13.8	13.8	Moderate
F036	4.1	2.5	8.1	4.4	15.9	16.6	1.9	0.0	4.1	8.4	4.2	Good
F042	5.3	6.1	13.7	21.5	23.6	8.4	23.5	8.4		8.6	8.6	Satisfactory
F073			9.3		49.4		28.1		28.8	33.8	28.8	Moderate
F090					25.0	0.0	6.7	0.0	0.0	0.0	0.0	Good
F094	2.1	9.5	9.3	15.5	14.3	11.0	0.0	26.7	0.0	6.7	9.4	Satisfactory
F113	8.3	10.0	9.4	13.8	11.7	5.0	10.9	17.2	6.9	17.7	10.4	Satisfactory
F139			18.6		11.0	38.8			37.2	2.2	18.6	Moderate
F154							33.1	27.3	17.8	12.0	22.5	Moderate
F154b							25.0	10.0	10.0	0.0	10.0	Satisfactory
F158	8.3	3.0	2.4	3.8	7.9	8.7	8.2	6.3	10.5	2.9	7.1	Satisfactory
F158b	5.0	15.0	2.0	0.0	16.3	12.1	11.9	1.9	12.9	12.0	11.9	Satisfactory

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPMI

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Major Ions & Nutrients**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F159	43.2	24.2	58.2	39.2	12.0			35.2		16.9	35.2	Poor
F183	17.3	11.9	15.4	9.1	13.2	2.2	4.7	6.9	9.2	2.9	9.1	Satisfactory
F193	10.7	8.9	0.7	1.4	27.1	3.6	5.0	28.9	14.3	4.6	7.0	Satisfactory
F207	5.1	5.3	7.7		2.1	5.6	0.7	0.9	9.7	0.0	5.1	Satisfactory
F221	23.1	0.0	23.8	1.0	0.0	1.0	0.0	10.0	1.0	0.0	1.0	Good
F228										16.0	16.0	Moderate
F248					17.7	7.8	8.8	1.5	0.0	5.0	6.4	Satisfactory
F280										6.7	6.7	Satisfactory
F283										50.7	50.7	Poor
F292										17.0	17.0	Moderate
F293										5.8	5.8	Satisfactory
F299										18.2	18.2	Moderate
F304							0.0	0.0	0.0	0.0	0.0	Good
F305										32.4	32.4	Poor
F309										20.6	20.6	Moderate
F317										21.0	21.0	Moderate
F324										13.6	13.6	Moderate
Interlab Median	8.3	9.2	9.4	6.8	11.0	6.4	5.6	5.8	9.4	7.6		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPMI

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Major Ions & Nutrients**

Sample Number	Sample Name	Province/State	Conductivity ( $\mu\text{S}/\text{cm}$ )
1	ECOAST-MX	Nova Scotia	57.7
2	LONG-02	Ontario	203
3	BATTLE-02	Saskatchewan	964
4	BELLE-09B	Quebec	103.0
5	YAM - 09B	Quebec	252
6	SPEN-06B	Ontario	697
7	CRANBERRY-05	New Jersey	218
8	SOURIS-05	Manitoba	907
9	RICH-09	Quebec	275
10	ERIE-02	Ontario	288

Program Name: FPMI

Range of Samples: 1 to 10

2011-03-11

Study Code: 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Major Ions & Nutrients**

Parameters	ECOAST-MX Sample 1	LONG-02 Sample 2	BATTLE-02 Sample 3	BELLE-09B Sample 4	YAM - 09B Sample 5	SPEN-06B Sample 6	CRANBERRY-05 Sample 7	SOURIS-05 Sample 8	RICH-09 Sample 9	ERIE-02 Sample 10
Ammonia (mg/L N)	0.0290	0.0080	0.0080	0.0060	0.0160	0.0105	0.0070	0.0100	0.0295	0.0255
Boron (mg/L)	0.0047	0.0091	0.270	0.0086	0.0103	0.0226	0.0095	0.132	0.0180	0.0234
Calcium (mg/L)	7.28	9.84	25.5	11.1	27.4	77.7	13.2	59.2	25.0	35.4
Chloride (mg/L)	2.92	39.0	43.4	5.73	19.0	57.5	35.8	23.0	21.8	16.5
Colour (Units)	39.5	22.5	20.0	37.9	19.7	39.0	19.0	69.0	14.9	1.95
Conductivity @ 25C (uS/cm)	57.7	203	964	103.0	252	697	218	907	275	288
Diss Inorg Carbon (mg/L C)	4.40	4.15	68.1	7.08	17.2	56.6	9.40	60.3	19.8	23.2
Diss Organic Carbon (mg/L C)	4.00	4.40	7.92	6.18	4.32	6.30	3.40	14.80	3.88	1.900
Fluoride (mg/L)	0.0335	0.0509	0.190	0.0500	0.0800	0.170	0.0700	0.1400	0.100	0.1100
Magnesium (mg/L)	1.10	3.10	22.0	2.73	5.74	28.6	5.70	42.7	8.08	8.81
Nitrate + Nitrite (mg/L N)	0.0410	0.120	0.1050	0.324	1.54	1.33	0.169	0.480	1.14	0.393
pH (pH Units)	7.38	7.30	8.56	7.70	7.98	8.41	7.81	8.45	8.05	8.12
Potassium (mg/L)	0.304	1.04	5.56	0.840	2.20	2.23	0.700	15.0	1.99	1.40
Silicates (mg/L SiO2)	4.04	2.93	0.550	4.82	6.39	4.36	5.74	17.1	4.04	1.080
Sodium (mg/L)	2.54	23.0	166	5.00	13.3	29.0	20.0	77.5	17.8	9.10
Sulfate (mg/L)	3.30	13.6	150	8.00	15.9	39.3	8.93	197	16.9	23.8
Total Alkalinity (mg/L CaCO3)	20.000	17.8	294	31.1	73.0	246	40.0	262	83.0	95.2
Total Hardness (mg/L)	22.6	37.0	153.0	38.5	91.9	308	56.3	318	94.7	125.0
Total Kjeldahl N (mg/L N)	0.140	0.240	0.527	0.250	0.286	0.439	0.204	1.100	0.285	0.225
Total N (mg/L N)	0.170	0.345	0.611	0.550	1.77	1.69	0.360	1.52	1.37	0.593
Turbidity (JTU/NTU)	0.100	0.125	0.150	0.168	0.110	0.200	0.165	0.170	0.141	0.130

PARAMETER: 07192 Ammonia

mg/L N

 WATER SCIENCE & TECHNOLOGY  
 ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIE-02 LAB RESULT	10= WH LAB RESULT						
F003	0.026	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	0.025						
F004	0.026	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	0.009	<0.005	0.026						
F010	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03						
F011	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03						
F015	0.026	0.002	<0.002	0.003	<0.002	<0.002	0.003	<0.002	<0.002	0.02						
F021	0.01 AL	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.006 WL						
F022	0.04	0.022	0.047	0.021	0.027	0.042	0.015	0.035 WH	0.036	0.044 WH						
F026	0.026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.021						
F036	0.034	0.006	0.008	0.006	0.009	0.006	0.007	0.01	0.006	0.028						
F113	0.023	<0.002	0.005	0.003	<0.002	0.004	<0.002	0.006	<0.002	<0.002 AL						
F154	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.021						
F158	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05						
F158b	0.03	0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02						
F183	0.031	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.027						
F207	0.031	<0.005	0.006	<0.005	<0.005	0.005	<0.005	0.017	<0.005	0.026						
F221	0.028	0.002	<0.001	0.002	<0.001	<0.001	<0.001	0.002	<0.001	0.028						
F228	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02						
F280	0.028	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.021						
F292	0.049 AH	0.026	0.024	0.026 WH	0.022	0.023	0.023	0.03	0.023	0.042 WH						
F293	0.036	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.028						
F299	0.04	0.01	<0.01	0.01	0.01	0.01	0.01	0.01	<0.01	0.02						
F304	0.028	0.003	<0.001	0.002	0.001	<0.001	0.001	0.002	<0.001	0.018						
F305	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05						
F309	0.0167	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043 AL						
F317	0.029	<0.026	<0.026	<0.026	<0.026	0.034	<0.026	<0.026	<0.026	<0.026						
F324	<0.04	<0.04	<0.04	<0.04	0.051	<0.04	<0.04	<0.04	0.057	0.049 AH						
ASSIGNED VALUE *	0.0290	0.0080	0.0080	0.0060	0.0160	0.0105	0.0070	0.0100	0.0295	0.0255						
R-STD DEV *	0.00617	0.01030	0.01974	0.00894	0.01902	0.01610	0.00793	0.01056	0.02440	0.00664						
ACCEPTABLE LIMITS(+-) *	0.01234	0.02060	-	0.01788	0.03804	0.03220	0.01586	0.02112	-	0.01328						
WARNING LIMITS(+-) *	.01234-	.018	.02060-	.030	.01788-	.026	.03804-	.057	.03220-	.048	.01586-	.023	.02112-	.031	.01328-	.019
ACTION LIMITS(<>) *	0.01851	0.03090	-	0.02682	0.05706	0.04830	0.02379	0.03168	-	0.01992						
N *	23	8	5	9	6	8	7	10	4	21						

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	19.5	6.5			3			Colorimetry
F004	27.0	6.7			4			Salicylate/nitropruss
F010	32.0	16.0			2			Skalar
F011	32.0	16.0			2			
F015	18.0	3.6			5			Colorimetry
F021	2.0	1.0	AL	WL	2			Flow injection
F022	93.5	9.3		WHWH	10			Colorimetry
F026	14.5	7.2			2			Phenate
F036	62.0	6.2			10			Colorimetry
F113	12.5	2.5		AL	5			Flow injection
F154	11.0	5.5			2			Colorimetry
F158	0.0	0.0			0			Colorimetry
F158b	31.0	7.7			4			Colorimetry
F183	30.5	15.2			2			Colorimetry
F207	41.0	8.2			5			Flow injection
F221	29.5	5.9			5			Flow injection
F228	25.0	8.3			3			Colorimetry
F280	18.0	9.0			2			Automated phenate
F292	91.0	9.1	AH WH	WH	10			Flow injection
F293	35.0	17.5			2			Phenate
F299	56.0	7.0			8			
F304	20.0	2.8			7			Flow injection
F305	0.0	0.0			0			Colorimetry
F309	2.0	2.0		AL	1			Flow injection
F317	19.0	9.5			2			Colorimetry
F324	31.0	10.3		AH	3			

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 7.4

PARAMETER: 05091 Boron

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F010	0.006	0.014	0.273	0.016	0.016	0.033	0.016	0.134	0.021	0.027
F014	<0.010	0.01	0.254	0.01	0.012	0.023	0.01	0.125	0.018	0.024
F015	<0.01	<0.01	0.27	<0.01	0.01	0.02	<0.01	0.13	0.02	0.02
F022	<0.025	<0.025	0.254	<0.025	<0.025	<0.025	<0.025	0.123	<0.025	<0.025
F026	<0.02	<0.02	0.268	<0.02	<0.02	0.023	<0.02	0.128	<0.02	0.024
F139	0.0034	0.0091	0.263	0.0086	0.0106	0.0221	0.0095	0.134	0.0165	0.0228
F154	<0.030	<0.030	0.277	<0.030	<0.030	<0.030	<0.030	0.138	<0.030	<0.030
F158	<0.005	0.007	0.274	0.007	0.009	0.019	0.008	0.121	0.014	0.021
F183	<0.005	0.007	0.234 WL	0.007	0.008	0.018	0.008	0.111 WL	0.014	0.02
F283	<0.05	1.03 AH	0.332 AH	0.07 AH	0.051 AH	0.054 AH	<0.05	0.146	<0.05	<0.05
F292	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F293	<0.015	<0.015	0.272	<0.015	<0.015	0.029	<0.015	0.141	0.021	0.027
F317	<0.1	<0.1	0.28	<0.1	<0.1	<0.1	<0.1	0.14	<0.1	<0.1
ASSIGNED VALUE *	0.0047	0.0091	0.270	0.0086	0.0103	0.0226	0.0095	0.132	0.0180	0.0234
R-STD DEV *	-	0.00520	0.0133	0.00667	0.00441	0.00709	0.00282	0.0103	0.00346	0.00320
ACCEPTABLE LIMITS(+-) *	-	0.01040	0.0266	0.01334	0.00882	0.01418	-	0.0206	0.00692	0.00640
WARNING LIMITS(+-) *	-	.01040- .015.0266- .0399.01334- .020.00882- .013.01418- .021					-	.0206- .0309.00692- .010.00640- .009		
ACTION LIMITS(<>) *	-	0.01560	0.0399	0.02001	0.01323	0.02127	-	0.0309	0.01038	0.00960
N *	2	6	12	6	7	9	5	12	7	8

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F010	60.5	6.0			10			ICP-AES
F014	38.5	4.2			9			ICP-AES
F015	24.5	4.0			6			ICP-AES
F022	5.5	2.7			2			ICP-AES
F026	21.0	5.2			4			ICP-AES
F139	36.5	3.6			10			ICP-MS
F154	19.0	9.5			2			ICP-MS
F158	24.0	2.6			9			ICP-MS
F183	11.5	1.2	WL WL		9			ICP-MS
F283	52.0	8.6	AHAHAHAHAH		6			ICP Optima 2000 DV
F292	0.0	0.0			0			ICP-AES
F293	39.0	7.8			5			ICP-AES
F317	21.0	10.5			2			ICP-AES

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 4.7

PARAMETER: 20091 Calcium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT										
F003	7.11	9.72	25.1	10.9	27.5	75.4	13.1	58.9	24.6	34.7										
F009	7.27	9.54	25.9	11.1	27.2	81.	14.2	54.3	24.9	36.										
F010	7.29	10.1	25.9	11.2	28.7	82.5	13.5	61.9	25.9	37.3										
F011	7.6	10.1	25.6	11.4	27.4	77.7	13.4	59.5	25.3	35.6										
F014	7.41	10.3	25.3	11.4	28.3	79.2	13.4	60.1	25.6	35.9										
F015	7.5	10.1	26.8	11.5	27.6	74.8	13.4	58.9	25.4	35.1										
F021	6.89	9.82	25.4	10.8	27.5	78.7	13.	59.7	25.	35.4										
F022	7.19	9.84	25.1	11.1	27.4	77.2	13.3	58.1	25.1	35.8										
F026	7.63	10.6	25.4	11.	27.6	78.7	13.4	60.	24.2	35.6										
F032	6.6	9.4	23.7	10.4	26.	76.1	12.4	56.4	23.8	34.6										
F032g	7.9	11.1 AH	28.8 AH	12.6 AH	30.3 WH	71.8	14.3	60.6	26.1	35.5										
F032h	6.99	9.84	23.8	11.	25.3	73.9	11.9 WL	56.	23.2	32.9										
F036	7.14	9.6	24.8	10.8	26.8	76.7	12.7	58.2	23.8	34.7										
F042	7.7	11.2 AH	27.4	11.5	30.3 WH	83.6	13.	61.7	26.9	35.5										
F139	7.18	10.2	25.9	11.3	27.8	81.1	13.3	65.1 WH	25.7	35.8										
F154	7.28	9.49	23.9	10.6	26.5	75.2	12.0	54.7	23.2	34.5										
F158	7.2	9.9	25.7	10.9	27.3	78.4	12.9	58.1	24.6	35.4										
F159	7.83	10.5	26.4	11.8	29.6	84.2	13.8	63.6	26.6	38.4 WH										
F183	7.63	9.75	24.8	11.	26.6	77.2	13.	59.3	24.9	34.1										
F193	6.95	9.73	27.3	11.	27.	80.	12.8	61.5	25.	34.8										
F207	7.2	9.7	25.1	10.7	26.9	75.5	12.9	58.7	24.1	34.5										
F248	7.33	9.77	25.2	10.8	27.1	77.5	12.7	59.1	24.4	35.2										
F280	7.25	10.2	25.	11.1	26.7	75.5	13.2	58.	24.6	34.5										
F283	7.76	10.3	27.2	11.7	30.9 WH	88.9 AH	14.1	66.1 WH	26.7	37.2										
F292	7.13	9.93	25.5	11.2	27.3	77.7	13.1	56.7	24.5	33.8										
F293	7.39	10.	25.7	11.3	28.	78.4	13.3	60.	25.4	35.9										
F299	80. AH	9.83	26.	11.	28.	78.	14.	63.	26.	38.										
F305	6.66	9.09 WL	24.	10.1 WL	25.9	72.5	12.3	56.2	24.	33.										
F309	7.67	9.51	26.	11.4	28.5	79.4	13.1	58.5	24.9	38.										
F317	7.5	9.9	26.	12. WH	29.	81.	14.	63.	26.	37.										
ASSIGNED VALUE *	7.28	9.84	25.5	11.1	27.4	77.7	13.2	59.2	25.0	35.4										
R-STD DEV *	0.351	0.383	1.07	0.41	1.17	3.23	0.62	2.84	1.02	1.32										
ACCEPTABLE LIMITS(+-) *	0.702	0.766	2.14	0.82	2.34	6.46	1.24	5.68	2.04	2.64										
WARNING LIMITS(+-) *	.702	1.053	.766	1.149	2.14	3.21	.82	1.23	2.34	3.51	6.46	9.69	1.24	1.86	5.68	8.52	2.04	3.06	2.64	3.96
ACTION LIMITS(<>) *	1.053	1.149	3.21	1.23	3.51	9.69	1.86	8.52	3.06	3.96										
N *	30	30	30	30	30	30	30	30	30	30										

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	102.0	10.2			10			AAS absorption
F009	158.5	15.8			10			IC Dionex
F010	227.5	22.7			10			ICP-AES
F011	187.0	18.7			10			
F014	210.5	21.0			10			ICP-AES
F015	183.0	18.3			10			ICP-AES
F021	130.5	13.0			10			ICP-AES
F022	140.5	14.0			10			ICP-AES
F026	181.5	18.1			10			ICP-AES
F032	38.5	3.8		BIASED LOW*	10	-2.4	-0.5855	AAS abs-E3171
F032g	243.0	24.3	AHAHAHWH	BIASED HIGH	10	-7.5	2.8710	ICP-AES-E3386
F032h	44.0	4.4	WL	BIASED LOW	10	-5.4	-0.1485	ICP-AES-E3497
F036	71.0	7.1		BIASED LOW*	10	-1.3	-0.3112	AAS absorption
F042	248.5	24.8	AH WH	BIASED HIGH	10	6.2	-0.1344	ICP-AES
F139	209.5	20.9	WH		10			ICP-MS
F154	44.5	4.4		BIASED LOW*	10	-4.6	-0.1266	ICP-MS
F158	126.5	12.6			10			ICP-MS
F159	275.0	27.5	WH	BIASED HIGH	10	8.3	-0.3703	ICP-AES
F183	112.5	11.2			10			ICP-MS
F193	142.5	14.2			10			ICP-MS
F207	79.5	7.9			10			ICP-AES
F248	109.5	10.9			10			ICP-MS
F280	113.0	11.3			10			AAS absorption
F283	279.5	27.9	WHAH WH	BIASED HIGH	10	14.4	-1.3479	ICP Optima 2000 DV
F292	117.5	11.7			10			ICP-AES
F293	194.5	19.4			10			ICP-AES
F299	222.5	22.2	AH		10			
F305	26.0	2.6	WL WL	BIASED LOW	10	-6.2	-0.0426	ICP-AES
F309	188.5	18.8			10			ICP-AES
F317	243.0	24.3	WH	BIASED HIGH*	10	4.8	-0.0918	ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.5

PARAMETER: 17092 Chloride

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT										
F003	2.94	38.3	42.7	5.75	19.	56.8	35.5	22.7	21.4	16.3										
F009	2.97	39.	44.9	5.85	19.1	58.8	36.5	22.7	22.5	16.7										
F010	2.8	39.	43.	5.4	18.	57.	36.	22.	21.	16.										
F011	2.9	39.	43.5	5.6	19.	57.4	35.8	22.5	21.6	16.4										
F014	2.97	38.3	42.2	5.9	20.2	55.9	35.8	24.3	22.7	17.7										
F015	3.1	42. AH	43.	6.	20.	59.	38. WH	24.	22.	17.										
F021	2.91	38.8	43.3	5.73	18.5	62.1 WH	34.8	23.	21.3	16.										
F022	2.97	39.1	43.8	5.78	19.1	57.5	35.6	23.	21.5	16.6										
F026	2.92	38.2	41.6	5.8	18.7	56.1	35.1	22.	21.3	16.4										
F032	2.69	38.7	43.	5.49	19.1	56.6	35.7	23.6	21.8	16.4										
F036	3.03	38.7	44.1	5.87	18.7	58.4	35.4	23.2	21.1	16.2										
F042	3.	39.	44.	5.8	19.	57.	37.	23.	22.	17.										
F073	3.1	41. WH	46.	6.1	19.	62. WH	37.	23.	24. WH	17.										
F113	2.95	39.4	43.9	5.8	19.1	58.1	36.2	23.1	21.8	16.5										
F139	2.99	40.2	44.7	5.88	19.5	59.2	36.3	23.4	22.3	16.9										
F154	2.92	38.8	43.1	5.58	18.9	56.7	35.5	22.4	21.2	16.1										
F158	2.9	39.3	43.5	5.8	19.2	57.8	35.8	23.1	21.8	16.5										
F159	2.89	36.5 WL	37.9 AL	5.79	18.2	60.3	43.8 AH	23.8	22.8	19.0 AH										
F183	3.01	38.6	42.9	5.68	18.8	56.9	35.4	22.6	21.3	16.2										
F193	2.89	39.7	44.3	5.67	19.4	58.4	36.1	23.2	22.1	16.6										
F207	2.8	38.8	43.2	5.3	18.3	57.3	35.4	22.	20.8	15.7										
F248	2.82	38.8	43.2	5.47	19.1	56.4	36.1	22.7	21.8	16.5										
F283	2.51 WL	36.9 WL	40.6 WL	5.69	17.7	54.3	33.4 WL	18.9 AL	21.5	14.3 AL										
F292	2.57 WL	37.8	41.9	5.11 WL	18.	55.8	34.5	21.7	20.5	15.4										
F293	2.87	39.	43.	5.67	18.9	57.	35.5	23.1	21.4	16.4										
F299	2. AL	41. WH	48. AH	4. AL	20.	60.	38. WH	25. WH	30. AH	17.										
F305	1.7 AL	39.	43.7	4.6 AL	19.9	58.1	35.7	22.4	21.	15.6										
F309	3.21	39.9	44.2	5.73	19.2	65.7 AH	36.6	23.1	21.8	16.9										
F317	2.7	39.	46.	5.4	20.	60.	37.	25. WH	23.	18. WH										
F324	2.93	41.4 WH	46.	5.5	20.3	60.8	38.1 WH	25. WH	23.1	17.3										
ASSIGNED VALUE *	2.92	39.0	43.4	5.73	19.0	57.5	35.8	23.0	21.8	16.5										
R-STD DEV *	0.154	0.86	1.32	0.242	0.71	1.94	0.96	0.86	0.80	0.63										
ACCEPTABLE LIMITS(+-) *	0.308	1.72	2.64	0.484	1.42	3.88	1.92	1.72	1.60	1.26										
WARNING LIMITS(+-) *	.308	.462	1.72	2.58	2.64	3.96	.484	.726	1.42	2.13	3.88	5.82	1.92	2.88	1.72	2.58	1.60	2.40	1.26	1.89
ACTION LIMITS(<>) *	0.462	2.58	3.96	0.726	2.13	5.82	2.88	2.58	2.40	1.89										
N *	30	30	30	30	30	30	30	30	30	30										

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	110.5	11.0			10			IC Dionex
F009	206.0	20.6			10			
F010	83.0	8.3			10			IC Dionex
F011	135.0	13.5			10			
F014	187.5	18.7			10			IC Dionex
F015	244.5	24.4	AH WH	BIASED HIGH*	10	2.4	0.2698	IC
F021	124.0	12.4	WH		10			IC Dionex
F022	170.5	17.0			10			IC Dionex
F026	86.0	8.6			10			IC Dionex
F032	121.0	12.1			10			colorimetry-E3016
F036	151.5	15.1			10			IC Dionex
F042	194.5	19.4			10			IC Dionex
F073	248.5	24.8	WH WH WH	BIASED HIGH	10	7.0	-0.5261	IC Dionex
F113	192.5	19.2			10			IC Dionex
F139	237.5	23.7			10			IC Dionex
F154	96.0	9.6			10			IC
F158	178.5	17.8			10			IC Dionex
F159	174.5	17.4	WLAL AH AH		10			IC Dionex
F183	103.5	10.3			10			IC
F193	195.0	19.5			10			IC Dionex
F207	70.5	7.0		BIASED LOW*	10	0.4	-0.6453	IC Dionex
F248	126.5	12.6			10			IC Dionex
F283	39.5	3.9	WLWLWL WL AL	BIASED LOW	10	-5.4	-0.4900	Ion Chromatography
F292	25.5	2.5	WL WL	BIASED LOW*	10	-2.3	-0.5591	IC
F293	121.0	12.1			10			IC
F299	223.0	22.3	ALWHAHAL WHWHAH		10			
F305	106.0	10.6	AL AL		10			IC
F309	226.0	22.6	AH		10			IC Dionex
F317	218.0	21.8	WH WH		10			IC
F324	254.0	25.4	WH WHWH	BIASED HIGH	10	6.2	-0.0945	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.5

PARAMETER: 00292 Colour

Units

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	32.3	20.7	19.1	33.3	16.7	32.7	16.6	59.9	12.1	1.1
F011	42.	24.	21.	40.	20.	41.	20.	72.	15.	<5.
F015	40.	20.	17.5	40.	17.5	40.	15.	65.	12.5	<2.5
F021	35.	24.	39. AH	34.	19.	34.	21.	60.	14.	<5.
F032	36.5	22.4	21.2	37.8	19.7	38.7	18.4	75.	14.8	1.5
F036	37.4	23.4	21.2	36.2	18.6	37.8	17.8	71.	15.2	2.4
F042	41.	24.	21.	39.	20.	39.	21.	69.	15.	3.
F094	41.	22.	20.	38.	20.	39.	19.	70.	15.	<2.
F154	40.6	25.1	25.6	37.9	21.3	39.2	18.9	68.4	15.9	<5.0
F154b	39.5	20.8	23.6	39.5	20.3	37.8	18.9	67.7	13.9	<5.0
F158	30.	18.	18.	30.	15.	31.	16.	56.	11.	<5.0
F183	34.9	22.6	21.2	35.9	19.7	36.6	19.3	66.7	14.9	<4.96
F193	27.3	17.3	16.3	27.6	14.7	28.6 WL	14.2	53.4	11.	1.3
F207	38.	22.	20.	37.	19.	38.	20.	63.	15.	5.
F248	27.6	17.6	16.3	28.1	15.2	28.9 WL	14.3	53.1	11.1	1.4
F283	47.3	43. AH	45.5 AH	53. WH	43. AH	54. WH	42. AH	75.6	40.5 AH	31. AH
F292	40.	25.	20.	40.	20.	40.	20.	75.	15.	<5.0
F293	42.	25.1	27.2	41.8	20.2	40.2	20.2	74.1	14.5	<2.0
F305	50.	30.	25.	45.	25.	40.	25.	70.	20. WH	<5.
F309	25. WL	15.	10. WL	30.	15.	50. WH	30. AH	70.	5. AL	<5.0
F317	45.	35. WH	20.	50.	20.	45.	20.	80.	15.	10. WH
ASSIGNED VALUE *	39.5	22.5	20.0	37.9	19.7	39.0	19.0	69.0	14.9	1.95
R-STD DEV *	7.00	4.21	4.22	6.12	2.74	4.99	3.27	7.88	2.27	3.547
ACCEPTABLE LIMITS(+-) *	14.00	8.42	8.44	12.24	5.48	9.98	6.54	15.76	4.54	7.094
WARNING LIMITS(+-) *	14.00-	21.008	42-	12.63	8.44-	12.66	12.24-	18.365	48-	8.22
ACTION LIMITS(<>) *	21.00	12.63	12.66	18.36	8.22	14.97	9.81	23.64	6.81	10.641
N *	21	21	21	21	21	21	21	21	21	9

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	46.0	4.6		BIASED LOW*	10	-13.2	-0.3070	Auto Analyser
F011	135.0	15.0			9			True
F015	74.5	8.2			9			Flow injection
F021	91.0	10.1	AH		9			auto analyser-E3219
F032	102.0	10.2			10			True
F036	101.5	10.1			10			Apparent
F042	128.5	12.8			10			True
F094	107.5	11.9			9			True
F154	130.0	14.4			9			True
F154b	98.0	10.8			9			Apparent
F158	31.5	3.5		BIASED LOW*	9	-19.2	-0.4052	Spectrophotometry
F183	84.5	9.3			9			Spectrophotometry
F193	17.0	1.7	WL	BIASED LOW*	10	-23.7	-0.5904	Spectrophotometry
F207	94.5	9.4			10			Auto Analyser
F248	26.5	2.6	WL	BIASED LOW*	10	-24.1	-0.2881	Spectrophotometry
F283	196.0	19.6	AHAHWHAHWAH	BIASED HIGH	10	-37.9	29.7613	NOVA-60 (unit in Hz)
F292	128.5	14.2			9			True
F293	148.0	16.4		BIASED HIGH*	9	6.4	0.4690	Spectrophotometry
F305	163.0	18.1	WH	BIASED HIGH*	9	-6.3	7.2248	Apparent
F309	63.0	7.0	WL WL WHAH AL		9			Nessler
F317	157.5	15.7	WH	WH	10			Visual Comparison

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 25

OVERALL AVERAGE RANK IS 10.7

PARAMETER: 00392 Conductivity @ 25C uS/cm

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05 LAB RESULT	8= SOURIS-05 LAB RESULT	9= RICH-09 LAB RESULT	10= ERIE-02 LAB RESULT
F003	57.9	201.	957.	102.	244.	682.	214.	897.	270.	284.
F004	57.7	203.	964.	103.	251.	697.	218.	908.	274.	288.
F009	55.	203.	955.	101.	251.	694.	218.	901.	274.	289.
F010	57.	208.	981.	104.	256.	711.	223.	932.	281.	298.
F011	57.3	200.	943.	103.	248.	685.	216.	893.	269.	281.
F014	58.4	207.	973.	105.	256.	701.	222.	917.	279.	294.
F015	57.	202.	954.	102.	248.	691.	214.	901.	276.	289.
F015b	60.	210. WH	980.	110. AH	270. AH	720. WH	230. AH	920.	280.	310. AH
F021	57.	203.	963.	103.	252.	700.	221.	916.	227. AL	290.
F022	57.9	205.	977.	103.	252.	700.	217.	906.	274.	287.
F026	56.6	201.	969.	105.	248.	689.	217.	903.	272.	286.
F032	57.8	204.	969.	103.	247.	696.	219.	915.	277.	284.
F036	56.	202.	959.	99.4	252.	701.	218.	910.	273.	287.
F042	57.9	204.	965.	103.	253.	699.	220.	910.	276.	291.
F073	60.	205.	1012. AH	105.	264. WH	731. AH	230. AH	949. AH	289. WH	304. WH
F090	59.	207.	960.	103.	254.	700.	217.	912.	278.	292.
F113	53.3 AL	190. AL	906. AL	98.4 WL	235. AL	654. AL	206. AL	855. AL	256. AL	270. WL
F154	57.6	200.	955.	103.	249.	691.	218.	899.	273.	287.
F158	58.4	206.	982.	105.	253.	700.	221.	925.	279.	293.
F158b	56.9	203.	966.	102.	252.	698.	217.	911.	276.	290.
F183	54.1 WL	205.	966.	106.	255.	699.	222.	911.	278.	293.
F193	56.1	203.	966.	101.	251.	697.	218.	909.	274.	288.
F207	57.8	205.	964.	103.	252.	694.	220.	904.	275.	287.
F221	57.7	205.	959.	106.	254.	689.	221.	895.	277.	291.
F248	58.3	202.	960.	103.	249.	697.	217.	905.	272.	285.
F283	61.2 WH	211. WH	984.	106.	262. WH	710.	225. WH	934. WH	283.	297.
F292	58.2	201.	947.	101.	245.	689.	217.	896.	268.	283.
F293	56.3	202.	967.	103.	252.	694.	218.	907.	276.	292.
F305	58.	205.	971.	104.	250.	671. WL	218.	890.	268.	256. AL
F309	5010. AH	197. WL	931. WL	100.	243. WL	677. WL	215.	884.	266.	282.
F317	57.	201.	960.	100.	250.	690.	200. AL	900.	270.	280.
ASSIGNED VALUE *	57.7	203	964	103.0	252	697	218	907	275	288
R-STD DEV *	1.35	2.9	12.6	2.17	4.4	9.3	3.4	12.5	5.3	6.1
ACCEPTABLE LIMITS(+-) *	2.70	5.8	25.2	4.34	8.8	18.6	6.8	25.0	10.6	12.2
WARNING LIMITS(+-) *	2.70- 4.05	5.8- 8.7	25.2- 37.8	4.34- 6.51	8.8- 13.2	18.6- 27.9	6.8- 10.2	25.0- 37.5	10.6- 15.9	12.2- 18.3
ACTION LIMITS(<>) *	4.05	8.7	37.8	6.51	13.2	27.9	10.2	37.5	15.9	18.3
N *	31	31	31	31	31	31	31	31	31	31

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	76.0	7.6			10			PC Titrate
F004	156.0	15.6			10			Radiometer
F009	116.0	11.6			10			Cond. meter
F010	261.5	26.1		BIASED HIGH*	10	2.2	-0.1472	Cond. meter
F011	67.5	6.7		BIASED LOW*	10	-2.0	1.0231	
F014	263.5	26.3		BIASED HIGH*	10	0.7	1.9629	PC Titrate
F015	103.5	10.3			10			Cond. meter
F015b	294.0	29.4	WH AH AHAHWAH AH	BIASED HIGH*	10	1.1	8.3932	Cond. meter
F021	167.0	16.7	AL		10			PC Titrate
F022	178.0	17.8			10			Cond. meter
F026	116.5	11.6			10			PC Titrate
F032	168.5	16.8			10			PC titr-E3218
F036	130.5	13.0			10			Cond. meter
F042	196.5	19.6			10			Cond. meter
F073	291.0	29.1	AH WHAHAHAWHWH	BIASED HIGH	10	5.0	-1.3591	Cond. meter
F090	211.0	21.1			10			
F113	13.0	1.3	ALALALWLALALALALALWL	BIASED LOW	10	-5.9	-0.6781	automated probe
F154	108.0	10.8			10			Radiometer
F158	256.0	25.6		BIASED HIGH*	10	1.7	-0.9599	PC Titrate
F158b	158.5	15.8			10			Cond. meter
F183	217.0	21.7	WL		10			Cond. meter
F193	140.0	14.0			10			Cond. meter
F207	167.0	16.7			10			Cond. meter
F221	181.0	18.1			10			Radiometer
F248	131.0	13.1			10			Radiometer
F283	294.0	29.4	WHHW WH WHHW	BIASED HIGH*	10	2.1	2.6829	Cond. meter
F292	76.5	7.6			10			Cond. meter
F293	160.0	16.0			10			PC Titrate
F305	129.0	12.9	WL AL		10			Cond. meter
F309	58.5	5.8	AH WL WL WI WL	BIASED LOW	10	-172.4	1167.4487	PC Titrate
F317	73.5	7.3	AL	BIASED LOW*	10	-0.2	-4.9341	PC Titrate

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 2.5

OVERALL AVERAGE RANK IS 16.0

PARAMETER: 06592 Diss Inorg Carbon mg/L C

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	4.5	4.3	68.5	7.2	17.6	56.5	9.4	59.	20.1	23.5
F010	4.45	4.3	72.5	7.43	18.3	61.2	9.43	62.3	20.5	23.8
F015	4.4	4.2	67.6	7.1	16.9	55.9	9.2	58.8	19.2	22.2
F022	4.15	3.98	60.1 WL	6.52	15.1	50.2	8.37	52.5 WL	17.1 WL	20. WL
F026	4.4	4.22	70.6	7.66	17.4	59.8	9.75	62.2	19.9	23.2
F032	4.4	4.04	65.8	7.07	17.2	54.1	9.6	57.9	19.8	23.2
F036	4.16	3.98	71.4	6.8	17.3	54.9	9.74	62.9	21.2	22.8
F042	4.78	4.59	72.3	7.72	18.3	61.6	9.96	64.5	20.9	24.3
F073	4.7	4.	68.1	6.8	16.7	60.1	9.2	63.1	19.1	22.
F094	3.57 WL	3.21 WL	67.9	5.72 WL	17.2	56.6	7.25 AL	61.7	20.1	23.3
F113	4.59	4.33	68.1	7.	17.2	56.7	9.19	59.6	19.7	23.4
F154	4.3	4.1	64.2	7.2	15.6	53.7	9.0	55.5	18.2	19.5 AL
F183	3.88	3.55	64.9	6.12	15.2	53.4	8.02	58.5	17.8	21.9
F317	5.1	5.1 WH	70.	8.2	18.	58.	9.9	61.	20.	23.
ASSIGNED VALUE *	4.40	4.15	68.1	7.08	17.2	56.6	9.40	60.3	19.8	23.2
R-STD DEV *	0.349	0.334	3.34	0.638	1.11	3.52	0.670	3.19	1.21	1.09
ACCEPTABLE LIMITS(+-) *	0.698	0.668	6.68	1.276	2.22	7.04	1.340	6.38	2.42	2.18
WARNING LIMITS(+-) *	.698- 1.047	.668- 1.002	6.68- 10.02	1.276- 1.914	2.22- 3.33	7.04- 10.56	1.340- 2.010	6.38- 9.57	2.42- 3.63	2.18- 3.27
ACTION LIMITS(<>) *	1.047	1.002	10.02	1.914	3.33	10.56	2.010	9.57	3.63	3.27
N *	14	14	14	14	14	14	14	14	14	14

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	93.5	9.3			10			IR detection
F010	116.0	11.6		BIASED HIGH*	10	6.3	-0.2976	Shimadzu
F015	60.5	6.0			10			Carbon analyser
F022	19.5	1.9	WL	WLWLWL	BIASED LOW	10	-12.3	Shimadzu
F026	98.5	9.8			10			Colorimetry
F032	63.5	6.3			10			colorim-E3370
F036	81.0	8.1			10			Shimadzu
F042	134.5	13.4		BIASED HIGH*	10	7.1	-0.0308	TOC analyser
F073	72.5	7.2			10			Dohrmann
F094	54.5	5.4	WLWL	WL AL				IR detection
F113	81.5	8.1			10			IR detection
F154	39.5	3.9		AL				Carbon analyser
F183	24.0	2.4		BIASED LOW*	10	-3.2	-0.8186	Shimadzu
F317	111.0	11.1	WH		10			TOC analyser

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 7.5

OVERALL AVERAGE RANK IS 7.5

PARAMETER: 06002 Diss Organic Carbon mg/L C

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	4.	4.5	8.1	6.2	4.3	6.4	3.4	14.5	3.8	1.9
F004	3.79	4.39	7.92	6.15	4.32	6.29	3.39	14.9	3.86	1.9
F010	3.75	4.41	7.92	5.74	4.15	6.13	3.28	14.3	3.79	1.8
F011	4.1	4.7	8.1	5.9	4.5	6.3	3.4	14.4	3.9	2.1
F015	4.2	4.9	6.7	6.4	4.1	6.1	3.6	14.9	4.	1.8
F021	4.14	4.93	9.01	6.35	4.6	7.29	3.69	15.4	4.28	2.29
F022	3.02 AL	3.85	7.1	4.97 AL	3.75 WL	5.48	3.1	13.	3.37	1.83
F026	3.74	4.25	7.9	5.99	4.29	6.11	3.32	14.5	3.74	1.84
F032	4.1	4.4	8.0	6.2	4.4	6.2	3.5	14.8	3.9	1.9
F036	3.9	4.4	9.2	6.2	4.5	7.	3.4	16.3	3.9	2.1
F042	3.89	4.38	7.61	5.97	4.27	5.88	3.32	14.4	3.68	1.74
F073	3.55	4.25	7.81	5.89	4.19	5.87	3.23	14.5	3.75	1.79
F113	4.08	4.76	8.28	6.4	4.54	6.57	3.73	15.4	4.11	2.15
F154	4.7 WH	6.0 AH	10.3 AH	7.7 AH	6.0 AH	7.8 WH	4.9 AH	17.2 WH	5.7 AH	4.8 AH
F158	4.1	4.6	8.1	6.3	4.4	6.4	3.4	15.4	3.8	1.8
F183	4.	4.52	2.34 AL	6.26	3.85 WL	1.81 AL	3.66	7.68 AL	2.95 AL	0.641 AL
F207	4.1	4.4	7.8	6.	4.4	6.5	3.8	14.6	3.9	2.
F221	4.0	4.8	7.8	6.2	4.5	6.5	3.4	16.1	3.9	2.0
F292	8.5 AH	8.1 AH	81. AH	13.3 AH	21.7 AH	66.2 AH	12.8 AH	77.7 AH	22.2 AH	22.8 AH
F293	3.6	4.	8.1	6.1	4.4	6.4	3.5	15.2	4.	2.
F317	3.6	3.9	7.5	5.6	3.9	5.7	3.1	14.	3.4	1.7
ASSIGNED VALUE *	4.00	4.40	7.92	6.18	4.32	6.30	3.40	14.80	3.88	1.900
R-STD DEV *	0.288	0.389	0.687	0.299	0.271	0.582	0.257	0.993	0.270	0.2181
ACCEPTABLE LIMITS(+-) *	0.576	0.778	1.374	0.598	0.542	1.164	0.514	1.986	0.540	0.4362
WARNING LIMITS(+-) *	.576- .864	.778- 1.167	1.374- 2.061	5.98- .897	.542- .813	1.164- 1.746	5.14- .771	1.986- 2.979	5.40- .810	.4362- .6543
ACTION LIMITS(<>) *	0.864	1.167	2.061	0.897	0.813	1.746	0.771	2.979	0.810	0.6543
N *	21	21	21	21	21	21	21	21	21	21

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	109.5	10.9			10			IR detection
F004	95.0	9.5			10			TOC analyser
F010	64.5	6.4			10			Shimadzu
F011	122.0	12.2			10			
F015	117.5	11.7			10			Carbon analyser
F021	181.0	18.1		BIASED HIGH*	10	3.8	0.2590	Carbon analyser
F022	22.5	2.2	AL ALWL	BIASED LOW	10	-11.9	-0.0951	Shimadzu
F026	68.0	6.8			10			UV digestion colorim
F032	119.0	11.9			10			E3370
F036	142.0	14.2			10			automated
F042	55.0	5.5			10			TOC analyser
F073	49.5	4.9		BIASED LOW*	10	-0.9	-0.1909	Dohrmann
F113	169.5	16.9		BIASED HIGH*	10	3.1	0.1037	UV IR
F154	200.0	20.0	WHAHAHAHAWHAHWAHWAH	BIASED HIGH*	10	4.5	1.5274	Carbon analyser
F158	126.0	12.6			10			TOC analyser
F183	62.0	6.2	AL WLAL ALALAL		10			Shimadzu
F207	123.0	12.3			10			TOC analyser
F221	133.5	13.3			10			Combustion IR
F292	210.0	21.0	AHAHAHAHAWHAHAWAHWAH	BIASED HIGH	10	509.4	-1.4473	TOC analyser
F293	113.5	11.3			10			Shimadzu
F317	27.0	2.7		BIASED LOW*	10	-3.8	-0.2677	TOC analyser

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 7.5

OVERALL AVERAGE RANK IS 11.0

PARAMETER: 09092 Fluoride

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT	
F003	0.03	0.05	0.19	0.05	0.08	0.16	0.07	0.14	0.09	0.1	
F009	0.045	0.037	0.171	0.054	0.085	0.181	0.085	0.151	0.102	0.119	
F010	0.03	0.05	0.18	0.05	0.08	0.16	0.06	0.12	0.1	0.11	
F011	<0.1	<0.1	0.2	<0.1	<0.1	0.2	<0.1	0.1	<0.1	0.1	
F014	<0.100	<0.100	0.239	<0.100	0.105	0.21	<0.100	0.186	0.128	0.145	
F015	0.03	0.05	0.2	0.05	0.08	0.2	0.07	0.16	0.1	0.11	
F022	0.03	0.05	0.19	0.05	0.07	0.17	0.07	0.14	0.09	0.1	
F032	<0.05	0.06	0.18	0.06	0.08	0.15	0.07	0.13	0.09	0.11	
F042	<0.04	0.0537	0.169	0.0494	0.0801	0.195	0.0687	0.147	0.095	0.109	
F073	0.05	0.05	0.15	0.04	0.11	0.24 WH	0.08	0.14	0.12	0.14	
F139	0.0351	0.0574	0.214	0.0513	0.0871	0.179	0.0728	0.153	0.104	0.117	
F154	<0.10	<0.10	0.17	<0.10	<0.10	0.13	<0.10	0.11	<0.10	<0.10	
F158	<0.10	<0.10	0.19	<0.10	<0.10	0.16	<0.10	0.14	<0.10	0.11	
F158b	<0.10	<0.10	0.19	<0.10	<0.10	0.18	<0.10	0.17	<0.10	0.12	
F159	<0.10	<0.10	0.24 WH	<0.10	0.1	0.17	<0.10	0.11	0.1	0.14	
F183	<0.05	0.057	0.177	0.051	0.075	0.155	0.065	0.131	0.091	0.102	
F193	0.05	0.07	0.22	0.07 WH	0.1	0.19	0.09	0.18	0.11	0.13	
F248	0.032	0.041	0.188	0.047	0.062	0.18	0.069	0.142	0.096	0.101	
F283	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
F292	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
F293	0.045	0.066	0.224	0.062	0.094	0.198	0.083	0.171	0.113	0.13	
F299	<0.05	0.06	0.19	0.06	0.08	0.16	0.07	0.14	0.1	0.11	
F305	0.12 AH	0.12 AH	0.2	0.12 AH	0.13 WH	0.17	0.12 AH	0.16	0.13 WH	0.17 AH	
F309	<0.023	0.0518	0.131 WL	0.0252 WL	0.0451	0.105 WL	0.0427 WL	0.0849 WL	0.067 WL	0.0536 WL	
F317	<0.04	0.041	0.17	<0.04	0.067	0.14	0.056	0.12	0.078	0.092	
ASSIGNED VALUE *	0.0335	0.0509	0.190	0.0500	0.0800	0.170	0.0700	0.1400	0.100	0.1100	
R-STD DEV *	0.01137	0.01071	0.0246	0.00942	0.01742	0.0260	0.01212	0.02657	0.0149	0.01898	
ACCEPTABLE LIMITS(+-) *	0.02274	0.02142	0.0492	0.01884	0.03484	0.0520	0.02424	0.05314	0.0298	0.03796	
WARNING LIMITS(+-) *	.02274-	.034.02142-	.032.0492-	.0738.01884-	.028.03484-	.052.0520-	.0780.02424-	.036.05314-	.079.0298-	.0447.03796-	.056
ACTION LIMITS(<>) *	0.03411	0.03213	0.0738	0.02826	0.05226	0.0780	0.03636	0.07971	0.0447	0.05694	
N *	11	17	23	16	19	23	17	23	19	22	

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	71.5	7.1			10			IC Dionex
F009	112.5	11.2			10			Alizarin
F010	69.0	6.9			10			IC Dionex
F011	43.5	10.8		INSUFFICIENT DATA	4			
F014	123.0	20.5		BIASED HIGH	6	21.4	0.0106	PC Titrate
F015	109.5	10.9			10			IC
F022	71.0	7.1			10			IC Dionex
F032	77.5	8.6			9			IC-E3172
F042	81.0	9.0			9			IC Dionex
F073	121.0	12.1	WH		10			IC Dionex
F139	130.0	13.0			10			IC Dionex
F154	10.0	3.3		INSUFFICIENT DATA	3			IC
F158	42.5	10.6		INSUFFICIENT DATA	4			ISE
F158b	63.5	15.8		INSUFFICIENT DATA	4			IC Dionex
F159	83.0	13.8	WH		6			IC Dionex
F183	62.0	6.8			9			IC
F193	163.5	16.3	WH	BIASED HIGH	10	8.5	0.0127	IC Dionex
F248	71.0	7.1			10			ISE
F283	0.0	0.0		INSUFFICIENT DATA	0			IC
F292	0.0	0.0		INSUFFICIENT DATA	0			IC
F293	159.0	15.9		BIASED HIGH	10	15.7	0.0031	PC Titrate
F299	96.0	10.6			9			
F305	167.5	16.7	AHAH AHWL AH WHAH	BIASED HIGH	10	-49.4	0.0934	IC
F309	17.0	1.8	WLWL WLWLWLWL	BIASED LOW	9	-36.3	-0.0007	IC Dionex
F317	24.5	3.0		BIASED LOW	8	-9.6	-0.0075	IC

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 10.3

PARAMETER: 12091 Magnesium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	1.06	3.08	22.	2.66	5.56	28.4	5.55	42.1	7.96	8.76
F009	1.08	3.03	23.1	2.55	5.95	28.9	6.18 WH	44.	8.23	9.3
F010	1.09	3.19	22.1	2.79	5.88	29.0	5.81	43.6	8.3	9.07
F011	1.1	3.1	22.	2.8	5.7	28.3	5.7	42.	8.2	8.8
F014	1.12	3.24	21.9	2.81	5.95	28.6	5.77	42.8	8.31	8.93
F015	1.1	3.3	22.4	2.9	6.	29.4	5.9	42.9	8.4	9.
F021	1.06	3.12	21.9	2.69	5.79	29.1	5.66	42.7	8.12	8.83
F022	1.07	3.02	20.3	2.73	5.64	29.1	5.64	42.2	7.82	8.7
F026	1.12	3.14	21.3	2.63	5.7	28.3	5.58	41.8	7.82	8.75
F032	1.04	3.	21.3	2.76	5.64	28.3	5.54	40.9	8.	8.68
F032g	1.27 AH	3.74 AH	23.5	3.11 WH	6.55 AH	29.	6.31 WH	45.9	8.77	9.55
F032h	1.13	3.05	21.1	2.78	5.71	27.6	5.72	40.3	8.17	8.98
F036	1.07	3.09	21.4	2.7	5.75	28.4	5.51	42.6	7.9	8.75
F042	1.04	3.27	22.	2.66	5.43	28.7	5.61	42.7	7.56	8.71
F139	1.05	3.06	21.4	2.69	5.59	28.6	5.52	43.7	7.82	8.48
F154	1.13	3.04	21.1	2.52	5.50	26.7 WL	5.09 WL	42.9	7.39	8.50
F158	1.1	3.2	21.6	2.8	6.	29.	5.9	41.2	8.4	9.2
F159	1.02	2.95	22.6	2.51	6.08	29.7	5.82	44.1	8.48	9.33
F183	1.13	3.	20.5	2.63	5.47	27.9	5.58	41.6	7.99	8.54
F193	1.17	3.16	32.1 AH	2.78	5.73	28.8	5.63	40.4	8.02	8.63
F207	1.1	3.1	22.2	2.7	5.8	28.1	5.7	43.1	8.	8.8
F248	1.15	3.15	21.5	2.73	5.74	28.4	5.6	40.9	8.08	8.82
F283	1.22 WH	3.13	23.9	2.83	30.9 AH	31.1 WH	5.96	46.8 WH	8.88 WH	9.93 WH
F292	1.07	3.06	21.4	2.7	5.69	27.7	5.53	39.5	7.71	8.24
F293	1.1	3.19	22.4	2.79	5.89	28.6	5.7	42.7	8.16	8.81
F299	32.3 AH	2.89	25.1 WH	2.31 AL	6.04	31.8 AH	6.26 WH	49.7 AH	8.99 WH	9.97 WH
F305	0.97 WL	2.8 WL	20.5	2.45 WL	5.27	25.8 AL	5.21 WL	39.5	7.6	7.94 WL
F309	1.15	3.01	22.8	2.82	6.1	29.9	5.71	41.8	7.94	9.46
F317	1.1	3.2	24.	3.	6.1	30.	6.	47. WH	8.7	9.5
ASSIGNED VALUE *	1.10	3.10	22.0	2.73	5.74	28.6	5.70	42.7	8.08	8.81
R-STD DEV *	0.053	0.114	1.15	0.134	0.257	0.85	0.212	1.81	0.382	0.428
ACCEPTABLE LIMITS(+-) *	0.106	0.228	2.30	0.268	0.514	1.70	0.424	3.62	0.764	0.856
WARNING LIMITS(+-) *	.106-.159	.228-.342	2.30-3.45	.268-.402	.514-.771	1.70-2.55	.424-.636	3.62-5.43	.764-1.146	.856-1.284
ACTION LIMITS(<>) *	0.159	0.342	3.45	0.402	0.771	2.55	0.636	5.43	1.146	1.284
N *	29	29	29	29	29	29	29	29	29	29

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	101.0	10.1			10			AAS absorption
F009	180.5	18.0	WH		10			ICP-MS
F010	196.0	19.6			10			ICP-AES
F011	147.5	14.7			10			
F014	195.5	19.5			10			ICP-AES
F015	224.0	22.4			10			ICP-AES
F021	149.0	14.9			10			ICP-AES
F022	102.5	10.2			10			ICP-AES
F026	104.5	10.4			10			ICP-AES
F032	78.0	7.8			10			AAS absorp-E3171
F032g	268.0	26.8	AHAH WHAH WH	BIASED HIGH	10	5.1	0.2540	ICP-AES-E3386
F032h	129.0	12.9			10			ICP-AES-E3497
F036	106.5	10.6			10			AAS absorption
F042	111.0	11.1			10			ICP-AES
F139	92.0	9.2			10			ICP-MS
F154	71.0	7.1	WLWL		10			ICP-MS
F158	193.0	19.3			10			ICP-MS
F159	176.0	17.6			10			ICP-AES
F183	76.0	7.6			10			ICP-MS
F193	160.5	16.0	AH		10			ICP-MS
F207	149.0	14.9			10			ICP-AES
F248	142.5	14.2			10			ICP-MS
F283	262.0	26.2	WH AWHH WHHHWH	BIASED HIGH*	10	-0.7	3.7033	ICP Optima 2000 DV
F292	68.0	6.8		BIASED LOW	10	-6.4	0.2232	ICP-AES
F293	176.0	17.6			10			ICP-AES
F299	228.0	22.8	AH WHAL AHWHAHWHWH		10			
F305	16.0	1.6	WLWL WL ALWL WL	BIASED LOW	10	-7.8	-0.0445	ICP-AES
F309	192.5	19.2			10			ICP-AES
F317	254.5	25.4	WH	BIASED HIGH	10	9.1	-0.1666	ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.0

PARAMETER: 07092 Nitrate + Nitrite mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIE-02 LAB RESULT	10= ERIE-02 LAB RESULT			
F003	0.05	0.125	0.112	0.334	1.55	1.4	0.178	0.501	1.2	0.408			
F004	0.044	0.126	0.109	0.342	1.65	1.39	0.176	0.484	1.21	0.402			
F009	<0.05	0.12	0.105	0.333	1.57	1.36	0.174	0.49	1.17	0.402			
F010	0.05	0.11	0.1	0.31	1.39 WL	1. AL	0.16	0.32 AL	0.82 AL	0.34			
F011	0.11 AH	0.17 AH	0.16 AH	0.35	1.45	1.32	0.18	0.46	1.14	0.45			
F015	0.047	0.125	0.113	0.337	1.54	1.38	0.177	0.511	1.17	0.42			
F021	0.04	0.11	0.09	0.32	1.52	1.33	0.17	0.45	1.12	0.39			
F022	0.032	0.104	0.087	0.293	1.51	1.3	0.149	0.442	1.09	0.361			
F026	0.039	0.112	0.096	0.304	1.55	1.34	0.158	0.444	1.15	0.38			
F026b	<0.045	0.105	0.054 AL	0.303	1.45	1.27	0.146	0.426	1.07	0.352			
F032	0.05	0.118	0.104	0.327	1.51	1.32	0.19	0.485	1.13	0.404			
F036	0.038	0.115	0.0999	0.296	1.47	1.19	0.158	0.394 WL	1. WL	0.368			
F042	0.042	0.124	0.106	0.343	1.61	1.39	0.169	0.493	1.18	0.398			
F073	0.04	0.12	0.1	0.31	1.49	1.28	0.16	0.44	1.08	0.37			
F113	0.03	0.091 WL	0.131	0.272 WL	1.45	1.25	0.135 WL	0.478	1.08	0.341			
F139	0.0446	0.125	0.0814	0.304	1.55	1.33	0.169	0.518	1.1	0.351			
F154	0.052	0.124	0.106	0.316	1.47	1.28	0.167	0.453	1.10	0.379			
F158	<0.05	0.11	0.1	0.31	1.54	1.26	0.16	0.35 AL	1.11	0.37			
F158b	0.04	0.14	0.12	0.35	1.57	1.56 WH	0.19	0.56 WH	1.19	0.43			
F159	0.21 AH	0.24 AH	2.9 AH	0.43 AH	1.36 WL	0.72 AL	0.42 AH	1.43 AH	1.18	0.84 AH			
F183	0.05	0.12	0.114	0.311	1.53	1.37	0.167	0.494	1.16	0.378			
F193	<0.07	0.13	0.11	0.33	1.54	1.33	0.18	0.47	1.15	0.4			
F207	0.042	0.126	0.109	0.336	1.68	1.46	0.176	0.486	1.22	0.411			
F221	0.039	0.121	0.103	0.327	1.56	1.36	0.171	0.468	1.17	0.396			
F228	0.03	0.11	0.10	0.32	1.51	1.29	0.16	0.47	1.05	0.39			
F283	<1.0	<1.0	<1.0	<1.0	2.36 AH	2.34 AH	<1.0	<1.0	1.74 AH	0.505 AH			
F292	0.069 WH	0.151 WH	0.128	0.357	1.59	1.37	0.196	0.491	1.18	0.426			
F293	0.043	0.126	0.105	0.329	1.57	1.36	0.168	0.482	1.15	0.401			
F299	0.04	0.11	0.09	0.31	1.5	1.27	0.16	0.46	1.12	0.39			
F304	0.043	0.124	0.105	0.336	1.58	1.37	0.174	0.491	1.17	0.408			
F305	0.23 AH	0.19 AH	0.21 AH	0.33	1.5	1.2	0.22 AH	0.52	1.1	0.49 WH			
F309	0.0372	0.124	0.105	0.336	1.67	1.44	0.182	0.517	1.28 WH	0.448			
F317	0.037	0.11	0.097	0.31	1.4	1.3	0.16	0.45	1.1	0.37			
F324	0.03	0.11	0.09	0.32	1.57	1.36	0.16	0.45	1.13	0.38			
ASSIGNED VALUE *	0.0410	0.120	0.1050	0.324	1.54	1.33	0.169	0.480	1.14	0.393			
R-STD DEV *	0.00942	0.0123	0.01394	0.0198	0.073	0.079	0.0144	0.0364	0.059	0.0354			
ACCEPTABLE LIMITS(+-) *	0.01884	0.0246	0.02788	0.0396	0.146	0.158	0.0288	0.0728	0.118	0.0708			
WARNING LIMITS(+-) *	.01884-	.028.0246-	.0369.02788-	.041.0396-	.0594.146-	.219	.158-	.237	.0288-	.0432.0728-	.1092.118-	.177	.0708- .1062
ACTION LIMITS(<>) *	0.02826	0.0369	0.04182	0.0594	0.219	0.237	0.0432	0.1092	0.177	0.1062			
N *	29	33	33	33	34	34	33	33	34	34			

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	251.0	25.1			10			AA Cadmium redn
F004	248.0	24.8			10			AA Cadmium redn
F009	189.0	21.0			9			IC Dionex
F010	66.0	6.6	WLAL ALAL	BIASED LOW	10	-19.8	0.0063	AA Hydrazine redn
F011	226.0	22.6	AHAHAH		10			AA Cadmium redn
F015	243.5	24.3			10			IC Dionex
F021	126.0	12.6			10			IC Dionex
F022	57.5	5.7		BIASED LOW*	10	-1.5	-0.0209	IC Dionex
F026	115.0	11.5	AL	BIASED LOW*	10	-3.9	-0.0249	AA Cadmium redn
F026b	34.5	3.8		BIASED LOW*	9			IC Dionex
F032	183.5	18.3			10			E3364
F036	57.0	5.7	WLWL	BIASED LOW	10	-8.2	-0.0064	AA Hydrazine redn
F042	228.5	22.8			10			AA Cadmium redn
F073	93.0	9.3			10			IC Dionex
F113	69.5	6.9	WL WL WL	BIASED LOW	10	-5.2	-0.0107	IC Dionex
F139	146.5	14.6			10			IC Dionex
F154	140.0	14.0			10			Flow injection Cd
F158	82.5	9.1	AL		9			AA Hydrazine redn
F158b	277.0	27.7	WH WH	BIASED HIGH	10	6.7	0.0114	AA Hydrazine redn
F159	256.0	25.6	AHAHAHAWLALAHAH AH		10			IC Dionex
F183	188.0	18.8			10			Colorimetry
F193	187.5	20.8			9			IC Dionex
F207	254.5	25.4			10			Flow injection Cd
F221	175.0	17.5			10			Flow injection Cd
F228	102.0	10.2			10			Flow injection Cd
F283	135.0	33.7	AHAH AHAH	INSUFFICIENT DATA	4			IC
F292	280.5	28.0	WHHW	BIASED HIGH*	10	1.2	0.0229	Flow injection Cd
F293	198.0	19.8			10			Flow injection Cd
F299	100.5	10.0			10			
F304	223.5	22.3			10			Flow injection Cd
F305	232.5	23.2	AHAHAH AH WH		10			IC
F309	251.0	25.1	WH		10			Flow injection Cd
F317	80.0	8.0		BIASED LOW	10	-5.8	0.0003	Flow injection Cd
F324	122.0	12.2			10			

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 17.0

PARAMETER: 01092 pH

pH Units

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	7.45	7.43	8.58	7.62	8.03	8.44	7.81	8.5	8.08	8.16
F009	7.32	7.27	8.54	7.5	7.92	8.41	7.68	8.46	8.01	8.09
F010	7.	6.9	8.4	7.2 WL	7.7	8.3	7.4 WL	8.3	7.8	7.9
F011	7.53	7.47	8.53	7.71	8.02	8.4	7.81	8.45	8.06	8.13
F014	7.54	7.48	8.59	7.77	8.06	8.45	7.87	8.5	8.13	8.21
F015	7.62	7.58	8.59	7.83	8.14	8.48	7.95	8.5	8.19	8.25
F015b	7.31	7.47	8.56	7.79	8.06	8.44	7.88	8.48	8.14	8.17
F021	7.62	7.59	8.61	7.83	8.13	8.5	7.94	8.53	8.19	8.27
F022	7.43	7.34	8.58	7.8	8.06	8.47	7.84	8.44	8.19	8.22
F026	7.08	7.09	8.46	7.45	7.79	8.4	7.59	8.48	8.02	8.06
F032	7.62	7.56	8.61	7.81	8.13	8.48	7.89	8.52	8.17	8.23
F036	6.7	6.7	8.48	7. WL	7.39 WL	8.33	7.05 AL	8.35	7.5 AL	7.6 AL
F042	7.25	7.27	8.43	7.68	7.89	8.3	7.81	8.4	7.99	8.06
F073	7.2	7.2	8.2 AL	7.3	7.2 AL	8.3	7.8	8.3	7.8	8.
F090	7.51	7.43	8.53	7.65	7.97	8.40	7.81	8.43	8.00	8.08
F113	7.16	7.25	8.5	7.33	7.77	8.39	7.42 WL	8.43	7.98	8.08
F154	7.49	7.47	8.59	7.70	8.08	8.47	7.81	8.49	8.11	8.21
F158	7.7	7.62	8.58	7.88	8.19	8.5	8.	8.51	8.24	8.29
F158b	6.69	6.99	8.58	7.83	7.95	8.44	7.86	8.5	8.08	8.1
F183	7.21	7.21	8.55	7.69	7.9	8.46	7.8	8.53	8.05	8.14
F193	7.6	6.96	8.58	7.47	8.	8.43	7.64	8.49	8.05	8.13
F221	7.60	7.52	8.56	7.71	8.03	8.42	7.82	8.44	8.04	8.10
F248	7.5	7.52	8.58	7.73	8.14	8.49	7.94	8.53	8.14	8.27
F283	6.94	7.00	8.36	7.33	7.77	8.36	7.69	8.40	7.86	7.92
F292	7.02	7.02	8.33	7.28	7.71	8.2 WL	7.53	8.3	7.83	7.91
F293	7.29	7.25	8.35	7.55	7.88	8.24	7.65	8.28 WL	7.92	7.99
F305	6.53 WL	6.53 WL	8.16 AL	7.95	7.64	8.17 WL	8.11	8.27 WL	8.05	7.84
F309	3.42 AL	6. AL	7.67 AL	8.01	7.71	8.23	8.36 AH	8.43	8.4 WH	8.21
F317	7.5	7.5	8.5	7.7	8.	8.4	7.8	8.4	8.	8.1
ASSIGNED VALUE *	7.38	7.30	8.56	7.70	7.98	8.41	7.81	8.45	8.05	8.12
R-STD DEV *	0.323	0.293	0.110	0.247	0.195	0.090	0.175	0.082	0.142	0.137
ACCEPTABLE LIMITS(+-) *	0.646	0.586	0.220	0.494	0.390	0.180	0.350	0.164	0.284	0.274
WARNING LIMITS(+-) *	.646- .969	.586- .879	.220- .330	.494- .741	.390- .585	.180- .270	.350- .525	.164- .246	.284- .426	.274- .411
ACTION LIMITS(<>) *	0.969	0.879	0.330	0.741	0.585	0.270	0.525	0.246	0.426	0.411
N *	29	29	29	29	29	29	29	29	29	29

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	WL	WL	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	180.5	18.0				BIASED LOW	10			pH Stirred
F009	128.5	12.8				BIASED HIGH	10			pH Stirred
F010	40.5	4.0		WL	WL	BIASED HIGH	10	22.4	-2.0570	pH Stirred
F011	167.0	16.7				BIASED HIGH	10			PC-Titrate
F014	220.5	22.0				BIASED HIGH	10	-19.3	1.6849	pH Stirred
F015	258.5	25.8				BIASED HIGH	10			pH Stirred
F015b	195.5	19.5				BIASED HIGH	10			pH Stirred
F021	268.5	26.8				BIASED HIGH	10	-17.4	1.5480	pH Stirred
F022	203.5	20.3				BIASED HIGH	10			pH Stirred
F026	97.5	9.7				BIASED HIGH	10			pH Stirred
F032	253.5	25.3				BIASED HIGH	10	-16.7	1.4732	pH unstir-E3218
F036	37.0	3.7		WLWL	AL ALAL	BIASED LOW	10	47.7	-4.2487	pH Stirred
F042	104.0	10.4				BIASED LOW	10			pH unstirred
F073	58.5	5.8		AL AL		BIASED LOW	10	-7.2	0.3449	pH Stirred
F090	137.5	13.7				BIASED LOW	10			
F113	87.5	8.7		WL		BIASED HIGH	10			pH Stirred
F154	203.5	20.3				BIASED HIGH	10			pH Stirred
F158	273.0	27.3				BIASED HIGH	10	-23.8	2.0863	pH Stirred
F158b	163.5	16.3				BIASED HIGH	10			pH Stirred
F183	158.0	15.8				BIASED HIGH	10			pH unstirred
F193	149.5	14.9				BIASED HIGH	10			pH unstirred
F221	178.0	17.8				BIASED HIGH	10			pH unstirred
F248	241.5	24.1				BIASED HIGH	10	-10.4	0.9503	pH Stirred
F283	67.0	6.7				BIASED LOW	10	19.7	-1.7711	pH Stirred
F292	45.5	4.5		WL		BIASED LOW	10	10.2	-1.0614	pH Stirred
F293	75.5	7.5		WL		BIASED LOW	10			pH Stirred
F305	84.0	8.4	WLWLAL	WL WL		BIASED LOW	10			pH Stirred
F309	131.5	13.1	ALALAL	AH WH		BIASED LOW	10			pH Stirred
F317	141.0	14.1				BIASED LOW	10			pH Stirred

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.0

PARAMETER: 19091 Potassium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	0.29	1.04	5.49	0.83	2.16	2.16	0.67	14.6	1.95	1.37
F009	0.3	1.04	5.94	0.81	2.06	2.1	0.67	15.9	1.92	1.38
F010	0.34	1.12	5.65	0.9	2.31	2.34	0.76	15.4	2.09	1.52 WH
F011	0.3	1.	5.6	0.8	2.2	2.2	0.7	15.	2.	1.4
F014	0.31	1.	5.4	0.84	2.1	2.1	0.69	15.	1.9	1.4
F015	0.3	1.1	5.5	0.9	2.2	2.2	0.7	15.1	2.	1.4
F021	0.4 WH	1.15	5.67	0.96 WH	2.32	2.32	0.82 AH	15.2	2.1	1.52 WH
F022	0.261	1.05	5.44	0.864	2.21	2.22	0.709	14.7	2.04	1.43
F026	0.31	1.07	5.88	0.836	2.15	2.22	0.702	15.5	2.03	1.41
F032	0.29	1.04	5.46	0.88	2.15	2.16	0.7	14.5	1.97	1.44
F032g	0.38 WH	1.38 AH	7.04 AH	1.02 AH	2.72 AH	2.42 WH	0.94 AH	17.5 AH	2.45 AH	1.65 AH
F032h	0.37	1.03	5.48	0.81	2.14	2.23	0.68	15.5	1.95	1.38
F036	0.3	1.07	5.53	0.85	2.24	2.24	0.7	15.2	1.99	1.4
F139	0.307	1.09	5.65	0.878	2.28	2.32	0.73	15.8	2.01	1.43
F154	0.31	0.99	5.10 WL	0.81	2.15	2.18	0.65	13.3 WL	1.90	1.40
F158	<0.5	1.1	5.3	0.8	2.2	2.2	0.7	13.8	1.9	1.4
F159	0.29	1.04	5.63	0.86	2.28	2.26	0.68	15.5	1.94	1.37
F183	0.315	1.03	5.48	0.807	2.12	2.27	0.688	14.8	1.97	1.38
F193	0.28	0.97	5.86	0.8	2.1	2.34	0.68	15.8	1.92	1.43
F207	0.3	1.	5.4	0.8	2.1	2.1	0.7	14.6	1.9	1.4
F248	0.32	1.05	5.41	0.841	2.21	2.27	0.69	14.4	2.	1.45
F283	0.202 AL	1.01	5.43	0.595 AL	2.07	1.88 AL	0.566 AL	14.7	1.60 AL	1.27 WL
F292	<2.0	<2.0	5.6	<2.0	2.2	2.2	<2.0	14.5	<2.0	<2.0
F293	0.31	1.07	5.67	0.86	2.19	2.29	0.74	14.8	2.02	1.43
F299	2.27 AH	1.24 AH	5.78	1.04 AH	2.32	2.32	0.89 AH	15.0	2.12	1.55 WH
F305	<0.5	1.02	5.61	0.837	2.21	2.19	0.716	15.	2.06	1.4
F309	0.444 AH	1.05	6.06	0.883	2.36	2.39	0.711	15.2	1.99	1.56 WH
F317	0.3	1.1	6.8 AH	0.87	3. AH	2.3	0.72	17. AH	2.1	1.5
ASSIGNED VALUE *	0.304	1.04	5.56	0.840	2.20	2.23	0.700	15.0	1.99	1.40
R-STD DEV *	0.0342	0.053	0.234	0.0478	0.101	0.096	0.0325	0.61	0.083	0.059
ACCEPTABLE LIMITS(+-) *	0.0684	0.106	0.468	0.0956	0.202	0.192	0.0650	1.22	0.166	0.118
WARNING LIMITS(+-) *	.0684- .1026	.106- .159	.468- .702	.0956- .1434	.202- .303	.192- .288	.0650- .0975	.122- .183	.166- .249	.118- .177
ACTION LIMITS(<>) *	0.1026	0.159	0.702	0.1434	0.303	0.288	0.0975	1.83	0.249	0.177
N *	25	27	28	27	28	28	27	28	27	27

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING				BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	76.0	7.6						10			AAS absorption
F009	99.0	9.9						10			ICP-MS
F010	225.0	22.5		WH			BIASED HIGH*	10	2.2	0.0433	ICP-AES
F011	110.0	11.0						10			
F014	80.0	8.0						10			ICP-MS
F015	148.0	14.8						10			ICP-AES
F021	232.0	23.2	WH	WH	AH	WH	BIASED HIGH*	10	0.6	0.0967	ICP-AES
F022	138.5	13.8						10			ICP-AES
F026	165.0	16.5						10			ICP-AES
F032	109.5	10.9						10			AAS absorp-E3171
F032g	267.0	26.7	WHAHAHAHAHWAHAHAHAH				BIASED HIGH	10	16.8	0.0905	ICP-AES-E3386
F032h	111.5	11.1						10			ICP-AES-E3497
F036	147.0	14.7						10			AAS absorption
F139	198.0	19.8						10			ICP-MS
F154	59.5	5.9	WL	WL			BIASED LOW	10	-11.9	0.1184	ICP-MS
F158	82.0	9.1						9			ICP-MS
F159	127.0	12.7						10			AAS absorption
F183	101.5	10.1						10			ICP-MS
F193	114.5	11.4						10			ICP-MS
F207	61.5	6.1					BIASED LOW*	10	-2.7	-0.0182	ICP-AES
F248	139.0	13.9						10			ICP-MS
F283	28.5	2.8	AL	AL	ALAL	ALWL	BIASED LOW*	10	-0.9	-0.1710	ICP Optima 2000 DV
F292	44.0	11.0					INSUFFICIENT DATA	4			ICP-AES
F293	172.5	17.2						10			ICP-AES
F299	238.0	23.8	AHAH	AH	AH	WH	BIASED HIGH*	10	-4.0	0.4457	
F305	127.0	14.1						9			ICP-AES
F309	216.5	21.6	AH			WH	BIASED HIGH*	10	1.4	0.0899	ICP-AES
F317	221.0	22.1		AH	AH	AH	BIASED HIGH	10	14.4	-0.0136	ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 14.1

PARAMETER: 14091 Silicates

mg/L SiO<sub>2</sub>WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	4.06	2.96	0.56	4.8	6.38	4.36	5.74	17.2	4.09	1.1
F011	4.12	2.96	0.593	4.89	6.44	4.53	5.76	10.4 AL	4.14	1.15
F022	4.38	3.19	0.885 AH	5.21	6.57	4.73	6.02	18.5	4.26	1.16
F026	3.96	2.87	0.52	4.77	6.33	4.26	5.64	16.7	4.24	1.02
F026b	3.84	2.72	0.503	4.58	6.12	4.07	5.45	16.1	3.73	0.996
F032	4.04	2.93	0.51	4.8	6.3	4.24	5.74	16.7	3.96	0.96
F036	4.02	2.91	0.54	4.83	6.42	4.36	5.76	17.2	4.02	1.02
F042	4.41	3.2	0.57	5.24	7.12 WH	4.75	6.3 WH	17.9	4.41	1.13
F154	3.90	2.90	0.538	4.82	6.40	4.17	5.85	17.3	4.00	1.01
F158	3.9	2.8	<1.0	4.7	6.3	4.2	5.6	16.	3.9	<1.0
F183	4.28	2.94	0.618	4.91	6.19	4.33	5.74	15.9	4.04	1.1
F193	4.12	2.97	0.59	4.98	6.41	4.44	5.73	17.2	4.11	1.06
F207	3.98	2.89	0.54	4.8	6.38	4.33	5.72	17.	4.02	1.05
F221	4.11	3.02	0.565	5.03	6.63	4.53	5.95	17.2	4.19	1.12
F292	3.49 WL	2.54 WL	0.5	4.28	5.56 AL	3.8	5.04 WL	14.6	3.56 WL	0.92
F293	4.34	3.15	0.61	5.33	6.86	4.76	6.22	18.2	4.37	1.22
F317	3.7	2.7	1.2 AH	4.5	5.9	4.9	5.3	15.	3.8	1.1
ASSIGNED VALUE *	4.04	2.93	0.550	4.82	6.39	4.36	5.74	17.1	4.04	1.080
R-STD DEV *	0.246	0.176	0.0550	0.268	0.250	0.287	0.265	1.27	0.228	0.0835
ACCEPTABLE LIMITS(+-) *	0.492	0.352	0.1100	0.536	0.500	0.574	0.530	2.54	0.456	0.1670
WARNING LIMITS(+-) *	.492- .738	.352- .528	.1100- .1650	.536- .804	.500- .750	.574- .861	.530- .795	2.54- 3.81	.456- .684	.1670- .2505
ACTION LIMITS(<>) *	0.738	0.528	0.1650	0.804	0.750	0.861	0.795	3.81	0.684	0.2505
N *	17	17	16	17	17	17	17	17	17	16

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	95.0	9.5			10			Molybdate
F011	111.0	11.1			10			Molybdate
F022	152.0	15.2	AH	BIASED HIGH	10	8.0	-0.0105	Molybdate
F026	65.0	6.5			10			Molybdate
F026b	30.0	3.0		BIASED LOW	10	-5.0	-0.0309	ICP-AES
F032	62.0	6.2			10			E3370
F036	90.0	9.0			10			Molybdate
F042	154.0	15.4	WH WH	BIASED HIGH	10	5.3	0.1360	Molybdate
F154	75.5	7.5			10			Heteropolyblue
F158	35.0	4.3			8			Auto Molybdate
F183	93.5	9.3			10			ICP-MS
F193	109.0	10.9			10			Molybdate
F207	72.0	7.2			10			Flow injection
F221	126.0	12.6			10			Auto Molybdate
F292	11.0	1.1	WLWL	AL WL WL	BIASED LOW	10	-14.2	Flow injection
F293	156.0	15.6			BIASED HIGH	10	6.8	0.0562
F317	59.0	5.9	AH			10	0.0621	ICP-AES
								ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 8.9

PARAMETER: 11091 Sodium

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	2.5	22.8	167.	4.98	13.1	27.9	19.8	76.1	17.3	9.08
F009	2.49	23.4	171.	4.66	13.8	29.1	22.1 WH	72.2	18.	9.77
F010	2.61	24.3	168.	5.27	14.	30.2	21.0	80.5	18.4	9.69
F011	2.5	22.9	164.	5.	13.3	28.4	20.	77.3	17.7	9.1
F014	2.54	23.3	161.	5.13	13.5	28.4	20.	77.4	17.8	9.09
F015	2.5	22.7	168.	5.	13.1	28.1	19.5	77.6	17.3	9.1
F021	2.53	24.1	169.	5.18	14.	29.8	21.	80.5	18.4	9.57
F022	2.59	23.7	164.	5.5	13.9	29.3	20.8	79.2	18.1	9.58
F026	2.61	24.6 WH	170.	4.98	13.8	30.7	21.1	77.8	18.1	9.41
F032	2.52	23.5	169.	5.3	13.3	29.	20.	77.8	18.	9.18
F032g	3.01 AH	27.4 AH	185. AH	6.16 AH	15. AH	30.	22.1 WH	82.1	20. AH	10.6 AH
F032h	2.52	22.5	162.	4.76	12.8	29.1	19.8	76.8	17.4	9.03
F036	2.48	23.	162.	4.93	13.3	27.8	19.6	76.9	17.1	8.86
F139	2.41	22.9	181. WH	5.01	13.3	28.9	19.9	83.8 WH	17.5	9.07
F154	2.63	18.9 AL	146. AL	4.62	11.2 AL	26.0 AL	16.6 AL	69.1 WL	15.1 AL	8.72
F158	2.6	23.9	158.	5.3	13.7	29.	20.4	77.1	17.9	9.5
F159	2.47	22.7	166.	4.92	13.1	27.7	19.3	76.3	17.	8.81
F183	2.81 WH	23.5	166.	5.07	13.	29.2	20.4	78.7	18.	9.32
F193	2.6	22.8	161.	4.94	13.	28.8	19.5	73.9	17.3	8.87
F207	2.6	22.9	160.	5.	13.2	28.2	20.	76.5	17.2	9.2
F248	2.61	22.4	166.	4.89	12.9	28.2	19.2	74.	17.2	9.08
F283	1.71 AL	23.0	181. WH	3.77 AL	12.1 WL	29.1	18.8	80.9	15.2 AL	7.89 WL
F292	2.55	23.9	166.	5.33	13.8	29.6	20.5	75.6	18.	9.07
F293	2.54	23.4	166.	5.13	13.7	29.	20.5	78.4	18.1	9.43
F299	28.8 AH	23.9	165.	5.39	14.	29.2	21.7	80.1	18.7	10.
F305	2.39	22.3	171.	4.79	13.4	28.5	19.9	77.4	17.5	8.57
F309	1290. AH	21.1 WL	177.	4.77	11.9 WL	28.3	18.7	82.8	16.5	8.72
F317	2.8 WH	23.	170.	5.3	14.	31. WH	21.	79.	19.	10.
ASSIGNED VALUE *	2.54	23.0	166	5.00	13.3	29.0	20.0	77.5	17.8	9.10
R-STD DEV *	0.123	0.77	5.8	0.278	0.55	0.88	0.96	2.84	0.71	0.451
ACCEPTABLE LIMITS(+-) *	0.246	1.54	11.6	0.556	1.10	1.76	1.92	5.68	1.42	0.902
WARNING LIMITS(+-) *	.246- .369	1.54- 2.31	11.6- 17.4	.556- .834	1.10- 1.65	1.76- 2.64	1.92- 2.88	5.68- 8.52	1.42- 2.13	.902- 1.353
ACTION LIMITS(<>) *	0.369	2.31	17.4	0.834	1.65	2.64	2.88	8.52	2.13	1.353
N *	28	28	28	28	28	28	28	28	28	28

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	93.0	9.3			10			AAS absorption
F009	162.0	16.2	WH		10			ICP-MS
F010	232.0	23.2		BIASED HIGH*	10	1.3	0.6142	ICP-AES
F011	119.5	11.9			10			
F014	135.0	13.5			10			ICP-AES
F015	105.0	10.5			10			ICP-AES
F021	219.0	21.9			10			ICP-AES
F022	204.5	20.4			10			ICP-AES
F026	211.5	21.1	WH		10			ICP-AES
F032	166.5	16.6			10			AAS absorp-E3171
F032g	272.5	27.2	AHAHAHAHAH WH AHAH	BIASED HIGH	10	10.5	0.0104	ICP-AES-E3386
F032h	85.5	8.5			10			ICP-AES-E3497
F036	80.0	8.0			10			AAS absorption
F139	144.5	14.4	WH WH		10			ICP-MS
F154	35.5	3.5	ALAL ALALALWLAL	BIASED LOW	10	-11.8	-0.1430	ICP-MS
F158	165.0	16.5			10			ICP-MS
F159	63.5	6.3		BIASED LOW*	10	0.0	-0.5079	AAS absorption
F183	174.5	17.4	WH		10			ICP-MS
F193	85.0	8.5			10			ICP-MS
F207	109.5	10.9			10			ICP-AES
F248	82.5	8.2			10			ICP-MS
F283	94.5	9.4	AL WHALWL ALWL		10			ICP Optima 2000 DV
F292	172.5	17.2			10			ICP-AES
F293	175.5	17.5			10			ICP-AES
F299	232.5	23.2	AH	BIASED HIGH*	10	-4.5	4.9829	ICP-AES
F305	101.0	10.1			10			
F309	105.5	10.5	AHWL WL		10			ICP-AES
F317	232.5	23.2	WH WH	BIASED HIGH*	10	2.1	0.4363	ICP-AES

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 14.5

PARAMETER: 16092 Sulfate

mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	3.25	13.5	151.	7.91	15.8	39.1	8.9	199.	16.9	23.8
F009	3.38	14.	152.	8.22	16.5	40.3	9.34	196.	17.6	24.8
F010	3.4	14.	148.	8.1	16.	40.	9.	200.	17.	24.
F011	4. AH	14.	152.	8.	16.	40.	9.	197.	17.	24.
F014	3.34	13.9	151.	8.08	16.3	39.5	9.11	199.	17.4	24.6
F015	3.	13.	143.	7.3	15.3	40.	8.3	197.	16.5	24.
F021	3.25	13.5	151.	7.88	15.7	39.3	8.81	198.	16.7	23.9
F022	3.22	13.6	154.	8.02	15.8	39.5	8.82	199.	16.7	23.8
F026	3.28	13.3	148.	7.85	16.	38.5	8.58	197.	16.4	23.7
F032	3.18	13.3	148.	7.58	14.9	38.1	8.48	193.	16.	22.6
F036	3.2	13.4	144.	7.85	15.5	39.2	8.75	186.	16.4	23.4
F042	3.30	14.	151.	8.04	16.	39.	8.93	195.	17.	24.
F073	3.4	14.1	159. WH	8.5	16.8	40.	9.3	210.	17.8	23.
F113	3.34	13.7	151.	8.04	16.	40.8	9.03		17.2	24.
F139	3.24	14.1	149.	8.15	16.5	41.4 WH	9.07	197.	17.6	25.1
F154	2.95	13.2	149.	7.58	15.5	38.8	8.47	195.	16.4	23.2
F158	3.3	13.5	146.	7.9	15.7	39.1	8.8	192.	16.9	23.7
F159	3.12	12.1 WL	146.	8.39	13.9 WL	38.5	9.4	189.	17.4	23.3
F183	3.45	13.	152.	7.6	15.3	39.4	8.49	201.	16.3	23.2
F193	3.35	13.9	156.	8.14	16.3	40.4	9.01	202.	17.5	24.3
F207	3.2	13.	148.	7.4	15.	38.5	8.4	193.	16.2	22.8
F248	3.31	13.6	147.	7.95	15.8	39.5	8.94	201.	16.9	23.7
F280	3.3	12.1 WL	143.	8.3	14.4 WL	36.7 WL	9.3	188.	15.1 WL	22.3
F283	3.31	14.6	154.	9.84 AH	17.2 WH	40.4	9.27	210.	20.2 AH	24.9
F292	2.48 AL	12.2 WL	148.	6.56 AL	14.4 WL	39.2	7.49 AL	192.	15.6	22.6
F293	3.62	13.8	147.	8.17	16.3	39.7	9.13	195.	17.2	24.2
F299	2. AL	50. AH	36. AL	8.	16.	44. AH	10. WH	368. AH	18.	23.
F305	<1.0 AL	9.2 AL	142.	3.8 AL	11.6 AL	34.6 AL	4.8 AL	188.	12.6 AL	19.4 AL
F309	2920. AH	14.2	153.	7.67	15.5	38.9	8.83	222. AH	16.6	23.4
F317	3.	13.	150.	7.6	16.	39.	8.6	200.	17.	24.
F324	<3.0	13.8	154.	8.03	16.3	42.7 AH	8.39	221. AH	16.7	21.7 WL
ASSIGNED VALUE *	3.30	13.6	150	8.00	15.9	39.3	8.93	197	16.9	23.8
R-STD DEV *	0.186	0.62	4.3	0.355	0.69	0.99	0.405	7.1	0.69	0.83
ACCEPTABLE LIMITS(+-) *	0.372	1.24	8.6	0.710	1.38	1.98	0.810	14.2	1.38	1.66
WARNING LIMITS(+-) *	.372- .558	1.24- 1.86	8.6- 12.9	.710- 1.065	1.38- 2.07	1.98- 2.97	.810- 1.215	14.2- 21.3	1.38- 2.07	1.66- 2.49
ACTION LIMITS(<>) *	0.558	1.86	12.9	1.065	2.07	2.97	1.215	21.3	2.07	2.49
N *	29	31	31	31	31	31	31	30	31	31

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	155.5	15.5			10			IC Dionex
F009	249.5	24.9		BIASED HIGH*	10	0.1	0.6141	IC Dionex
F010	209.5	20.9			10			IC Dionex
F011	211.5	21.1	AH		10			
F014	223.0	22.3			10			IC Dionex
F015	97.5	9.7			10			IC
F021	148.0	14.8			10			IC Dionex
F022	169.0	16.9			10			IC Dionex
F026	118.5	11.8			10			IC Dionex
F032	66.0	6.6		BIASED LOW*	10	-1.3	-0.4049	IC-E3172
F036	92.0	9.2			10			IC Dionex
F042	179.5	17.9			10			IC Dionex
F073	256.0	25.6	WH	BIASED HIGH	10	6.9	-0.6491	IC Dionex
F113	194.0	21.5			9			IC Dionex
F139	232.5	23.2	WH		10			IC Dionex
F154	83.5	8.3			10			IC
F158	122.0	12.2			10			IC Dionex
F159	120.5	12.0	WL WL		10			IC Dionex
F183	134.5	13.4			10			
F193	248.5	24.8		BIASED HIGH*	10	3.3	-0.0542	IC Dionex
F207	65.5	6.5		BIASED LOW*	10	-1.3	-0.3714	
F248	164.0	16.4			10			IC Dionex
F280	90.5	9.0	WL WLWL WL		10			IC
F283	278.5	27.8	AHWH AH	BIASED HIGH	10	5.2	0.3454	IC
F292	52.0	5.2	ALWL ALWL AL	BIASED LOW*	10	-1.3	-0.8850	IC
F293	210.0	21.0			10			IC
F299	199.0	19.9	ALAHAL AHWHAH		10			
F305	11.5	1.2	ALAL ALALALAL ALAL	BIASED LOW*	9	-2.4	-3.8777	IC
F309	178.5	17.8	AH AH		10			IC Dionex
F317	138.5	13.8			10			IC
F324	169.0	18.7	AH AH WL		9			

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.8

PARAMETER: 06192 Total Alkalinity mg/L CaCO<sub>3</sub>WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	18.8	17.8	294.	30.2	73.	246.	38.5	262.	82.	95.6
F009	20.	19.	298.	30.	73.	248.	40.	263.	84.	96.
F010	17.	16.	275. WL	27. WL	67. WL	231.	36. WL	249.	76. WL	89. WL
F011	21.	17.8	296.	32.	73.5	246.	40.9	262.	83.1	95.8
F014	20.9	18.	301.	32.3	74.5	251.	40.9	268.	84.5	98.2
F015	23.2	22.3 WH	299.	34.5	74.8	250.	41.3	265.	84.1	
F021	20.6	17.6	294.	31.5	73.1	247.	40.	261.	82.6	95.7
F022	22.5	20.7	272. WL	33.3	76.2	232.	41.8	240. WL	87.4	98.4
F026	18.6	16.	286.	28.4	67.3 WL	234.	36.9	244.	73.3 AL	92.3
F032	17.7	16.4	287.	30.7	71.6	241.	39.5	256.	82.1	95.3
F036	19.7	19.3	293.	31.3	72.5	245.	39.4	260.	82.2	94.9
F042	19.3	18.6	300.	30.9	73.6	251.	39.6	268.	83.6	96.8
F113	19.5	18.8		31.1	72.	242.	38.1	251.	80.2	91.9
F154	19.9	18.8	292.	30.8	71.8	244.	39.2	259.	81.5	94.6
F158	20.3	17.	285.	30.5	70.1	236.	39.2	254.	80.	92.3
F193	20.3	19.1	295.	33.8	71.7	247.	39.7	263.	81.6	95.2
F207	18.	17.	297.	32.	74.	250.	41.	265.	84.	95.
F248	20.	<20.	297.	31.	73.	247.	40.	262.	83.	95.
F283	87.5 AH	55. AH	324. AH	54.5 AH	112. AH	355. AH	84. AH	355. AH	114. AH	128. AH
F292	21.6	17.	299.	31.7	75.6	253.	41.	271.	85.5	95.6
F293	18.4	16.4	294.	30.9	73.6	248.	40.8	262.	83.1	97.2
F299	20.	20.	275. WL	33.	70.	236.	42.	248.	80.	90. WL
F305	20.5	16.9	297.	293. AH	32.7 AL	240.	41.1	264.	84.1	95.6
F309	<0.390 AL	20.9	320. WH	34.6	79.5 WH	267. WH	43.3	284. WH	90.4 WH	104. AH
F317	17.	16.	270. WL	29.	70.	240.	38.	240. WL	72. AL	94.
ASSIGNED VALUE *	20.000	17.8	294	31.1	73.0	246	40.0	262	83.0	95.2
R-STD DEV *	1.7477	1.90	9.5	2.12	2.79	7.7	1.65	10.1	2.90	2.53
ACCEPTABLE LIMITS(+-) *	3.4954	3.80	19.0	4.24	5.58	15.4	3.30	20.2	5.80	5.06
WARNING LIMITS(+-) *	3.4954- 5.243	80- 5.70	19.0- 28.5	4.24- 6.36	5.58- 8.37	15.4- 23.1	3.30- 4.95	20.2- 30.3	5.80- 8.70	5.06- 7.59
ACTION LIMITS(<>) *	5.2431	5.70	28.5	6.36	8.37	23.1	4.95	30.3	8.70	7.59
N *	24	24	24	25	25	25	25	25	25	24

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	101.5	10.1			10			PC Titrate
F009	147.5	14.7			10			Mettler
F010	21.0	2.1	WLWLWL WL WLWL	BIASED LOW	10	-5.3	-1.8389	Mettler
F011	152.0	15.2			10			
F014	193.5	19.3			10			PC Titrate
F015	188.0	20.8	WH	BIASED HIGH*	9	0.4	2.4571	Titration
F021	135.0	13.5			10			PC Titrate
F022	158.5	15.8	WL WL	BIASED LOW	10			PC Titrate
F026	33.5	3.3	WL AL	BIASED LOW	10	-4.1	-1.8848	PC Titrate
F032	75.5	7.5			10			PC titr-E3218
F036	110.0	11.0			10			
F042	158.0	15.8			10			Gran Titration
F113	74.5	8.2			9			Titration
F154	91.0	9.1			10			Radiometer
F158	67.5	6.7			10			PC Titrate
F193	137.0	13.7			10			Titration
F207	148.0	14.8			10			Mettler
F248	117.0	13.0			9			Titration
F283	245.0	24.5	AHAHAHAHAHAHAHAHAHAH	BIASED HIGH	10	13.2	35.1329	Titration
F292	186.0	18.6			10			PC Titrate
F293	128.0	12.8			10			PC Titrate
F299	98.0	9.8	WL WL		10			
F305	143.0	14.3	AHAL		10			Titration
F309	211.0	23.4	AL WH WWHW WHWHAH	BIASED HIGH	9	8.2	0.7210	PC Titrate
F317	30.0	3.0	WL WLAL	BIASED LOW	10	-6.7	0.0744	PC Titrate

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 3

OVERALL AVERAGE RANK IS 12.8

PARAMETER: 10692 Total Hardness mg/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	22.2	36.9	155.	37.6	89.9	306.	54.6	319.	91.9	121.
F011	23.2	38.2	155.	39.7	91.9	311.	56.8	321.	96.8	125.
F014	23.1	38.9	153.	39.9	95.1	316.	57.1	326.	98.1	126.
F015	23.8	38.9	159.	41.	94.1	308.	58.	324.	98.2	125.
F022	22.3	37.0	146.	38.9	91.5	312.	56.4	318.	94.8	125.
F026b	23.7	39.3	151.	38.3	92.4	313.	56.4	322.	92.8	125.
F032	20.8	35.8	147.	37.2	88.	306.	53.6	309.	92.4	122.
F154	22.8	36.2	146.	36.7	88.7	298.	51.0 WL	313.	88.3	121.
F158	22.5	37.9	153.	38.7	92.8	315.	56.5	314.	96.	126.
F207	22.6	37.	154.	37.8	91.1	304.	55.9	324.	93.2	123.
F228	22.	37.	150.	39.	92.	307.	56.	314.	96.	125.
F283	43.6 AH	76.6 AH	60.6 AL	53.6 AH	69. AL	115. AL	71. AH	112. AL	69. AL	75.6 AL
F292	22.2	37.4	152.	39.1	91.7	308.	55.4	304.	93.	118.
F299	332. AH	36.	168. WH	36.	95.	327.	60.	361. AH	102.	135.
F305	20.6	34.2	144.	35.3	86.4	287. WL	52.2	303.	91.2	115.
F309	23.9	36.1	159.	40.1	96.3	321.	56.2	318.	94.9	134.
F317	24.	44. AH	170. WH	52. AH	100. WH	380. AH	68. AH	350. AH	110. AH	140. WH
F324	21.9	38.4	151.	38.2	91.3	309.	57.	315.	94.6	122.
ASSIGNED VALUE *	22.6	37.0	153.0	38.5	91.9	308	56.3	318	94.7	125.0
R-STD DEV *	1.30	1.71	6.74	2.01	3.45	9.9	2.55	10.4	3.93	5.94
ACCEPTABLE LIMITS(+-) *	2.60	3.42	13.48	4.02	6.90	19.8	5.10	20.8	7.86	11.88
WARNING LIMITS(+-) *	2.60- 3.90	3.42- 5.13	13.48- 20.224	0.02- 6.03	6.90- 10.35	19.8- 29.7	5.10- 7.65	20.8- 31.2	7.86- 11.79	11.88- 17.82
ACTION LIMITS(<>) *	3.90	5.13	20.22	6.03	10.35	29.7	7.65	31.2	11.79	17.82
N *	18	18	18	18	18	18	18	18	18	18

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	64.0	6.4			10			calculated AAS
F011	120.5	12.0			10			
F014	140.5	14.0			10			calculated ICP
F015	139.0	13.9			10			calculated ICP
F022	88.5	8.8			10			calculated ICP
F026b	109.0	10.9			10			calculated ICP
F032	40.0	4.0		BIASED LOW*	10	-1.5	-1.5039	calcu AAS-E3171
F154	41.0	4.1	WL	BIASED LOW*	10	-2.2	-1.7380	APHA Calculation
F158	110.0	11.0			10			calculated ICP
F207	81.5	8.1			10			calculated ICP
F228	84.0	8.4			10			calculated ICP
F283	77.0	7.7	AHAHALAHALAHALALAL		10			NOVA-60
F292	72.0	7.2			10			calculated ICP
F299	140.0	14.0	AH WH AH		10			
F305	18.0	1.8	WL	BIASED LOW	10	-5.6	-0.7193	calculated ICP
F309	127.0	12.7			10			calculated ICP
F317	174.0	17.4	AHWHAHWAHAWAHAWH	BIASED HIGH	10	15.7	-0.4201	Titration (EDTA)
F324	84.0	8.4			10			

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
 PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 9.5

PARAMETER: 07392 Total Kjeldahl N mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT		
F003	0.122	0.23	0.497	0.227	0.287	0.378	0.174	1.07	0.237	0.181		
F026b	0.157	0.24	0.472	0.228	0.159	0.284	0.219	0.98	0.184	0.191		
F032	0.14	0.24	0.53	0.28	0.4	0.5	0.2	1.14	0.34	0.22		
F036	0.124	0.221	0.486	0.22	0.263	0.379	0.18	1.01	0.242	0.195		
F094	<0.20	0.23	0.52	0.25	0.31	0.44	0.21	1.13	0.27	0.21		
F154	<0.20	0.35	0.55	0.37	0.32	0.45	0.25	1.24	0.31	0.25		
F207	0.12	0.22	0.47	0.21	0.26	0.42	0.18	1.05	0.25	0.2		
F228	0.31 WH	0.31	0.57	0.27	0.35	0.45	0.14	1.18	0.34	0.29		
F292	0.13	0.27	0.54	0.34	0.2	0.47	0.2	1.16	0.3	0.23		
F293	0.163	0.246	0.527	0.252	0.285	0.438	0.208	1.05	0.264	0.24		
F299	0.16	1.81 AH	0.63 WH	1.04 AH	1.05 AH	0.72 WH	0.21	1.02	0.35	0.29		
F304	0.12	0.21	0.53	0.2	0.21	0.32	0.17	1.1	0.2	0.18		
F305	0.46 AH	0.57 AH	1.1 AH	0.56 AH	0.63 WH	0.74 WH	0.49 AH	1.7 AH	0.59 AH	0.56 AH		
F309	0.17	0.284	0.503	0.237	0.264	0.281	0.246	0.993	0.312	0.291		
F317	0.42 AH	0.35	0.54	0.36	0.46	0.54	0.27	1.3	0.45	0.31		
F324	<0.3	<0.3	0.455	<0.3	<0.3	0.426	<0.3	1.1	<0.3	<0.3		
ASSIGNED VALUE *	0.140	0.240	0.527	0.250	0.286	0.439	0.204	1.100	0.285	0.225		
R-STD DEV *	0.0615	0.0696	0.0478	0.0828	0.1184	0.1082	0.0424	0.1080	0.0778	0.0560		
ACCEPTABLE LIMITS(+-) *	0.1230	0.1392	0.0956	0.1656	0.2368	0.2164	0.0848	0.2160	0.1556	0.1120		
WARNING LIMITS(+-) *	.1230-	.1845.	.1392-	.2088.0956-	.1434.1656-	.2484.2368-	.3552.2164-	.3246.0848-	.1272.2160-	.3240.1556-	.2334.1120-	.1680
ACTION LIMITS(<>) *	0.1845	0.2088	0.1434	0.2484	0.3552	0.3246	0.1272	0.3240	0.2334	0.1680		
N *	13	15	16	15	15	16	15	16	15	15		

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	43.5	4.3			10			block digestion
F026b	40.5	4.0		BIASED LOW	10	-11.3	-0.0212	calculated
F032	93.0	9.3			10			E3367
F036	39.5	3.9		BIASED LOW*	10	-6.5	-0.0184	block digestion
F094	69.0	7.6			9			block digestion
F154	105.0	11.6			9			block digestion
F207	37.5	3.7		BIASED LOW*	10	-2.1	-0.0288	
F228	103.5	10.3	WH		10			digested Phenate
F292	85.0	8.5			10			Kjeldahl digestion
F293	76.5	7.6			10			digested Salicylate
F299	121.0	12.1	AHWHAHAWH	BIASED HIGH	10	-58.0	0.5705	
F304	32.5	3.2		BIASED LOW*	10	5.7	-0.0721	calculated
F305	148.0	14.8	AHAHAHAHWHWAHAHAHAH	BIASED HIGH	10	36.0	0.2302	Kjeldahl digestion
F309	76.0	7.6			10			block digestion
F317	132.0	13.2	AH	BIASED HIGH*	10	3.0	0.1139	block digestion
F324	16.5	5.5		INSUFFICIENT DATA	3			

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
 PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 8.0

PARAMETER: 07293 Total N

mg/L N

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F003	0.167	0.333	0.546	0.562	1.75	1.69	0.344	1.53	1.39	0.58
F004	0.171	0.363	0.624	0.557	1.78	1.67	0.362	1.52	1.38	0.598
F006	<0.2	0.3	0.5	0.5	1.5	1.4	0.3	1.3	1.2	0.5
F010	0.17	0.29	0.54	0.47	1.62	1.54	0.33	1.35	1.22	0.55
F011	0.18	0.34	0.62	0.55	1.73	1.65	0.35	1.49	1.34	0.57
F015	0.12	0.25	0.49	0.41	1.81	1.37 WL	0.27	1.21 WL	1.37	0.44
F021	0.17	0.33	0.6	0.53	1.77	1.72	0.36	1.57	1.29	0.6
F026	0.196	0.352	0.568	0.532	1.71	1.62	0.377	1.42	1.33	0.571
F042	0.161	0.337	0.626	0.517	1.77	1.72	0.35	1.64	1.47	0.605
F113	0.183	0.363	0.614	0.555	1.85	1.73	0.348	1.58	1.4	0.59
F158	0.15	0.29	0.46	0.49	1.76	1.6	0.3	1.35	1.28	0.58
F183	0.15	0.35	0.75	0.57	1.7	1.64	0.36	1.45	1.36	0.68
F207	0.16	0.35	0.58	0.55	1.94	1.88	0.36	1.54	1.47	0.61
F221	0.178	0.383	0.620	0.567	1.76	1.65	0.363	1.48	1.35	0.596
F283	21. AH	19. AH	50. AH	43. AH	42. AH	46. AH	23. AH	18. AH	22. AH	23. AH
F292	0.2	0.42	0.66	0.7	1.79	1.84	0.39	1.65	1.48	0.66
F299	0.2	1.9 AH	0.72	1.3 AH	2.6 AH	2.	0.37	1.5	1.5	0.67
F304	0.16	0.33	0.64	0.54	1.79	1.69	0.35	1.59	1.37	0.59
F305	0.69 AH	0.76 AH	1.3 AH	0.89 AH	2.13 WH	1.94	0.71 AH	2.22 AH	1.69 WH	1.06 AH
F309	<0.250	0.408	0.608	0.573	1.93	1.72	0.428	1.51	1.59	0.739
F317	0.46 AH	0.46	0.63	0.66	1.9	1.8	0.43	1.7	1.5	0.68
F324	<0.3	<0.3	0.545	0.32 WL	1.57	1.78	<0.3	1.55	1.13	0.38 WL
ASSIGNED VALUE *	0.170	0.345	0.611	0.550	1.77	1.69	0.360	1.52	1.37	0.593
R-STD DEV *	0.0289	0.0733	0.0901	0.0959	0.147	0.155	0.0473	0.144	0.138	0.0852
ACCEPTABLE LIMITS(+-) *	0.0578	0.1466	0.1802	0.1918	0.294	0.310	0.0946	0.288	0.276	0.1704
WARNING LIMITS(+-) *	.0578- .0867.1466- .2199.1802- .2703.1918- .2877.294- .441				.310- .465	.0946- .1419.288- .432		.276- .414	.1704- .2556	
ACTION LIMITS(<>) *	0.0867	0.2199	0.2703	0.2877	0.441	0.465	0.1419	0.432	0.414	0.2556
N *	19	21	22	22	22	22	21	22	22	22

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	89.0	8.9			10			autoclaved
F004	119.5	11.9			10			Persulfate dig.
F006	24.5	2.7		BIASED LOW	9	-16.3	0.0078	Combustion chemilum.
F010	38.5	3.8		BIASED LOW	10	-10.0	-0.0059	Hydrazine
F011	85.5	8.5			10			
F015	36.5	3.6	WL WL	BIASED LOW*	10	-5.0	-0.0852	autoclaved
F021	97.5	9.7			10			Flow injection
F026	84.0	8.4			10			autoclaved
F042	114.0	11.4			10			Persulfate dig.
F113	126.0	12.6			10			persulfate digestion
F158	40.0	4.0		BIASED LOW*	10	-3.2	-0.0496	Persulfate dig.
F183	103.5	10.3			10			Flow injection
F207	126.0	12.6			10			calculated
F221	109.5	10.9			10			Flow injection
F283	215.0	21.5	AHAHAHAHAHAHAHAHAHAH	BIASED HIGH	10	487.8	25.3820	NOVA-60
F292	170.0	17.0			10			Flow injection
F299	177.0	17.7	AH AHAH	BIASED HIGH*	10	-6.1	0.4264	
F304	105.0	10.5			10			Flow injection
F305	201.0	20.1	AHAHAHAHWH AHAHWHAH	BIASED HIGH*	10	-5.4	0.4827	calculated
F309	142.0	15.7			9			calculated
F317	179.0	17.9	AH	BIASED HIGH*	10	-1.1	0.1269	calculated
F324	40.0	5.7	WL WL		7			calculated

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 11.2

PARAMETER: 00192 Turbidity

JTU/NTU

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Major Ions &amp; Nutrients

SAMPLE LAB NO	1= ECOAST-MX LAB RESULT	2= LONG-02 LAB RESULT	3= BATTLE-02 LAB RESULT	4= BELLE-09B LAB RESULT	5= YAM - 09B LAB RESULT	6= SPEN-06B LAB RESULT	7= CRANBERRY-05SOURIS-05 LAB RESULT	8= RICH-09 LAB RESULT	9= ERIC-02 LAB RESULT	10= ERIE-02 LAB RESULT
F011	0.07	0.1	0.11	0.13	0.1	0.15	0.14	0.12	0.09	0.1
F015	0.08	0.11	0.13	0.14	0.11	0.17	0.16	0.14	0.1	0.14
F021	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1
F022	<0.1	0.1	<0.1	0.12	<0.1	0.12	0.13	<0.1	<0.1	<0.1
F090	0.096	0.119	0.138	0.167	0.121	0.182	0.174	0.161	0.141	0.111
F154	0.13	0.25 WH	0.25 WH	0.22	0.28 AH	0.27	0.24 WH	0.23	0.21	0.27 AH
F158	0.09	0.12	0.13	0.14	0.1	0.22	0.16	0.11	0.16	0.13
F193	0.12	0.13	0.15	0.14	0.12	0.19	0.17	0.16	0.11	0.13
F228	0.4 AH	0.2	0.2	0.2	0.3 AH	0.5 AH	0.2	0.3 WH	0.2	0.4 AH
F292	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F293	<0.10	0.13	0.15	0.17	0.13	0.2	0.16	0.18	0.12	0.14
F299	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1
F305	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
F309	0.518 AH	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
F317	0.14	0.15	0.17	0.19	0.16	0.2	0.2	0.17	0.15	0.17
ASSIGNED VALUE *	0.100	0.125	0.150	0.168	0.110	0.200	0.165	0.170	0.141	0.130
R-STD DEV *	0.0422	0.0469	0.0443	0.0380	0.0371	0.0443	0.0369	0.0487	0.0500	0.0446
ACCEPTABLE LIMITS(+-) *	0.0844	0.0938	0.0886	0.0760	0.0742	0.0886	0.0738	0.0974	0.1000	0.0892
WARNING LIMITS(+-) *	.0844- .1266.0938- .1407.0886- .1329.0760- .1140.0742- .1113.0886- .1329.0738- .1107.0974- .1461.1000- .1500.0892- .1338									
ACTION LIMITS(<>) *	0.1266	0.1407	0.1329	0.1140	0.1113	0.1329	0.1107	0.1461	0.1500	0.1338
N *	11	12	11	12	11	12	12	11	11	11

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F011	19.5	1.9		BIASED LOW*	10	-24.2	-0.0004	
F015	39.5	3.9		BIASED LOW*	10	-18.4	0.0080	Nephelometry
F021	49.5	4.9			10			Nephelometry
F022	6.0	1.5		INSUFFICIENT DATA	4			Turbidimeter
F090	54.0	5.4			10			
F154	107.0	10.7	WHWH AH WH AH	BIASED HIGH*	10	-43.2	0.1515	Turbidimeter
F158	48.5	4.8			10			Turbidimeter
F193	56.5	5.6			10			Turbidimeter
F228	104.5	10.4	AH AHAH WH AH	BIASED HIGH	10	-65.8	0.2398	Nephelometry
F292	0.0	0.0		INSUFFICIENT DATA	0			Turbidimeter
F293	61.0	6.7			9			Hach
F299	68.5	6.8			10			
F305	0.0	0.0		INSUFFICIENT DATA	0			Turbidimeter
F309	11.0	11.0	AH	INSUFFICIENT DATA	1			Turbidimeter
F317	82.5	8.2			10			Nephelometry

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 50

OVERALL AVERAGE RANK IS 6.2

## **Section 3 – Trace Elements in Water**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

**Program Name:** FPTM

**Study Code:** 0097

Range of Samples: 1 to 10

**Table 1 Participating Laboratories - EC PT for Trace Elements in Water**

Accutest Labs Southeast, Orlando, FL, US  
 ALS Laboratory Group, MB Technology Centre Ltd., Winnipeg, MB  
 Brooks Rand LLC, Seattle, WA, US  
 Capital District Health Authority, QEII Lab, Halifax, NS  
 Collier County PCPD Lab, Naples, FL, US  
 Columbia Analytical Services, Jacksonville, FL, US  
 CSIRO Land and Water, Lucas Heights, NSW, Australia  
 Dade County DERM Lab, Miami, FL, US  
 Environment Canada, AAQS, Ottawa, ON  
 Environment Canada, ALET, Moncton, NB  
 Environment Canada, NLET, Burlington, ON  
 Environment Canada, PYLET, Vancouver, BC  
 Environment New Brunswick, Fredericton, NB  
 Environnement Canada, QLET, Montreal, QC  
 Environnement Quebec, CEAEQ, Laval, QC  
 Exova, Edmonton, AB  
 Florida DEP Central Lab, Tallahassee, FL, US  
 Kinetrics Inc., Toronto, ON  
 Maxxam Analytics Incorporated, Burnaby, BC  
 McGill University, Ste-Anne-de-Bellevue, QC  
 Ministry of ND & Mines, Geoscience Laboratories, Sudbury, ON  
 Natural Resources Canada-CFS-GL, Sault Ste. Marie, ON  
 Ontario Ministry of Environment, LSB, Etobicoke, ON  
 Santé Canada - DSPA, Longueuil, QC  
 Saskatchewan Research Council, Saskatoon, SK  
 South Florida Water Management Dist., West Palm Beach, FL, US  
 TAIGA Environmental Laboratory, Yellowknife, NT  
 TestAmerica, Savannah, GA, US  
 TestAmerica, Tallahassee, FL, US  
 U.S. Geological Survey, Boulder, CO, US  
 Universidade da Coruña, A Coruña, Spain  
 University of Manitoba, Winnipeg, MB  
 Ville de Montreal, Montreal, QC

33 Laboratories.

Program Name: FPTM

Number of Labs: 42

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Trace Elements in Water**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F007	18	0	0.00	180	0	0.00		0.00
F195	10	0	0.00	90	0	0.00		0.00
F068	23	0	0.00	230	1	0.22		0.22
F032c	23	0	0.00	230	1	0.22		0.22
F032d	23	0	0.00	230	1	0.22		0.22
F169	19	0	0.00	190	1	0.26		0.26
F003	28	0	0.00	280	2	0.36		0.36
F193	18	0	0.00	180	2	0.56		0.56
F248	21	0	0.00	210	5	1.19		1.19
F024	28	1	1.79	280	2	0.36		2.14
F292	22	0	0.00	220	10	2.27		2.27
F014	16	1	3.13	160	3	0.94		4.06
F026	15	1	3.33	150	3	1.00		4.33
F139	29	2	3.45	290	11	1.90		5.34
F020	26	3	5.77	260	2	0.38		6.15
F293	24	2	4.17	240	10	2.08		6.25
F011	27	4	7.41	270	2	0.37		7.78
F032g	16	1	3.13	160	15	4.69		7.81
F022	29	3	5.17	290	21	3.62		8.79
F154	28	3	5.36	280	22	3.93		9.29
F228	7	1	7.14	70	3	2.14		9.29
F158	24	4	8.33	240	5	1.04		9.37
F021b	18	2	5.56	180	16	4.44		10.00
F021	18	3	8.33	180	9	2.50		10.83
F207	9	1	5.56	90	10	5.56		11.11
F309	20	2	5.00	200	25	6.25		11.25
F032h	21	3	7.14	210	18	4.29		11.43
F183	27	4	7.41	270	22	4.07		11.48
F009	24	3	6.25	240	34	7.08		13.33
F317b	23	4	8.70	230	23	5.00		13.70
F249	25	6	12.00	250	11	2.20		14.20
F021c	23	6	13.04	230	13	2.83		15.87
F015	26	6	11.54	260	23	4.42		15.96
F299	19	4	10.53	190	22	5.79		16.32
F292b	21	6	14.29	210	17	4.05		18.33
F032	3	1	16.67	30	2	3.33		20.00
F182	17	7	20.59	170	8	2.35		22.94
F311	27	9	16.67	270	38	7.04		23.70
F060	27	5	9.26	270	82	15.19		24.44
F060b	1	0	0.00	10	5	25.00		25.00
F317	23	9	19.57	230	60	13.04		32.61
F305	20	8	20.00	200	62	15.50		35.50

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

Program Name: FPTM

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Trace Elements in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F003	3.2	0.4	1.4	0.7	0.4	0.4	0.2	4.6	1.8	0.4	0.5	Good
F007										0.0	0.0	Good
F009	16.2	17.5	20.5	30.4	22.2	13.5	16.9	9.8	28.1	13.3	17.2	Moderate
F011	6.7	28.3	40.7	17.2	29.4	17.4	1.1	8.7	5.0	7.8	13.0	Moderate
F014	6.3	1.6	6.3		2.2		3.4			4.1	3.8	Good
F015	39.0	15.0	9.4	13.5	8.1	2.3	4.4	31.4	18.1	16.0	14.2	Moderate
F020	21.7	6.2	5.6	36.5	6.4	8.7	4.2	7.5	3.9	6.2	6.3	Satisfactory
F021	14.2	9.0	11.3	11.8	36.7	2.2	9.8	9.7	0.6	10.8	10.3	Satisfactory
F021b				4.0	21.5	3.9	3.1	8.6	11.4	10.0	8.6	Satisfactory
F021c							6.7	5.8	7.8	15.9	7.2	Satisfactory
F022	2.4	3.5	0.9	7.8	9.3	2.4	1.2	0.7	1.2	8.8	2.4	Good
F024	18.2	28.4	11.1	8.9	5.2	2.5	0.5	2.3	9.6	2.1	7.1	Satisfactory
F026	3.0	1.7	1.0	0.7	5.0	0.7	1.3	5.7	1.3	4.3	1.5	Good
F032	1.3	5.0	6.7	21.7	13.3	10.0	38.3	15.9	3.3	20.0	11.7	Satisfactory
F032c		3.3	8.0	16.7	6.5	0.0	2.6	0.2	0.7	0.2	2.6	Good
F032d			33.4	4.6	0.0	2.4	0.2	0.0	4.6	0.2	1.3	Good
F032g							7.0		13.1	7.8	7.8	Satisfactory
F032h									9.3	11.4	10.4	Satisfactory
F060	9.6	12.4	12.2	13.9	8.7	11.9	1.9	15.9	8.0	24.4	12.0	Satisfactory
F060b									15.0	25.0	20.0	Moderate
F068	3.4	6.4	4.1	0.7	20.2	1.1	10.9	2.2	0.7	0.2	2.8	Good
F139	4.4	13.8	1.1	11.1	17.6	17.9	6.6		6.3	5.3	6.6	Satisfactory
F154							23.0	20.7	9.8	9.3	15.3	Moderate
F158	18.3	13.5	20.2	18.1	16.5	9.2	17.7	10.8	23.5	9.4	17.1	Moderate
F169	0.0	1.2	0.0	0.3	0.3		1.5			0.3	0.3	Good
F182	19.4	21.3	7.3	43.5	15.0	72.1		5.3		22.9	20.4	Moderate
F183		12.8			8.5		15.7	19.6	20.8	11.5	14.2	Moderate

Program Name: FPTM

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Trace Elements in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F193	7.6	0.8	1.8	4.0	10.5	0.3	0.8	1.4	0.0	0.6	1.1	Good
F195		8.5		0.6		0.0		11.1		0.0	0.6	Good
F207	5.6	6.3	10.7		8.2		1.7	7.2	2.2	11.1	6.8	Satisfactory
F228										9.3	9.3	Satisfactory
F248				19.5	10.2	21.0	14.5	21.0	2.3	1.2	14.5	Moderate
F249										14.2	14.2	Moderate
F292										2.3	2.3	Good
F292b										18.3	18.3	Moderate
F293										6.3	6.3	Satisfactory
F299										16.3	16.3	Moderate
F305										35.5	35.5	Poor
F309										11.3	11.3	Satisfactory
F311										23.7	23.7	Moderate
F317										32.6	32.6	Poor
F317b										13.7	13.7	Moderate
Interlab Median	6.7	7.4	7.3	11.5	9.0	2.5	3.8	8.1	5.6	9.3		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPTM

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Trace Elements in Water**

Sample Number	Sample Name	Copper (µg/L)
1	TM-26.4	15.0
2	TMDA-61.2	64.2
3	TMDA-54.5	421
4	TM-16	113
5	TM-25.4	26.8
6	TMDA-55D5	159
7	TM-40	40.9
8	TM-09	34.9
9	TM-21Wana	25.0
10	TM-35	11.4

Program Name: FPTM

Range of Samples: 1 to 10

2011-03-11

Study Code: 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Trace Elements in Water**

Parameters	TM-26.4 Sample 1	TMDA-61.2 Sample 2	TMDA-54.5 Sample 3	TM-16 Sample 4	TM-25.4 Sample 5	TMDA-55D5 Sample 6	TM-40 Sample 7	TM-09 Sample 8	TM-21Wana Sample 9	TM-35 Sample 10
Aluminum (ug/L)	74.0	57.1	397	54.0	30.2	240	38.3	31.0	120	48.7
Antimony (ug/L)	2.80	34.0	28.0	15.0	23.7	85.4	41.6	4.00	0.278	1.56
Arsenic (ug/L)	8.56	34.2	45.0	40.0	26.8	92.2	40.5	19.6	0.615	6.90
Barium (ug/L)	26.1	63.0	336	210	27.0	162	43.3	58.0	82.6	15.3
Beryllium (ug/L)	3.50	36.0	17.3	7.91	26.0	77.2	48.3	6.00	0.01250	2.51
Bismuth (ug/L)	2.86	20.5	15.60	5.36	17.5	44.4	33.9	1.80	0.0855	3.06
Boron (ug/L)	45.6	79.4	61.0	46.7	40.7	198	50.0	31.0	20.1	15.3
Cadmium (ug/L)	7.20	58.2	158	14.7	23.6	91.8	43.2	3.94	16.4	8.20
Chromium (ug/L)	12.4	68.0	440	13.0	24.0	148	39.8	4.05	23.0	6.84
Cobalt (ug/L)	8.12	64.0	319	8.85	27.6	186	41.1	2.00	16.8	12.6
Copper (ug/L)	15.0	64.2	421	113	26.8	159	40.9	34.9	25.0	11.4
Gallium (ug/L)	5.51	8.25	12.8	6.82	9.09	0.01798	0.0326	2.99	0.0638	0.124
Iron (ug/L)	21.7	79.6	382	211	31.2	202	42.8	119.0	31.3	16.4
Lead (ug/L)	10.40	61.7	516	24.0	27.0	249	36.3	8.74	16.8	14.8
Lithium (ug/L)	4.97	34.8	22.9	9.77	23.9	54.6	38.5	4.28	1.90	3.84
Manganese (ug/L)	10.90	76.0	286	28.4	25.2	138	42.2	9.92	20.1	14.0
Molybdenum (ug/L)	7.70	72.8	302	31.8	27.8	119	44.0	12.9	23.8	6.90
Nickel (ug/L)	11.1	58.5	339	69.6	16.3	169	44.0	19.4	20.3	9.54
Rubidium (ug/L)	10.40	3.12	14.7	12.0	19.2	0.0593	0.501	4.45	1.30	0.620
Selenium (ug/L)	5.38	38.4	34.9	21.9	28.4	98.7	45.0	14.2	0.235	4.60
Silver (ug/L)	7.00	10.70	13.2	7.65	22.20	1.20	17.2	3.82	0.0141	3.72
Strontium (ug/L)	107.0	112	599	255	73.8	128	70.5	106.0	595	140
Thallium (ug/L)	5.29	37.2	28.1	6.69	30.6	65.9	43.9	2.00	0.157	5.80
Tin (ug/L)	5.70	55.8	46.3	8.76	23.7	56.5	40.0	3.08	0.1030	3.32
Titanium (ug/L)	6.18	37.0	33.5	12.0	25.4	73.0	42.7	8.00	3.90	4.75
Tungsten (ug/L)	6.18	1.97	8.98	3.27	9.72	0.032	0.047	1.80	0.089	0.053
Uranium (ug/L)	7.37	36.5	57.5	4.83	27.1	138	40.1	1.94	0.396	5.71
Vanadium (ug/L)	12.6	71.6	349.00	15.1	27.7	163	42.7	2.97	16.0	10.20
Zinc (ug/L)	38.4	71.6	546	101.0	44.4	232	68.7	43.2	30.5	28.3

PARAMETER: 13095 Aluminum

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	76.4	58.5	381.	54.2	31.3	233.	39.2	31.5	122.	48.7
F007	73.5	57.	382.	53.3	30.8	240.	38.7	30.6	120.	49.5
F009	79.6	61.2	410.	56.3	32.7	259.	40.1	32.	127.	53.3
F011	71.7	55.1	390.	54.3	29.2	239.	37.5	29.5	115.	47.8
F014	73.	55.	386.	53.	28.	235.	39.	30.	114.	45.
F015	73.1	56.1	394.	53.1	29.6	252.	38.1	29.7	120.	47.9
F020	74.6	59.2	391.	54.6	31.4	225.	39.2	31.	118.	48.8
F021b	74.	59.	405.	55.	30.	244.	40.	30.	120.	50.
F021c	71.1	54.5	396.	53.9	30.3	240.	38.3	31.6	116.	48.5
F022	90.1 AH	55.9	377.	53.6	31.5	230.	37.8	31.2	112.	48.7
F024	70.9	55.1	396.	52.	27.8	240.	36.5	29.5	114.	46.6
F026	76.3	59.8	399.	56.3	32.	239.	40.3	32.	121.	51.1
F032c	72.4	56.3	395.	54.1	30.2	237.	37.6	30.3	120.	47.5
F032d	73.2	56.9	401.	53.9	30.4	242.	38.1	30.8	118.	48.1
F032g	75.	56.	449. AH	55.	31.	248.	40.	32.	121.	49.
F032h	75.	58.	402.	66. AH	30.	249.	38.	31.	126.	50.
F060	78.3	63.6	404.	55.1	36.2 AH	244.	46.3 AH	34.5 WH	131.	53.4 WH
F068	74.	55.3	400.	52.3	28.6	243.	36.3	29.3	120.	46.6
F139	72.	62.	392.	54.	30.	234.	39.	30.	118.	47.
F154	66.8 WL	53.	384.	51.2	27.6	232.	35.6 WL	27.9	108.	43.2 WL
F158	77.1	57.5	415.	55.9	31.1	253.	39.8	33.8	123.	49.4
F169	74.0	58.8	405.	54.8	31.6	251.	38.3	31.4	124.	48.5
F182	73.	57.1	383.	53.5	31.2	234.	37.4	30.7	116.	50.5
F183	76.5	58.3	392.	54.	39.7 AH	239.	40.3	33.9	114.	49.7
F193	72.9	59.7	403.	54.5	30.9	238.	39.4	31.2	118.	47.9
F207	77.	57.	414.	54.	30.	248.	38.	33.	124.	49.
F248	71.1	55.5	382.	50.9	29.3	229.	37.1	30.8	118.	47.5
F249	72.	55.	384.	52.	29.	236.	38.	31.	113.	47.
F292	<100.	<100.	390.	61. AH	<100.	240.	<100.	<100.	130.	<100.
F292b	83.5 WH	68.4 AH	433. WH	60.8 WH	<50.	260. WH	<50.	<50.	127.	55.3 WH
F293	79.1	63.6	418.	56.1	36.5 AH	243.	40.5	32.	123.	49.3
F299	71.6	59.7	406.	52.5	29.6	235.	39.5	29.9	121.	48.4
F305	77.6	74. AH	429. WH	68.1 AH	42.9 AH	271. AH	47.4 AH	37.9 AH	132.	54.5 WH
F309	75.5	66.1 WH	398.	57.5	30.2	250.	38.8	33.4	128.	53.2
F311	71.9	55.5	390.	52.2	29.3	233.	37.	29.	117.	46.6
F317	<100.	<100.	400.	<100.	<100.	230.	<100.	<100.	100. AL	<100.
F317b	85. AH	64.	430. WH	64. AH	<50.	260. WH	<50.	<50.	130.	58. AH
ASSIGNED VALUE *	74.0	57.1	397	54.0	30.2	240	38.3	31.0	120	48.7
R-STD DEV *	3.27	3.56	14.1	2.23	1.67	9.4	1.48	1.58	6.3	2.30
ACCEPTABLE LIMITS(+-) *	6.54	7.12	28.2	4.46	3.34	18.8	2.96	3.16	12.6	4.60
WARNING LIMITS(+-) *	6.54- 9.81	7.12- 10.68	28.2- 42.3	4.46- 6.69	3.34- 5.01	18.8- 28.2	2.96- 4.44	3.16- 4.74	12.6- 18.9	4.60- 6.90
ACTION LIMITS(<>) *	9.81	10.68	42.3	6.69	5.01	28.2	4.44	4.74	18.9	6.90
N *	35	35	37	36	33	37	33	33	37	35

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	183.5	18.3			10			ICP-MS
F007	155.5	15.5			10			ICP-MS
F009	298.5	29.8		BIASED HIGH*	10	3.8	1.7364	ICP-MS
F011	93.0	9.3			10			
F014	82.0	8.2		BIASED LOW*	10	-2.7	-0.4738	ICP-MS
F015	141.5	14.1			10			ICP-MS
F020	175.5	17.5			10			ICP-MS
F021b	212.0	21.2			10			ICP-AES
F021c	136.5	13.6			10			ICP-MS
F022	136.5	13.6	AH		10			ICP-MS
F024	67.5	6.7		BIASED LOW*	10	0.2	-2.6630	ICP-MS
F026	251.5	25.1			10			ICP-AES
F032c	132.0	13.2			10			ICP-MS-E3473
F032d	160.5	16.0			10			ICP-MS-E3474
F032g	238.0	23.8	AH		10			ICP AES-E3386
F032h	225.5	22.5	AH		10			ICP-AES-E3497
F060	300.0	30.0	AH AHWL WH	BIASED HIGH*	10	0.2	5.1475	ICP-MS
F068	108.0	10.8			10			ICP-MS
F139	137.0	13.7			10			ICP-MS
F154	21.5	2.1	WL	WL WL	BIASED LOW*	10	-2.8	-3.2855
F158	264.5	26.4			10			ICP-MS
F169	229.0	22.9			10			ICP-MS
F182	133.5	13.3			10			
F183	215.0	21.5	AH		10			HR-ICP-MS
F193	184.5	18.4			10			ICP-MS
F207	217.5	21.7			10			ICP-AES
F248	68.0	6.8		BIASED LOW*	10	-4.2	0.4800	ICP-MS
F249	77.5	7.7		BIASED LOW*	10	-3.2	-0.0852	ICP-AES
F292	97.0	24.2	AH	INSUFFICIENT DATA	4			ICP-AES
F292b	236.0	33.7	WAHWHWHL WH	BIASED HIGH	7	7.7	2.6959	ICP-MS
F293	282.0	28.2	AH	BIASED HIGH*	10	3.8	0.7321	ICP-MS
F299	154.5	15.4			10			
F305	340.0	34.0	AHWAHHAHAHAHAH WH	BIASED HIGH	10	6.9	6.6453	ICP-AES
F309	261.5	26.1	WH		10			ICP-AES
F311	65.5	6.5		BIASED LOW*	10	-1.9	-0.9758	ICP-MS
F317	26.0	8.6		AL INSUFFICIENT DATA	3			ICP-AES
F317b	240.0	34.2	AH WAAH WH AH	BIASED HIGH	7	6.7	4.6219	ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.0

PARAMETER: 51095 Antimony

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	2.61	31.8	25.9	14.0	22.1	83.1	39.5	3.84	0.277	1.47
F007	2.84	33.9	27.9	14.7	23.6	82.4	39.5	3.88	0.26	1.58
F009	2.9	35.2	28.5	15.6	23.3	88.7	42.9	4.2	<1.	1.6
F011	2.7	31.6	26.8	14.5	21.7	83.5	40.6	3.9	0.3	1.5
F014	7.2 AH	33.	28.	15.	22.	84.	41.	4.4	<1.0	1.7
F015	3.	36.8	30.5	16.1	26.5 WH	96.6 AH	44.3	4.24	0.29	1.68
F020	2.81	34.9	29.	15.4	23.7	85.4	42.9	4.06	0.28	1.56
F021	2.7	31.8	27.8	14.3	23.4	82.8	40.2	3.7	0.3	1.5
F021c	2.66	33.	27.2	14.4	23.3	82.	39.7	3.86	0.25	1.48
F022	2.81	32.8	26.5	14.4	20.9 WL	83.7	39.8	3.9	0.261	1.49
F024	2.8	34.4	28.2	15.3	23.5	87.2	42.5	4.1	0.3	1.6
F032	2.8	34.2	27.4	14.6	24.2	87.8	42.6	4.6 WH	0.3	1.6
F032c	2.71	33.1	28.1	14.9	24.1	85.3	40.7	3.96	<0.39	1.56
F032d	2.8	35.	28.6	15.2	24.3	88.4	42.6	4.03	<0.38	1.55
F060	3.05	36.2	29.3	17.3 AH	23.8	87.7	46.1 WH	5.01 AH	0.304	1.67
F068	2.83	34.	28.	15.	24.	86.6	41.6	4.06	0.28	1.6
F139	2.71	33.9	28.	15.2	24.1	87.9	41.6	4.07	0.27	1.53
F154	2.44 WL	31.	26.1	13.9	22.4	82.9	38.6	3.7	0.23 WL	1.41
F158	2.8	34.5	28.9	15.8	24.8	90.	42.8	4.1	<2.	<2.
F193	2.8	33.8	28.3	15.	24.7	88.7	42.1	4.	<0.5	1.6
F195	2.79	34.	26.6		21.5	81.2	41.	3.99	0.29	1.54
F248	2.6	33.	27.6	14.5	23.4	84.	40.4	4.	<0.5	1.6
F249	2.61	31.5	25.6	13.9	22.4	80.3	38.5	3.84	0.27	1.4
F292	<50.	<50.	<50.	<50.	85.	<50.	<50.	<50.	<50.	<50.
F292b	2.82	67.0 AH	29.5	15.3	25.5	91.3	43.1	4.09	<2.0	<2.0
F293	2.81	34.9	27.4	15.	24.3	88.	42.5	4.04	0.26	1.57
F299	2.67	35.7	28.5	14.7	24.3	84.9	43.1	3.88	<0.449	1.41
F305	5. AH	37.1	28.	17.4 AH	25.	89.4	43.5	4.9 AH	2. AH	2.3 AH
F309	<4.40	32.7	23.3 AL	12.8 WL	21.9	86.4	37. WL	<4.40	<4.40	<4.40
F311	2.77	33.2	27.2	14.7	23.	84.	40.7	3.93	0.264	1.45
F317	8.1 AH	36.	29.	15.	27. WH	91.	46. WH	<5.3	<5.3	<5.3
F317b	3.1	35.	30.	16.	25.	87.	43.	4.3	<2.	<2.
ASSIGNED VALUE *	2.80	34.0	28.0	15.0	23.7	85.4	41.6	4.00	0.278	1.56
R-STD DEV *	0.165	1.81	1.26	0.75	1.39	3.36	2.00	0.211	0.0227	0.096
ACCEPTABLE LIMITS(+-) *	0.330	3.62	2.52	1.50	2.78	6.72	4.00	0.422	0.0454	0.192
WARNING LIMITS(+-) *	.330-.495	3.62-5.43	2.52-3.78	1.50-2.25	2.78-4.17	6.72-10.08	4.00-6.00	.422-.633	.0454-.0681	.192-.288
ACTION LIMITS(<>) *	0.495	5.43	3.78	2.25	4.17	10.08	6.00	0.633	0.0681	0.288
N *	30	31	31	30	31	32	31	29	19	26

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	50.0	5.0		BIASED LOW*	10	-3.6	-0.3743	ICP-MS
F007	113.0	11.3			10			ICP-MS
F009	199.5	22.1			9			ICP-MS
F011	79.5	7.9			10			
F014	152.0	16.8	AH		9			ICP-MS
F015	264.5	26.4		WHAH	10	11.7	-0.4631	ICP-MS
F020	188.0	18.8			10			ICP-MS
F021	81.0	8.1			10			ICP-MS
F021c	61.5	6.1			10	-4.4	0.1455	ICP-MS
F022	75.0	7.5	WL		10	-2.9	-0.3548	ICP-MS
F024	185.5	18.5			10			ICP-MS
F032	179.0	17.9		WH	10			AAS hydri-E3089
F032c	124.0	13.7			9			ICP-MS-E3473
F032d	178.5	19.8			9			ICP-MS-E3474
F060	250.0	25.0	AH	WHAH	10	2.8	0.6993	ICP-MS
F068	171.0	17.1			10			ICP-MS
F139	155.5	15.5			10			ICP-MS
F154	30.0	3.0	WL	WL	BIASED LOW*	10	-4.0	-0.4662
F158	184.5	23.0			8			ICP-MS
F193	167.5	18.6			9			ICP-MS
F195	87.5	9.7			9			ICP-MS
F248	97.0	10.7			9			ICP-MS
F249	32.5	3.2			BIASED LOW	10	-6.7	-0.0674
F292	14.0	14.0			INSUFFICIENT DATA	1		ICP-AES
F292b	210.0	26.2	AH		BIASED HIGH	8	9.2	2.7357
F293	168.0	16.8				10		ICP-MS
F299	138.0	15.3				9		ICP-MS
F305	261.0	26.1	AH	AH	AHAAH	BIASED HIGH*	10	2.3
F309	30.0	5.0		ALWL	WL	BIASED LOW*	6	4.3
F311	95.0	9.5					10	-3.9933
F317	191.5	27.3	AH	WH	WH	BIASED HIGH*	7	2.7
F317b	204.0	25.5				BIASED HIGH*	8	2.1239
								0.7820
								ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.2

PARAMETER: 33095 Arsenic

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	8.54	34.3	45.0	40.0	26.6	91.6	40.5	19.6	0.565	6.72
F007	8.77	33.8	42.4	38.9	24.9	85.7	37.5	18.2	0.63	7.11
F009	8.6	34.4	44.5	39.3	27.6	91.8	39.4	18.9	<1.	7.
F011	8.4	32.6	43.7	39.7	26.2	90.6	39.8	19.2	0.6	6.7
F014	8.3	33.	43.	39.	25.	89.	39.	19.	<1.0	6.4
F015	8.7	34.3	45.2	40.9	27.1	92.8	40.5	19.5	0.7	6.8
F020	8.54	34.	45.5	40.3	26.4	91.6	38.3	19.2	0.63	6.75
F021	8.	32.6	42.5	38.5	24.5 WL	91.2	39.9	19.4	0.6	6.3
F021c	10.1 AH	33.6	52.1 AH	49.1 AH	28.9 WH	96.5	42.9	23.1 AH	0.82 AH	8.28 WH
F022	8.81	35.1	47.2	42.1	27.7	97.3	42.	20.4	0.728	7.27
F024	8.6	34.2	45.6	41.4	26.8	93.3	40.7	19.5	0.6	6.9
F026	<15.	38. WH	46.2	41.9	26.9	101. WH	44. WH	20.2	<15.	<15.
F032	8.2	32.	42.2	37.9	25.	86.8	38.8	18.4	0.4 AL	6.3
F032c	8.54	34.2	46.1	38.8	27.1	93.1	40.5	19.6	0.64	6.89
F032d	8.43	33.9	44.7	38.7	26.5	91.5	40.	19.4	0.66	6.54
F060	9.63 WH	38.3 AH	50.2 WH	46.6 AH	31.1 AH	98.9	46.1 AH	22.2 WH	0.904 AH	7.68
F068	9.	35.	46.3	42.	27.3	95.6	41.6	19.6	0.696	6.9
F139	8.38	35.4	45.9	41.8	27.	93.5	40.9	19.7	0.611	6.91
F154	7.92	32.7	43.4	38.8	25.7	87.1	38.9	18.4	0.61	6.3
F158	9.	36.1	48.1	42.8	28.7	98.	43.	20.7	<2.	7.3
F169	8.49	32.9	45.3	39.3	27.8	91.0	40.6	20.9	<2.30	8.25 WH
F182	8.08	32.9	42.5	38.4	25.5	86.9	37.1 WL	18.2	0.56	6.56
F183	8.5	33.	46.	39.	26.	86.	39.	18.	0.58	6.4
F193	8.8	34.6	46.2	41.5	27.5	93.6	41.1	19.6	0.6	6.9
F195	8.76	35.4	45.		26.9	89.6	41.3	20.3	0.626	6.86
F207	8.6	34.2	44.9	40.9	27.2	91.9	40.4	19.7	<1.	7.
F228	9.4	35.1	49.4 WH	39.9	25.8	91.8	41.9	20.4	<4.0	8.0 WH
F248	8.8	34.9	46.1	40.7	26.8	92.9	40.7	19.8	0.8 WH	7.1
F249	8.57	35.2	47.6	44.4 WH	28.6	97.4	43.7 WH	21.8 WH	0.59	6.23
F292	<10.	35.	44.	42.	26.	92.	40.	19.	<10.	<10.
F292b	8.2	34.2	44.8	39.2	27.	92.5	40.4	18.8	<0.50	6.36
F293	8.8	34.7	44.8	40.9	26.6	93.3	41.3	19.6	0.62	6.93
F299	8.1	35.	44.	38.	26.	88.	40.	19.	0.57	6.5
F305	6.1 AL	32.9	45.1	38.8	25.6	92.5	40.	16.3 AL	<2.0	5.5 WL
F309	6.86 AL	31.6 WL	41.5	39.6	26.6	95.5	39.4	19.7	<4.20	7.73
F311	8.28	35.4	43.5	41.1	26.3	94.7	41.6	19.8	0.632	6.53
F317	5.2 AL	36.	45.	40.	27.	97.	41.	15. AL	<4.6	7.8
F317b	9.2	34.	47.	42.	27.	91.	42.	20.	<1.3	6.9
ASSIGNED VALUE *	8.56	34.2	45.0	40.0	26.8	92.2	40.5	19.6	0.615	6.90
R-STD DEV *	0.449	1.28	1.95	1.75	1.03	3.82	1.54	0.97	0.0652	0.523
ACCEPTABLE LIMITS(+-) *	0.898	2.56	3.90	3.50	2.06	7.64	3.08	1.94	0.1304	1.046
WARNING LIMITS(+-) *	.898- 1.347	2.56- 3.84	3.90- 5.85	3.50- 5.25	2.06- 3.09	7.64- 11.46	3.08- 4.62	1.94- 2.91	.1304- .19561	0.46- 1.569
ACTION LIMITS(<>) *	1.347	3.84	5.85	5.25	3.09	11.46	4.62	2.91	0.1956	1.569
N *	36	38	38	37	38	38	38	38	25	36

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F003	163.5	16.3			10			ICP-MS	
F007	103.0	10.3			10			ICP-MS	
F009	161.0	17.8			9			ICP-MS	
F011	107.5	10.7			10				
F014	72.5	8.0		BIASED LOW*	9	-3.4	-0.1743	ICP-MS	
F015	211.5	21.1			10			ICP-MS	
F020	151.0	15.1			10			ICP-MS	
F021	69.0	6.9	WL	BIASED LOW*	10	-1.3	-0.6931	ICP-MS	
F021c	323.0	32.3	AH AHAWH	AHAWH	BIASED HIGH	10	5.1	1.4681	ICP-MS
F022	308.5	30.8			BIASED HIGH	10	5.3	-0.2766	ICP-MS
F024	203.5	20.3				10		ICP-MS	
F026	222.0	31.7	WH	WHHW	BIASED HIGH	7	11.3	-2.0047	ICP-AES
F032	35.5	3.5		AL	BIASED LOW	10	-5.8	-0.0559	AAS hydri-E3089
F032c	197.5	19.7				10		ICP-MS-E3473	
F032d	132.0	13.2				10		ICP-MS-E3474	
F060	352.0	35.2	WAHWAHWAH	AHWHAH	BIASED HIGH	10	7.7	1.2677	ICP-MS
F068	272.5	27.2				10		ICP-MS	
F139	233.5	23.3				10		ICP-MS	
F154	61.5	6.1			BIASED LOW	10	-5.1	0.1178	ICP-MS
F158	307.5	34.1			BIASED HIGH	9	6.3	-0.0122	ICP-MS
F169	193.0	21.4		WH		9		ICP-MS	
F182	49.0	4.9	WL		BIASED LOW	10	-5.9	0.0486	
F183	96.0	9.6				10		HR-ICP-MS	
F193	242.5	24.2				10		ICP-MS	
F195	195.0	21.6				9		ICP-MS	
F207	192.5	21.3				9			
F228	238.5	26.5	WH	WH		9		ICP-AES	
F248	244.0	24.4		WH		10		ICP-MS	
F249	270.0	27.0	WH	WHHW		10		ICP-MS	
F292	122.0	17.4				7		ICP-AES	
F292b	128.0	14.2				9		ICP-MS	
F293	217.5	21.7				10		ICP-MS	
F299	100.0	10.0				10			
F305	79.0	8.7	AL	AL WL		9		ICP-AES	
F309	132.5	14.7	ALWL			9		ICP-AES	
F311	202.0	20.2				10		ICP-MS	
F317	189.0	21.0	AL	AL		9		ICP-AES	
F317b	227.5	25.2				9		ICP-MS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.8

PARAMETER: 56095 Barium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	25.4	61.8	328.	200.	26.2	156.	41.8	56.6	82.8	14.7
F007	26.1	62.6	323.	205.	27.1	156.	42.3	58.4	82.2	15.7
F009	26.6	65.	343.	212.	27.5	164.	43.4	58.8	82.6	15.7
F011	26.5	62.9	348.	209.	27.1	166.	43.4	59.2	83.2	15.6
F014	26.	63.	334.	206.	27.	162.	43.	57.	83.	15.
F015	25.1	63.5	319.	208.	26.9	164.	44.1	58.4	83.3	15.2
F020	26.2	61.9	316.	197.	27.	151. WL	42.6	55.6	77.6	15.1
F021b	26.	64.	336.	211.	27.	162.	43.	58.	82.	15.
F021c	24.6	61.0	314.	197.	25.5	151. WL	40.7	55.6	79.0	14.5
F022	26.2	63.3	350.	220.	27.	169.	43.6	58.7	83.	15.8
F024	26.1	62.7	332.	207.	27.	163.	43.2	58.	81.3	15.2
F032c	25.2	61.2	321.	205.	26.2	157.	42.1	58.	79.9	14.8
F032d	26.4	62.4	326.	209.	26.8	160.	43.4	57.6	81.2	15.3
F032g	26.	61.4	329.	207.	26.	163.	44.	59.	78.7	15.
F032h	26.6	64.6	344.	223.	26.8	168.	43.3	60.3	81.8	15.9
F060	27.1	66.	336.	219.	31. AH	162.	47.2 WH	61.5 WH	83.2	17.1 WH
F068	25.6	62.3	340.	206.	26.	160.	42.3	57.	80.3	14.6
F139	26.	64.2	340.	216.	27.5	166.	43.8	59.5	83.7	15.3
F154	23.8 WL	57.8 WL	334.	208.	25.8	157.	40.7	55.6	77.3 WL	14.4
F158	26.	62.5	343.	214.	27.1	163.	43.2	58.5	83.1	15.3
F169	26.1	63.0	334.	211.	26.9	158.	42.0	57.8	79.4	15.3
F182	25.3	62.	321.	205.	26.1	155.	41.4	57.	76.8 WL	15.3
F183	27.2	64.7	343.	217.	27.6	171.	44.3	60.	86.2	15.9
F193	25.9	63.5	340.	213.	27.2	163.	44.	58.1	84.2	15.4
F195	25.9	62.4	330.		26.6	158.	43.	57.4	80.4	15.2
F248	27.2	65.8	343.	217.	27.6	164.	44.5	61.1	85.1	16.2
F249	25.5	62.	320.	201.	26.8	158.	43.	57.5	79.7	15.
F292	28. WH	65.	331.	221.	28.	163.	44.	60.	83.	18. AH
F292b	26.4	66.8	348.	214.	28.8 WH	164.	45.9	59.6	82.9	15.9
F293	27.7	67.2 WH	343.	223.	27.9	170.	45.6	60.5	86.8	16.
F299	26.	67. WH	353.	212.	27.	159.	44.	58.	85.	16.
F305	28.1 WH	69.2 AH	354.	220.	29. WH	174. WH	46.2 WH	59.5	82.7	17.1 WH
F309	23.8 WL	62.8	331.	210.	23.9 AL	169.	41.8	56.3	82.6	13.8 WL
F311	26.2	64.4	335.	210.	26.9	159.	42.7	57.3	81.7	15.2
F317	29. AH	65.	360.	210.	29. WH	170.	46.	57.	86.	16.
F317b	27.	64.	350.	210.	27.	160.	44.	60.	85.	15.
ASSIGNED VALUE *	26.1	63.0	336	210	27.0	162	43.3	58.0	82.6	15.3
R-STD DEV *	0.88	1.89	12.4	7.1	0.81	5.6	1.35	1.61	2.54	0.62
ACCEPTABLE LIMITS(+-) *	1.76	3.78	24.8	14.2	1.62	11.2	2.70	3.22	5.08	1.24
WARNING LIMITS(+-) *	1.76- 2.64	3.78- 5.67	24.8- 37.2	14.2- 21.3	1.62- 2.43	11.2- 16.8	2.70- 4.05	3.22- 4.83	5.08- 7.62	1.24- 1.86
ACTION LIMITS(<>) *	2.64	5.67	37.2	21.3	2.43	16.8	4.05	4.83	7.62	1.86
N *	36	36	36	35	36	36	36	36	36	36

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING		
F003	70.5	7.0		BIASED LOW*	10	-3.1	0.0448	ICP-MS		
F007	143.0	14.3			10			ICP-MS		
F009	244.0	24.4			10			ICP-MS		
F011	235.0	23.5			10					
F014	145.5	14.5			10			ICP-MS		
F015	171.5	17.1			10			ICP-MS		
F020	79.0	7.9	WL	BIASED LOW	10	-6.7	1.4266	ICP-MS		
F021b	167.0	16.7			10			ICP-AES		
F021c	22.5	2.2	WL	BIASED LOW	10	-6.8	0.7797	ICP-MS		
F022	249.5	24.9			10			ICP-MS		
F024	157.0	15.7			10			ICP-MS		
F032c	71.0	7.1		BIASED LOW*	10	-4.2	0.8498	ICP-MS-E3473		
F032d	145.5	14.5			10			ICP-MS-E3474		
F032g	128.5	12.8			10			ICP AES-E3386		
F032h	251.0	25.1			10			ICP-AES-E3497		
F060	297.5	29.7	AH WWHW WH	BIASED HIGH*	10	-0.1	2.6777	ICP-MS		
F068	96.0	9.6			10			ICP-MS		
F139	242.0	24.2			10			ICP-MS		
F154	48.0	4.8	WLWL	WL	BIASED LOW*	10	-0.1	-2.9054		
F158	205.5	20.5			10			ICP-MS		
F169	141.0	14.1			10			ICP-MS		
F182	64.5	6.4		WL	BIASED LOW*	10	-4.2	0.3520		
F183	301.5	30.1			BIASED HIGH*	10	2.5	0.6463	HR-ICP-MS	
F193	221.0	22.1				10		ICP-MS		
F195	99.0	11.0				9		ICP-MS		
F248	304.0	30.4			BIASED HIGH*	10	2.0	0.6724	ICP-MS	
F249	85.0	8.5				10		ICP-AES		
F292	277.5	27.7	WH	AH		10		ICP-AES		
F292b	283.0	28.3		WH		10		ICP-MS		
F293	326.0	32.6	WH		BIASED HIGH*	10	2.8	1.4008	ICP-MS	
F299	240.5	24.0	WH			10				
F305	324.0	32.4	WHAH	WHHWH	WH	BIASED HIGH	10	5.2	0.1735	ICP-AES
F309	106.0	10.6	WL	AL	WL		10		ICP-AES	
F311	156.5	15.6					10		ICP-MS	
F317	293.0	29.3	AH	WH		BIASED HIGH	10	5.6	-1.3612	ICP-AES
F317b	232.0	23.2					10		ICP-MS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.4

PARAMETER: 04095 Beryllium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	3.50	36.2	16.7	7.93	26.1	75.4	48.1	6.08	0.00095	2.50
F009	3.6	37.7	17.3	8.	26.9	81.6	49.5	6.1	<1.	2.8
F011	3.3	33.7	16.4	7.7	23.9	74.1	44.8	5.8	<0.1	2.4
F015	3.69	38.	18.2	8.3	27.8	82.9	51.6	6.3	0.005	2.71
F020	3.5	36.6	17.4	7.98	25.7	76.1	47.6	6.	<0.01	2.51
F021	3.8	36.8	17.7	8.5	26.9	83.8	51.7	6.3	<0.1	2.7
F021b	3. WL	36.	17.	8.	26.	77.	48.	6.	<1.	2. AL
F021c	3.15	34.8	16.7	7.76	24.7	75.6	46.4	5.8	<0.01	2.39
F022	3.6	38.6	18.6	8.4	28.2	84.9	51.9	6.48	<0.05	3.02 AH
F024	3.3	37.5	18.1	8.1	26.2	78.	49.4	6.2	<0.1	2.4
F032c	3.54	35.1	17.2	7.91	25.9	77.3	48.3	5.89	<0.54	2.54
F032d	3.53	35.7	17.3	8.11	25.8	77.7	49.	6.12	<0.38	2.65
F032g	3.36	35.5	17.3	7.98	26.4	78.3	49.2	6.16	<0.03	2.49
F032h	3.4	35.7	17.1	7.8	24.5	72.5	46.1	5.9	0.1	2.5
F060	3.78	41.1 WH	19.9 AH	9.63 AH	30.7 AH	79.6	57. AH	7.18 AH	<0.1	2.88 WH
F068	3.6	36.	16.6	8.13	26.	79.6	48.	5.96	<0.01	2.56
F139	3.48	39.6	17.	8.34	26.	77.1	48.9	5.89	<0.01	2.55
F154	3.69	33.8	17.3	7.75	24.4	74.8	47.3	5.53	<0.2	2.5
F158	3.6	37.5	17.9	8.3	27.6	81.4	50.3	6.1	<2.	2.7
F182	3.5	35.8	16.3	7.81	24.6	73.3	45.4	5.73	<0.01	2.54
F183	3.39	38.3	17.9	7.87	26.5	81.2	50.2	5.95	<0.5	2.2 WL
F248	3.4	36.6	17.6	7.8	25.8	76.9	48.4	6.1	<0.1	2.5
F249	3.41	34.7	15.9	7.51	24.2	71.7	46.	6.12	0.02	2.4
F292	<4.0	36.	16.8	7.8	28.2	75.9	46.6	6.	<4.0	<4.0
F292b	3.66	39.7 WH	19.1 WH	8.56 WH	28.2	82.2	52.2	6.37	<1.0	2.62
F293	3.5	35.1	17.2	7.31	24.4	72.9	46.3	5.92	<0.025	2.55
F299	3.41	36.1	17.1	7.71	24.7	72.	48.2	5.65	0.58	2.37
F305	3.4	37.8	17.8	7.9	26.	80.6	48.9	5.7	<1.0	2.5
F309	3.65	38.3	18.	8.34	27.1	83.5	49.7	6.31	<0.490	2.75
F311	3.14	34.	16.	7.69	24.5	70.8	45.3	5.69	<0.12	2.66
F317	3.7	36.	18.	7.8	27.	81.	50.	5.8	<0.2	2.5
F317b	3.2	35.	17.	7.8	24.	73.	47.	5.7	<0.15	2.5
ASSIGNED VALUE *	3.50	36.0	17.3	7.91	26.0	77.2	48.3	6.00	0.01250	2.51
R-STD DEV *	0.194	1.78	0.76	0.312	1.53	4.43	2.33	0.261	0.105838	0.153
ACCEPTABLE LIMITS(+-) *	0.388	3.56	1.52	0.624	3.06	8.86	4.66	0.522	-	0.306
WARNING LIMITS(+-) *	.388- .582	3.56- 5.34	1.52- 2.28	.624- .936	3.06- 4.59	8.86- 13.29	4.66- 6.99	.522- .783	-	.306- .459
ACTION LIMITS(<>) *	0.582	5.34	2.28	0.936	4.59	13.29	6.99	0.783	-	0.459
N *	31	32	32	32	32	32	32	32	5	31

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	133.0	13.3			10			ICP-MS
F009	208.0	23.1			9			ICP-MS
F011	38.5	4.2		BIASED LOW	9	-5.0	-0.1778	
F015	249.5	24.9		BIASED HIGH	10	7.2	-0.1586	ICP-MS
F020	142.5	15.8			9			ICP-MS
F021	240.5	26.7		BIASED HIGH	9	8.0	-0.5006	ICP-MS
F021b	108.0	12.0	WL	AL	9			ICP-AES
F021c	61.0	6.7			9	-2.4	-0.2344	ICP-MS
F022	264.5	29.3		AH	BIASED HIGH	9	9.4	-0.2437
F024	171.0	19.0			9			ICP-MS
F032c	133.0	14.7			9			ICP-MS-E3473
F032d	167.0	18.5			9			ICP-MS-E3474
F032g	147.0	16.3			9			ICP AES-E3386
F032h	86.5	8.6			10			ICP-AES-E3497
F060	273.5	30.3	WHAHAHAWH AHAHWH	BIASED HIGH	9	6.0	1.5024	ICP-MS
F068	152.5	16.9			9			ICP-MS
F139	162.5	18.0			9			ICP-MS
F154	89.5	9.9			9			ICP-MS
F158	221.5	24.6			9			ICP-MS
F182	86.0	9.5			9			
F183	163.0	18.1	WL		9			HR-ICP-MS
F248	137.0	15.2			9			ICP-MS
F249	61.0	6.1		BIASED LOW	10	-6.6	0.1901	ICP-MS
F292	99.5	14.2			7			ICP-AES
F292b	260.0	28.8	WHHWHW	BIASED HIGH	9	7.0	0.2190	ICP-MS
F293	87.5	9.7			9			ICP-MS
F299	84.5	8.4			10			
F305	147.5	16.3			9			ICP-AES
F309	243.5	27.0		BIASED HIGH	9	7.1	-0.3495	ICP-AES
F311	46.5	5.1		BIASED LOW	9	-8.0	0.3219	ICP-MS
F317	174.0	19.3			9			ICP-AES
F317b	63.5	7.0		BIASED LOW*	9	-4.9	0.1475	ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 16.1

PARAMETER: 83095 Bismuth

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT					
F003	2.93	23.8	16.5	5.32	20.5	47.4	35.9	1.80	0.0220	3.02					
F009	2.2	17.	12.5	4.	15.	37.3	26.3	<2.	<2.	2.4					
F011	3.	25.8	18.4	5.7	22.1	52.3	40.2	1.8	<0.2	3.4					
F015	2.83	20.5	15.6	5.11	17.3	46.3	33.1	2.16	0.35	3.02					
F020	3.08	23.4	17.2	5.8	21.	46.7	35.9	1.82	0.142	3.2					
F022	2.56	11.9	8.89 WL	3.78	8.1 WL	12.4 AL	13.6 AL	1.42 WL	0.029	2.24					
F024	3.	23.4	16.5	5.4	20.3	46.8	35.3	1.8	<0.2	3.1					
F032h	<5.	13.	12.	<5.	10. WL	23. WL	18. WL	<5.	<5.	<5.					
F060	3.12	18.7	14.	6.21	17.2	33.9	29.3	4.51 AH	7.26 AH	4.					
F139	2.02 WL	19.8	14.2	4.6	17.5	42.1	30.9	1.66	0.14	2.57					
F154	2.79	23.1	17.	5.44	20.3	47.2	36.3	1.8	<0.2	3.18					
F183	2.39	18.	13.	3.21 WL	16.	36.6	28.8	1.63	<0.5	2.39					
F311	2.9	24.6	17.3	5.41	20.5	42.6	34.7	1.74	0.031	3.13					
ASSIGNED VALUE *	2.86	20.5	15.60	5.36	17.5	44.4	33.9	1.80	0.0855	3.06					
R-STD DEV *	0.379	4.66	2.692	0.958	3.70	8.86	6.43	0.184	0.19715	0.510					
ACCEPTABLE LIMITS(+-) *	0.758	9.32	5.384	1.916	7.40	17.72	12.86	0.368	0.39430	1.020					
WARNING LIMITS(+-) *	.758-	1.137	9.32-	13.98	5.384-	8.0761.916-	2.8747.40-	11.10	17.72-	26.5812.86-	19.293.368-	.552	.39430-	.5911.020-	1.530
ACTION LIMITS(<>) *	1.137	13.98	8.076	2.874	11.10	26.58	19.29	0.552	0.59145	1.530					
N *	12	13	13	12	13	13	13	11	7	12					

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	79.5	7.9			10			ICP-MS
F009	25.0	3.1		BIASED LOW	8	-14.2	-0.4982	ICP-MS
F011	102.0	11.3		BIASED HIGH	9	24.1	-0.4507	
F015	67.5	6.7			10			ICP-MS
F020	98.0	9.8		BIASED HIGH	10	10.1	0.1260	ICP-MS
F022	15.0	1.5	WL WLALALWL	BIASED LOW	10	-67.6	1.8780	ICP-MS
F024	75.5	8.3			9			ICP-MS
F032h	10.0	2.0	WLWLWL	BIASED LOW	5	-55.5	3.6835	ICP-AES-E3497
F060	77.0	7.7	AHAAH		10			ICP-MS
F139	47.0	4.7	WL		10			ICP-MS
F154	79.0	8.7			9			ICP-MS
F183	28.0	3.1	WL	BIASED LOW	9	-12.5	-0.2919	HR-ICP-MS
F311	79.5	7.9			10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 6.5

PARAMETER: 05095 Boron

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	46.4	79.2	59.2	46.3	41.3	194.	49.2	31.7	21.4	15.0
F009	44.	76.	54.	40. WL	<40.	199.	48.	<40.	<40.	<40.
F011	42.5	74.	57.4	44.5	38.3	191.	48.	31.	19.6	14.9
F015	50.	80.	60.	50.	40.	210.	50.	30.	20.	20. WH
F020	<50.	86.	67.	<50.	<50.	199.	53.	<50.	<50.	<50.
F022	44.4	81.7	63.1	47.1	42.	208.	51.4	33.5	22.8	18.8
F024	43.5	78.5	57.2	44.6	35.9 WL	185.	44.6 WL	27.2	17.8	14.6
F026	48.5	81.9	63.7	49.2	42.8	204.	52.4	33.5	22.3	17.7
F032c	44.	77.3	59.3	47.7	40.9	194.	47.4	30.9	20.1	15.3
F032d	45.1	78.2	56.9	45.	39.5	192.	48.	30.4	20.1	15.1
F060	48.7	90.4 WH	67.6	55.4 AH	46.7 WH	201.	59.4 AH	35.9 WH	23.2	18.3
F139	45.6	91.7 WH	62.5	48.7	41.	199.	50.8	31.8	20.8	16.1
F154	51.	77.	61.	46.	40.	195.	51.	31.	20.	14.
F158	45.3	79.7	61.1	46.9	40.3	206.	49.6	29.7	19.3	14.
F183	46.6	84.2	64.3	46.5	40.7	198.	54.	30.7	19.6	15.4
F193	46.6	81.9	63.5	48.3	41.5	204.	51.3	32.	21.	16.
F249	43.9	78.1	59.2	44.8	37.2	196.	47.2	28.	17.	11.
F292	<500.	<500.	<500.	<500.	<500.	<500.	<500.	<500.	<500.	<500.
F293	53. WH	84.	63.	51.	47. WH	195.	50.	34.	24. WH	18.
F311	44.4	77.7	60.	45.4	39.8	193.	47.7	30.9	19.9	14.2
F317	<100.	<100.	<100.	<100.	<100.	210.	<100.	<100.	<100.	<100.
F317b	48.	77.	64.	47.	<44.	190.	51.	<44.	<44.	<44.
ASSIGNED VALUE *	45.6	79.4	61.0	46.7	40.7	198	50.0	31.0	20.1	15.3
R-STD DEV *	2.81	4.15	3.55	2.46	2.15	7.4	2.59	2.05	1.89	2.15
ACCEPTABLE LIMITS(+-) *	5.62	8.30	7.10	4.92	4.30	14.8	5.18	4.10	3.78	4.30
WARNING LIMITS(+-) *	5.62- 8.43	8.30- 12.45	7.10- 10.65	4.92- 7.38	4.30- 6.45	14.8- 22.2	5.18- 7.77	4.10- 6.15	3.78- 5.67	4.30- 6.45
ACTION LIMITS(<>) *	8.43	12.45	10.65	7.38	6.45	22.2	7.77	6.15	5.67	6.45
N *	19	20	20	19	17	21	20	17	17	17

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	92.0	9.2			10			ICP-MS
F009	27.5	4.5	WL	BIASED LOW*	6	3.4	-6.1102	ICP-MS
F011	40.0	4.0		BIASED LOW*	10	-3.8	-0.4873	
F015	120.5	12.0			10			ICP-AES
F020	68.0	17.0		INSUFFICIENT DATA	4			ICP-MS
F022	140.0	14.0			10			ICP-MS
F024	28.0	2.8	WL WL	BIASED LOW	10	-5.8	-0.5384	ICP-MS
F026	151.5	15.1		BIASED HIGH*	10	2.1	1.5736	ICP-AES
F032c	75.0	7.5			10			ICP-MS-E3473
F032d	59.5	5.9			10			ICP-MS-E3474
F060	173.0	17.3	WH AHHH AHHH	BIASED HIGH*	10	-0.3	5.9902	ICP-MS
F139	128.0	12.8	WH		10			ICP-MS
F154	86.5	8.6			10			ICP-MS
F158	84.5	8.4			10			ICP-MS
F183	116.0	11.6			10			HR-ICP-MS
F193	136.5	13.6			10			ICP-MS
F249	37.5	3.7		BIASED LOW*	10	0.9	-3.0912	ICP-AES
F292	0.0	0.0		INSUFFICIENT DATA	0			ICP-AES
F293	149.0	14.9	WH WH WH		10			ICP-AES
F311	58.5	5.8			10			ICP-MS
F317	20.5	20.5		INSUFFICIENT DATA	1			ICP-AES
F317b	61.0	10.1			6			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 9.9

PARAMETER: 48095 Cadmium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	6.86	56.5	152.	14.0	23.0	89.8	41.8	3.80	16.3	7.84
F007	7.29	57.3	159.	14.3	22.5	87.1	41.0	3.8	16.1	7.87
F009	7.3	60.	160.	14.8	24.1	95.2	43.2	3.9	16.3	8.2
F011	6.97	55.8	156.	14.3	22.9	91.2	41.9	3.88	16.2	7.97
F014	6.8	58.	160.	14.	22.	88.	42.	3.8	16.	8.
F015	7.25	58.3	156.	14.7	24.3	94.	43.6	3.94	16.3	8.2
F020	7.1	58.1	158.	14.5	23.1	89.8	42.	3.81	16.4	8.06
F021	6.9	56.6	158.	14.4	23.6	90.7	42.8	3.8	16.1	8.2
F021b	7.	58.	157.	14.	23.	91.	42.	4.	16.	8.
F021c	6.83	57.	154.	14.4	22.5	87.6	41.4	3.8	16.2	7.83
F022	7.37	60.1	156.	15.3	24.4	97.4	44.2	4.05	16.3	8.9 WH
F024	7.1	57.7	158.	14.5	23.6	91.8	42.6	3.9	16.7	8.3
F026	7.43	58.1	159.	15.3	24.3	91.7	44.5	4.13	17.	8.5
F032c	7.1	58.3	159.	14.8	23.9	93.9	43.3	3.95	16.7	8.41
F032d	6.94	58.2	157.	14.7	23.1	90.	43.1	3.9	16.6	8.07
F032g	7.3	56.8	163.	15.2	23.5	92.3	46.	4.2	16.4	8.6
F032h	7.5	58.9	156.	15.6	23.8	87.9	43.	4.5 WH	17.5	8.5
F060	7.41	61.1	159.	16.9 AH	24.8	94.5	45.9	4.87 AH	16.4	8.79
F068	7.3	59.	163.	14.6	23.6	96.3	43.3	4.1	16.6	8.23
F139	6.95	59.4	158.	14.8	23.3	92.6	42.9	3.95	16.2	8.01
F154	6.58 WL	54.8	157.	13.9	22.5	87.9	40.8	3.62	15.3	7.7
F158	7.5	61.8	170. WH	16.1 WH	25.1	99.2	46.1	4.2	17.3	8.7
F169	7.1	58.0	157.	14.7	23.5	91.8	42.5	3.86	16.6	8.24
F182	6.84	57.0	153.	14.5	22.4	88.3	40.4	3.81	15.4	8.1
F183	7.37	59.	166.	15.	27. AH	96.	44.	3.93	17.	8.7
F193	7.	57.8	158.	14.7	23.7	92.7	43.4	3.9	15.7	8.1
F195	7.23	59.2	156.		23.7	89.2	43.6	3.94	16.5	8.31
F207	6.8	54. WL	155.	14.2	21.7 WL	84.9	40.6	3.9	15.2 WL	7.9
F228	7.0	55.0	149. WL	14.7	22.6	87.6	41.9	4.2	15.6	7.6
F248	7.3	59.1	163.	14.6	23.5	92.7	43.5	4.1	16.8	8.4
F249	7.16	58.3	164.	14.8	23.6	90.5	42.9	4.09	16.4	8.04
F292	7.5	60.9	158.	15.2	24.	93.6	43.8	<5.	17.	8.3
F292b	7.14	59.5	164.	14.7	23.7	93.1	43.7	3.96	16.3	8.07
F293	7.59	61.9	161.	15.	24.3	95.9	45.6	4.07	17.5	8.49
F299	7.27	61.6	162.	15.1	24.1	90.9	45.5	4.	16.9	8.36
F305	7.4	63.6 WH	174. AH	15.7	25.	99.9 WH	46.3	3.7	16.8	8.5
F309	6.79	57.8	154.	14.1	22.7	92.8	41.7	3.5 WL	16.7	8.28
F311	7.74	64. WH	173. AH	16.3 WH	25.6 WH	98.	46.	4.24	17.9 WH	8.75
F317	7.6	58.	170. WH	15.	24.	97.	46.	3.6	17.	8.1
F317b	7.5	58.	160.	15.	23.	90.	43.	4.1	17.	8.2
ASSIGNED VALUE *	7.20	58.2	158	14.7	23.6	91.8	43.2	3.94	16.4	8.20
R-STD DEV *	0.293	1.96	4.4	0.55	0.89	3.71	1.84	0.190	0.55	0.316
ACCEPTABLE LIMITS(+-) *	0.586	3.92	8.8	1.10	1.78	7.42	3.68	0.380	1.10	0.632
WARNING LIMITS(+-) *	.586- .879	3.92- 5.88	8.8- 13.2	1.10- 1.65	1.78- 2.67	7.42- 11.13	3.68- 5.52	.380- .570	1.10- 1.65	.632- .948
ACTION LIMITS(<>) *	0.879	5.88	13.2	1.65	2.67	11.13	5.52	0.570	1.65	0.948
N *	40	40	40	39	40	40	40	39	40	40

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	71.5	7.1		BIASED LOW*	10	-3.5	0.1445	ICP-MS
F007	96.5	9.6			10			ICP-MS
F009	243.0	24.3			10			ICP-MS
F011	98.0	9.8			10			
F014	91.5	9.1			10			ICP-MS
F015	217.0	21.7			10			ICP-MS
F020	143.5	14.3			10			ICP-MS
F021	127.5	12.7			10			ICP-MS
F021b	125.0	12.5			10			ICP-AES
F021c	62.0	6.2		BIASED LOW*	10	-2.9	-0.1487	ICP-MS
F022	290.0	29.0	WH		10			ICP-MS
F024	181.5	18.1			10			ICP-MS
F026	293.5	29.3			10			ICP-AES
F032c	244.5	24.4			10			ICP-MS-E3473
F032d	161.5	16.1			10			ICP-MS-E3474
F032g	262.5	26.2			10			ICP AES-E3386
F032h	264.0	26.4	WH		10			ICP-AES-E3497
F060	329.0	32.9	AH	AH	BIASED HIGH*	10	0.7	1.1528
F068	254.5	25.4			10			ICP-MS
F139	180.0	18.0			10			ICP-MS
F154	38.0	3.8	WL		BIASED LOW*	10	-1.1	-1.0458
F158	371.5	37.1	W H W H		BIASED HIGH	10	7.7	-0.2106
F169	174.0	17.4			10			ICP-MS
F182	71.0	7.1		BIASED LOW*	10	-3.2	-0.1895	
F183	313.0	31.3	AH			10		HR-ICP-MS
F193	172.0	17.2				10		ICP-MS
F195	188.0	20.8				9		ICP-MS
F207	43.5	4.3	WL	WL	WL	BIASED LOW*	10	-3.0
F228	94.5	9.4	WL				10	-0.8387
F248	257.0	25.7						GFAAS
F249	211.5	21.1						ICP-AES
F292	264.5	29.3						ICP-MS
F292b	234.5	23.4						ICP-MS
F293	330.0	33.0				BIASED HIGH*	10	-3.0
F299	283.0	28.3					10	-0.8387
F305	329.5	32.9	W H A H	WH		BIASED HIGH	10	2.4
F309	116.0	11.6		WL			10	0.5762
F311	386.0	38.6	W H A H W H W H	WH		BIASED HIGH	10	10.4
F317	273.5	27.3	WH				10	-0.8562
F317b	232.5	23.2					10	ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 20.4

PARAMETER: 24095 Chromium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	12.2	67.1	431.	12.5	23.8	144.	38.4	4.04	23.1	6.79
F007	12.4	68.7	426.	12.5	23.3	144.	36.7	3.9	22.5	6.48
F009	13.8 WH	74.4 AH	451.	14.1 WH	27.1 AH	162. WH	42.9	4.5	24.8 WH	7.3
F011	12.2	65.7	437.	12.8	23.4	154.	39.	3.9	22.2	6.7
F014	12.	67.	419.	13.	23.	144.	39.	4.1	22.	6.2
F015	13.	69.9	442.	13.6	25.4	154.	41.8	4.3	23.2	7.1
F020	12.7	69.7	448.	13.4	24.4	149.	39.8	4.	23.5	7.
F021	12.	67.	437.	12.4	24.	152.	40.1	4.1	22.7	6.7
F021b	12.	68.	445.	13.	24.	148.	40.	4.	22.	6. WL
F021c	12.	64.3	421.	12.3	23.5	139. WL	37.6	3.93	21. WL	6.49
F022	12.2	66.7	438.	12.8	24.1	148.	39.2	3.75	22.1	6.65
F024	12.6	69.1	445.	12.9	24.4	149.	39.8	4.	23.	6.8
F026	12.9	68.3	456.	13.4	24.8	152.	39.6	4.32	23.4	7.2
F032c	12.3	68.	433.	12.5	24.3	147.	39.6	4.27	23.3	6.88
F032d	12.8	68.9	444.	13.3	24.7	149.	40.1	4.32	23.4	7.12
F032g	13.	66.	443.	13.	24.	149.	41.	4.	22.	7.
F032h	12.	67.	436.	13.	24.	144.	39.	4.	23.	12. AH
F060	13.1	69.3	424.	14.5 WH	25.9 WH	148.	43.2 WH	4.97 AH	24.	7.44
F068	12.	67.6	443.	12.3	23.6	146.	39.	4.06	21.6	6.83
F139	12.4	64.3	447.	13.	24.5	152.	42.4	4.17	23.1	7.01
F154	10.9 WL	67.4	426.	12.	22.4	144.	38.1	3.5 WL	21.5	6.2
F158	12.4	66.9	446.	12.9	23.9	149.	39.4	4.1	22.8	6.7
F169	12.6	68.4	433.	13.2	23.9	149.	39.8	4.17	22.8	6.77
F182	12.4	67.	422.	13.	23.6	143.	37.6	4.31	22.	7.01
F183	11.6	69.	425.	11.6 WL	24.	143.	38.	3.7	20. AL	5.8 WL
F193	12.4	68.	443.	12.9	24.9	146.	40.5	4.	23.2	6.8
F207	13.6 WH	68.5	439.	13.9	24.7	144.	39.2	5.2 AH	24.3	8. WH
F228	12.9	67.4	439.	12.8	24.1	147.	40.3	4.2	22.8	6.9
F248	11.8	66.2	428.	12.3	22.9	142.	38.5	3.9	22.1	6.6
F249	12.1	66.7	447.	14.1 WH	24.4	152.	39.1	4.27	23.1	6.84
F292	13.	70.	430.	13.	24.	149.	40.	<10.	23.	<10.
F292b	12.4	70.9	460.	13.2	25.5	156.	41.6	4.3	23.3	6.89
F293	13.2	71.1	447.	13.3	24.7	152.	41.3	4.17	23.4	6.9
F299	12.2	70.9	456.	12.7	23.9	144.	40.9	3.93	23.3	6.87
F305	14.5 AH	77.7 AH	506. AH	14.8 AH	27.6 AH	168. AH	45.7 AH	4.5	24.8 WH	7.9 WH
F309	12.7	67.7	435.	12.4	23.3	153.	38.7	3.78	23.3	7.49
F311	12.3	69.1	449.	13.3	24.6	148.	39.8	4.04	22.9	6.62
F317	14. WH	70.	470. WH	13.	26. WH	160. WH	43.	4.3	25. WH	7.5
F317b	13.	67.	460.	13.	24.	150.	42.	3.8	23.	6.6
ASSIGNED VALUE *	12.4	68.0	440	13.0	24.0	148	39.8	4.05	23.0	6.84
R-STD DEV *	0.56	1.84	13.1	0.54	0.81	4.7	1.67	0.243	0.86	0.414
ACCEPTABLE LIMITS(+-) *	1.12	3.68	26.2	1.08	1.62	9.4	3.34	0.486	1.72	0.828
WARNING LIMITS(+-) *	1.12- 1.68	3.68- 5.52	26.2- 39.3	1.08- 1.62	1.62- 2.43	9.4- 14.1	3.34- 5.01	.486- .729	1.72- 2.58	.828- 1.242
ACTION LIMITS(<>) *	1.68	5.52	39.3	1.62	2.43	14.1	5.01	0.729	2.58	1.242
N *	39	39	39	39	39	39	39	38	39	38

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F003	125.0	12.5			10			ICP-MS	
F007	97.5	9.7			10			ICP-MS	
F009	361.5	36.1	WHAH WHAHWH WH	BIASED HIGH*	10	2.1	2.3001	ICP-MS	
F011	125.0	12.5			10				
F014	93.0	9.3			10			ICP-MS	
F015	303.5	30.3			10			ICP-MS	
F020	261.5	26.1			10			ICP-MS	
F021	158.0	15.8			10			ICP-MS	
F021b	154.0	15.4		WL	10			ICP-AES	
F021c	42.0	4.2	WL	WL	10	-4.9	-0.2993	ICP-MS	
F022	125.0	12.5			10			ICP-MS	
F024	211.5	21.1			10			ICP-MS	
F026	293.5	29.3			10			ICP-AES	
F032c	188.0	18.8			10			ICP-MS-E3473	
F032d	281.0	28.1			10			ICP-MS-E3474	
F032g	195.0	19.5			10			ICP AES-E3386	
F032h	160.0	16.0		AH	10			ICP-AES-E3497	
F060	302.5	30.2	WHHH WHAH		10			ICP-MS	
F068	122.0	12.2			10			ICP-MS	
F139	238.5	23.8			10			ICP-MS	
F154	46.5	4.6	WL	WL	BIASED LOW*	10	-3.5	-0.3069	ICP-MS
F158	169.5	16.9			10			ICP-MS	
F169	194.0	19.4			10			ICP-MS	
F182	136.0	13.6			10				
F183	63.5	6.3	WL	ALWL	BIASED LOW*	10	-3.7	-0.1189	HR-ICP-MS
F193	206.5	20.6			10			ICP-MS	
F207	277.0	27.7	WH	AH WH		10		ICP-AES	
F228	203.0	20.3			10			ICP-AES	
F248	55.0	5.5			BIASED LOW*	10	-3.2	-0.2607	ICP-MS
F249	219.5	21.9	WH			10		ICP-MS	
F292	179.0	22.3				8		ICP-AES	
F292b	302.5	30.2				10		ICP-MS	
F293	301.5	30.1				10		ICP-MS	
F299	200.5	20.0				10			
F305	382.0	38.2	AHAHAHAHAHAHAH	WHHH	BIASED HIGH	10	14.4	-0.3349	ICP-AES
F309	175.0	17.5				10		ICP-AES	
F311	215.5	21.5				10		ICP-MS	
F317	346.5	34.6	WH WH WHHH WH		BIASED HIGH	10	6.4	0.0921	ICP-AES
F317b	211.0	21.1				10		ICP-MS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 19.9

PARAMETER: 27095 Cobalt

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	7.71	61.2	312.	8.37	26.6	182.	39.3	1.94	15.0	12.0
F007	8.13	64.	308.	8.72	26.8	178.	39.4	1.92	16.5	12.1
F009	9. WH	68.7 WH	325.	9.6	30.7 WH	196.	44.3	2.2 WH	18.	14.5 AH
F011	7.8	65.1	316.	8.6	26.4	189.	39.4	1.9	15.8	12.2
F015	8.18	63.9	309.	9.	27.9	187.	42.4	2.01	16.6	12.8
F020	8.28	65.2	321.	9.08	27.9	183.	41.2	1.97	17.4	12.9
F021	7.9	64.5	329.	8.9	27.4	190.	42.6	2.1	17.1	13.1
F021b	9. WH	65.	322.	11. AH	28.	186.	42.	<5.	18.	14. WH
F021c	7.92	60.6	320.	9.03	28.1	185.	41.1	2.03	16.1	12.7
F022	8.12	63.	315.	8.86	27.5	183.	40.9	2.03	16.8	13.3
F024	8.2	64.	325.	8.8	27.9	187.	41.1	2.	16.8	12.8
F026	8.73	66.6	333.	9.06	28.8	191.	42.9	1.84	17.	13.3
F032c	8.2	62.4	308.	8.85	27.5	180.	40.6	2.01	16.8	12.9
F032d	8.18	63.1	311.	8.83	27.7	181.	41.1	1.99	16.8	12.7
F032g	7.1 AL	59.7	307.	8.5	26.3	186.	39.9	1.8 WL	15.	12.2
F032h	8.	62.	318.	8. WL	26.	186.	39.	2.	16.	12.
F060	8.87 WH	66.3	321.	10.7 AH	30.7 WH	183.	47.3 AH	2.83 AH	18.1	14. WH
F068	8.16	62.5	313.	8.6	26.3	180.	40.3	1.96	15.6	11.6
F139	8.2	68.7 WH	326.	9.53	28.7	193.	43.3	2.04	17.2	13.2
F154	7.68	63.9	327.	8.63	27.8	188.	40.8	1.91	15.8	12.5
F158	8.1	62.6	320.	8.8	27.3	187.	40.4	2.	16.8	12.5
F169	7.98	64.2	305.	8.81	27.3	185.	41.4	1.96	16.4	12.4
F182	7.84	61.9	303.	8.54	26.2	177.	38.5	1.89	15.8	12.4
F183	7.97	63.7	301.	8.36	26.6	180.	39.4	2.	16.1	12.4
F193	8.1	62.4	320.	8.9	28.	181.	41.3	2.	16.7	12.6
F195	7.92	61.7	314.		26.3	176.	40.6	1.95	16.5	12.4
F248	8.2	65.2	328.	8.9	27.6	189.	42.	2.1	17.2	13.1
F249	7.51	58. WL	317.	9.15	25.6	185.	38.5	2.03	15.3	11.7
F292	<10.	66.	313.	10. WH	29.	188.	42.	<10.	18.	12.5
F292b	8.15	66.2	333.	9.03	28.9	193.	43.1	2.07	16.9	12.5
F293	8.46	65.7	323.	9.07	27.9	187.	42.1	1.99	17.2	12.7
F305	7.8	62.5	315.	8.3	26.2	179.	39.6	1.7 AL	15.5	12.1
F309	7.89	64.1	319.	8.59	27.3	194.	41.4	1.84	16.9	12.8
F311	8.32	65.3	329.	9.16	28.4	189.	41.8	2.	17.3	13.1
F317	9.3 AH	66.	350. AH	9.2	30. WH	200. WH	45. WH	2.3 AH	18.	13.
F317b	8.	60.	340. WH	8.7	26.	170. WL	40.	1.9	16.	12.
ASSIGNED VALUE *	8.12	64.0	319	8.85	27.6	186	41.1	2.00	16.8	12.6
R-STD DEV *	0.313	2.26	10.0	0.388	1.18	5.9	1.65	0.092	0.93	0.54
ACCEPTABLE LIMITS(+-) *	0.626	4.52	20.0	0.776	2.36	11.8	3.30	0.184	1.86	1.08
WARNING LIMITS(+-) *	.626-.939	4.52-6.78	20.0-30.0	.776-1.164	2.36-3.54	11.8-17.7	3.30-4.95	.184-.276	1.86-2.79	1.08-1.62
ACTION LIMITS(<>) *	0.939	6.78	30.0	1.164	3.54	17.7	4.95	0.276	2.79	1.62
N *	35	36	36	35	36	36	36	34	36	36

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	63.0	6.3		BIASED LOW*	10	-2.3	-0.5434	ICP-MS
F007	108.0	10.8			10			ICP-MS
F009	333.5	33.3	WHWH WH WH AH	BIASED HIGH*	10	2.0	1.7369	ICP-MS
F011	119.0	11.9			10			
F015	206.5	20.6			10			ICP-MS
F020	231.0	23.1			10			ICP-MS
F021	245.0	24.5			10			ICP-MS
F021b	256.0	28.4	WH AH	WH	9			ICP-AES
F021c	177.5	17.7			10			ICP-MS
F022	188.5	18.8			10			ICP-MS
F024	211.5	21.1			10			ICP-MS
F026	277.5	27.7			10			ICP-AES
F032c	164.5	16.4			10			ICP-MS-E3473
F032d	164.5	16.4			10			ICP-MS-E3474
F032g	59.0	5.9	AL	WL	BIASED LOW*	10	-3.0	-0.2686
F032h	98.0	9.8		WL				ICP-AES-E3497
F060	310.5	31.0	WH AHWH AHAH WH	BIASED HIGH*	10	-0.8	2.1157	ICP-MS
F068	95.0	9.5			10			ICP-MS
F139	302.5	30.2	WH		BIASED HIGH*	10	2.2	0.7913
F154	151.5	15.1			10			ICP-MS
F158	166.5	16.6			10			ICP-MS
F169	142.5	14.2			10			ICP-MS
F182	54.5	5.4			BIASED LOW	10	-5.2	0.2014
F183	98.0	9.8			10			HR-ICP-MS
F193	177.5	17.7			10			ICP-MS
F195	88.0	9.7			9			ICP-MS
F248	262.5	26.2			10			ICP-MS
F249	96.5	9.6	WL		10			ICP-MS
F292	207.5	25.9	WH		8			ICP-MS
F292b	273.5	27.3			10			ICP-MS
F293	247.5	24.7			10			ICP-MS
F305	61.5	6.1		AL	BIASED LOW*	10	-1.9	-0.6599
F309	174.5	17.4			10			ICP-AES
F311	277.0	27.7			10			ICP-MS
F317	330.0	33.0	AH AH WHWHWAH	BIASED HIGH	10	9.0	-0.6438	ICP-AES
F317b	97.0	9.7	WH WL		10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.3

PARAMETER: 29095 Copper

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	14.3	61.4	407.	105.	25.6	151.	38.9	33.6	24.5	10.7
F007	15.1	66.1	420.	114.	26.8	157.	41.0	34.9	25.3	11.7
F009	16.6 WH	70.9 WH	433.	120.	29.8 WH	172.	43.8	37.5	26.7	13. WH
F011	13.9	59.7	406.	114.	25.	164.	38.1	32.4	22.6	10.5
F014	15.	63.	413.	109.	25.	156.	40.	35.	24.	11.
F015	15.1	64.5	425.	114.	27.2	165.	41.8	35.2	24.7	11.5
F020	15.3	64.	403.	113.	26.5	159.	39.7	34.4	25.	11.3
F021	13.9	64.6	416.	113.	24.1	157.	38.6	33.6	22.9	10.6
F021b	15.	67.	438.	117.	28.	167.	42.	36.	26.	12.
F021c	14.9	63.3	428.	116.	27.3	162.	41.	35.7	23.9	11.3
F022	15.4	63.5	443.	119.	26.9	168.	40.6	34.5	24.5	11.9
F024	14.8	63.5	420.	111.	26.4	158.	40.1	34.1	24.5	11.2
F026	15.6	66.9	426.	116.	27.3	161.	42.4	36.1	25.9	12.
F032c	15.	63.5	407.	106.	26.7	158.	40.5	34.3	24.3	11.4
F032d	14.6	61.8	410.	107.	25.9	153.	39.4	33.6	23.9	11.
F032g	16.	68.	437.	122.	29.	171.	44.	38. WH	27.	12.
F032h	14.6	61.6	397.	107.	25.7	148.	39.	33.2	25.	11.
F060	14.7	64.1	389.	110.	29.1	150.	43.	35.1	24.9	11.6
F068	14.3	61.6	403.	108.	25.	150.	39.	33.	23.	10.3 WL
F139	14.8	66.7	417.	115.	26.9	158.	40.9	35.	24.1	11.5
F154	13.5	61.4	414.	103.	25.	154.	37.6	31.4 WL	23.5	10.4
F158	15.7	66.2	438.	118.	27.9	167.	42.6	36.3	26.2	11.8
F169	15.4	65.7	405.	112.	26.5	156.	40.2	34.5	23.9	11.5
F182	14.5	63.1	399.	109.	25.5	151.	37.9	33.5	23.1	11.2
F183	13.4 WL	58. WL	391.	96. AL	25.	154.	36. WL	29. AL	20. AL	10.3 WL
F193	15.	62.3	422.	107.	27.3	153.	39.7	34.1	23.9	11.3
F195	14.6	63.5	423.		25.9	156.	40.2	34.1	24.	11.
F207	13.7	61.5	202. AL	108.	26.5	152.	36.4 WL	32.8	24.7	11.
F228	15.8	64.0	408.	110.	27.4	159.	42.0	35.0	25.3	11.5
F248	15.2	65.	423.	112.	26.8	160.	41.7	35.5	25.4	11.9
F249	14.9	64.2	419.	113.	26.9	161.	40.7	34.9	25.4	11.4
F292b	14.8	66.5	428.	112.	27.6	162.	41.8	35.6	25.0	11.4
F293	15.9	66.6	425.	113.	26.8	161.	41.7	35.	25.3	11.7
F299	15.	66.	438.	108.	26.	152.	42.	34.	25.	11.
F305	15.9	69.3	448.	119.	27.9	168.	42.6	34.7	25.1	11.7
F309	14.8	66.8	424.	114.	26.5	167.	40.9	35.2	25.2	11.4
F311	15.2	65.9	430.	115.	27.6	162.	41.1	35.7	25.7	11.7
F317	17. WH	68.	460. WH	120.	30. WH	170.	45.	36.	28. WH	12.
F317b	17. WH	68.	460. WH	120.	29.	170.	45.	38. WH	28. WH	12.
ASSIGNED VALUE *	15.0	64.2	421	113	26.8	159	40.9	34.9	25.0	11.4
R-STD DEV *	0.75	2.67	17.6	5.4	1.35	7.4	2.06	1.32	1.22	0.53
ACCEPTABLE LIMITS(+-) *	1.50	5.34	35.2	10.8	2.70	14.8	4.12	2.64	2.44	1.06
WARNING LIMITS(+-) *	1.50- 2.25	5.34- 8.01	35.2- 52.8	10.8- 16.2	2.70- 4.05	14.8- 22.2	4.12- 6.18	2.64- 3.96	2.44- 3.66	1.06- 1.59
ACTION LIMITS(<>) *	2.25	8.01	52.8	16.2	4.05	22.2	6.18	3.96	3.66	1.59
N *	39	39	39	38	39	39	39	39	39	39

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	74.0	7.4		BIASED LOW*	10	-3.2	-0.8681	ICP-MS
F007	230.5	23.0			10			ICP-MS
F009	368.0	36.8	WHWH	WH	WH	BIASED HIGH*	10	ICP-MS
F011	87.0	8.7			BIASED LOW*	10	-2.4	-0.1721
F014	131.0	13.1				10		ICP-MS
F015	247.5	24.7				10		ICP-MS
F020	174.5	17.4				10		ICP-MS
F021	102.5	10.2				10		ICP-MS
F021b	319.5	31.9			BIASED HIGH*	10	4.4	-0.2079
F021c	220.0	22.0				10		ICP-AES
F022	255.0	25.5				10		ICP-MS
F024	151.0	15.1				10		ICP-MS
F026	307.5	30.7				10		ICP-AES
F032c	151.5	15.1				10		ICP-MS-E3473
F032d	93.0	9.3				10		ICP-MS-E3474
F032g	364.0	36.4		WH		BIASED HIGH*	10	ICP AES-E3386
F032h	83.0	8.3				BIASED LOW	10	ICP-AES-E3497
F060	193.0	19.3				10		ICP-MS
F068	54.0	5.4		WL		BIASED LOW*	10	ICP-MS
F139	211.5	21.1				10	-4.0	-0.6184
F154	51.0	5.1		WL		BIASED LOW*	10	ICP-MS
F158	326.0	32.6				BIASED HIGH*	10	ICP-MS
F169	172.0	17.2					10	ICP-MS
F182	76.5	7.6				BIASED LOW	10	ICP-MS
F183	25.0	2.5	WLWL AL	WLALALWL		BIASED LOW	10	HR-ICP-MS
F193	141.5	14.1					10	ICP-MS
F195	120.0	13.3					9	ICP-MS
F207	74.0	7.4	AL	WL		BIASED LOW	10	ICP-AES
F228	230.5	23.0					10	ICP-AES
F248	248.5	24.8					10	ICP-MS
F249	212.5	21.2					10	ICP-MS
F292b	246.0	24.6					10	ICP-MS
F293	260.0	26.0					10	ICP-MS
F299	181.5	18.1					10	ICP-MS
F305	316.0	31.6				BIASED HIGH	10	ICP-AES
F309	236.0	23.6					10	ICP-AES
F311	282.5	28.2					10	ICP-MS
F317	371.0	37.1	WH WH WH	WH		BIASED HIGH	10	ICP-AES
F317b	372.5	37.2	WH WH	WHWH		BIASED HIGH	10	ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 19.9

PARAMETER: 31095 Gallium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	5.28	8.13	12.3	6.53	8.91	0.00997	0.0280	2.95	0.0584	0.124
F022	5.34	8.25	12.8	6.82	9.09	<0.05	<0.05	2.99	0.113	0.18
F024	5.6	8.1	12.3	6.6	8.6	<0.1	<0.1	3.	<0.1	0.1
F139	5.51	8.96	13.1	7.26	9.32	0.026	0.0373	3.02	0.0675	0.127
F183	5.6	8.4	12.9	6.88	9.23	<0.05	<0.05	2.93	0.06	0.114
ASSIGNED VALUE *	5.51	8.25	12.8	6.82	9.09	0.01798	0.0326	2.99	0.0638	0.124
R-STD DEV *	0.169	0.348	0.41	0.326	0.324	-	-	0.042	0.02616	0.0306
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	5	5	5	5	5	2	2	5	4	5

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	15.5	1.5			10			ICP-MS
F022	26.0	3.2			8			ICP-MS
F024	15.0	2.1			7			ICP-MS
F139	39.0	3.9			10			ICP-MS
F183	25.5	3.1			8			HR-ICP-MS

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 2.8

PARAMETER: 26095 Iron

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	20.6	77.7	355.	196.	29.8	195.	62.3 AH	116.	29.6	16.1
F007	21.7	81.5	376.	215.	31.6	208.	42.8	120.	31.3	17.6
F009	25.	92.	383.	219.	41. AH	190.	36.	121.	32.	<20.
F011	20.	76.	378.	211.	30.	204.	41.	119.	29.	16.
F014	23.	80.	391.	220.	32.	205.	44.	124.	32.	18.
F015	23.	85.	419.	233.	34.	225. WH	47.	128.	32.	18.
F020	25.	89.	401.	211.	36.	206.	48.	127.	34.	19.
F021b	24.5	79.6	382.	208.	31.8	198.	42.9	116.	32.1	<20.
F021c	18.9	70.9	340.	172. AL	28.5	172. WL	38.8	112.	31.1	14.2
F022	19.	78.	383.	212.	30.	201.	41.	117.	29.	15.
F024	21.4	80.1	394.	212.	31.3	213.	42.	118.	30.1	16.8
F026	21.8	81.5	393.	211.	32.2	203.	44.3	122.	32.3	17.4
F032c	<34.	80.3	405.	211.	30.6	211.	43.3	117.	38.4 WH	<34.
F032d	<26.	81.6	397.	210.	32.5	208.	44.4	119.	38.4 WH	<26.
F032g	23.	73.	379.	206.	29.	203.	41.	119.	28.	13. WL
F032h	24.	77.	364.	193.	33.	184.	43.	111.	36.	19.
F060	22.4	84.3	393.	220.	31.2	203.	42.1	115.	31.6	16.6
F060b	<20.	51.7 AL	370.	193.	<20. AL	217.	30.6 AL	99.3 WL	<20. AL	<20.
F068	21.	79.	380.	198.	30.3	200.	42.	110.	29.	16.
F139	21.7	73.4	381.	210.	30.9	202.	43.9	121.	29.9	17.
F154	<100.	<100.	360.	200.	<100.	190.	<100.	120.	<100.	<100.
F158	<50.	76.7	378.	200.	<50.	197.	<50.	111.	<50.	<50.
F169	20.8	79.2	375.	206.	31.5	195.	41.9	114.	34.2	16.1
F182	19.8	71.2	292. AL	173. AL	25.7 WL	147. AL	38.7	104.	24.7	14.9
F183	21.	77.	371.	202.	29.1	199.	39.9	113.	28.6	15.3
F193	21.1	79.2	397.	206.	31.2	201.	42.8	116.	30.5	17.
F207	20.	74.	366.	198.	29.	186.	41.	112.	29.	16.
F248	24.	82.	389.	211.	33.	200.	45.	122.	36.	24. AH
F249	21.	78.	376.	205.	31.	200.	42.	114.	30.	17.
F292	<100.	<100.	390.	220.	<100.	200.	<100.	120.	<100.	<100.
F293	<30.	88.	419.	222.	35.	215.	48.	127.	33.	<30.
F299	25.	78.	380.	206.	29.	202.	40.	130.	28.	16.
F305	<35.	92.6	423.	218.	47.4 AH	209.	50.5 WH	105.	<35.	<35.
F309	26.7 WH	87.8	382.	213.	34.3	216.	44.8	126.	38.	23.1 AH
F311	37.7 AH	98.8 WH	425.	241. WH	44. AH	214.	53.7 WH	142. WH	53.7 AH	31.6 AH
F317	<50.	110. AH	430. WH	240. WH	<50.	240. AH	68. AH	130.	<50.	<50.
F317b	<44.	83.	440. WH	220.	<44.	210.	46.	130.	<44.	<44.
ASSIGNED VALUE *	21.7	79.6	382	211	31.2	202	42.8	119.0	31.3	16.4
R-STD DEV *	2.33	6.49	21.6	11.3	2.57	10.3	3.71	7.72	3.44	1.87
ACCEPTABLE LIMITS(+-) *	4.66	12.98	43.2	22.6	5.14	20.6	7.42	15.44	6.88	3.74
WARNING LIMITS(+-) *	4.66- 6.99	12.98- 19.47	43.2- 64.8	22.6- 33.9	5.14- 7.71	20.6- 30.9	7.42- 11.13	15.44- 23.166	88- 10.32	3.74- 5.61
ACTION LIMITS(<>) *	6.99	19.47	64.8	33.9	7.71	30.9	11.13	23.16	10.32	5.61
N *	27	35	37	37	31	37	34	37	30	25

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F003	106.0	10.6		AH	10			ICP-MS	
F007	190.5	19.0			10			ICP-MS	
F009	185.5	20.6		AH	9			ICP-MS	
F011	119.0	11.9			10				
F014	225.0	22.5			10			ICP-AES	
F015	273.0	27.3		WH	BIASED HIGH	10	10.4	-1.1692	ICP-AES
F020	264.5	26.4			10			ICP-MS	
F021b	155.5	17.2			9			ICP-AES	
F021c	37.5	3.7	AL WL	BIASED LOW	10	-12.9	0.7646	ICP-MS	
F022	120.5	12.0			10			ICP-MS	
F024	186.5	18.6			10			ICP-MS	
F026	214.5	21.4			10			ICP-AES	
F032c	179.0	22.3		WH	8			ICP-MS-E3473	
F032d	191.0	23.8		WH	8			ICP-MS-E3474	
F032g	106.5	10.6		WL	10			ICP AES-E3386	
F032h	136.5	13.6			10			ICP-AES-E3497	
F060	190.5	19.0			10			ICP-AES	
F060b	48.5	8.0	AL AL ALWLAL		6			ICP-MS	
F068	100.5	10.0			10			ICP-MS	
F139	155.0	15.5			10			ICP-MS	
F154	41.0	10.2			4			ICP-MS	
F158	43.5	8.7			5			ICP-MS	
F169	126.5	12.6			10			ICP-MS	
F182	20.0	2.0	ALALWLAL	BIASED LOW	10	-24.3	4.9577		
F183	76.5	7.6		BIASED LOW*	10	-2.5	-1.3130	HR-ICP-MS	
F193	159.0	15.9			10			ICP-MS	
F207	61.0	6.1			10	-4.8	-1.2397		
F248	228.5	22.8		AH	10			ICP-MS	
F249	119.5	11.9			10			ICP-AES	
F292	91.0	22.7			4			ICP-AES	
F293	239.5	29.9			8	8.6	-0.8872	ICP-AES	
F299	139.5	13.9			10				
F305	188.0	26.8	AH WH		7			ICP-AES	
F309	264.5	26.4	WH AH		10			ICP-AES	
F311	319.0	31.9	AHWH WHAH WHWAHAH	BIASED HIGH	10	6.6	12.8309	ICP-MS	
F317	213.0	35.5	AHWHWH AHAH	BIASED HIGH	6	7.5	17.3621	ICP-AES	
F317b	185.5	30.9	WH	BIASED HIGH	6	15.3	-10.9607	ICP-MS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 17.2

PARAMETER: 82095 Lead

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	10.1	61.1	494.	22.8	26.5	243.	35.4	8.51	15.2	14.0
F007	10.4	61.3	516.	24.0	26.9	241.	35.9	8.59	16.8	14.6
F009	10.8	64.6	508.	24.8	28.5	249.	37.8	9.	17.2	15.4
F011	10.4	61.7	526.	24.	27.	252.	36.4	8.6	16.7	14.7
F014	10.	62.	530.	24.	27.	247.	37.	8.8	17.	15.
F015	11.5	67.9 WH	529.	26.5	30.5 WH	260.	39.9	9.64	16.9	16.6 WH
F020	10.5	60.9	488.	24.1	27.2	235.	36.5	8.56	16.8	14.5
F021	10.	58.9	507.	23.	26.7	244.	35.6	8.5	16.6	14.5
F021b	<20.	66.	511.	30. AH	24. WL	246.	36.	<20.	21. AH	<20.
F021c	9.81	60.9	501.	23.2	25.4	232.	34.1	8.25	15.7	13.7
F022	10.3	61.7	503.	24.2	27.1	243.	35.7	8.79	16.7	15.2
F024	10.5	61.7	526.	24.1	27.2	252.	35.9	8.8	17.	14.9
F026	11.5	65.4	527.	26.	27.8	256.	38.6	9.15	16.6	15.1
F032c	10.3	60.9	497.	23.4	26.6	236.	36.	8.72	16.7	14.5
F032d	10.3	60.6	493.	23.9	27.	241.	35.9	8.73	16.7	14.8
F032g	14. AH	64.	518.	28. WH	29.	247.	39.	<11.	20. AH	16.
F032h	10.	65.	534.	24.	28.	252.	38.	7. AL	17.	14.
F060	10.8	64.4	547.	26.3	29.1	242.	40.6 WH	9.49	17.1	15.7
F068	10.	60.3	503.	23.3	26.6	256.	35.6	8.6	16.	14.
F139	10.2	62.1	498.	23.6	27.	247.	35.6	8.74	16.8	14.5
F154	9.35	57.2	493.	22.7	25.3	237.	34.5	8.04	15.7	13.8
F158	10.8	63.7	526.	24.9	28.5	254.	37.7	9.	17.2	15.2
F169	10.5	61.6	518.	23.9	27.0	249.	35.6	8.68	15.9	14.8
F182	10.1	61.7	515.	23.7	26.0	245.	34.2	8.51	15.9	14.7
F183	10.2	65.	506.	23.	27.	247.	35.	8.1	16.	14.
F193	10.3	61.5	534.	23.7	27.	257.	35.5	8.4	17.	14.6
F195	10.4	61.4	514.		27.3	244.	36.3	8.67	16.4	14.7
F207	11.	61.7	516.	23.3	21.7 AL	235.	34.8	9.2	18.2	16.
F228	10.2	60.6	505.	22.8	26.5	250.	36.7	8.4	15.4	13.8
F248	10.8	58.8	532.	24.2	25.8	249.	32.6	9.2	17.7	15.4
F249	9.64	57.	522.	22.3	25.2	258.	32.9	8.25	15.2	13.3
F292	11.	66.	517.	25.	28.	258.	38.	11. AH	17.	15.
F292b	10.4	65.0	538.	24.6	28.1	253.	38.1	8.93	16.7	14.7
F293	11.1	65.7	533.	24.8	28.2	256.	38.4	9.19	17.5	15.2
F299	7.8 AL	18. AL	197. AL	15. AL	8.6 AL	45. AL	7.7 AL	7.1 AL	17.	11. AL
F305	11.1	62.9	511.	23.	26.2	241.	36.3	9.1	15.8	14.9
F309	12.9 AH	64.	508.	27.6 WH	29.2	256.	39.	11.7 AH	18.7 WH	17.9 AH
F311	11.1	67.	548.	25.9	29.2	262.	38.5	9.29	18.	15.8
F317	12. WH	65.	550.	25.	30. WH	270. WH	41. WH	9.9 WH	17.	16.
F317b	11.	65.	560. WH	26.	28.	250.	38.	9.3	18.	15.
ASSIGNED VALUE *	10.40	61.7	516	24.0	27.0	249	36.3	8.74	16.8	14.8
R-STD DEV *	0.621	2.75	18.6	1.39	1.45	8.9	1.97	0.526	0.89	0.82
ACCEPTABLE LIMITS(+-) *	1.242	5.50	37.2	2.78	2.90	17.8	3.94	1.052	1.78	1.64
WARNING LIMITS(+-) *	1.242- 1.8635	50.50- 8.25	37.2- 55.8	2.78- 4.17	2.90- 4.35	17.8- 26.7	3.94- 5.91	1.052- 1.5781	7.78- 2.67	1.64- 2.46
ACTION LIMITS(<>) *	1.863	8.25	55.8	4.17	4.35	26.7	5.91	1.578	2.67	2.46
N *	39	40	40	39	40	40	40	38	40	39

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	81.5	8.1		BIASED LOW*	10	-4.0	0.5041	ICP-MS
F007	160.0	16.0			10			ICP-MS
F009	269.5	26.9			10			ICP-MS
F011	202.0	20.2			10			
F014	216.0	21.6			10			ICP-MS
F015	352.5	35.2	WH WH WH	BIASED HIGH*	10	2.5	2.0568	ICP-MS
F020	153.0	15.3			10			ICP-MS
F021	104.5	10.4			10			ICP-MS
F021b	171.5	24.5	AH WL	AH	7			ICP-AES
F021c	56.0	5.6		BIASED LOW*	10	-3.4	-0.7220	ICP-MS
F022	184.0	18.4			10			ICP-MS
F024	231.0	23.1			10			ICP-MS
F026	295.0	29.5			10			ICP-AES
F032c	126.0	12.6			10			ICP-MS-E3473
F032d	142.5	14.2			10			ICP-MS-E3474
F032g	292.0	32.4	AH WH	AH	9	-0.4	2.6180	ICP AES-E3386
F032h	213.0	21.3		AL	10			ICP-AES-E3497
F060	308.5	30.8	WH		10			ICP-MS
F068	121.5	12.1			10			ICP-MS
F139	156.5	15.6			10			ICP-MS
F154	40.5	4.0		BIASED LOW*	10	-4.4	-0.5126	ICP-MS
F158	284.0	28.4			10			ICP-MS
F169	177.5	17.7			10			ICP-MS
F182	125.5	12.5			10			
F183	129.5	12.9			10			HR-ICP-MS
F193	191.5	19.1			10			ICP-MS
F195	157.0	17.4			9			ICP-MS
F207	196.0	19.6	AL		10			GFAAS
F228	110.0	11.0			10			ICP-AES
F248	214.0	21.4			10			ICP-MS
F249	84.5	8.4		BIASED LOW*	10	2.1	-1.9765	ICP-MS
F292	303.5	30.3		AH	10			ICP-AES
F292b	263.0	26.3			10			ICP-MS
F293	318.0	31.8		BIASED HIGH*	10	3.2	0.4603	ICP-MS
F299	36.0	3.6	AL	BIASED LOW	10	-65.6	0.2988	
F305	174.5	17.4			10			ICP-AES
F309	337.5	33.7	AH WH AHWHAH	BIASED HIGH*	10	-1.5	3.6028	ICP-AES
F311	354.0	35.4		BIASED HIGH	10	6.1	0.2801	ICP-MS
F317	355.5	35.5	WH WH WH WH WH	BIASED HIGH	10	6.8	0.6293	ICP-AES
F317b	312.5	31.2	WH		10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 20.2

PARAMETER: 03095 Lithium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	4.75	33.4	21.6	9.30	23.4	54.3	37.5	4.13	1.71	3.62
F007	4.98	33.1	22.0	9.74	23.1	52.9	37.0	3.97	1.89	3.84
F011	4.5	30.4	21.	9.	21.6 WL	51.3	35.6	3.7	1.8	3.5
F015	5.14	34.6	24.	9.97	24.9	57.9	39.6	4.31	1.9	3.93
F020	5.1	35.6	24.6	10.	24.7	55.3	39.	4.3	2.	3.8
F022	4.88	34.3	22.9	10.	24.4	56.9	38.7	4.34	2.29	4.16
F024	5.3	35.	22.4	9.8	23.8	54.8	36.8	4.1	1.9	4.
F032h	8. AH	38.	26.	12. AH	28. AH	57.	41.	6. AH	<5.	6. AH
F060	5.34	39.	25.2	11.8 AH	25.1	54.	41.6	4.96	2.17	4.18
F139	4.93	36.8	22.9	10.1	23.9	54.5	38.3	4.28	1.9	3.73
F154	6.1 WH	32.6	22.4	9.6	23.5	53.5	37.	4.6	2.7 AH	4.
F183	4.36	36.1	23.7	9.17	24.4	58.2	40.1	3.5	1.23 WL	3.22 WL
F249	4.97	31.6	21.	9.29	22.3	53.2	35.7	4.15	1.8	3.57
F311	4.83	35.4	23.8	10.	24.6	57.3	38.9	4.33	1.92	3.91
ASSIGNED VALUE *	4.97	34.8	22.9	9.77	23.9	54.6	38.5	4.28	1.90	3.84
R-STD DEV *	0.429	2.57	1.66	0.574	1.16	2.32	2.07	0.410	0.238	0.308
ACCEPTABLE LIMITS(+-) *	0.858	5.14	3.32	1.148	2.32	4.64	4.14	0.820	0.476	0.616
WARNING LIMITS(+-) *	.858-	1.287	5.14-	7.71	3.32-	4.98	1.148-	1.7222	32-	3.48
ACTION LIMITS(<>) *	1.287	7.71	4.98		1.722	3.48	6.96	6.21	1.230	0.714
N *	14	14	14	14	14	14	14	14	13	14

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	42.0	4.2			10			ICP-MS
F007	46.5	4.6			10			ICP-MS
F011	16.0	1.6	WL	BIASED LOW	10	-7.4	-0.2741	
F015	97.0	9.7			10			ICP-MS
F020	95.0	9.5			10			ICP-MS
F022	90.0	9.0			10			ICP-MS
F024	70.0	7.0			10			ICP-MS
F032h	121.0	13.4	AH AHAH AH AH	BIASED HIGH*	9	0.9	2.4620	ICP-AES-E3497
F060	121.0	12.1	AH	BIASED HIGH*	10	2.0	0.9222	ICP-MS
F139	77.5	7.7			10			ICP-MS
F154	75.5	7.5	WH AH		10			ICP-MS
F183	60.5	6.0		WLWL	10			HR-ICP-MS
F249	33.0	3.3			BIASED LOW	10	-5.1	-0.2320
F311	91.0	9.1			10			ICP-MS
								ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 7.4

PARAMETER: 25095 Manganese

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	10.3	73.7	273.	27.4	24.5	132.	41.1	9.79	20.3	13.5
F007	10.7	76.1	279.	28.6	24.8	133.	42.2	9.92	20.5	14.3
F009	11.9	82.6 WH	289.	30.6	28.2 WH	145.	45.5	10.8 WH	21.6	16. WH
F011	10.6	72.5	287.	28.	24.5	143.	41.1	9.7	19.3	13.5
F014	11.	76.	282.	28.	25.	134.	42.	10.	20.	13.
F015	10.8	75.2	285.	28.4	25.2	142.	42.4	9.89	19.7	14.1
F020	11.	77.1	294.	29.1	25.2	139.	42.5	9.9	20.4	14.1
F021b	11.	77.	290.	29.	26.	139.	43.	10.	20.	14.
F021c	10.4	71.4	272.	27.0	24.8	129.	40.0	9.77	18.4	13.4
F022	10.9	75.4	284.	29.	25.8	137.	42.2	10.1	20.2	14.7
F024	10.9	74.9	284.	27.8	24.8	137.	41.4	9.7	19.6	13.9
F026	11.3	78.9	294.	29.9	26.6	140.	44.2	10.2	20.9	14.8
F032c	10.7	75.3	280.	28.6	25.3	134.	42.2	10.1	20.7	14.1
F032d	10.9	74.9	268.	28.	25.1	133.	42.2	9.78	19.9	14.1
F032g	10.4	72.	271.	27.4	24.2	137.	42.5	9.9	18.7	13.4
F032h	9.9	70.1	258. WL	26.3	23.6	130.	39.3	9.2 WL	19.2	12.6
F060	10.9	78.	293.	29.	25.6	141.	43.1	9.9	20.2	14.3
F068	10.3	76.3	280.	27.3	24.3	130.	41.	9.66	19.	13.3
F139	11.5	87.6 AH	312.	31.4 WH	27.6 WH	148.	45.9 WH	10.6	21.8	15.2
F154	9.96	73.	267.	25.9 WL	23.5	129.	39.6	9.17 WL	18.3	12.7
F158	11.8	77.6	300.	29.3	25.7	143.	43.	10.2	20.7	14.2
F169	11.0	76.0	280.	28.3	26.1	137.	42.0	10.2	19.8	14.6
F182	10.2	74.2	278.	27.4	24.1	132.	39.6	9.49	18.8	13.6
F183	10.2	72.6	270.	26.3	24.	129.	40.2	8.97 WL	18.5	13.9
F193	10.7	75.2	296.	28.1	25.3	138.	42.4	9.8	19.9	13.8
F248	11.	77.9	289.	28.5	25.3	139.	43.	10.3	20.6	14.4
F249	10.7	75.3	279.	28.3	25.3	135.	42.1	9.77	19.7	13.9
F292	<10.	79.	288.	29.	25.	142.	42.	<10.	19.	13.
F292b	10.9	78.3	296.	28.4	29.7 AH	141.	43.6	10.1	20.3	13.9
F293	11.3	76.9	287.	28.9	25.7	139.	42.8	10.2	20.8	14.4
F299	10.8	79.	300.	28.	25.	133.	43.	9.8	20.	14.
F305	12.2 WH	86.4 AH	324. WH	31.6 WH	28.2 WH	153. WH	47.5 AH	10.5	21.2	15.5
F309	11.3	80.1	286.	28.7	25.9	147.	43.4	10.4	21.	15.
F311	11.3	81.7	304.	30.3	27.1	145.	44.6	10.5	21.4	15.2
F317	12.	79.	310.	30.	27.	150.	46. WH	10.	22.	15.
F317b	12.	75.	310.	29.	25.	130.	42.	10.	21.	14.
ASSIGNED VALUE *	10.90	76.0	286	28.4	25.2	138	42.2	9.92	20.1	14.0
R-STD DEV *	0.580	3.16	13.8	1.17	1.15	6.6	1.62	0.343	1.05	0.77
ACCEPTABLE LIMITS(+-) *	1.160	6.32	27.6	2.34	2.30	13.2	3.24	0.686	2.10	1.54
WARNING LIMITS(+-) *	1.160- 1.740	6.32- 9.48	27.6- 41.4	2.34- 3.51	2.30- 3.45	13.2- 19.8	3.24- 4.86	.686- 1.029	2.10- 3.15	1.54- 2.31
ACTION LIMITS(<>) *	1.740	9.48	41.4	3.51	3.45	19.8	4.86	1.029	3.15	2.31
N *	35	36	36	36	36	36	36	35	36	36

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	90.0	9.0			10			ICP-MS
F007	163.5	16.3			10			ICP-MS
F009	326.5	32.6	WH WH WH WH	BIASED HIGH*	10	0.7	2.4333	ICP-MS
F011	112.5	11.2			10			
F014	144.5	14.4			10			ICP-MS
F015	172.0	17.2			10			ICP-MS
F020	221.5	22.1			10			ICP-MS
F021b	224.5	22.4			10			ICP-AES
F021c	52.5	5.2		BIASED LOW	10	-5.5	-0.0395	ICP-MS
F022	207.0	20.7			10			ICP-MS
F024	117.5	11.7			10			ICP-MS
F026	284.5	28.4		BIASED HIGH*	10	2.1	0.4606	ICP-AES
F032c	179.0	17.9			10			ICP-MS-E3473
F032d	129.5	12.9			10			ICP-MS-E3474
F032g	92.0	9.2			10			ICP AES-E3386
F032h	25.5	2.5	WL WL	BIASED LOW	10	-9.7	0.9091	ICP-AES-E3497
F060	231.5	23.1			10			ICP-AES
F068	76.0	7.6		BIASED LOW*	10	-2.7	-0.3207	ICP-MS
F139	339.5	33.9	AH WWHW WH	BIASED HIGH	10	8.6	0.3262	ICP-MS
F154	21.5	2.1	WL WL	BIASED LOW	10	-6.8	0.0036	ICP-MS
F158	272.0	27.2			10			ICP-MS
F169	193.5	19.3			10			ICP-MS
F182	59.5	5.9		BIASED LOW*	10	-3.1	-0.4359	
F183	42.5	4.2	WL	BIASED LOW	10	-6.0	0.0449	HR-ICP-MS
F193	163.5	16.3			10			ICP-MS
F248	238.5	23.8			10			ICP-MS
F249	133.0	13.3			10			ICP-AES
F292	139.5	17.4			8			ICP-AES
F292b	241.5	24.1	AH		10			ICP-MS
F293	242.0	24.2			10			ICP-AES
F299	182.0	18.2			10			
F305	348.0	34.8	WAHWHWHWHWAH	BIASED HIGH	10	12.9	-0.5982	ICP-AES
F309	281.5	28.1			10			ICP-AES
F311	320.0	32.0		BIASED HIGH	10	5.8	0.1098	ICP-MS
F317	318.0	31.8	WH	BIASED HIGH	10	8.2	-0.4384	ICP-AES
F317b	202.0	20.2			10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.4

PARAMETER: 42095 Molybdenum

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	7.34	71.1	294.	29.9	26.9	116.	42.6	12.2	21.3 WL	6.45
F007	7.68	72.9	296.	30.6	27.2	115.	42.8	12.2	23.2	6.83
F009	7.6	72.8	304.	32.6	28.1	119.	44.	12.7	24.	6.8
F011	7.6	72.	332. WH	31.7	27.8	122.	44.6	12.9	24.	7.
F015	8.	75.1	314.	33.2	29.4	128.	46.2	12.9	24.5	7.21
F020	7.64	71.9	303.	31.3	27.6	118.	43.6	12.4	23.6	6.68
F021	7.4	71.6	295.	31.6	27.	117.	43.5	12.9	23.5	6.6
F021b	7.	71.	300.	32.	27.	117.	43.	12.	22.	6. WL
F021c	7.41	67.9	287.	30.2	27.2	113.	42.4	12.3	21.8	6.38
F022	7.01	70.	286.	31.7	27.9	112.	45.4	14.5 WH	24.6	13.8 AH
F024	7.6	72.	300.	31.	27.7	119.	43.5	12.4	23.3	6.8
F026	8.04	76.2	311.	32.2	29.2	124.	46.5	13.1	24.9	7.16
F032c	7.71	72.5	301.	31.6	28.2	120.	43.9	12.6	23.4	6.91
F032d	7.75	72.2	296.	30.9	27.6	118.	43.9	12.5	23.3	6.68
F032g	7.8	73.5	305.	32.7	28.4	119.	45.1	13.1	23.9	6.9
F032h	8.	71.	294.	31.	27.	117.	43.	12.	23.	7.
F060	7.08	68.2	302.	33.4	28.5	109.	45.3	14.3 WH	26. WH	6.86
F068	7.8	73.3	300.	31.	27.3	114.	44.	12.	23.	6.9
F139	7.76	78.7	318.	33.8	29.1	125.	45.9	13.2	24.4	7.04
F154	7.41	70.8	295.	30.	27.3	113.	42.7	11.6	22.1	6.49
F158	<10.	71.2	297.	30.2	27.2	119.	43.2	11.9	23.2	<10.
F183	8.09	77.4	332. WH	34.2	29.8	129.	47.5	13.3	25.1	7.18
F193	7.6	72.8	303.	33.2	28.1	124.	45.1	13.1	24.9	6.9
F248	7.1	70.7	306.	31.	26.7	114.	42.9	12.7	22.4	6.8
F249	7.93	76.5	301.	33.6	28.9	121.	46.6	13.3	24.4	6.97
F292	<10.	73.	289.	32.	27.	118.	44.	15. AH	23.	<10.
F292b	8.13	78.1	324.	34.	30.1 WH	128.	47.8 WH	13.1	24.2	7.14
F293	8.16	77.2	306.	32.1	28.5	122.	46.3	13.1	24.3	7.04
F299	7.54	76.7	288.	31.	27.7	117.	46.	12.6	23.4	6.63
F305	8.8 WH	79.9 WH	329. WH	33.8	29.8	131. WH	47.5	12.9	23.9	6.9
F309	8.18	74.3	298.	30.9	27.4	125.	43.7	12.	23.7	6.46
F311	8.03	77.1	320.	33.9	29.5	126.	47.	13.6	24.8	7.27
F317	7.2	74.	320.	32.	30.	130.	49. WH	14.	26. WH	7.4
F317b	8.	72.	310.	32.	28.	120.	44.	13.	24.	6.7
ASSIGNED VALUE *	7.70	72.8	302	31.8	27.8	119	44.0	12.9	23.8	6.90
R-STD DEV *	0.402	3.10	12.5	1.42	1.09	5.9	1.87	0.68	1.05	0.301
ACCEPTABLE LIMITS(+-) *	0.804	6.20	25.0	2.84	2.18	11.8	3.74	1.36	2.10	0.602
WARNING LIMITS(+-) *	.804- 1.206	6.20- 9.30	25.0- 37.5	2.84- 4.26	2.18- 3.27	11.8- 17.7	3.74- 5.61	1.36- 2.04	2.10- 3.15	.602- .903
ACTION LIMITS(<>) *	1.206	9.30	37.5	4.26	3.27	17.7	5.61	2.04	3.15	0.903
N *	32	34	34	34	34	34	34	34	34	32

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING		BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	44.0	4.4		WL	BIASED LOW*	10	-2.4	-0.5541	ICP-MS
F007	99.5	9.9				10			ICP-MS
F009	178.0	17.8				10			ICP-MS
F011	197.0	19.7	WH			10			
F015	262.5	26.2				10			ICP-MS
F020	132.0	13.2				10			ICP-MS
F021	103.0	10.3				10			ICP-MS
F021b	71.0	7.1		WL	BIASED LOW*	10	-0.5	-0.8947	ICP-AES
F021c	40.5	4.0			BIASED LOW	10	-5.0	-0.0971	ICP-MS
F022	158.5	15.8		WH AH		10			ICP-MS
F024	126.0	12.6				10			ICP-MS
F026	265.0	26.5				10			ICP-AES
F032c	167.0	16.7				10			ICP-MS-E3473
F032d	122.0	12.2				10			ICP-MS-E3474
F032g	210.5	21.0				10			ICP AES-E3386
F032h	101.5	10.1				10			ICP-AES-E3497
F060	179.0	17.9		WHHW		10			ICP-MS
F068	127.0	12.7				10			ICP-MS
F139	266.0	26.6				10			ICP-MS
F154	50.0	5.0			BIASED LOW*	10	-2.3	-0.7323	ICP-MS
F158	68.5	8.5				8			ICP-MS
F183	310.0	31.0	WH		BIASED HIGH	10	10.1	-1.0626	HR-ICP-MS
F193	214.5	21.4				10			ICP-MS
F248	85.5	8.5				10			ICP-MS
F249	246.5	24.6				10			ICP-MS
F292	119.5	14.9		AH		8			ICP-AES
F292b	295.5	29.5	WH WH		BIASED HIGH	10	7.5	-0.2689	ICP-MS
F293	253.0	25.3				10			ICP-MS
F299	136.0	13.6				10			
F305	280.0	28.0	WHHWH	WH	BIASED HIGH	10	9.3	-0.6043	ICP-AES
F309	150.5	15.0				10			ICP-AES
F311	294.5	29.4			BIASED HIGH	10	6.0	-0.0522	ICP-MS
F317	272.5	27.2		WH WH	BIASED HIGH	10	6.2	0.0422	ICP-AES
F317b	189.5	18.9				10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 17.3

PARAMETER: 28095 Nickel

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	10.9	56.9	328.	68.5	16.1	164.	43.3	19.0	20.3	9.38
F007	11.3	59.4	328.	71.2	16.3	164.	43.4	19.4	21.2	9.71
F009	11.9	61.7	343.	71.1	17.5	174.	45.6	19.9	21.1	10.3
F011	10.7	54.5	344.	67.1	15.4	167.	42.2	18.5	19.2	9.
F014	11.	56.	335.	68.	15.	162.	43.	19.	20.	9.
F015	11.9	59.1	331.	71.	16.8	160.	45.8	20.	21.3	10.1
F020	11.6	58.1	341.	71.1	16.4	169.	43.8	19.5	20.8	9.74
F021	10.9	57.3	331.	66.7	16.3	170.	44.	19.5	20.2	9.4
F021b	8. AL	59.	349.	70.	18.	171.	43.	20.	20.	9.
F021c	10.5	53.9 WL	329.	67.5	15.9	161.	42.2	19.3	18.9	8.99
F022	11.1	57.1	339.	68.8	16.6	169.	44.3	19.6	20.2	9.65
F024	11.8	58.5	348.	69.7	16.6	173.	44.2	19.6	20.5	9.7
F026	11.6	60.4	348.	72.9	16.7	172.	46.2	20.3	21.4	9.83
F032c	11.1	56.5	328.	65.3	16.4	169.	44.	18.8	20.2	9.33
F032d	10.9	55.8	331.	65.8	15.8	161.	42.6	19.	19.5	9.03
F032g	11.7	58.2	348.	71.6	17.	175.	45.6	19.6	20.4	10.1
F032h	12.	59.	341.	73.	16.	175.	44.	20.	20.	10.
F060	11.1	58.7	321.	71.3	17.9	166.	47.2	20.6	20.2	9.52
F068	10.6	56.	330.	68.	15.3	160.	43.3	18.3	19.3	9.13
F139	11.4	61.8	346.	73.3	16.6	172.	45.5	19.9	20.7	9.69
F154	10.2	57.	327.	65.4	15.5	158.	43.	18.1	19.5	8.8
F158	11.8	58.6	346.	70.8	16.9	174.	45.1	20.	21.5	9.8
F169	11.3	59.1	328.	69.6	16.0	160.	41.8	19.2	20.1	9.55
F182	10.8	56.6	321.	66.8	15.7	161.	40.7	18.4	19.1	9.18
F183	11.	55.	340.	67.	16.	166.	41.	18.	19.	9.
F193	11.5	57.4	342.	68.9	16.6	168.	43.7	19.2	20.6	9.8
F195	11.	58.5	342.		15.7	165.	44.1	19.2	19.8	9.11
F228	11.0	56.7	336.	66.6	15.8	167.	44.0	18.5	19.6	8.8
F248	11.3	58.8	345.	69.7	16.3	170.	44.5	19.7	21.	9.8
F249	11.5	59.9	343.	72.5	16.7	176.	44.8	20.	21.6	9.86
F292	<50.	60.	334.	71.	<50.	173.	<50.	<50.	<50.	<50.
F292b	11.8	62.5	360. WH	72.8	17.6	182. WH	47.2	20.7	21.7	9.95
F293	11.8	60.5	337.	69.	16.1	170.	44.6	19.4	20.8	9.31
F299	10.6	59.8	339.	68.5	15.8	163.	45.5	19.0	20.3	9.64
F305	10.8	56.	327.	65.3	14.9	161.	41.4	17.4 WL	18.5	8.8
F309	10.8	57.5	331.	67.9	15.4	169.	42.5	18.4	20.3	9.35
F311	11.6	59.6	347.	69.9	17.8	169.	44.9	19.8	21.1	10.6 WH
F317	13. AH	58.	370. AH	71.	17.	180.	47.	19.	21.	8.8
F317b	13. AH	61.	360. WH	75.	18.	170.	48. WH	21. WH	23. WH	11. WH
ASSIGNED VALUE *	11.1	58.5	339	69.6	16.3	169	44.0	19.4	20.3	9.54
R-STD DEV *	0.57	2.06	10.0	2.72	0.84	6.1	1.78	0.79	0.92	0.513
ACCEPTABLE LIMITS(+-) *	1.14	4.12	20.0	5.44	1.68	12.2	3.56	1.58	1.84	1.026
WARNING LIMITS(+-) *	1.14- 1.71	4.12- 6.18	20.0- 30.0	5.44- 8.16	1.68- 2.52	12.2- 18.3	3.56- 5.34	1.58- 2.37	1.84- 2.76	1.026- 1.539
ACTION LIMITS(<>) *	1.71	6.18	30.0	8.16	2.52	18.3	5.34	2.37	2.76	1.539
N *	38	39	39	38	38	39	38	38	38	38

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F003	132.5	13.2			10			ICP-MS	
F007	207.5	20.7			10			ICP-MS	
F009	319.5	31.9		BIASED HIGH*	10	1.2	1.0120	ICP-MS	
F011	91.5	9.1			10				
F014	101.5	10.1			10			ICP-MS	
F015	265.0	26.5			10			ICP-MS	
F020	228.5	22.8			10			ICP-MS	
F021	162.5	16.2			10			ICP-MS	
F021b	212.5	21.2	AL		10			ICP-AES	
F021c	72.0	7.2	WL	BIASED LOW*	10	-3.1	-0.6178	ICP-MS	
F022	197.5	19.7			10			ICP-MS	
F024	255.5	25.5			10			ICP-MS	
F026	320.0	32.0		BIASED HIGH*	10	2.4	0.4196	ICP-AES	
F032c	135.5	13.5			10			ICP-MS-E3473	
F032d	85.5	8.5		BIASED LOW*	10	-2.7	-0.6445	ICP-MS-E3474	
F032g	293.0	29.3			10			ICP AES-E3386	
F032h	265.0	26.5			10			ICP-AES-E3497	
F060	232.0	23.2			10			ICP-MS	
F068	73.5	7.3		BIASED LOW*	10	-3.0	-0.4601	ICP-MS	
F139	288.5	28.8			10			ICP-MS	
F154	50.5	5.0		BIASED LOW*	10	-3.9	-0.4803	ICP-MS	
F158	294.5	29.4			10			ICP-MS	
F169	145.0	14.5			10			ICP-MS	
F182	63.0	6.3		BIASED LOW	10	-5.2	0.2044		
F183	89.5	8.9			10			HR-ICP-MS	
F193	206.5	20.6			10			ICP-MS	
F195	138.0	15.3			9			ICP-MS	
F228	110.5	11.0			10			ICP-AES	
F248	245.5	24.5			10			ICP-MS	
F249	305.5	30.5			10			ICP-MS	
F292	105.5	26.3		INSUFFICIENT DATA	4			ICP-AES	
F292b	357.5	35.7	WH	BIASED HIGH	10	6.4	0.0798	ICP-MS	
F293	229.5	22.9			10			ICP-MS	
F299	172.0	17.2			10				
F305	34.0	3.4		WL	BIASED LOW*	10	-3.5	-0.9614	
F309	121.5	12.1			10			ICP-AES	
F311	288.5	28.8		WH				ICP-MS	
F317	267.0	26.7	AH AH					ICP-AES	
F317b	364.0	36.4	AH WH	WHWHWHWH	BIASED HIGH	10	5.0	0.5335	ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 19.6

PARAMETER: 37095 Rubidium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	10.3	3.12	14.6	11.9	19.4	0.0576	0.498	4.43	1.22	0.615
F011	10.4	3.	14.7	12.	19.2	<0.1	0.5	4.5	1.3	0.6
F022	10.6	3.20	15.2	12.4	19.5	0.054	0.494	4.57	1.44	0.645
F024	10.2	3.1	14.7	12.	18.6	<0.05	0.51	4.3	1.3	0.64
F060	10.8	3.18	14.6	11.9	19.2	0.076	0.501	4.45	1.32	0.626
F139	10.8	3.43	15.7	13.3 AH	20.3	0.061	0.509	4.64	1.4	0.645
F154	9.81	2.88	14.3	11.7	18.5	<0.2	0.45 AL	4.11	1.2	0.57
F169	10.5	3.13	15.4	12.2	19.5	<0.20	0.51	4.63	1.26	0.61
F183	10.3	2.84	14.3	11.6	18.8	<1.0	<1.0	3.85 WL	1.14	<1.0
ASSIGNED VALUE *	10.40	3.12	14.7	12.0	19.2	0.0593	0.501	4.45	1.30	0.620
R-STD DEV *	0.316	0.186	0.54	0.35	0.55	0.01096	0.0094	0.246	0.108	0.0262
ACCEPTABLE LIMITS(+-) *	0.632	0.372	1.08	0.70	1.10	-	0.0188	0.492	0.216	0.0524
WARNING LIMITS(+-) *	.632-.948	.372-.558	1.08-1.62	.70-1.05	1.10-1.65	-	.0188-.0282	.492-.738	.216-.324	.0524-.0786
ACTION LIMITS(<>) *	0.948	0.558	1.62	1.05	1.65	-	0.0282	0.738	0.324	0.0786
N *	9	9	9	9	9	4	8	9	9	8

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	37.5	3.7			10			ICP-MS
F011	41.0	4.5			9			
F022	64.0	6.4			10			ICP-MS
F024	41.0	4.5			9			ICP-MS
F060	53.0	5.3			10			ICP-MS
F139	78.0	7.8	AH		10			ICP-MS
F154	13.5	1.5	AL		9			ICP-MS
F169	57.0	6.3			9			ICP-MS
F183	12.0	1.7	WL		7			HR-ICP-MS

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 4.7

PARAMETER: 34095 Selenium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT										
F003	5.13	38.1	34.9	21.4	28.9	98.9	45.3	14.2	0.189	4.37										
F007	5.94	39.5	34.9	21.8	28.2	94.2	42.9	15.6	0.24	5.19										
F009	5.9	41.3	37.7	24.	31.9	109.	47.9	15.	<1.	5.										
F011	5.3	37.5	33.1	21.6	28.	96.7	44.2	14.	<0.3	4.6										
F014	5.4	37.	33.	22.	27.	95.	43.	13.	<1.5	4.1										
F015	5.9	41.	37.4	23.5	31.2	106.	48.5	15.2	0.3	4.8										
F020	5.16	37.7	33.5	20.9	27.6	91.2	43.1	13.8	0.2	4.32										
F021	4.8	35.5	31.8	20.2	24.7 WL	92.9	42.5	13.5	0.3	4.4										
F021c	5.08	38.8	34.6	21.1	28.	95.	43.1	13.1	0.19	4.34										
F022	5.58	36.9	35.8	21.7	28.7	98.5	45.5	14.3	<1.	5.37										
F024	5.2	37.8	34.6	21.9	27.7	97.6	45.	14.9	0.2	4.7										
F026	<15.	35.5	34.	21.2	27.8	102.	44.8	<15.	<15.	<15.										
F032	5.2	39.9	34.4	21.2	28.4	93.3	44.	14.2	0.3	4.4										
F032c	5.38	38.	34.5	21.8	28.2	97.4	44.	14.	<1.05	4.6										
F032d	5.46	37.3	34.2	21.3	27.3	94.1	43.1	14.1	<0.66	4.31										
F060	6.27 WH	45.8 AH	40.1 WH	27.5 AH	35.7 AH	117. AH	55.8 AH	18. AH	<0.2	5.17										
F068	5.73	40.6	36.6	22.6	30.3	102.	47.6	14.3	0.206	4.7										
F139	5.4	40.5	36.2	23.3	29.9	101.	46.9	14.9	0.26	4.58										
F154	5.	35.2	33.1	20.5	27.3	92.2	42.7	13.2	<1.	4.2										
F158	5.7	41.4	39.4 WH	24.5 WH	32.7 WH	110.	48.9	15.7	<2.	5.3										
F169	5.36	39.0	34.5	22.0	28.7	101.	44.6	13.9	<0.50	4.25										
F182	4.8	36.	33.6	21.2	26.1	89.2	39.9 WL	13.1	0.1 WL	3.8										
F183	5.68	40.3	37.7	22.7	30.2	104.	47.2	14.7	<1.0	4.75										
F193	5.4	38.9	35.3	22.7	29.7	101.	46.5	14.6	<0.5	4.7										
F248	5.1	37.8	36.3	22.1	29.	99.1	45.9	13.3	<0.5	4.5										
F249	5.74	43.2	36.1	24.2 WH	32.6 WH	110.	50.9 WH	15.6	0.23	5.15										
F292	<50.	40.6	37.3	<50.	<50.	97.	<50.	<50.	<50.	<50.										
F292b	5.49	40.6	37.3	22.7	30.4	103.	46.5	14.9	<5.0	5.37										
F293	5.33	38.	34.	21.8	28.2	98.5	46.1	14.5	0.24	4.51										
F299	5.16	36.9	32.9	20.1	26.9	89.7	43.5	13.1	<0.87	4.39										
F305	4.6 WL	40.5	37.9	21.3	28.5	101.	47.6	13.7	<2.0	5.										
F309	7.58 AH	39.	35.8	22.3	28.3	101.	42.5	17.5 AH	<3.20	5.36										
F311	5.31	40.7	34.8	22.9	28.8	103.	47.5	14.8	0.291	4.74										
F317	<6.4	33. WL	36.	22.	31.	100.	46.	13.	<6.4	<6.4										
F317b	5.4	37.	36.	22.	28.	95.	45.	14.	<1.1	4.4										
ASSIGNED VALUE *	5.38	38.4	34.9	21.9	28.4	98.7	45.0	14.2	0.235	4.60										
R-STD DEV *	0.382	2.31	1.91	1.10	1.77	5.75	2.44	0.99	0.0551	0.441										
ACCEPTABLE LIMITS(+-) *	0.764	4.62	3.82	2.20	3.54	11.50	4.88	1.98	0.1102	0.882										
WARNING LIMITS(+-) *	.764-	1.146	4.62-	6.93	3.82-	5.73	2.20-	3.30	3.54-	5.31	11.50-	17.254	8.88-	7.32	1.98-	2.97	.1102-	.1653	.882-	1.323
ACTION LIMITS(<>) *	1.146	6.93	5.73	3.30	5.31	17.25	7.32	2.97	0.1653	1.323										
N *	32	35	35	34	34	35	34	33	14	32										

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	137.0	13.7			10			ICP-MS
F007	177.5	17.7			10			ICP-MS
F009	267.5	29.7		BIASED HIGH	9	9.9	-0.4201	ICP-MS
F011	105.0	11.6			9			
F014	73.0	8.1			9			ICP-MS
F015	275.5	27.5		BIASED HIGH	10	7.1	0.0274	ICP-MS
F020	69.0	6.9		BIASED LOW	10	-7.4	0.6525	ICP-MS
F021	49.5	4.9	WL	BIASED LOW	10	-6.2	-0.4005	ICP-MS
F021c	85.5	8.5			10			ICP-MS
F022	168.0	18.6			9			ICP-MS
F024	143.5	14.3			10			ICP-MS
F026	69.5	11.5			6			ICP-AES
F032	126.5	12.6			10			AAS hydri-E3089
F032c	128.0	14.2			9			ICP-MS-E3473
F032d	91.0	10.1			9			ICP-MS-E3474
F060	298.0	33.1	WHAHWHAHAHAHAHAH	BIASED HIGH	9	18.2	0.6347	ICP-MS
F068	230.5	23.0			10			ICP-MS
F139	221.0	22.1			10			ICP-MS
F154	36.0	4.0		BIASED LOW	9	-6.7	0.0638	ICP-MS
F158	283.5	31.5	WHHWHH	BIASED HIGH	9	10.8	-0.0585	ICP-MS
F169	139.0	15.4			9			ICP-MS
F182	31.5	3.1	WL WL	BIASED LOW	10	-9.7	0.3534	
F183	231.5	25.7			9			HR-ICP-MS
F193	193.0	21.4			9			ICP-MS
F248	149.5	16.6			9			ICP-MS
F249	278.0	27.8	WHHH WH	BIASED HIGH	10	11.3	-0.2072	ICP-MS
F292	69.5	23.1		INSUFFICIENT DATA	3			ICP-AES
F292b	241.0	26.7		BIASED HIGH*	9	3.9	0.2779	ICP-MS
F293	148.0	14.8			10			ICP-MS
F299	46.0	5.1		BIASED LOW	9	-9.0	0.7085	
F305	172.0	19.1	WL		9			ICP-AES
F309	199.5	22.1	AH		9			ICP-AES
F311	218.5	21.8			10			ICP-MS
F317	114.5	16.3	WL		7			ICP-AES
F317b	130.5	14.5			9			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 16.9

PARAMETER: 47095 Silver

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	6.86	10.7	12.9	7.39	21.8	1.18	16.7	3.82	0.0132	3.65
F007	7.05	10.8	13.3	7.68	21.9	1.2	17.8	3.83	0.01	3.72
F009	7.3	11.4	13.8	8.	23.6	1.3	17.1	4.	<1.	4.
F011	6.6	9.7	12.6	7.3	21.4	1.1	15.5	3.8	<0.1	3.6
F015	7.11	10.9	13.6	7.98	22.9	1.26	18.7	3.92	<0.02	3.87
F020	7.19	11.	14.	8.1	23.1	1.3	16.7	3.96	0.02	3.92
F021	7.	10.9	13.7	7.7	22.9	1.2	19.5	3.8	<0.1	3.7
F021b	7.	11.	14.	8.	23.	<2.	19.	4.	<2.	4.
F021c	6.68	10.9	13.1	7.48	21.6	1.14	18.9	3.8	0.01	3.65
F022	6.58	10.4	12.7	7.3	21.1	1.15	17.1	3.69	0.054 WH	3.61
F024	7.	10.7	13.3	7.8	22.5	1.2	16.1	4.	0.03	3.8
F032c	6.86	10.9	13.4	7.68	22.2	1.24	18.1	3.91	<0.39	3.86
F032d	6.81	10.5	12.9	7.53	21.5	1.18	17.4	3.76	<0.23	3.65
F032h	<9.	9. WL	12.	<9.	20.	<9.	13. WL	<9.	<9.	<9.
F060	7.01	10.4	13.2	7.81	23.7	1.25	16.3	3.82	0.013	3.72
F068	6.96	10.	12.3	7.6	21.6	1.23	16.	3.8	<0.01	3.76
F139	6.18 WL	9.8	11.9	7.05	20.3	1.09	14.7	3.53	0.015	3.42
F154	6.73	9.94	13.2	7.39	21.9	1.12	15.3	3.65	<0.1	3.53
F158	7.3	10.9	13.9	8.	23.3	<2.	16.6	3.9	<2.	3.9
F169	6.80	10.3	13.1	7.49	22.2	1.25	16.2	3.84	<0.50	3.72
F183	6.8	9.77	13.8	7.23	23.3	<1.0 WL	17.8	3.11 AL	<1.0	2.78 AL
F248	7.	10.7	13.5	7.6	22.1	1.2	17.4	3.9	<0.1	3.9
F249	6.3 WL	9.6	12.	6.9 WL	20.5	1.1	15.9	3.6	<0.1	3.4
F292	<10.	<10.	13.	<10.	21.	<10.	18.	<10.	<10.	<10.
F292b	7.01	11.7	13.7	7.63	2.89 AL	1.29	20.0	3.97	<0.50	3.67
F293	7.18	11.	13.2	7.7	22.4	1.21	16.3	3.98	<0.025	3.87
F299	7.2	14. AH	14.	7.8	22.6	1.2	19.3	4.	<0.03	3.9
F305	6.7	10.5	11.8 WL	7.5	22.2	<1.0 WL	17.8	3.8	<1.0	3.7
F309	7.54	11.8	13.4	8.12	23.8	<1.10	18.9	3.76	<1.10	4.17 WH
F311	7.13	11.3	14.2	8.32	23.4	2.18 AH	18.9	4.68 AH	0.569 AH	3.87
F317	7.7 WH	11.	15. WH	7.8	24.	1. WL	18.	3.6	<0.89	3.8
F317b	6.8	10.	13.	7.4	21.	1.1	16.	3.8	<0.18	3.6
ASSIGNED VALUE *	7.00	10.70	13.2	7.65	22.20	1.20	17.2	3.82	0.0141	3.72
R-STD DEV *	0.278	0.693	0.70	0.330	1.225	0.082	1.56	0.152	0.01753	0.181
ACCEPTABLE LIMITS(+-) *	0.556	1.386	1.40	0.660	2.450	0.164	3.12	0.304	0.03506	0.362
WARNING LIMITS(+-) *	.556- .834	1.386- 2.079	1.40- 2.10	.660- .990	2.450- 3.675	1.64- .246	3.12- 4.68	.304- .456	.03506- .052	.362- .543
ACTION LIMITS(<>) *	0.834	2.079	2.10	0.990	3.675	0.246	4.68	0.456	0.05259	0.543
N *	30	31	32	30	32	25	32	30	9	30

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	106.0	10.6			10			ICP-MS
F007	152.0	15.2			10			ICP-MS
F009	231.0	25.6		BIASED HIGH*	9	3.5	0.0591	ICP-MS
F011	50.5	5.6		BIASED LOW	9	-6.3	0.0177	
F015	200.5	22.2			9			ICP-MS
F020	224.5	22.4			10			ICP-MS
F021	169.0	18.7			9			ICP-MS
F021b	205.0	25.6		BIASED HIGH	8	5.9	-0.0980	ICP-AES
F021c	113.0	11.3			10			ICP-MS
F022	76.5	7.6	WH		10			ICP-MS
F024	164.0	16.4			10			ICP-MS
F032c	168.5	18.7			9			ICP-MS-E3473
F032d	96.5	10.7			9			ICP-MS-E3474
F032h	7.5	1.8	WL	WL	INSUFFICIENT DATA	4		ICP-AES-E3497
F060	161.5	16.1			10			ICP-MS
F068	102.5	11.3			9			ICP-MS
F139	27.0	2.7	WL		BIASED LOW	10	-10.9	0.0519
F154	66.0	7.3			BIASED LOW*	9	-4.2	-0.0500
F158	183.5	22.9				8		ICP-MS
F169	119.0	13.2				9		ICP-MS
F183	90.0	11.2	WL AL AL			8		HR-ICP-MS
F248	156.0	17.3				9		ICP-MS
F249	27.0	3.0	WL WL		BIASED LOW	9	-8.0	-0.0718
F292	38.5	12.8			INSUFFICIENT DATA	3		ICP-AES
F292b	177.0	19.6	AL			9		ICP-MS
F293	174.5	19.3				9		ICP-MS
F299	223.5	24.8	AH		BIASED HIGH	9	6.1	0.1996
F305	91.5	11.4	WL WL			8		ICP-AES
F309	203.0	25.3		WH	BIASED HIGH	8	7.6	-0.0916
F311	252.0	25.2		AH AHAH	BIASED HIGH*	10	3.7	0.4407
F317	185.0	20.5	WH WH	WL		9		ICP-AES
F317b	68.0	7.5				9		ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 15.3

PARAMETER: 38095 Strontium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	104.	110.	569.	247.	71.6	124.	68.9	102.	581.	136.
F009	110.	119.	600.	257.	78.	134.	73.	109.	597.	147.
F011	110.	118.	601.	256.	72.	135.	69.3	111.	595.	148.
F015	104.	109.	569.	255.	71.3	123.	68.5	102.	575.	138.
F020	103.	111.	578.	238.	72.5	122.	70.1	99.1	571.	132.
F021b	107.	115.	599.	254.	75.	130.	72.	108.	595.	142.
F021c	101.	113.	575.	250.	70.7	126.	68.4	103.	570.	134.
F022	112.	119.	619.	265.	73.5	135.	70.5	111.	624.	148.
F024	101.	106.	581.	242.	70.5	125.	68.2	102.	582.	137.
F026	110.	115.	613.	262.	76.9	132.	74.2	110.	613.	147.
F032c	103.	112.	574.	250.	72.2	126.	69.1	104.	582.	137.
F032d	107.	112.	584.	247.	73.8	128.	71.1	107.	585.	140.
F032g	111.	115.	618.	265.	77.1	136.	76.6 WH	115.	612.	146.
F032h	103.	107.	581.	245.	70.6	126.	68.2	103.	576.	135.
F060	107.	118.	606.	259.	76.4	128.	75.1	109.	594.	152.
F068	100.	110.	583.	250.	74.	130.	70.6	100.	580.	140.
F139	108.	123. WH	618.	269.	75.9	133.	73.7	111.	616.	146.
F154	99.5	105.	569.	238.	69.	118.	68.6	95.2 WL	560.	133.
F158	106.	112.	599.	257.	74.1	128.	70.6	106.	595.	142.
F169	109.	110.	600.	257.	75.8	124.	71.0	106.	600.	142.
F182	103.	110.	585.	250.	70.	122.	66.5	103.	573.	138.
F183	108.	114.	608.	256.	73.9	126.	69.8	105.	610.	141.
F195	106.	112.	581.		71.8	123.	70.	106.	576.	138.
F207	105.	109.	374. AL	250.	70.4	128.	69.3	104.	564.	135.
F249	101.	107.	587.	244.	70.7	125.	67.8	101.	568.	134.
F292	112.	118.	592.	264.	76.	133.	72.	111.	596.	142.
F292b	107.	117.	613.	256.	76.3	132.	72.4	107.	598.	141.
F293	109.	113.	591.	255.	74.2	130.	72.2	108.	599.	142.
F299	107.	113.	628.	257.	74.6	132.	70.5	107.	629.	143.
F311	116. WH	125. WH	653. WH	279. WH	81.8 WH	141. WH	77.9 WH	116. WH	658. AH	153. WH
F317	110.	110.	620.	250.	76.	140. WH	74.	100.	610.	140.
F317b	110.	110.	610.	260.	71.	120.	68.	100.	600.	130.
ASSIGNED VALUE *	107.0	112	599	255	73.8	128	70.5	106.0	595	140
R-STD DEV *	4.26	4.7	21.1	8.5	2.91	5.7	2.58	4.80	20.4	5.9
ACCEPTABLE LIMITS(+-) *	8.52	9.4	42.2	17.0	5.82	11.4	5.16	9.60	40.8	11.8
WARNING LIMITS(+-) *	8.52- 12.78	9.4- 14.1	42.2- 63.3	17.0- 25.5	5.82- 8.73	11.4- 17.1	5.16- 7.74	9.60- 14.40	40.8- 61.2	11.8- 17.7
ACTION LIMITS(<>) *	12.78	14.1	63.3	25.5	8.73	17.1	7.74	14.40	61.2	17.7
N *	32	32	32	31	32	32	32	32	32	32

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	83.0	8.3			10			ICP-MS
F009	252.5	25.2			10			ICP-MS
F011	219.0	21.9			10			
F015	83.0	8.3			10			ICP-MS
F020	70.5	7.0		BIASED LOW*	10	-3.6	-0.9173	ICP-MS
F021b	196.5	19.6			10			ICP-AES
F021c	84.0	8.4			10			ICP-MS
F022	265.5	26.5		BIASED HIGH*	10	4.5	-0.5303	ICP-MS
F024	66.0	6.6		BIASED LOW*	10	-2.1	-2.4378	ICP-MS
F026	263.0	26.3		BIASED HIGH*	10	2.8	0.7947	ICP-AES
F032c	109.5	10.9			10			ICP-MS-E3473
F032d	153.5	15.3			10			ICP-MS-E3474
F032g	282.5	28.2	WH	BIASED HIGH*	10	2.9	2.4939	ICP AES-E3386
F032h	73.0	7.3		BIASED LOW*	10	-2.7	-0.9631	ICP-AES-E3497
F060	235.0	23.5			10			ICP-MS
F068	118.5	11.8			10			ICP-MS
F139	268.5	26.8	WH	BIASED HIGH*	10	3.5	1.2668	ICP-MS
F154	21.5	2.1	WL	BIASED LOW*	10	-4.9	-2.1406	ICP-MS
F158	177.0	17.7			10			ICP-MS
F169	185.0	18.5			10			ICP-MS
F182	76.0	7.6		BIASED LOW*	10	-2.6	-0.8033	
F183	183.0	18.3			10			HR-ICP-MS
F195	106.0	11.7			9			ICP-MS
F207	82.0	8.2	AL		10			ICP-AES
F249	57.0	5.7		BIASED LOW*	10	-2.8	-1.8221	ICP-AES
F292	242.5	24.2			10			ICP-AES
F292b	219.0	21.9			10			ICP-MS
F293	201.5	20.1			10			ICP-AES
F299	224.0	22.4			10			
F311	319.0	31.9	WHWWHWHWWHWWHWWHAWWH	BIASED HIGH	10	10.1	-0.4248	ICP-MS
F317	205.0	20.5	WH		10			ICP-AES
F317b	126.0	12.6			10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 16.4

PARAMETER: 81095 Thallium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	5.14	36.3	27.7	6.54	30.0	65.3	43.0	1.95	0.160	5.65
F009	<10.	38.	29.	<10.	30.	66.	44.	<10.	<10.	<10.
F011	5.1	35.7	27.8	6.5	30.	65.3	43.3	1.9	0.1	5.7
F014	5.3	37.	29.	6.4	32.	65.	42.	2.	<1.0	5.8
F015	5.74	40.	31.6	7.33	33.6	71.4	47.5	2.2	0.202	6.45
F020	5.31	37.5	29.1	6.79	31.2	63.9	42.6	1.93	0.152	5.8
F021	4.7	32.2 WL	25.5	5.8	27.	60.9	38.6	1.7 WL	0.1	5.4
F021b	<25.	38.	33. WH	<25.	35. WH	74. WH	49.	<25.	<25.	<25.
F021c	4.78	35.1	27.6	6.22	27.5	59.9	40.9	1.81	0.16	5.22
F022	5.26	37.4	29.1	6.83	30.7	67.5	44.	2.01	0.192	6.17
F024	5.4	37.7	28.1	6.8	31.	67.	43.8	2.	<0.2	6.
F032c	5.22	36.2	28.	6.68	30.5	65.9	44.4	2.01	<0.26	5.81
F032d	5.21	36.5	28.	6.61	30.6	65.1	43.5	1.98	<0.22	5.8
F060	5.43	37.5	28.1	7.58	30.5	63.6	44.2	2.51 AH	0.224	6.03
F068	5.06	36.	27.	6.53	29.	64.6	42.3	1.93	0.156	5.66
F139	5.34	37.8	28.5	6.8	31.1	69.1	44.	2.03	0.158	5.8
F154	4.69	34.7	27.5	6.3	28.5	62.3	42.5	1.83	0.13	5.52
F158	5.4	37.7	29.1	6.8	31.3	67.3	44.8	2.	<2.	5.9
F169	5.26	37.1	28.1	6.70	31.3	68.1	44.8	2.02	<0.25	5.89
F183	5.29	37.3	27.8	6.62	30.5	63.2	43.	2.02	0.14	5.78
F195	5.3	37.	28.8		30.8	66.	44.2	1.99	0.143	5.84
F248	5.2	33.7	26.8	6.5	28.1	55.6 WL	38.2	2.	<0.2	6.
F249	4.77	33.9	25.4	6.15	27.3	60.	39.4	1.96	0.14	5.14
F292	<50.	<50.	<50.	<50.	<50.	69.	<50.	<50.	<50.	<50.
F292b	5.45	38.5	29.5	6.99	30.9	67.5	45.6	2.05	<1.0	5.67
F293	5.63	39.5	29.9	7.17	31.8	69.8	46.1	2.24	0.23	6.12
F299	3.89 AL	12.4 AL	11.3 AL	4.16 AL	10.7 AL	14.7 AL	11.5 AL	1.6 AL	0.34 AH	4.27 AL
F305	3.1 AL	36.9	28.4	5.6	28.3	65.8	42.1	<1.9	<1.9	3. AL
F309	<6.80	32.9	24.9	8.1 WH	29.2	63.5	40.6	<6.80	<6.80	8.57 AH
F311	5.62	39.9	30.5	7.25	32.8	70.3	46.4	2.12	0.169	6.19
F317	10. AH	43. WH	35. AH	11. AH	40. AH	72.	51. WH	<8.8	<8.8	10. AH
F317b	5.8	39.	31.	7.2	32.	69.	47.	2.3 WH	<0.25	6.
ASSIGNED VALUE *	5.29	37.2	28.1	6.69	30.6	65.9	43.9	2.00	0.157	5.80
R-STD DEV *	0.385	2.19	1.80	0.545	2.07	4.00	2.78	0.129	0.0459	0.376
ACCEPTABLE LIMITS(+-) *	0.770	4.38	3.60	1.090	4.14	8.00	5.56	0.258	0.0918	0.752
WARNING LIMITS(+-) *	.770- 1.155	4.38- 6.57	3.60- 5.40	1.090- 1.635	4.14- 6.21	8.00- 12.00	5.56- 8.34	.258- .387	.0918- .1377	.752- 1.128
ACTION LIMITS(<>) *	1.155	6.57	5.40	1.635	6.21	12.00	8.34	0.387	0.1377	1.128
N *	28	31	31	28	31	32	31	26	17	29

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	103.5	10.3			10			ICP-MS
F009	92.5	18.5			5			ICP-MS
F011	91.0	9.1			10			
F014	131.0	14.5			9			ICP-MS
F015	262.0	26.2		BIASED HIGH*	10			ICP-MS
F020	146.5	14.6			10			ICP-MS
F021	31.5	3.1	WL	BIASED LOW*	10	-9.2	-0.2801	ICP-MS
F021b	146.5	29.3	WH WWHW	BIASED HIGH	5	11.1	0.1572	ICP-AES
F021c	56.5	5.6		BIASED LOW*	10	-7.9	0.1675	ICP-MS
F022	186.5	18.6			10			ICP-MS
F024	165.5	18.3			9			ICP-MS
F032c	134.0	14.8			9			ICP-MS-E3473
F032d	115.0	12.7			9			ICP-MS-E3474
F060	190.0	19.0			10			ICP-MS
F068	82.5	8.2			10			ICP-MS
F139	186.5	18.6			10			ICP-MS
F154	58.0	5.8		BIASED LOW*	10	-4.9	-0.0488	ICP-MS
F158	183.5	20.3			9			ICP-MS
F169	167.0	18.5			9			ICP-MS
F183	123.0	12.3			10			HR-ICP-MS
F195	141.0	15.6			9			ICP-MS
F248	71.0	7.8	WL		9			ICP-MS
F249	44.5	4.4		BIASED LOW*	10	-9.3	-0.0334	ICP-MS
F292	25.5	25.5		INSUFFICIENT DATA	1			ICP-AES
F292b	191.5	21.2			9			ICP-MS
F293	244.0	24.4		BIASED HIGH*	10	5.6	0.0382	ICP-MS
F299	28.0	2.8	ALALALALALALALAHAL	BIASED LOW	10	-78.0	2.5267	
F305	64.0	8.0	AL	AL	8			ICP-AES
F309	82.0	11.7	WH	AH	7			ICP-AES
F311	248.0	24.8		BIASED HIGH*	10	6.7	0.0738	ICP-MS
F317	240.0	30.0	AHWHAHAAH	WH AH	8	4.2	4.9202	ICP-AES
F317b	231.0	25.6		WH	BIASED HIGH*	9	5.1	0.2797

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 15.0

PARAMETER: 50095 Tin

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	5.57	55.2	44.6	8.25	23.1	53.9	38.4	2.77	0.0238	3.11
F009	5.5	52.	42.9	8.5	22.2	52.5	36.2 WL	<5.	<5.	<5.
F011	5.5	55.9	48.1	8.4	24.	58.2	40.2	3.	<0.1	3.
F015	7.85 AH	77.8 AH	63.6 AH	11.8 AH	33.5 AH	80.3 AH	54.1 AH	4.13 WH	0.28	4.55 AH
F020	5.67	55.5	46.	8.83	23.6	54.3	39.2	2.79	0.03	3.21
F021	5.6	52.9	47.4	8.3	23.8	56.7	38.7	3.	0.3	3.3
F021c	5.52	54.	44.4	8.25	23.3	53.1	38.9	2.84	<0.08	3.13
F022	5.25	54.5	46.	8.62	23.5	56.5	39.1	3.86 WH	1.01 AH	4.61 AH
F024	6.	57.1	47.	8.8	24.3	57.3	40.3	3.1	0.3	3.4
F032h	<9.	56.	48.	<9.	23.	59.	40.	<9.	<9.	<9.
F060	5.19	54.8	44.9	9.71 WH	24.2	54.3	40.4	3.85 WH	<1.	3.08
F068	5.83	56.6	46.3	8.73	24.	53.3	40.	3.06	0.0996	3.36
F139	5.74	58.4	47.1	8.92	24.5	57.9	40.8	3.03	0.103	3.4
F154	5.36	55.3	45.7	8.29	23.6	54.7	38.6	2.67	<0.2	3.17
F158	5.4	55.3	46.2	8.4	23.7	55.6	39.3	2.8	<2.	3.2
F183	5.92	55.6	45.5	8.88	23.7	56.4	39.9	3.39	<1.0	3.35
F248	5.5	55.7	46.4	8.8	23.2	54.9	39.	3.5	<1.	3.7
F249	5.9	58.8	48.1	9.1	25.3	59.7	41.3	3.3	<0.1	3.5
F292	<40.	57.	43.	<40.	<40.	57.	<40.	<40.	<40.	<40.
F292b	6.16	60.1	49.7	8.88	25.6	59.6	42.	<5.0	<5.0	<5.0
F293	6.3	56.3	46.8	9.	24.1	57.1	40.	3.2	<3.0	3.3
F305	6.1	53.	43.7	8.	21.5	52.2	36.5 WL	3.2	<1.0	3.5
F309	<6.80	55.8	43.2	7.64 WL	21.9	56.7	37.5	<6.80	<6.80	<6.80
F311	5.98	59.9	48.4	9.02	25.	58.8	41.4	3.03	<0.30	3.45
F317	6.3	59.	48.	7.2 AL	29. AH	62.	44. WH	<5.1	<5.1	<5.1
F317b	6.2	57.	48.	8.8	25.	56.	41.	3.1	<1.4	3.5
ASSIGNED VALUE *	5.70	55.8	46.3	8.76	23.7	56.5	40.0	3.08	0.1030	3.32
R-STD DEV *	0.404	2.33	2.15	0.461	1.18	2.78	1.62	0.349	0.18270	0.240
ACCEPTABLE LIMITS(+-) *	0.808	4.66	4.30	0.922	2.36	5.56	3.24	0.698	0.36540	0.480
WARNING LIMITS(+-) *	.808- 1.212	4.66- 6.99	4.30- 6.45	.922- 1.383	2.36- 3.54	5.56- 8.34	3.24- 4.86	.698- 1.047	.36540- .548	.480- .720
ACTION LIMITS(<>) *	1.212	6.99	6.45	1.383	3.54	8.34	4.86	1.047	0.54810	0.720
N *	23	26	26	24	25	26	25	20	8	20

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING	
F003	46.5	4.6		BIASED LOW*	10	-3.0	-0.1560	ICP-MS	
F009	24.0	3.4	WL	BIASED LOW*	7	-7.9	0.2075	ICP-MS	
F011	109.0	12.1			9				
F015	219.0	21.9	AHAHAHAHAHAHAWH	AH	BIASED HIGH	10	39.6	-0.2362	ICP-MS
F020	85.5	8.5			10			ICP-MS	
F021	92.0	9.2			10			ICP-MS	
F021c	47.5	5.2		BIASED LOW*	9	-4.4	0.0549	ICP-MS	
F022	105.5	10.5	WHAHAW		10			ICP-MS	
F024	150.5	15.0			10			ICP-MS	
F032h	75.0	15.0			5			ICP-AES-E3497	
F060	98.5	10.9	WH	WH				ICP-MS	
F068	111.5	11.1			9			ICP-MS	
F139	151.0	15.1			10			ICP-MS	
F154	55.0	6.1		BIASED LOW*	9	-1.7	-0.2232	ICP-MS	
F158	75.5	8.3			9			ICP-MS	
F183	113.0	12.5			9			HR-ICP-MS	
F248	104.0	11.5			9			ICP-MS	
F249	178.5	19.8		BIASED HIGH*	9	4.9	-0.0472	ICP-MS	
F292	36.5	12.1		INSUFFICIENT DATA	3			ICP-AES	
F292b	155.5	22.2		BIASED HIGH*	7	6.7	-0.1425	ICP-MS	
F293	141.5	15.7			9			ICP-AES	
F305	61.5	6.8	WL		9			ICP-AES	
F309	37.5	6.2	WL		6			ICP-AES	
F311	171.0	19.0		BIASED HIGH*	9	5.4	-0.1828	ICP-MS	
F317	138.5	19.7	ALAH	WH	BIASED HIGH*	7	7.7	0.0347	ICP-AES
F317b	151.5	16.8			9			ICP-MS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 12.2

PARAMETER: 22095 Titanium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	6.22	36.4	32.5	11.7	25.6	69.7	41.9	8.13	3.96	4.73
F011	5.8	36.6	33.4	11.5	24.6	72.9	41.8	7.8	3.5	4.6
F015	6.	37.	33.	12.	25.	74.	43.	8.	4.	5.
F020	5.6	38.	33.5	12.	25.4	72.9	41.4	7.8	3.9	3.7 AL
F021	6.5	36.8	35.	12.2	25.2	74.5	44.3	8.4	3.9	5.1
F021b	6.	37.	34.	12.	25.	74.	43.	8.	4.	5.
F021c	5.85	35.	32.3	11.4	25.	69.5	40.5	7.93	3.43	4.56
F022	7.13 WH	37.4	34.4	12.7	25.9	74.7	43.1	8.76	4.73 WH	6. AH
F024	6.1	38.4	33.1	12.1	25.6	71.6	41.1	8.1	4.2	4.7
F032c	5.95	36.8	33.	12.	25.2	71.9	42.2	8.01	4.01	4.85
F032d	6.28	36.6	32.3	11.8	24.9	72.	42.	7.96	3.92	4.77
F032g	6.2	37.	34.	12.2	25.5	75.7	44.4	8.3	3.7	4.7
F032h	6.3	37.1	33.6	12.	25.2	72.2	41.9	8.3	4.	4.9
F060	6.44	38.4	34.8	13.3 WH	27.5 WH	73.8	44.	9.07 WH	4.15	5.11
F068	6.16	36.3	32.	11.3	24.3	71.	41.3	8.03	3.73	4.6
F139	6.22	40.8 AH	35.2	13.1	26.3	75.3	44.7	8.38	3.83	5.03
F154	5.64	36.	32.3	11.2	24.6	69.6	41.5	7.62	3.7	4.48
F158	6.2	36.8	33.4	11.8	25.4	73.	42.6	8.	3.7	4.6
F169	6.35	37.7	33.9	12.3	26.0	73.8	43.6	8.32	4.00	4.99
F183	6.17	38.9	34.5	11.7	26.4	71.9	42.7	7.94	3.61	4.87
F249	5.77	36.5	32.5	11.5	24.8	73.	41.8	7.68	3.47	4.52
F292	<50.	<50.	<50.	<50.	<50.	75.	<50.	<50.	<50.	<50.
F292b	6.07	38.0	33.6	11.7	26.2	76.4	42.8	7.56	3.47	4.31
F293	8.08 AH	38.9	35.1	13.7 AH	26.3	73.2	43.2	9.84 AH	6.56 AH	6.53 AH
F311	12.5 AH	43.5 AH	38.3 AH	18.9 AH	29. AH	68. WL	44.4	15.2 AH	17. AH	13.6 AH
F317	6.8	38.	35.	12.	27.	78. WH	45.	7.6	3.6	4.6
F317b	6.2	36.	33.	12.	25.	69.	41.	8.2	4.	4.8
ASSIGNED VALUE *	6.18	37.0	33.5	12.0	25.4	73.0	42.7	8.00	3.90	4.75
R-STD DEV *	0.367	1.16	1.17	0.55	0.81	2.47	1.41	0.390	0.310	0.313
ACCEPTABLE LIMITS(+-) *	0.734	2.32	2.34	1.10	1.62	4.94	2.82	0.780	0.620	0.626
WARNING LIMITS(+-) *	.734- 1.101	2.32- 3.48	2.34- 3.51	1.10- 1.65	1.62- 2.43	4.94- 7.41	2.82- 4.23	.780- 1.170	.620- .930	.626- .939
ACTION LIMITS(<>) *	1.101	3.48	3.51	1.65	2.43	7.41	4.23	1.170	0.930	0.939
N *	26	26	26	26	26	27	26	26	26	26

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING		
F003	108.0	10.8			10			ICP-MS		
F011	67.0	6.7			10					
F015	134.5	13.4			10			ICP-AES		
F020	97.0	9.7			10			ICP-MS		
F021	184.5	18.4			10			ICP-MS		
F021b	144.0	14.4			10			ICP-AES		
F021c	36.5	3.6		BIASED LOW*	10	-4.8	0.0658	ICP-MS		
F022	210.0	21.0	WH	WHAH	BIASED HIGH*	10	0.5	0.6970	ICP-MS	
F024	134.5	13.4			10			ICP-MS		
F032c	118.5	11.8			10			ICP-MS-E3473		
F032d	100.0	10.0			10			ICP-MS-E3474		
F032g	164.5	16.4			10			ICP AES-E3386		
F032h	147.5	14.7			10			ICP-AES-E3497		
F060	220.0	22.0	WHHH	WH	BIASED HIGH*	10	0.9	0.7649	ICP-MS	
F068	60.5	6.0			BIASED LOW*	10	-2.9	-0.0842	ICP-MS	
F139	213.0	21.3	AH		BIASED HIGH*	10	4.1	0.2059	ICP-MS	
F154	35.0	3.5			BIASED LOW*	10	-3.8	-0.0501	ICP-MS	
F158	112.5	11.2				10			ICP-MS	
F169	186.5	18.6				10			ICP-MS	
F183	138.0	13.8				10			HR-ICP-MS	
F249	55.5	5.5			BIASED LOW*	10	0.0	-0.5176	ICP-AES	
F292	23.0	23.0			INSUFFICIENT DATA	1			ICP-AES	
F292b	116.0	11.6				10			ICP-MS	
F293	229.0	22.9	AH	AH	AHAHAH	BIASED HIGH*	10	-2.7	2.1363	ICP-AES
F311	232.5	23.2	AHAHAHHAHWL	AHAHAH		BIASED HIGH	10	-19.0	10.0713	ICP-MS
F317	170.0	17.0					10			ICP-AES
F317b	99.0	9.9					10			ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 13.5

PARAMETER: 74095 Tungsten

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F022	5.35	1.69	7.31	2.69	7.98	<0.05	<0.05	1.6	0.089	<0.05
F139	6.5	2.13	9.25	3.49	10.4	0.045	0.054	1.97	0.113	0.055
F154	5.87	1.89	8.7	3.18	9.43	<0.2	<0.2	1.72	<0.2	<0.2
F311	6.68	2.05	9.39	3.36	10.	0.018	0.04	1.89	0.083	0.05
ASSIGNED VALUE *	6.18	1.97	8.98	3.27	9.72	0.032	0.047	1.80	0.089	0.053
R-STD DEV *	0.690	0.220	1.077	0.397	1.201	-	-	0.189	0.0180	-
ACCEPTABLE LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
WARNING LIMITS(+-) *	-	-	-	-	-	-	-	-	-	-
ACTION LIMITS(<>) *	-	-	-	-	-	-	-	-	-	-
N *	4	4	4	4	4	2	2	4	3	2

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F022	8.0	1.1			7			ICP-MS
F139	31.0	3.1			10			ICP-MS
F154	12.0	2.0			6			ICP-MS
F311	24.0	2.4			10			ICP-MS

NOTE: BIAS WAS NOT ASSESSED BECAUSE STATISTICS

FOR FEWER THAN 10 LABS WERE AVAILABLE

OVERALL AVERAGE RANK IS 2.2

PARAMETER: 92095 Uranium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	7.12	36.5	57.5	4.56	26.6	136.	39.3	1.85	0.390	5.53
F009	7.3	37.2	58.1	4.7	27.4	139.	40.2	1.9	<1.	5.6
F011	7.2	36.1	60.3	4.7	26.1	138.	41.3	1.9	0.4	5.6
F014	7.2	35.	57.	4.6	26.	135.	40.	1.9	<0.5	5.5
F015	8.08 WH	40.4 WH	67.9 AH	5.35	30.7 WH	155.	44.5 WH	2.14 WH	0.403	6.5 WH
F020	7.79	37.9	60.1	5.11	27.8	137.	40.8	1.99	0.419	5.9
F021	7.1	33.3	54.1	4.4	25.2	151.	37.2	1.8	0.4	5.5
F021c	7.32	36.7	57.3	4.64	26.3	135.	41.6	1.85	0.36	5.48
F022	7.42	37.	59.8	4.87	27.2	162. WH	39.6	1.97	0.479 AH	6.2
F024	7.7	37.9	59.7	5.	28.1	147.	41.4	2.	0.4	5.9
F032c	7.38	35.7	57.2	4.89	27.1	132.	40.	1.94	0.39	5.68
F032d	7.37	36.2	57.5	4.87	27.4	131.	40.1	1.94	0.38	5.71
F032h	7.	36.	57.	5.	26.	133.	39.	2.	<2.	5. WL
F060	7.54	38.3	58.4	6.04 AH	27.6	136.	43.	2.95 AH	0.648 AH	6.15
F068	7.23	36.	58.6	4.8	26.6	143.	39.6	1.86	0.373	5.76
F139	7.14	36.2	57.2	4.71	26.5	137.	39.	1.92	0.394	5.53
F154	6.48 WL	34.1	57.2	4.49	25.9	132.	37.2	1.76 WL	0.35	5.42
F158	7.6	37.9	61.5	5.	28.2	149.	41.7	2.	<2.	5.9
F182	7.02	35.6	55.9	4.65	25.6	138.	37.5	1.85	0.36	5.58
F183	7.64	36.7	55.4	4.86	28.4	144.	40.1	2.04	0.398	5.88
F193	7.6	37.3	60.6	4.9	27.9	151.	41.6	2.	<0.7	5.9
F248	7.4	33.6	56.	4.7	25.2	115. WL	35.2 WL	2.	0.4	5.8
F249	6.82	33.5	54.3	4.45	24.7	128.	36.2	1.95	0.37	5.15
F293	7.72	38.6	59.4	4.91	28.1	149.	42.8	2.01	0.402	5.91
F311	7.75	38.7	61.1	5.08	28.5	146.	41.7	2.02	0.415	6.05
ASSIGNED VALUE *	7.37	36.5	57.5	4.83	27.1	138	40.1	1.94	0.396	5.71
R-STD DEV *	0.330	1.77	2.34	0.250	1.29	9.3	2.17	0.090	0.0247	0.298
ACCEPTABLE LIMITS(+-) *	0.660	3.54	4.68	0.500	2.58	18.6	4.34	0.180	0.0494	0.596
WARNING LIMITS(+-) *	.660- .990	3.54- 5.31	4.68- 7.02	.500- .750	2.58- 3.87	18.6- 27.9	4.34- 6.51	.180- .270	.0494- .0741	.596- .894
ACTION LIMITS(<>) *	0.990	5.31	7.02	0.750	3.87	27.9	6.51	0.270	0.0741	0.894
N *	25	25	25	25	25	25	25	25	20	25

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	83.5	8.3			10			ICP-MS
F009	115.0	12.7			9			ICP-MS
F011	118.0	11.8			10			
F014	64.0	7.1			9			ICP-MS
F015	238.0	23.8	WHWHAH WH WHWH WH	BIASED HIGH	10	12.9	0.0426	ICP-MS
F020	184.0	18.4			10			ICP-MS
F021	56.5	5.6		BIASED LOW	10	8.1	-2.5395	ICP-MS
F021c	90.0	9.0			10			ICP-MS
F022	171.0	17.1	WH AH		10			ICP-MS
F024	185.5	18.5			10			ICP-MS
F032c	106.0	10.6			10			ICP-MS-E3473
F032d	114.0	11.4			10			ICP-MS-E3474
F032h	76.0	8.4	WL		9			ICP-AES-E3497
F060	197.5	19.7	AH	AHAH	BIASED HIGH*	10	-1.5	1.2057
F068	108.5	10.8			10			ICP-MS
F139	93.0	9.3			10			ICP-MS
F154	35.0	3.5	WL	WL	BIASED LOW*	10	-3.9	-0.2037
F158	183.0	20.3			BIASED HIGH	9	8.1	-0.6744
F182	59.0	5.9			BIASED LOW*	10	-0.2	-0.6688
F183	153.0	15.3				10		HR-ICP-MS
F193	173.0	19.2				9		ICP-MS
F248	82.0	8.2	WLWL			10		ICP-MS
F249	32.0	3.2			BIASED LOW	10	-7.1	-0.1272
F293	201.0	20.1			BIASED HIGH	10	7.7	-0.5197
F311	216.5	21.6			BIASED HIGH	10	5.8	-0.0820

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 12.7

PARAMETER: 23095 Vanadium

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	11.9	69.5	349.	14.7	26.9	158.	41.9	2.87	14.9	9.95
F007	12.7	73.6	346.	14.9	26.8	159.	40.6	2.99	16.1	9.9
F009	14.1 WH	78.8 WH	362.	16.3	30.9 WH	176. WH	46.9 WH	3.	17.2	11.6 WH
F011	12.1	67.6	341.	14.8	26.1	165.	40.9	2.9	15.3	9.8
F014	12.	66.	326. WL	15.	26.	153.	40.	2.9	15.	9.2 WL
F015	12.7	71.5	343.	15.5	27.9	167.	43.5	3.	15.8	10.3
F020	13.2	72.6	359.	15.8	27.5	164.	42.3	3.2	16.7	10.8
F021	12.6	73.2	350.	15.5	27.8	168.	43.2	3.1	16.	10.5
F021b	12.	70.	348.	14. WL	26.	163.	42.	<4.	14. WL	10.
F021c	12.3	67.	331.	14.6	27.2	154.	40.8	2.91	14.8	10.
F022	10.8 WL	72.7	353.	15.7	28.	162.	43.5	2.97	16.3	11.
F024	12.8	72.3	350.	15.3	27.8	163.	42.7	3.	16.2	10.3
F032c	12.5	70.2	342.	15.3	27.6	161.	42.	2.98	15.9	10.4
F032d	13.	71.6	346.	15.4	27.8	161.	43.2	3.01	16.2	10.3
F032g	16. AH	75.	360.	19. AH	30.	172.	45.	6. AH	20. AH	13. AH
F032h	12.4	70.1	348.	15.4	26.4	162.	41.1	3.2	16.	10.4
F060	13.3	75.1	318. AL	17.9 AH	31.4 WH	165.	48.8 AH	4.08 AH	18.5 AH	12.1 AH
F068	12.6	72.	353.	14.6	27.	166.	42.3	3.06	15.3	10.
F139	12.7	68.4	354.	15.3	27.7	164.	44.7	2.96	16.2	10.3
F154	11.2 WL	69.4	344.	14.1	25.7	157.	40.5	2.71	15.	9.34 WL
F158	12.3	68.3	346.	14.9	26.6	160.	41.3	2.9	15.5	9.9
F169	12.9	73.9	346.	15.4	28.0	164.	43.2	2.93	16.1	10.2
F182	12.3	69.5	341.	14.9	26.3	156.	39.8	3.03	15.2	10.2
F183	12.8	75.7	360.	15.	28.2	165.	43.	2.94	16.1	10.3
F193	12.6	72.4	351.	15.1	28.9	163.	43.5	2.8	16.	10.1
F248	12.3	70.5	342.	14.7	26.5	158.	41.6	2.9	15.9	10.2
F249	12.9	71.8	356.	14.8	27.7	166.	42.7	2.58 WL	15.9	10.3
F292	<20.	67.	337.	<20.	23. AL	163.	38. WL	<20.	<20.	<20.
F292b	13.2	73.8	361.	15.7	28.9	170.	44.4	<5.0	16.2	10.5
F293	12.5	71.6	352.	15.3	27.4	165.	42.7	2.7	16.2	10.
F299	12.4	74.5	351.	15.1	27.3	160.	44.3	2.97	16.2	10.2
F305	14.3 WH	80.1 WH	392. AH	16.8 WH	30.1	181. AH	46.9 WH	3.7 AH	17.1	11.2
F309	12.2	71.	3.43 AL	14.4	27.1	168.	42.1	2.36 AL	15.9	10.
F311	12.5	70.9	349.	15.5	27.7	161.	41.8	3.06	16.3	10.5
F317	14. WH	72.	370. WH	15.	30.	180. AH	46.	3.1	16.	9.9
F317b	14. WH	71.	360.	16.	28.	160.	45.	3.8 AH	17.	11.
ASSIGNED VALUE *	12.6	71.6	349.00	15.1	27.7	163	42.7	2.97	16.0	10.20
R-STD DEV *	0.61	2.85	9.993	0.59	1.26	5.1	2.00	0.177	0.73	0.455
ACCEPTABLE LIMITS(+-) *	1.22	5.70	19.986	1.18	2.52	10.2	4.00	0.354	1.46	0.910
WARNING LIMITS(+-) *	1.22- 1.83	5.70- 8.55	19.986- 29.91	18- 1.77	2.52- 3.78	10.2- 15.3	4.00- 6.00	.354- .531	1.46- 2.19	.910- 1.365
ACTION LIMITS(<>) *	1.83	8.55	29.979	1.77	3.78	15.3	6.00	0.531	2.19	1.365
N *	35	36	36	35	36	36	36	33	35	35

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	81.0	8.1		BIASED LOW*	10	-0.2	-0.9960	ICP-MS
F007	138.5	13.8			10			ICP-MS
F009	323.5	32.3	WHWH	WHWHWH WH	BIASED HIGH*	10	4.0	1.7099
F011	80.5	8.0			BIASED LOW*	10	-1.7	-0.3708
F014	44.0	4.4	WL	WL	BIASED LOW	10	-6.6	0.0650
F015	204.5	20.4				10		ICP-MS
F020	254.5	25.4				10		ICP-MS
F021	238.0	23.8				10		ICP-MS
F021b	77.5	8.6	WL	WL		9		ICP-AES
F021c	65.5	6.5			BIASED LOW	10	-5.3	0.0969
F022	223.0	22.3	WL			10		ICP-MS
F024	211.0	21.1				10		ICP-MS
F032c	152.5	15.2				10		ICP-MS-E3473
F032d	207.0	20.7				10		ICP-MS-E3474
F032g	333.0	33.3	AH AH	AHAHAH	BIASED HIGH*	10	2.6	2.6590
F032h	162.0	16.2				10		ICP-AES-E3386
F060	295.5	29.5	ALAHWH	AHAHAHAH	BIASED HIGH	10	-8.7	5.5043
F068	167.5	16.7				10		ICP-MS
F139	203.5	20.3				10		ICP-MS
F154	42.5	4.2	WL	WL	BIASED LOW*	10	-1.4	-1.2114
F158	88.5	8.8				10		ICP-MS
F169	210.5	21.0				10		ICP-MS
F182	91.0	9.1				10		ICP-MS
F183	230.5	23.0				10		HR-ICP-MS
F193	189.5	18.9				10		ICP-MS
F248	97.5	9.7				10		ICP-MS
F249	183.5	18.3	WL			10		ICP-AES
F292	27.0	5.4	AL WL		BIASED LOW*	5	-2.1	-2.5162
F292b	262.0	29.1			BIASED HIGH*	9	3.6	0.0281
F293	174.0	17.4				10		ICP-AES
F299	190.0	19.0				10		
F305	337.5	33.7	WHWHAHWH	AHWAH	BIASED HIGH	10	12.3	-0.5215
F309	108.5	10.8	AL	AL		10		ICP-AES
F311	196.5	19.6				10		ICP-MS
F317	250.5	25.0	WH WH	AH		10		ICP-AES
F317b	269.0	26.9	WH	AH		10		ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.1

PARAMETER: 30095 Zinc

ug/L

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

SAMPLE LAB NO	1= TM-26.4 LAB RESULT	2= TMDA-61.2 LAB RESULT	3= TMDA-54.5 LAB RESULT	4= TM-16 LAB RESULT	5= TM-25.4 LAB RESULT	6= TMDA-55D5 LAB RESULT	7= TM-40 LAB RESULT	8= TM-09 LAB RESULT	9= TM-21Wana LAB RESULT	10= TM-35 LAB RESULT
F003	38.0	71.3	551.	100.	44.5	228.	68.6	43.5	31.5	28.3
F007	38.9	72.5	529.	103.	45.2	211.	66.3	39.8	31.9	30.7
F009	42.	80. WH	591. WH	111.	50. WH	259. WH	77. WH	47.	33.	33. WH
F011	35.4	65.8	547.	96.2	41.6	221.	65.	40.1	27.4	26.2
F014	37.	70.	546.	98.	42.	227.	68.	43.	29.	27.
F015	38.6	72.6	542.	103.	45.2	238.	70.1	43.3	29.4	28.4
F020	37.7	70.4	536.	100.	42.7	229.	66.9	41.5	30.7	27.5
F021	33.3 WL	65.5	532.	89.4 WL	38.7 WL	229.	64.	38.3 WL	26.3	24.7 WL
F021b	37.	71.	542.	101.	44.	228.	68.	42.	30.	28.
F021c	36.	66.1	541.	101.	44.	225.	67.1	42.7	28.4	27.3
F022	39.1	74.1	565.	105.	45.2	239.	71.2	44.3	31.7	29.3
F024	37.4	70.3	545.	101.	43.7	243.	69.	42.8	31.2	27.7
F026	39.7	72.9	548.	105.	45.4	232.	72.3	44.	32.4	29.3
F032c	36.3	68.	539.	95.8	43.5	223.	66.5	41.9	29.8	26.8
F032d	36.1	67.4	526.	96.	42.2	219.	64.2	40.4	29.2	26.6
F032g	35.6	65. WL	517.	93.9	41.	221.	64.5	41.3	27.4	25.9
F032h	39.	72.	554.	104.	45.	238.	71.	44.	32.	28.
F060	44.4 AH	83. AH	590. WH	119. AH	55.8 AH	261. WH	83.5 AH	52. AH	32.7	34.1 AH
F068	39.3	73.	550.	110.	46.	236.	72.3	44.	30.	28.6
F139	36.6	73.	539.	104.	44.3	232.	68.8	42.7	28.6	28.3
F154	36.9	69.2	534.	96.5	42.1	218.	66.5	40.1	29.4	26.6
F158	39.3	74.1	544.	106.	46.6	247.	72.1	44.9	31.1	29.7
F169	39.3	71.9	544.	101.	43.5	232.	67.6	43.7	30.6	28.1
F182	35.8	67.9	506.	95.7	41.	211.	62.6	40.3	27.3	27.1
F183	38.3	69.5	549.	100.	43.4	230.	65.	40.9	28.	26.7
F193	38.6	71.3	609. WH	104.	46.1	257. WH	73.	43.4	28.	28.5
F207	39.	74.	539.	105.	44.6	235.	69.	44.	32.	29.
F228	36.6	66.3	510.	93.5	41.5	220.	65.7	40.4	30.0	26.4
F248	38.2	71.3	554.	101.	44.2	235.	70.1	43.7	31.2	29.
F249	38.9	73.4	558.	106.	45.6	243.	71.4	43.9	31.3	29.1
F292	39.	74.	551.	129. AH	45.	235.	68.	46.	34.	34. AH
F292b	38.6	75.2	577.	104.	47.7	240.	72.7	45.1	32.1	29.9
F293	38.9	73.	559.	101.	44.8	239.	70.5	43.3	30.4	30.6
F299	35.	70.	625. AH	95.	41.	231.	67.	40.	29.	26.
F305	38.8	74.5	566.	103.	44.6	238.	70.1	41.7	30.5	29.
F309	36.	68.1	521.	96.1	41.1	228.	64.5	40.5	29.9	27.1
F311	39.4	74.9	568.	108.	51.4 WH	240.	72.6	45.5	36.1 WH	29.8
F317	42.	74.	590. WH	100.	49.	250.	76.	44.	35. WH	30.
F317b	41.	73.	560.	110.	46.	230.	71.	47.	35. WH	29.
ASSIGNED VALUE *	38.4	71.6	546	101.0	44.4	232	68.7	43.2	30.5	28.3
R-STD DEV *	1.90	3.38	20.7	5.70	2.45	10.8	3.59	2.27	2.20	1.74
ACCEPTABLE LIMITS(+-) *	3.80	6.76	41.4	11.40	4.90	21.6	7.18	4.54	4.40	3.48
WARNING LIMITS(+-) *	3.80- 5.70	6.76- 10.14	41.4- 62.1	11.40- 17.10	4.90- 7.35	21.6- 32.4	7.18- 10.77	4.54- 6.81	4.40- 6.60	3.48- 5.22
ACTION LIMITS(<>) *	5.70	10.14	62.1	17.10	7.35	32.4	10.77	6.81	6.60	5.22
N *	39	39	39	39	39	39	39	39	39	39

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL	AVERAGE	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	193.5	19.3			10			ICP-MS
F007	180.5	18.0			10			ICP-MS
F009	372.0	37.2	WHWH	WHWHWH WH	BIASED HIGH BIASED LOW*	10 8.1 1.8936	10 -4.3106	ICP-MS
F011	67.0	6.7						
F014	129.5	12.9			10			ICP-MS
F015	213.5	21.3			10			ICP-MS
F020	139.0	13.9			10			ICP-MS
F021	31.5	3.1	WL	WLWL WL WL	BIASED LOW*	10 -1.7 -4.4310	10	ICP-MS ICP-AES
F021b	156.5	15.6			10			
F021c	118.0	11.8			10			ICP-MS
F022	299.5	29.9			10			ICP-MS
F024	193.0	19.3			10			ICP-MS
F026	283.0	28.3			10			ICP-AES
F032c	103.0	10.3			10			ICP-MS-E3473
F032d	68.0	6.8			BIASED LOW*	10 -3.8 -1.2733	10	ICP-MS-E3474
F032g	41.5	4.1	WL		BIASED LOW	10 -5.2 -1.0885	10	ICP AES-E3386
F032h	257.0	25.7			10			ICP-AES-E3497
F060	380.5	38.0	AHAHWHAHAWHAHAWAH	AH	BIASED HIGH	10 7.3 6.1411	10	ICP-MS
F068	275.0	27.5			10			ICP-MS
F139	177.5	17.7			10			ICP-MS
F154	86.0	8.6			BIASED LOW*	10 -2.5 -1.6097	10	ICP-MS
F158	301.5	30.1			10			ICP-MS
F169	199.0	19.9			10			ICP-MS
F182	43.0	4.3			BIASED LOW	10 -7.7 0.1638	10	
F183	124.0	12.4			10			HR-ICP-MS
F193	259.0	25.9	WH	WH		10		ICP-MS
F207	251.0	25.1			10			ICP-AES
F228	68.0	6.8			BIASED LOW	10 -6.7 0.5121	10	ICP-AES
F248	220.5	22.0			10			ICP-MS
F249	288.0	28.8			10			ICP-AES
F292	297.0	29.7	AH	AH		10		ICP-AES
F292b	319.0	31.9			BIASED HIGH	10 5.4 -0.8251	10	ICP-MS
F293	252.0	25.2			10			ICP-MS
F299	107.0	10.7	AH			10		
F305	244.0	24.4			10			ICP-AES
F309	84.5	8.4			BIASED LOW*	10 -4.3 -0.1339	10	ICP-AES
F311	346.5	34.6	WH	WH	BIASED HIGH*	10 3.4 1.8906	10	ICP-MS
F317	327.0	32.7	WH	WH	BIASED HIGH	10 7.9 -1.1675	10	ICP-AES
F317b	304.0	30.4		WH		10		ICP-MS

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 20.0

## **Section 4 – Total Phosphorus in Water**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

Program Name: FPTP

Study Code: 0097

Range of Samples: 1 to 10

**Table 1 Participating Laboratories - EC PT for Total Phosphorus in Water**

Accutest Labs Southeast, Orlando, FL, US  
 Adirondack Lakes Survey Corporation, DEC, Ray Brook, NY, US  
 ALS Laboratory Group, MB Technology Centre Ltd., Winnipeg, MB  
 Bay of Plenty Regional Council, Whakatane, New Zealand  
 Capital District Health Authority, QEII Lab, Halifax, NS  
 Collier County PCPD Lab, Naples, FL, US  
 Columbia Analytical Services, Jacksonville, FL, US  
 Dade County DERM Lab, Miami, FL, US  
 DB Environmental Labs, Rockledge, FL, US  
 Department of Fisheries & Oceans, Freshwater, Winnipeg, MB  
 Environment Canada, ALET, Moncton, NB  
 Environment Canada, NLET, Burlington, ON  
 Environment Canada, NLET, Saskatoon, SK  
 Environment Canada, PYLET, Vancouver, BC  
 Environment New Brunswick, Fredericton, NB  
 Environnement Canada, QLET, Montreal, QC  
 Environnement Quebec, CEAEQ, Ste-Foy, QC  
 Florida DEP Central Lab, Tallahassee, FL, US  
 Illinois State Water Survey, Champaign, IL, US  
 Kinectrics Inc., Toronto, ON  
 Natural Resources Canada-CFS-GL, Sault Ste. Marie, ON  
 NIWA, Hamilton, New Zealand  
 Onondaga County, WEP, Syracuse, NY, US  
 Ontario Ministry of Environment, Dorset, ON  
 Ontario Ministry of Environment, LSB, Etobicoke, ON  
 RMB Environmental Laboratories, Detroit Lakes, MN, US  
 South Florida Water Management Dist., West Palm Beach, FL, US  
 TAIGA Environmental Laboratory, Yellowknife, NT  
 TestAmerica, Savannah, GA, US  
 TestAmerica, Tallahassee, FL, US  
 U.S. Environmental Protection Agency, Corvallis, OR, US  
 U.S. Geological Survey, NWQL, Denver, CO, US  
 Universidade da Coruña, A Coruña, Spain  
 University of New Hampshire, Durham, NH, US  
 University of Victoria, Victoria, BC  
 Ville de Montreal, Montreal, QC

36 Laboratories.

Program Name: FPTP

Number of Labs: 38

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Total Phosphorus in Water**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F007	1	0	0.00	10	0	0.00		0.00
F010	1	0	0.00	10	0	0.00		0.00
F011	1	0	0.00	10	0	0.00		0.00
F003	1	0	0.00	10	0	0.00		0.00
F021	1	0	0.00	10	0	0.00		0.00
F026	1	0	0.00	10	0	0.00		0.00
F026b	1	0	0.00	10	0	0.00		0.00
F036	1	0	0.00	10	0	0.00		0.00
F069	1	0	0.00	10	0	0.00		0.00
F069b	1	0	0.00	10	0	0.00		0.00
F074	1	0	0.00	10	0	0.00		0.00
F112	1	0	0.00	10	0	0.00		0.00
F113	1	0	0.00	4	0	0.00		0.00
F207	1	0	0.00	10	0	0.00		0.00
F221	1	0	0.00	10	0	0.00		0.00
F228	1	0	0.00	10	0	0.00		0.00
F248	1	0	0.00	10	0	0.00		0.00
F280	1	0	0.00	10	0	0.00		0.00
F292	1	0	0.00	10	0	0.00		0.00
F293	1	0	0.00	10	0	0.00		0.00
F170	1	0	0.00	10	0	0.00		0.00
F183	1	0	0.00	10	0	0.00		0.00
F302	1	0	0.00	10	0	0.00		0.00
F304	1	0	0.00	10	0	0.00		0.00
F299	1	0	0.00	10	1	5.00	5.00	5.00
F053	1	0	0.00	10	1	5.00	5.00	5.00
F032	1	0	0.00	10	2	10.00	10.00	10.00
F154	1	0	0.00	10	2	10.00	10.00	10.00
F202	1	0	0.00	10	2	10.00	10.00	10.00
F309	1	0	0.00	10	2	10.00	10.00	10.00
F317	1	0	0.00	10	3	15.00	15.00	15.00
F015	1	0	0.00	10	3	15.00	15.00	15.00
F022	1	0	0.00	10	3	15.00	15.00	15.00
F305	1	0	0.00	10	9	45.00	45.00	45.00
F324	1	1	50.00	10	0	0.00	50.00	50.00
F014	1	1	50.00	10	1	5.00	55.00	55.00
F158	1	1	50.00	10	2	10.00	60.00	60.00
F004	1	1	50.00	10	3	15.00	65.00	65.00

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

Program Name: FFTP

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Total Phosphorus in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F004	0.0	10.0	15.0	15.0	25.0	60.0	0.0	0.0	10.0	65.0	12.5	Satisfactory
F007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F010	75.0	0.0	10.0	65.0	20.0	0.0	0.0	5.0	25.0	0.0	7.5	Satisfactory
F011	5.0	10.0	55.0	85.0	15.0	10.0	30.0	25.0	5.0	0.0	12.5	Satisfactory
F014	0.0	5.0	0.0		5.0		0.0		70.0	55.0	5.0	Good
F015	0.0	0.0	10.0	0.0	0.0	0.0	0.0	20.0	5.0	15.0	0.0	Good
F021	0.0	60.0	5.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	Good
F022	0.0	5.0	20.0	10.0	50.0	15.0	0.0	0.0	0.0	15.0	7.5	Satisfactory
F026	0.0	65.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F026b		5.0	0.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F032	0.0	0.0	10.0	15.0	10.0	0.0	0.0	0.0	10.0	10.0	5.0	Good
F036	0.0	0.0	0.0	0.0	60.0	0.0	0.0	5.0	0.0	0.0	0.0	Good
F053									60.0	5.0	32.5	Poor
F069	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	Good
F069b		10.0		0.0	10.0	0.0		0.0		0.0	0.0	Good
F074	10.0	0.0	20.0	0.0	15.0	10.0	20.0	0.0	0.0	0.0	5.0	Good
F112							5.0	0.0	0.0	0.0	0.0	Good
F113	0.0	5.0	15.0	25.0	10.0	5.0	0.0	0.0	25.0	0.0	5.0	Good
F154							10.0	0.0	20.0	10.0	10.0	Satisfactory
F158								15.0	0.0	60.0	15.0	Moderate
F170	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	Good
F183			0.0			0.0		55.0	10.0	0.0	0.0	Good
F202	80.0	0.0	10.0	5.0	10.0	5.0	10.0	0.0	0.0	10.0	7.5	Satisfactory
F207	0.0	0.0	0.0		0.0	5.0	0.0	0.0	0.0	0.0	0.0	Good
F221	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Good
F228									0.0	0.0	0.0	Good

Program Name: FPTP

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Total Phosphorus in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F248						0.0	0.0	10.0	0.0	0.0	0.0	Good
F280										0.0	0.0	Good
F292										0.0	0.0	Good
F293										0.0	0.0	Good
F299										5.0	5.0	Good
F302										0.0	0.0	Good
F304							5.0	0.0	0.0	0.0	0.0	Good
F305										45.0	45.0	Poor
F309										10.0	10.0	Satisfactory
F317										15.0	15.0	Moderate
F324										50.0	50.0	Poor
Interlab Median	0.0	0.0	2.5	0.0	10.0	0.0	0.0	0.0	0.0	0.0		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPTP

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Total Phosphorus in Water**

Sample Number	Sample Name	Spiking Detail	Phosphorus (mg/L)
1	TP97-1	n/a	0.273
2	TP97-2	n/a	0.315
3	TP97-3	n/a	0.168
4	TP97-4	organic spike	0.546
5	TP97-5	n/a	0.00300
6	TP97-6	n/a	0.0220
7	TP97-7	n/a	0.00200
8	TP97-8	inorganic spike	0.869
9	TP97-9	organic spike	0.00800
10	TP97-10	inorganic spike	0.713

Samples are prepared in natural lake and river waters and preserved with 0.2% sulfuric acid. Standard phosphate solutions are prepared with potassium dihydrogen phosphate and sodium  $\beta$ -glycerophosphate for inorganic and organic spikes respectively.

**Program Name:** FPTP

**Range of Samples:** 1 to 10

2011-03-11

**Study Code:** 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Total Phosphorus in Water**

Parameters	TP97-1 Sample 1	TP97-2 Sample 2	TP97-3 Sample 3	TP97-4 Sample 4	TP97-5 Sample 5	TP97-6 Sample 6	TP97-7 Sample 7	TP97-8 Sample 8	TP97-9 Sample 9	TP97-10 Sample 10
Total Phosphorus (mg/L P)	0.273	0.315	0.168	0.546	0.00300	0.0220	0.00200	0.869	0.00800	0.713

PARAMETER: 15092 Total Phosphorus mg/L P

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Total Phosphorus in Water

SAMPLE LAB NO	1= TP97-1 LAB RESULT	2= TP97-2 LAB RESULT	3= TP97-3 LAB RESULT	4= TP97-4 LAB RESULT	5= TP97-5 LAB RESULT	6= TP97-6 LAB RESULT	7= TP97-7 LAB RESULT	8= TP97-8 LAB RESULT	9= TP97-9 LAB RESULT	10= TP97-10 LAB RESULT							
F003	0.269	0.31	0.165	0.546	0.003	0.022	0.001	0.858	0.008	0.715							
F004	0.249	0.277 WL	0.154	0.498	0.003	0.024	<0.002	0.715 AL	0.007	0.62 WL							
F007	0.28	0.327	0.172	0.562	0.003	0.022	<0.002	0.895	0.008	0.728							
F010	0.27	0.314	0.164	0.55	0.0042	0.0249	0.0027	0.862	0.0099	0.704							
F011	0.3	0.34	0.18	0.57	<0.01	0.02	<0.01	0.91	<0.01	0.74							
F014	0.3	0.33	0.18	0.59	<0.005	0.034 AH	<0.005	0.92	0.01	0.76							
F015	0.258	0.298	0.166	0.56	0.004	0.016 WL	<0.002	1.19 AH	0.012	1.01 AH							
F021	0.275	0.317	0.173	0.527	0.003	0.022	<0.002	0.875	0.008	0.733							
F022	0.266	0.315	0.166	0.524	0.012 AH	0.023	0.01 WH	0.845	0.02 AH	0.692							
F026	0.265	0.311	0.164	0.536	0.003	0.023	<0.001	0.865	0.008	0.701							
F026b	0.261	0.307	0.161	0.54	<0.02	0.019	<0.02	0.833	<0.02	0.701							
F032	0.253	0.287	0.174	0.494 WL	<0.01	0.023	<0.01	0.799	0.014 WH	0.664							
F036	0.279	0.321	0.167	0.561	0.0026	0.023	0.00087	0.885	0.0076	0.735							
F053	0.276	0.302	0.168	0.593	<0.003	0.023	<0.003	0.934	0.013 WH	0.783							
F069	0.273	0.317	0.171	0.562	<0.004	0.022	<0.004	0.902	0.007	0.739							
F069b	0.267	0.31	0.169	0.566	<0.01	0.019	<0.01	0.845	<0.01	0.699							
F074	0.266	0.3	0.165	0.554	0.003	0.023	0.002	0.851	0.009	0.709							
F112	0.279	0.316	0.151	0.560	0.00281	0.0216	0.00082	0.896	0.00803	0.744							
F113	0.254	0.297	0.152	0.527													
F154	0.241 WL	0.279 WL	0.163	0.524	<0.010	0.0238	<0.010	0.855	<0.010	0.697							
F158	0.296	0.346	0.18	0.594	<0.005	0.024	<0.005	0.97 WH	0.008	0.804 WH							
F170	0.289	0.333	0.177	0.577	0.005	0.023	<0.001	0.902	0.008	0.751							
F183	0.3	0.34	0.18	0.53	0.003	0.023	<0.003	0.85	0.008	0.72							
F202	0.292	0.314	0.178	0.54	0.007 AH	0.027 WH	0.005	0.864	0.01	0.705							
F207	0.274	0.317	0.169	0.559	0.002	0.021	<0.002	0.877	0.007	0.725							
F221	0.270	0.311	0.166	0.544	0.002	0.022	<0.001	0.879	0.007	0.722							
F228	0.276	0.321	0.168	0.526	0.002	0.022	<0.002	0.842	0.007	0.668							
F248	0.27	0.31	0.166	0.54	0.003	0.022	<0.003	0.83	0.008	0.68							
F280	0.282	0.315	0.17	0.539	0.003	0.022	0.003	0.874	0.006	0.713							
F292	0.273	0.319	0.168	0.553	<0.005	0.0203	<0.005	0.884	0.0062	0.728							
F293	0.269	0.321	0.165	0.541	<0.004	0.022	<0.004	0.849	0.007	0.701							
F299	0.25	0.292	0.158	0.529	0.008 AH	0.021	<0.004	0.794	0.01	0.684							
F302	0.275	0.317	0.168	0.555	0.003	0.022	0.001	0.879	0.008	0.724							
F304	0.281	0.324	0.17	0.562	<0.001	0.019	<0.001	0.882	0.008	0.763							
F305	0.036 AL	0.33	0.13 AL	1.4 AH	0.022 AH	0.036 AH	0.022 AH	3. AH	0.014 WH	1.7 AH							
F309	0.275	0.292	0.145 WL	0.523	<0.0044	0.0134 AL	<0.0044	0.857	0.00517	0.691							
F317	0.28	0.33	0.18	0.6	<0.024	0.052 AH	<0.024	0.97 WH	0.066 AH	0.71							
F324	0.265	0.308	0.163	0.508	<0.005	0.02	<0.005	0.822	0.006	0.677							
ASSIGNED VALUE *	0.273	0.315	0.168	0.546	0.00300	0.0220	0.00200	0.869	0.00800	0.713							
R-STD DEV *	0.0148	0.0154	0.0087	0.0261	0.001269	0.00218	0.003112	0.0420	0.002154	0.0350							
ACCEPTABLE LIMITS(+-) *	0.0296	0.0308	0.0174	0.0522	0.002538	0.00436	0.006224	0.0840	0.004308	0.0700							
WARNING LIMITS(+-) *	.0296-	.0444-	.0308-	.0462-	.0174-	.0261-	.0522-	.0783-	.002538-	.00.00436-	.006-	.006224-	.00.0840-	.1260-	.004308-	.00.0700-	.1050
ACTION LIMITS(<>) *	0.0444	0.0462	0.0261	0.0783	0.003807	0.00654	0.009336	0.1260	0.006462	0.1050							
N *	38	38	38	38	22	37	10	37	33	37							

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	140.5	14.0			10			Autoclaved SnCl2
F004	62.5	6.9	WL	AL WL	BIASED LOW	9	-16.0	Autoclaved SnCl2
F007	213.5	23.7				9		Autoclaved ascorbic
F010	175.0	17.5			10			Autoclaved SnCl2
F011	208.0	29.7			BIASED HIGH*	7	3.2	
F014	265.0	33.1		AH	BIASED HIGH	8	5.1	0.0073
F015	174.0	19.3		WL AH AH		9		0.0064
F021	174.5	19.3				9		Technicon
F022	157.0	15.7		AH WH AH		10		Autoclaved ascorbic
F026	130.0	14.4				9		Autoclaved SnCl2
F026b	62.0	8.8				7		Block dig. ICP-AES
F032	101.0	12.6	WL	WH		8		Autoclaved SnCl2
F036	197.0	19.7				10		ICP-AES
F053	212.5	26.5		WH		8		E3367
F069	181.5	22.6				8		Autoclaved ascorbic
F069b	104.0	14.8				7		acid persulfate dige
F074	146.5	14.6				10		b - alkaline persulf
F112	174.0	17.4				10		UV digestion, molybd
F113	24.5	6.1			INSUFFICIENT DATA	4		Block digest/Flow in
F154	70.0	10.0	WLWL			7		persulfate digestion
F158	262.5	32.8		WH WH	BIASED HIGH	8	11.5	Flow inj. ascorbic
F170	253.5	28.1				9		Block dig. ICP-MS
F183	204.0	22.6				9		Flow inj. ascorbic
F202	218.5	21.8	AHHH			10		ICP-MS
F207	156.0	17.3				9		manual ascorbic acid
F221	136.5	15.1				9		Flow inj. ascorbic
F228	118.0	13.1				9		Flow inj. ascorbic
F248	115.0	12.7				9		Autoclaved ascorbic
F280	164.5	16.4				10		Autoclaved ascorbic
F292	149.5	18.6				8		Autoclaved ascorbic
F293	118.5	14.8				8		Flow inj. ascorbic
F299	88.0	9.7	AH			9		Autoclaved ascorbic
F302	182.5	18.2				10		Flow inj. ascorbic
F304	194.0	24.2				8		Flow inj. ascorbic
F305	245.5	24.5	AL ALAHAHAHAHAHWAH			10		Block dig. ascorbic
F309	56.5	7.0	WL AL		BIASED LOW*	8	-1.7	Flow inj. ascorbic
F317	257.0	32.1	AH WHAH		BIASED HIGH*	8	3.1	Block dig. ascorbic
F324	49.0	6.1			BIASED LOW	8	-6.1	EPA 365.3

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 18.1

## **Section 5 – Turbidity in Water**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

**Program Name:** FPTU

**Study Code:** 0097

Range of Samples: 1 to 10

**Table 1 Participating Laboratories - EC PT for Turbidity in Water**

Capital District Health Authority, QEII Lab, Halifax, NS  
Environment Canada, NLET, Burlington, ON  
Environment Canada, NLET, Saskatoon, SK  
Environment Canada, PYLET, Vancouver, BC  
Environment New Brunswick, Fredericton, NB  
Environnement Canada, QLET, Montreal, QC  
Environnement Quebec, CEAEQ, Ste-Foy, QC  
Kinectrics Inc., Toronto, ON  
NIWA, Hamilton, New Zealand  
Ontario Ministry of Environment, LSB, Etobicoke, ON  
South Florida Water Management Dist., West Palm Beach, FL, US  
TAIGA Environmental Laboratory, Yellowknife, NT  
U of Maine, Sawyer Environmental Centre, Orono, ME, US  
U.S. Environmental Protection Agency, Corvallis, OR, US  
Universidade da Coruña, A Coruña, Spain  
Ville de Montreal, Montreal, QC

17 Laboratories (1 laboratory name unpublished).

Program Name: FPTU

Number of Labs: 17

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Turbidity in Water**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F007	1	0	0.00	10	0	0.00		0.00
F010	1	0	0.00	10	0	0.00		0.00
F011	1	0	0.00	10	0	0.00		0.00
F014	1	0	0.00	10	0	0.00		0.00
F015	1	0	0.00	10	0	0.00		0.00
F003	1	0	0.00	10	0	0.00		0.00
F032	1	0	0.00	10	0	0.00		0.00
F090	1	0	0.00	10	0	0.00		0.00
F113	1	0	0.00	9	0	0.00		0.00
F158	1	0	0.00	10	0	0.00		0.00
F183	1	0	0.00	10	0	0.00		0.00
F248	1	0	0.00	10	0	0.00		0.00
F221	1	0	0.00	10	1	5.00		5.00
F022	1	0	0.00	10	1	5.00		5.00
F042	1	0	0.00	10	3	15.00		15.00
F004	1	0	0.00	10	3	15.00		15.00
F207	1	0	0.00	10	3	15.00		15.00

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

Program Name: FPTU

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Turbidity in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F003					0.0		0.0	0.0	0.0	0.0	0.0	Good
F004					0.0		0.0	0.0	0.0	15.0	0.0	Good
F007							0.0	0.0	10.0	0.0	0.0	Good
F010					0.0		5.0	5.0	0.0	0.0	0.0	Good
F011					5.0		50.0	5.0	0.0	0.0	5.0	Good
F014							0.0	5.0		0.0	0.0	Good
F015					10.0		55.0	0.0	5.0	0.0	5.0	Good
F022					0.0		50.0	50.0	5.0	5.0	5.0	Good
F032					0.0		0.0	0.0	0.0	0.0	0.0	Good
F042							0.0			15.0	7.5	Satisfactory
F090					0.0		40.0	0.0	0.0	0.0	0.0	Good
F113					0.0		0.0		35.0	0.0	0.0	Good
F158					0.0		0.0	0.0		0.0	0.0	Good
F183										0.0	0.0	Good
F207										15.0	15.0	Moderate
F221								65.0	0.0	5.0	5.0	Good
F248					0.0			0.0	0.0	0.0	0.0	Good
Interlab Median	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPTU

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Turbidity in Water**

Sample Number	Sample Name	Turbidity (NTU/JTU)
1	TU97-1	638
2	TU97-2	0.182
3	TU97-3	66.6
4	TU97-4	35.7
5	TU97-5	52.0
6	TU97-6	5.85
7	TU97-7	11.5
8	TU97-8	454
9	TU97-9	19.8
10	TU97-10	320

**Program Name:** FPTU

**Range of Samples:** 1 to 10

2011-03-11

**Study Code:** 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Turbidity in Water**

Parameters	TU97-1 Sample 1	TU97-2 Sample 2	TU97-3 Sample 3	TU97-4 Sample 4	TU97-5 Sample 5	TU97-6 Sample 6	TU97-7 Sample 7	TU97-8 Sample 8	TU97-9 Sample 9	TU97-10 Sample 10
Turbidity (JTU/NTU)	638	0.182	66.6	35.7	52.0	5.85	11.5	454	19.8	320

PARAMETER: 00192 Turbidity

JTU/NTU

WATER SCIENCE & TECHNOLOGY  
ENVIRONMENT CANADA

EC PT for Turbidity in Water

SAMPLE LAB NO	1= TU97-1 LAB RESULT	2= TU97-2 LAB RESULT	3= TU97-3 LAB RESULT	4= TU97-4 LAB RESULT	5= TU97-5 LAB RESULT	6= TU97-6 LAB RESULT	7= TU97-7 LAB RESULT	8= TU97-8 LAB RESULT	9= TU97-9 LAB RESULT	10= TU97-10 LAB RESULT
F003	651.	0.3	67.6	35.7	52.8	6.1	11.8	467.	20.2	331.
F004	500. AL	0.1	65.	36.	50.	6.	12.	350. AL	20.	250. AL
F007	630.	0.2	69.2	37.6	54.1	6.3	11.7	455.	20.3	324.
F010	638.	0.182	70.1	37.2	53.8	6.29	11.5	459.	20.	332.
F011	631.	0.31	67.2	34.9	52.4	5.99	11.3	452.	19.8	319.
F014	640.	0.52	67.	38.	52.	5.1	13.	470.	20.	320.
F015	617.	0.12	66.1	35.6	51.3	5.77	11.5	441.	19.6	315.
F022	578.	0.73 WH	63.	34.3	48.9	5.44	10.4	428.	18.	307.
F032	651.	<0.25	65.4	35.4	51.2	5.85	11.1	466.	19.1	330.
F042	589.	0.12	63.3	33.2	49.2	4.4 WL	9.6 WL	436.	17.2 WL	310.
F090	649.	0.053	66.6	36.	52.	5.81	11.6	464.	19.9	333.
F113	0.13	63.2	33.5	48.4	4.9	10.2	410.	18.	308.	
F158	603.	0.13	67.8	37.3	52.7	6.02	12.	440.	20.3	311.
F183	653.	0.105	64.8	34.	51.2	4.97	10.4	466.	18.	328.
F207	638.	0.4	60.6 WL	33.5	46.2 WL	5.9	11.4	429.	19.3	289. WL
F221	690.	0.69 WH	68.1	35.9	52.6	6.1	11.9	492.	20.3	342.
F248	626.	<0.09	66.8	35.7	52.	5.82	11.5	451.	19.8	321.
ASSIGNED VALUE *	638	0.182	66.6	35.7	52.0	5.85	11.5	454	19.8	320
R-STD DEV *	30.9	0.1993	2.53	1.67	2.05	0.535	0.78	22.4	1.02	14.3
ACCEPTABLE LIMITS(+-) *	61.8	0.3986	5.06	3.34	4.10	1.070	1.56	44.8	2.04	28.6
WARNING LIMITS(+-) *	61.8- 92.7	.3986- .5979	5.06- 7.59	3.34- 5.01	4.10- 6.15	1.070- 1.605	1.56- 2.34	44.8- 67.2	2.04- 3.06	28.6- 42.9
ACTION LIMITS(<>) *	92.7	0.5979	7.59	5.01	6.15	1.605	2.34	67.2	3.06	42.9
N *	16	15	17	17	17	17	17	17	17	17

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING
F003	131.5	13.1			10			Hach
F004	68.0	6.8	AL	AL AL	10			Hach
F007	131.0	13.1			10			Hach
F010	127.5	12.7			10			Hach
F011	91.5	9.1			10			
F014	120.0	12.0			10			PC-Titrate
F015	69.5	6.9			10			Nephelometric
F022	44.5	4.4	WH	BIASED LOW*	10	-7.5	1.5693	Turbidimeter
F032	79.5	8.8			9			NTU/JTU-E3311
F042	29.5	2.9	WL WL	BIASED LOW*	10	-5.7	0.4241	Turbidimeter
F090	100.5	10.0			10			
F113	27.0	3.0		BIASED LOW*	9	-7.6	0.6675	automated turbidimet
F158	110.0	11.0			10			Turbidimeter
F183	68.5	6.8			10			
F207	55.0	5.5	WL WL	WL	10			Turbidimeter
F221	147.5	14.7	WH	BIASED HIGH*	10	8.8	-2.0028	Hach
F248	79.0	8.7			9			Turbidimeter

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
 PERCENT SLOPE USED FOR CAUTION COMPARISON = 10

OVERALL AVERAGE RANK IS 8.8

## **Section 6 – Total Mercury in Water**

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Table 1	Participating Laboratories
Table 2	Laboratory Performance Scores
Table 3	Five-Year Historical Laboratory Performance
Table 4	Sample Design
Table 5	Summary of Interlaboratory Median Values
Appendix A	Data Summary

**Program Name:** FPHG

**Study Code:** 0097

Range of Samples: 1 to 10

**Table 1 Participating Laboratories - EC PT for Total Mercury in Water**

Accutest Labs Southeast, Orlando, FL, US  
Brooks Rand LLC, Seattle, WA, US  
Columbia Analytical Services, Jacksonville, FL, US  
CSIRO Land and Water, Lucas Heights, NSW, Australia  
Dade County DERM Lab, Miami, FL, US  
Environment Canada, ALET, Moncton, NB  
Environment Canada, PYLET, Vancouver, BC  
Environment New Brunswick, Fredericton, NB  
Environnement Canada, QLET, Montreal, QC  
Florida DEP Central Lab, Tallahassee, FL, US  
Kinectrics Inc., Toronto, ON  
Maxxam Analytics Incorporated, Burnaby, BC  
Ontario Ministry of Environment, LSB, Etobicoke, ON  
Saskatchewan Research Council, Saskatoon, SK  
TAIGA Environmental Laboratory, Yellowknife, NT  
TestAmerica, Savannah, GA, US  
U of Maine, Sawyer Environmental Centre, Orono, ME, US  
U.S. Geological Survey, Boulder, CO, US  
Universidade da Coruña, A Coruña, Spain  
University of Manitoba, Winnipeg, MB  
Ville de Montreal, Montreal, QC

21 Laboratories.

Program Name: FPHG

Number of Labs: 21

Study Code: 0097

Range of Samples: 1 to 10

**Table 2 Laboratory Performance Scores - EC PT for Total Mercury in Water**

Lab Code	Systemic Bias			Flagged Results				% Score (Sum of Parameters Biased & Results Flagged)
	No. of Parameters Analyzed	No. of Parameters Biased	Parameters Biased (50%)	No. of Results Reported	No. of Flags Assigned	Results Flagged (50%)		
F014	1	0	0.00	10	0	0.00		0.00
F015	1	0	0.00	10	0	0.00		0.00
F020	1	0	0.00	10	0	0.00		0.00
F024	1	0	0.00	10	0	0.00		0.00
F032	1	0	0.00	10	0	0.00		0.00
F042	1	0	0.00	10	0	0.00		0.00
F007	1	0	0.00	5	0	0.00		0.00
F248	1	0	0.00	10	0	0.00		0.00
F249	1	0	0.00	10	0	0.00		0.00
F292	1	0	0.00	10	0	0.00		0.00
F293	1	0	0.00	10	0	0.00		0.00
F195	1	0	0.00	10	0	0.00		0.00
F011	1	0	0.00	10	1	5.00		5.00
F311	1	0	0.00	10	2	10.00		10.00
F022	1	0	0.00	10	3	15.00		15.00
F305	1	0	0.00	10	3	15.00		15.00
F228	1	1	50.00	10	0	0.00		50.00
F317	1	1	50.00	10	1	5.00		55.00
F021	1	1	50.00	10	1	5.00		55.00
F183	1	1	50.00	10	4	20.00		70.00
F182	1	1	50.00	10	7	35.00		85.00

**Laboratory Performance Rating**

Rating	% Score*
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

\*Sum of Parameters Biased &amp; Results Flagged

Program Name: FPHG

Study Code: 0097

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Total Mercury in Water**

LAB CODE	% Score (Sum of Parameters Biased & Results Flagged)										MEDIAN	RATING
	0088 Summer 2006	0089 Winter 2006	0090 Summer 2007	0091 Winter 2007	0092 Summer 2008	0093 Winter 2008	0094 Summer 2009	0095 Winter 2009	0096 Summer 2010	0097 Winter 2010		
F007								0.0		0.0	0.0	Good
F011								0.0		5.0	2.5	Good
F014	0.0		0.0		0.0		0.0		0.0	0.0	0.0	Good
F015								0.0		0.0	0.0	Good
F020										0.0	0.0	Good
F021	0.0		0.0		0.0		0.0			55.0	0.0	Good
F022	0.0		0.0		70.0		55.0		15.0	15.0	Moderate	
F024			0.0		60.0		5.0		0.0	2.5	Good	
F032	0.0		0.0		0.0		0.0		0.0	0.0	0.0	Good
F042	0.0		0.0		0.0		0.0		0.0	0.0	0.0	Good
F182	0.0		0.0		0.0		0.0		85.0	0.0	Good	
F183	0.0		50.0		0.0		0.0		70.0	0.0	Good	
F195	50.0		55.0		0.0		0.0		0.0	0.0	0.0	Good
F228										50.0	50.0	Poor
F248			5.0				55.0		0.0	5.0	Good	
F249										0.0	0.0	Good
F292										0.0	0.0	Good
F293										0.0	0.0	Good
F305										15.0	15.0	Moderate
F311										10.0	10.0	Satisfactory
F317										55.0	55.0	Poor
Interlab Median	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

**Laboratory Performance Rating**

Rating	% Score
Good	0 - 5
Satisfactory	> 5 - 12.5
Moderate	> 12.5 - 30
Poor	> 30

Program Name: FPHG

2011-03-11

Study Code: 0097

**Table 4 Sample Design - EC PT for Total Mercury in Water**

Sample Number	Sample Name	Mercury ( $\mu\text{g/L}$ )
1	HG97-1	0.320
2	HG97-2	0.0507
3	HG97-3	0.0900
4	HG97-4	0.300
5	HG97-5	0.00120
6	HG97-6	0.200
7	HG97-7	0.0220
8	HG97-8	0.4005
9	HG97-9	0.496
10	HG97-10	0.0400

Samples are prepared in natural lake water and preserved with 1% sulfuric acid and 0.05% potassium dichromate.

**Program Name:** FPHG

**Range of Samples:** 1 to 10

2011-03-11

**Study Code:** 0097

**Table 5 Summary of Interlaboratory Median Values - EC PT for Total Mercury in Water**

Parameters	HG97-1 Sample 1	HG97-2 Sample 2	HG97-3 Sample 3	HG97-4 Sample 4	HG97-5 Sample 5	HG97-6 Sample 6	HG97-7 Sample 7	HG97-8 Sample 8	HG97-9 Sample 9	HG97-10 Sample 10
Mercury (ug/L)	0.320	0.0507	0.0900	0.300	0.00120	0.200	0.0220	0.4005	0.496	0.0400

PARAMETER: 80095 Mercury

ug/L

 WATER SCIENCE & TECHNOLOGY  
 ENVIRONMENT CANADA

EC PT for Total Mercury in Water

SAMPLE LAB NO	1= HG97-1 LAB RESULT	2= HG97-2 LAB RESULT	3= HG97-3 LAB RESULT	4= HG97-4 LAB RESULT	5= HG97-5 LAB RESULT	6= HG97-6 LAB RESULT	7= HG97-7 LAB RESULT	8= HG97-8 LAB RESULT	9= HG97-9 LAB RESULT	10= HG97-10 LAB RESULT
F007		0.0521	0.0932		0.0012		0.0229			0.0459
F011	0.316	0.0542	0.0942	0.295	0.0052 AH	0.204	0.0242	0.354	0.425	0.0396
F014	0.32	<0.05	0.08	0.3	<0.05	0.19	<0.05	0.4	0.48	<0.05
F015	0.35	0.05	0.1	0.32	<0.02	0.22	0.02	0.42	0.5	0.04
F020	0.339	0.052	0.094	0.315	<0.002	0.212	0.021	0.427	0.498	0.043
F021	0.38	0.06	0.1	0.36	<0.02	0.23	0.03	0.46	0.55	0.05 AH
F022	0.38	0.08 AH	0.115 WH	0.355	<0.05	0.228	<0.05	0.443	0.517	0.063 AH
F024	0.29	0.06	0.09	0.29	<0.02	0.19	0.02	0.43	0.5	0.04
F032	0.34	0.04	0.09	0.31	<0.02	0.2	<0.02	0.44	0.52	0.04
F042	0.304	0.049	0.088	0.286	<0.010	0.192	0.022	0.383	0.46	0.04
F182	0.134 AL	0.0349 WL	0.0647 WL	0.182 AL	0.0011	0.15 WL	0.0181	0.297	0.303 AL	0.0238 AL
F183	0.233 WL	<0.050	<0.050 AL	0.236	<0.050	0.128 AL	<0.050	0.319	0.37 WL	<0.050
F195	0.309	0.0458	0.0854	0.288	0.0009	0.197	0.0218	0.383	0.471	0.0402
F228	0.289	0.043	0.082	0.301	<0.003	0.183	0.020	0.349	0.425	0.036
F248	0.329	0.053	0.098	0.315	<0.005	0.202	0.023	0.401	0.481	0.041
F249	0.31	0.05	0.09	0.29	<0.002	0.2	0.03	0.4	0.47	0.04
F292	0.35	<0.20	<0.20	0.34	<0.20	0.23	<0.20	0.43	0.51	<0.20
F293	0.321	0.0507	0.0896	0.3	0.00123	0.203	0.0222	0.414	0.496	0.0406
F305	0.32	<0.050	0.06 AL	0.26	<0.050	0.18	0.09 AH	0.61 AH	0.51	<0.050
F311	0.34	0.0534	0.0937	0.306	0.00135	0.208	0.416 AH	0.0234 AL	0.497	0.0428
F317	0.19 AL	<0.091	<0.091	0.26	<0.091	0.18	<0.091	0.37	0.43	<0.091
ASSIGNED VALUE *	0.320	0.0507	0.0900	0.300	0.00120	0.200	0.0220	0.4005	0.496	0.0400
R-STD DEV *	0.0391	0.00749	0.00879	0.0330	0.000304	0.0213	0.00523	0.05385	0.0443	0.00320
ACCEPTABLE LIMITS(+-) *	0.0782	0.01498	0.01758	0.0660	0.000608	0.0426	0.01046	0.10770	0.0886	0.00640
WARNING LIMITS(+-) *	.0782-	.1173.	.01498-	.022.	.01758-	.026.	.0660-	.0990.	.000608-	.00.0426-
ACTION LIMITS(<>) *	0.1173	0.02247	0.02637	0.0990	0.000912	0.0639	0.01569	0.16155	0.1329	0.00960
N *	20	16	18	20	6	20	15	20	20	16

\* NOTE: SEE GLOSSARY FOR DEFINITIONS

LAB NO.	TOTAL RANK	AVERAGE RANK	SUMMARY OF FLAGGING	BIAS STATEMENT	NO. SAMPLES RANKED	BIAS % SLOPE	BIAS BLANK	METHOD CODING			
F007	47.0	9.4			5			Cold vapour AFS			
F011	87.5	8.7	AH		10						
F014	49.0	8.1			6			Cold vapour AAS			
F015	111.0	12.3			9			UV cold vapour AAS			
F020	112.5	12.5			9			CVAF			
F021	156.5	17.3	AH	BIASED HIGH	9	14.1	0.0041	UV cold vapour AFS			
F022	142.5	17.8	AHHW	AH	BIASED HIGH*	8	4.1	0.0265	ICP-MS		
F024	81.5	9.0			9			Cold vapour AAS			
F032	93.0	11.6			8			Cold Vap AAS-E3060			
F042	56.5	6.2			9			Cold vapour AFS			
F182	14.0	1.4	ALWLWLAL	WL	ALAL	BIASED LOW	10	-38.1	0.0024	Cold vapour AFS	
F183	11.0	2.2	WL	AL	AL	WL	BIASED LOW	5	-15.7	-0.0308	ICP-MS
F195	62.5	6.2						Cold vapour AFS			
F228	40.5	4.5				BIASED LOW	9	-11.3	0.0035	Cold vapour AFS	
F248	108.5	12.0					9		Cold vapour AFS		
F249	76.5	8.5					9		Cold vapour AFS		
F292	87.0	17.4				BIASED HIGH*	5	-3.6	0.0429	Cold vapour AAS	
F293	95.5	9.5					10		Cold vapour AFS		
F305	69.0	9.8	AL	AHAH			7		UV cold vapour AAS		
F311	112.5	11.2		AHAL			10		Cold vapour AFS		
F317	20.0	4.0	AL			BIASED LOW	5	-6.5	-0.0336	Cold vapour AAS	

\* NOTE: INDICATED BIAS STATEMENT IS FOR CAUTION ONLY AND NOT COUNTED IN STUDY STATISTICS  
PERCENT SLOPE USED FOR CAUTION COMPARISON = 5

OVERALL AVERAGE RANK IS 9.5

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