Environment Canada Environnement Canada

# Environment Canada
# Proficiency Testing Program
# Study #0094

## Trace Elements in Water

---

# Environnement Canada
# Programme d'essais d'aptitude
# Études #0094

## Éléments traces dans l'eau

**June/Juin to September/Septembre 2009**

**C. Tinson**

**WSTD Contribution No. 09-065**

Canada

Environment Canada Environnement Canada

Information and Quality Management
Emergencies, Operational Analytical Laboratories and Research Support Division
Water Science and Technology Directorate, Environment Canada
867 Lakeshore Road, P.O. Box 5050
Burlington, ON, Canada, L7R 4A6

September 21, 2009

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

Re: Distribution of the Final Report for PT Study 0094 (June to September 2009)

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 **trace elements in natural waters**. The evaluation includes systemic bias and precision, a laboratory proficiency appraisal and a summary of z-scores. ***The reported data for sample #8, silver (47095) has not been assessed as this sample parameter did not meet the stability criteria for the PT program.*** 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 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 an instrumental part of the improvement process to our PT program.

Sincerely,

Cheryl Tinson

Study Coordinator

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

*WSTD Contribution No. 09-065*

# Environment Canada Proficiency Testing Program

# Final Report

# for

# Trace Elements in Water

# PT Study 0094* – June to September 2009

Contributors

C. Tinson - Study Coordinator
J. Simser - Quality Assurance Chemist
H. Agemian - Chief, Information and Quality Management

Information and Quality Management
Water Science and Technology Directorate
Burlington, Ontario, CANADA
<PTstudies@ec.gc.ca>

September 2009

*companion studies: Rain and Soft Waters: WSTD Contribution No. 09-063;
Major Ions and Nutrients, Total Phosphorus and Turbidity in Water: WSTD Contribution No. 09-064;
Trace Elements in Sediment: Contribution No. 09-066

Environment Canada Environnement Canada

Version 3.0
2009-09-10

# 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. 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 |
|---|---|
| 1. rain and soft waters (RN)<br>2. major ions and nutrients (MI)<br>3. trace elements in water (TE)<br>4. total phosphorus in water (TP)<br>5. turbidity in water (TU)<br>6. (a)trace elements in sediment (SED)* | 1. rain and soft waters (RN)<br>2. major ions and nutrients (MI)<br>3. trace elements in water (TE)<br>4. total phosphorus in water (TP)<br>5. turbidity in water (TU)<br>6. (b)total mercury in water (HG) |

*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.

A2LA ACCREDITED

Version 3.0
2009-09-10

# 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. 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)<br>2. principaux ions et substances nutritives (PI)<br>3. éléments traces dans l'eau (ET)<br>4. phosphore total dans l'eau (PT)<br>5. turbidité dans l'eau (TU)<br>6. (a)éléments traces dans les sédiments (ETS)* | 1. eau de pluie et eau douce (EP-ED)<br>2. principaux ions et substances nutritives (PI)<br>3. éléments traces dans l'eau (ET)<br>4. phosphore total dans l'eau (PT)<br>5. turbidité dans l'eau (TU)<br>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.

## 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.

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.

2009-09-08

**Program Name:** FPTM

**Study Code:** 0094 Range of Samples: 1 to 10

**Table 1 Participating Laboratories in EC PT for Trace Elements in Water - Study 0094**

ALS Laboratory Group, MB Technology Centre Ltd., Winnipeg, MB
Capital District Health Authority, QEII Lab, Halifax, NS
CTS Ambiental, FIRJAN, Rio de Janeiro, Brazil
Environment Canada, AAQS, Ottawa, ON
Environment Canada, CWS, Atlantic Region, Moncton, NB
Environment Canada, NLET, Burlington, ON
Environment Canada, PYLET, Vancouver, BC
Environment New Brunswick, Fredericton, NB
Environmental Laboratories, Envirolab, Lima, Peru
Environnement Quebec, CEAEQ, Laval, QC
Environnement Quebec, CEAEQ, Ste-Foy, QC
Exova, Edmonton, AB
JR Laboratories, Burnaby, BC
Kinectrics Inc., Toronto, ON
Maxxam Analytics Incorporated, Burnaby, BC
McGill University, MITHE-RN, Ste-Anne-de-Bellevue, QC
Minera Alumbrera, Tucuman, Argentina
Ministry of ND & Mines, Geoscience Laboratories, Sudbury, ON
Natural Resources Canada-CFS-GL, Sault Ste. Marie, ON
Ontario Ministry of Environment, LSB, Etobicoke, ON
P.T. International Nickel, Sorowako, Indonesia
Santé Canada - DSPA, Longueuil, QC
Saskatchewan Research Council, Saskatoon, SK
South Florida Water Management District, West Palm Beach, FL
TAIGA Environmental Laboratory, Yellowknife, NT
Tsakalidis Inc., Pireaus, Greece
U.S. Geological Survey, NWQL, Denver, CO
Universidade da Coruña, A Coruña, Spain
University of Maine, Sawyer Environmental Centre, Orono, ME
Ville de Montreal, Montreal, QC

30 Laboratories.

2009-09-02

**Program Name:** FPTM **Number of Labs:** 38

**Study Code:** 0094 **Range of Samples:** 1 to 10

## Table 2 Laboratory Performance Scores - EC PT for Trace Elements in Water - Study 0094

| | Systemic Bias | | | Flagged Results | | | |
|---|---|---|---|---|---|---|---|
| Lab Code | No. of Parameters Analyzed | No. of Parameters Biased | Parameters Biased (50%) | No. of Results Reported | No. of Flags Assigned | Results Flagged (50%) | % Score (Sum of Parameters Biased & Results Flagged) |
| F003 | 28 | 0 | 0.00 | 280 | 1 | 0.18 | 0.18 |
| F032d | 23 | 0 | 0.00 | 230 | 1 | 0.22 | 0.22 |
| F024 | 28 | 0 | 0.00 | 280 | 3 | 0.54 | 0.54 |
| F193 | 18 | 0 | 0.00 | 180 | 3 | 0.83 | 0.83 |
| F011 | 27 | 0 | 0.00 | 270 | 6 | 1.11 | 1.11 |
| F022 | 29 | 0 | 0.00 | 290 | 7 | 1.21 | 1.21 |
| F223 | 9 | 0 | 0.00 | 79 | 2 | 1.27 | 1.27 |
| F026 | 15 | 0 | 0.00 | 150 | 4 | 1.33 | 1.33 |
| F169 | 17 | 0 | 0.00 | 170 | 5 | 1.47 | 1.47 |
| F223b | 19 | 0 | 0.00 | 190 | 6 | 1.58 | 1.58 |
| F207 | 9 | 0 | 0.00 | 90 | 3 | 1.67 | 1.67 |
| F060 | 27 | 0 | 0.00 | 270 | 10 | 1.85 | 1.85 |
| F032c | 23 | 1 | 2.17 | 230 | 2 | 0.43 | 2.61 |
| F021b | 18 | 0 | 0.00 | 180 | 11 | 3.06 | 3.06 |
| F014 | 16 | 1 | 3.13 | 160 | 1 | 0.31 | 3.44 |
| F020 | 26 | 1 | 1.92 | 260 | 12 | 2.31 | 4.23 |
| F015 | 26 | 2 | 3.85 | 260 | 3 | 0.58 | 4.42 |
| F139 | 28 | 3 | 5.36 | 280 | 7 | 1.25 | 6.61 |
| F021c | 18 | 2 | 5.56 | 180 | 4 | 1.11 | 6.67 |
| F010 | 24 | 3 | 6.25 | 240 | 2 | 0.42 | 6.67 |
| F032g | 15 | 1 | 3.33 | 150 | 11 | 3.67 | 7.00 |
| F273 | 2 | 0 | 0.00 | 20 | 3 | 7.50 | 7.50 |
| F069b | 16 | 2 | 6.25 | 160 | 7 | 2.19 | 8.44 |
| F021 | 23 | 4 | 8.70 | 230 | 5 | 1.09 | 9.78 |
| F196 | 25 | 2 | 4.00 | 250 | 29 | 5.80 | 9.80 |
| F069 | 24 | 3 | 6.25 | 240 | 20 | 4.17 | 10.42 |
| F068 | 23 | 2 | 4.35 | 230 | 30 | 6.52 | 10.87 |
| F248 | 21 | 3 | 7.14 | 210 | 31 | 7.38 | 14.52 |
| F183 | 28 | 5 | 8.93 | 280 | 38 | 6.79 | 15.71 |
| F009 | 24 | 5 | 10.42 | 240 | 31 | 6.46 | 16.87 |
| F158 | 24 | 7 | 14.58 | 240 | 15 | 3.13 | 17.71 |
| F032a | 16 | 4 | 12.50 | 160 | 29 | 9.06 | 21.56 |
| F154 | 28 | 5 | 8.93 | 280 | 79 | 14.11 | 23.04 |
| F042 | 19 | 4 | 10.53 | 190 | 51 | 13.42 | 23.95 |
| F032 | 3 | 2 | 33.33 | 30 | 3 | 5.00 | 38.33 |
| F186 | 24 | 8 | 16.67 | 240 | 112 | 23.33 | 40.00 |
| F287 | 24 | 12 | 25.00 | 239 | 102 | 21.34 | 46.34 |
| F144 | 9 | 6 | 33.33 | 90 | 53 | 29.44 | 62.78 |

**Laboratory Performance Rating**

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

*Sum of Parameters Biased & Results Flagged

**Program Name:** FPTM

**Study Code:** 0094

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Trace Elements in Water - Study 0094**

| LAB CODE | % Score Per Study (Sum of Parameters Biased & Results Flagged) | | | | | | | | | | MEDIAN | RATING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0085 Winter 2004 | 0086 Summer 2005 | 0087 Winter 2005 | 0088 Summer 2006 | 0089 Winter 2006 | 0090 Summer 2007 | 0091 Winter 2007 | 0092 Summer 2008 | 0093 Winter 2008 | 0094 Summer 2009 | | |
| F003 | 5.0 | 8.8 | 8.1 | 3.2 | 0.4 | 1.4 | 0.7 | 0.4 | 0.4 | 0.2 | 1.1 | Good |
| F009 | 11.4 | 25.1 | 7.7 | 16.2 | 17.5 | 20.5 | 30.4 | 22.2 | 13.5 | 16.9 | 17.2 | Moderate |
| F010 | 5.0 | 4.2 | 2.9 | 7.1 | 1.1 | 2.1 | 9.4 | 3.1 | 2.3 | 6.7 | 3.6 | Good |
| F011 | 11.0 | 20.8 | 22.6 | 6.7 | 28.3 | 40.7 | 17.2 | 29.4 | 17.4 | 1.1 | 19.1 | Moderate |
| F014 | 16.1 | 2.4 | 0.0 | 6.3 | 1.6 | 6.3 | | 2.2 | | 3.4 | 2.9 | Good |
| F015 | 7.0 | 14.9 | 8.7 | 39.0 | 15.0 | 9.4 | 13.5 | 8.1 | 2.3 | 4.4 | 9.0 | Satisfactory |
| F020 | 10.5 | 8.3 | 11.7 | 21.7 | 6.2 | 5.6 | 36.5 | 6.4 | 8.7 | 4.2 | 8.5 | Satisfactory |
| F021 | 5.1 | 8.1 | 17.0 | 14.2 | 9.0 | 11.3 | 11.8 | 36.7 | 2.2 | 9.8 | 10.6 | Satisfactory |
| F021b | | | | | | | 4.0 | 21.5 | 3.9 | 3.1 | 3.9 | Good |
| F021c | | | | | | | | | | 6.7 | 6.7 | Satisfactory |
| F022 | 39.6 | 6.2 | 4.6 | 2.4 | 3.5 | 0.9 | 7.8 | 9.3 | 2.4 | 1.2 | 4.0 | Good |
| F024 | 7.7 | | 14.5 | 18.2 | 28.4 | 11.1 | 8.9 | 5.2 | 2.5 | 0.5 | 8.9 | Satisfactory |
| F026 | 4.9 | 1.2 | 5.5 | 3.0 | 1.7 | 1.0 | 0.7 | 5.0 | 0.7 | 1.3 | 1.5 | Good |
| F032 | 27.1 | 8.4 | 16.8 | 1.3 | 5.0 | 6.7 | 21.7 | 13.3 | 10.0 | 38.3 | 11.7 | Satisfactory |
| F032a | | | | 7.9 | | | 7.2 | 3.1 | 1.9 | 21.6 | 7.2 | Satisfactory |
| F032c | | | | | 3.3 | 8.0 | 16.7 | 6.5 | 0.0 | 2.6 | 4.9 | Good |
| F032d | | | | | | 33.4 | 4.6 | 0.0 | 2.4 | 0.2 | 2.4 | Good |
| F032g | | | | | | | | | | 7.0 | 7.0 | Satisfactory |
| F042 | 15.8 | 13.9 | 24.1 | 12.3 | 21.8 | 10.0 | | 48.8 | 36.0 | 24.0 | 21.8 | Moderate |
| F060 | | 2.6 | 3.8 | 9.6 | 12.4 | 12.2 | 13.9 | 8.7 | 11.9 | 1.9 | 9.6 | Satisfactory |
| F068 | 3.9 | 12.0 | 23.1 | 3.4 | 6.4 | 4.1 | 0.7 | 20.2 | 1.1 | 10.9 | 5.2 | Satisfactory |
| F069 | | 22.9 | | 20.2 | | 13.5 | | 11.3 | | 10.4 | 13.5 | Moderate |
| F069b | | | | | | | | | | 8.4 | 8.4 | Satisfactory |
| F139 | 3.7 | 7.8 | 10.0 | 4.4 | 13.8 | 1.1 | 11.1 | 17.6 | 17.9 | 6.6 | 8.9 | Satisfactory |
| F144 | | | | | 80.0 | | 25.0 | | 39.6 | 62.8 | 51.2 | Poor |
| F154 | | | | | | | | | | 23.0 | 23.0 | Moderate |
| F158 | 11.9 | 15.2 | 21.5 | 18.3 | 13.5 | 20.2 | 18.1 | 16.5 | 9.2 | 17.7 | 17.1 | Moderate |

**Program Name:** FPTM

**Study Code:** 0094

**Table 3 Five-Year Historical Laboratory Performance - EC PT for Trace Elements in Water - Study 0094**

| LAB CODE | % Score Per Study (Sum of Parameters Biased & Results Flagged) | | | | | | | | | | MEDIAN | RATING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0085 Winter 2004 | 0086 Summer 2005 | 0087 Winter 2005 | 0088 Summer 2006 | 0089 Winter 2006 | 0090 Summer 2007 | 0091 Winter 2007 | 0092 Summer 2008 | 0093 Winter 2008 | 0094 Summer 2009 | | |
| F169 | | | 0.7 | 0.0 | 1.2 | 0.0 | 0.3 | 0.3 | | 1.5 | 0.3 | Good |
| F183 | 15.4 | | | | 12.8 | | | 8.5 | | 15.7 | 14.1 | Moderate |
| F186 | | | | | | | | | | 40.0 | 40.0 | Poor |
| F193 | 37.9 | | 6.7 | 7.6 | 0.8 | 1.8 | 4.0 | 10.5 | 0.3 | 0.8 | 4.0 | Good |
| F196 | | | | | | | | | | 9.8 | 9.8 | Satisfactory |
| F207 | | | 9.1 | 5.6 | 6.3 | 10.7 | | 8.2 | | 1.7 | 7.3 | Satisfactory |
| F223 | 19.6 | | | 17.0 | | 1.8 | | 5.6 | | 1.3 | 5.6 | Satisfactory |
| F223b | | | | | | | | | | 1.6 | 1.6 | Good |
| F248 | | | | | | | 19.5 | 10.2 | 21.0 | 14.5 | 17.0 | Moderate |
| F273 | | | | | | | | | | 7.5 | 7.5 | Satisfactory |
| F287 | | | | | | | | | | 46.3 | 46.3 | Poor |
| Interlab Median | 11.0 | 8.4 | 8.9 | 7.6 | 6.4 | 7.4 | 11.1 | 8.6 | 2.5 | 6.7 | | |

**Laboratory Performance Rating**

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

Program Name: FPTM

Study Code: 0094

2009-09-02

**Table 4 Sample Design - EC PT for Trace Elements in Water - Study 0094**

| Sample Number | Sample Name | Copper (µg/L) |
|---|---|---|
| 1 | TM-23.4 | 8.60 |
| 2 | TM-26.4 | 15.0 |
| 3 | TM-15.2 | 17.4 |
| 4 | TMRain-04 | 7.07 |
| 5 | TM25.4 | 26.8 |
| 6 | TM-09 | 34.7 |
| 7 | TM-16 | 112 |
| 8 | TMDA-65 | 392 |
| 9 | TMDA-62.2 | 94.1 |
| 10 | TMDA-64.2 | 276.500 |

**Program Name:** FPTM **Range of Samples:** 1 to 10 2009-09-02

**Study Code:** 0094

## Table 5 Summary of Interlaboratory Median Values - EC PT for Trace Elements in Water - Study 0094

| Parameters | TM-23.4 Sample 1 | TM-26.4 Sample 2 | TM-15.2 Sample 3 | TMRain-04 Sample 4 | TM25.4 Sample 5 | TM-09 Sample 6 | TM-16 Sample 7 | TMDA-65 Sample 8 | TMDA-62.2 Sample 9 | TMDA-64.2 Sample 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum (ug/L) | 94.5 | 74.0 | 33.0 | 2.00 | 29.9 | 31.0 | 54.1 | 360 | 118 | 290.500 |
| Antimony (ug/L) | 3.2700 | 2.8300 | 16.3000 | 0.366 | 23.7000 | 4.08 | 15.2 | 197 | 62.80 | 130 |
| Arsenic (ug/L) | 8.10 | 8.77 | 15.8 | 1.13 | 27.3 | 20.1 | 41.5 | 200 | 57.3 | 162 |
| Barium (ug/L) | 14.3 | 26.2 | 13.3 | 0.853 | 27.0 | 57.5 | 210 | 400 | 114 | 290.500 |
| Beryllium (ug/L) | 2.02 | 3.44 | 15.1 | 0.383 | 25.9 | 5.99 | 8.00 | 185 | 56.0 | 159.500 |
| Bismuth (ug/L) | 3.34 | 2.72 | 13.20 | 0.622 | 19.0 | 1.70 | 5.20 | 169 | 51.4 | 133 |
| Boron (ug/L) | 18.3 | 46.4 | 23.8 | 1.200 | 40.9 | 31.2 | 47.5 | 398 | 124 | 286 |
| Cadmium (ug/L) | 2.90 | 7.14 | 13.0 | 0.520 | 23.7 | 3.87 | 14.8 | 303 | 93.3 | 266 |
| Chromium (ug/L) | 6.90 | 12.4 | 16.5 | 0.900 | 24.0 | 4.09 | 13.0 | 403 | 94.3 | 292 |
| Cobalt (ug/L) | 7.12 | 8.15 | 15.1 | 0.244 | 27.6 | 2.00 | 8.80 | 383 | 95.8 | 257 |
| Copper (ug/L) | 8.60 | 15.0 | 17.4 | 7.07 | 26.8 | 34.7 | 112 | 392 | 94.1 | 276.500 |
| Gallium (ug/L) | 2.09 | 5.40 | 0.100 | 0.022 | 8.82 | 3.00 | 6.78 | 0.0848 | 33.8 | 52.6 |
| Iron (ug/L) | 15.0 | 21.1 | 26.0 | 24.9 | 31.0 | 118 | 210 | 418 | 118 | 308 |
| Lead (ug/L) | 3.00 | 10.40 | 11.9 | 0.335 | 27.0 | 8.76 | 24.0 | 423 | 96.6 | 285 |
| Lithium (ug/L) | 2.09 | 5.00 | 15.0 | 0.528 | 24.4 | 4.26 | 9.96 | 180 | 60.0 | 154 |
| Manganese (ug/L) | 8.85 | 10.9 | 18.1 | 6.74 | 25.4 | 9.98 | 28.5 | 412 | 95.0 | 295.500 |
| Molybdenum (ug/L) | 4.18 | 7.62 | 14.2 | 0.217 | 27.0 | 12.5 | 30.9 | 384 | 101 | 292.500 |
| Nickel (ug/L) | 4.98 | 11.20 | 17.7 | 0.906 | 16.0 | 19.5 | 68.7 | 391 | 97.0 | 263.500 |
| Rubidium (ug/L) | 0.753 | 10.7 | 0.760 | 0.0300 | 19.6 | 4.52 | 12.3 | 0.433 | 15.8 | 30.8 |
| Selenium (ug/L) | 4.60 | 5.35 | 14.9 | 0.810 | 29.4 | 14.7 | 22.8 | 198 | 53.5 | 153 |
| Silver (ug/L) | 4.80 | 6.80 | 11.00 | 0.100 | 21.8 | 3.80 | 7.50 |  | 12.00 | 12.0000 |
| Strontium (ug/L) | 112 | 107 | 112 | 1.800 | 73.9 | 107 | 253 | 390 | 150 | 644 |
| Thallium (ug/L) | 3.98 | 5.30 | 18.1 | 0.395 | 30.9 | 2.00 | 6.73 | 202 | 52.1 | 148 |
| Tin (ug/L) | 2.72 | 5.71 | 15.0 | 0.750 | 23.8 | 2.90 | 8.46 | 387 | 108.5 | 291 |
| Titanium (ug/L) | 3.18 | 6.10 | 14.7 | 0.507 | 25.6 | 8.19 | 12.0 | 188 | 58.6 | 128.500 |
| Tungsten (ug/L) | 5.05 | 6.38 | 6.88 | 0.042 | 9.95 | 1.94 | 3.36 | 0.115 | 0.094 | 0.080 |
| Uranium (ug/L) | 5.12 | 7.57 | 15.6 | 0.300 | 27.7 | 1.99 | 4.88 | 209 | 56.6 | 145 |
| Vanadium (ug/L) | 1.90 | 12.7 | 13.2 | 0.700 | 27.5 | 3.00 | 15.2 | 370 | 116 | 289 |
| Zinc (ug/L) | 2.40 | 38.0 | 35.0 | 8.40 | 44.0 | 46.1 | 100 | 398 | 120 | 312 |

# Appendix A

Glossary of Terms and Definitions

# Environment Canada Proficiency Testing Program

## Glossary of Terms and Definitions

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

| | | |
|---|---|---|
| 1. | Assigned Value | The median 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 attachment).

**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).

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).

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).

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

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

$^*\hat{\sigma}$ is the R-Std Dev

**Systemic Bias:** Systemic bias is indicated when a laboratory's test results for an individual parameter are ranked, by the Youden non-parametric analysis [4], to be consistently and significantly 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 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.

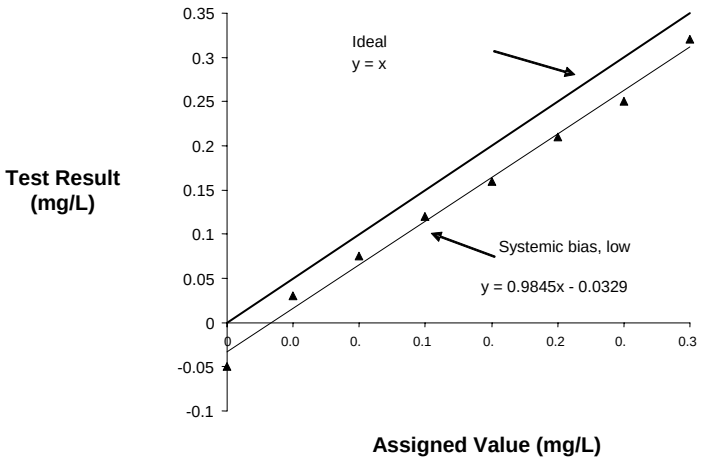
**No. Samples Ranked:** This is the number of test results used to calculate systemic bias. A laboratory must report five or more test results (not including '<') and there must be ten or more participating laboratories.

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**) x 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 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 attachment). 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. Attachments included with the Final Report

1. Z-Score Summaries [3]
2. Laboratory Proficiency Appraisal (see Table 2 for definitions)


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.

# Appendix B

Data Summary

PARAMETER: 13095 Aluminum ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 97.0 | 77.3 | 34.3 | 2.18 | 30.9 | 31.3 | 55.0 | 345. | 117. | 287. |
| F009 | 97. | 78. | 35. | <10. | 31. | 32. | 58. | 376. | 125. | 305. |
| F010 | 92. | 74. | 33. | 1.9 | 30. | 31. | 52. | 370. | 123. | 295. |
| F011 | 88.7 | 73.6 | 32.1 | 2.0 | 28.7 | 29.4 | 53.4 | 347. | 116. | 280. |
| F014 | 93. | 72. | 33. | 2. | 29. | 32. | 53. | 365. | 115. | 293. |
| F015 | 98.2 | 77.7 | 34.7 | 2.2 | 31.4 | 32.5 | 56.7 | 361. | 123. | 291. |
| F020 | 107. WH | 86.1 AH | 39.2 WH | 2.4 | 34.8 WH | 36.2 WH | 63.7 AH | 423. AH | 135. WH | 342. WH |
| F021 | 93.4 | 68.3 | 32.6 | 1.8 | 29.8 | 29.5 | 51.7 | 360. | 112. | 287. |
| F021b | 92. | 74. | 33. | <4. | 31. | 31. | 53. | 358. | 115. | 285. |
| F022 | 86.9 | 70.7 | 33.1 | 3.01 | 29.7 | 31.5 | 56.9 | 360. | 111. | 283. |
| F024 | 96.0 | 73.5 | 33.4 | 2.1 | 29.1 | 30.5 | 54.3 | 364. | 118. | 291. |
| F026 | 94. | 75. | 35. | <5. | 32. | 33. | 56. | 376. | 122. | 297. |
| F032a | 101. | 78.6 | 37.3 | 3.6 | 32.4 | 34.2 | 58.4 | 379. | 126. | 311. |
| F032c | 94.5 | 72.7 | 32.5 | 2.0 | 29.2 | 29.9 | 52.2 | 345. | 113. | 281. |
| F032d | 92.5 | 72.3 | 32.2 | 1.93 | 30.0 | 30.2 | 53.0 | 359. | 115. | 284. |
| F032g | 95. | 76. | 36. | 6. AH | 33. | 33. | 56. | 356. | 115. | 283. |
| F042 | 97.7 | 75.9 | 36.9 | <10. | 32.4 | 33.4 | 57.7 | 409. WH | 130. | 327. WH |
| F060 | 97.0 | 75.9 | 35.0 | <5. | 31.0 | 31.9 | 54.8 | 364. | 118. | 290. |
| F068 | 94. | 74. | 29. | 1.9 | 26. | 27.6 | 53.2 | 330. | 106. | 264. |
| F069 | 81.3 WL | 66.4 WL | 30.2 | <4.0 | 27.6 | 28.2 | 48.7 | 350. | 104. | 263. |
| F069b | 93.4 | 66.8 | <50.0 | <50.0 | <50.0 | <50.0 | <50.0 | 374. | 113. | 292. |
| F139 | 98.3 | 77.9 | 34.1 | <0.05 WL | 29.5 | 31. | 55.4 | 355. | 117. | 321. |
| F144 | 99.9 | 92.3 AH | 51.6 AH | 5.37 AH | 39.0 AH | 44.3 AH | 72.2 AH | 332. | 149. AH | 326. |
| F154 | 93.3 | 72.4 | 32.8 | <2.0 | 29.3 | 31. | 52.7 | 363. | 285. AH | 118. AL |
| F158 | 94.6 | 75.8 | 34.0 | 3.8 | 30.4 | 31.2 | 54.1 | 395. | 121. | 299. |
| F169 | 96.1 | 74.8 | 31.1 | 1.85 | 25.7 WL | 26.6 WL | 54.4 | 375. | 121. | 296. |
| F183 | 94.1 | 74.1 | 32.1 | 2.79 | 29.2 | 31.4 | 52.9 | 362. | 118. | 275. |
| F186 | 94. | 74. | 33. | 1.0 | 30. | 31. | 54. | 353. | 118. | 285. |
| F193 | 89.5 | 71.0 | 31.5 | <2.0 | 28.6 | 29.7 | 52.1 | 351. | 113. | 282. |
| F196 | 93. | 73. | 33. | <20. | 29. | 30. | 54. | 353. | 116. | 282. |
| F207 | 100. | 76. | 33. | <4. | 28. | 29. | 55. | 383. | 123. | 315. |
| F223b | 100. | <100. | <100. | <100. | <100. | <100. | <100. | 350. | 120. | 280. |
| F248 | 106. WH | 86.1 AH | 38.9 WH | <25.0 | 34.6 WH | 36.0 WH | 62.3 WH | 394. | 126. | 313. |
| F287 | 59. AL | 43. AL | <10. AL | 40. AH | <10. AL | <10. AL | 27.2 AL | 290. AL | 79. AL | 0.220 AL |
| ASSIGNED VALUE * | 94.5 | 74.0 | 33.0 | 2.00 | 29.9 | 31.0 | 54.1 | 360 | 118 | 290.500 |
| R-STD DEV * | 4.31 | 3.63 | 2.21 | 1.031 | 2.01 | 2.06 | 2.73 | 17.4 | 7.1 | 18.8438 |
| ACCEPTABLE LIMITS(+-) * | 8.62 | 7.26 | 4.42 | 2.062 | 4.02 | 4.12 | 5.46 | 34.8 | 14.2 | 37.6876 |
| WARNING LIMITS(+-) * | 8.62- 12.93 | 7.26- 10.89 | 4.42- 6.63 | 2.062- 3.093 | 4.02- 6.03 | 4.12- 6.18 | 5.46- 8.19 | 34.8- 52.2 | 14.2- 21.3 | 37.6876- 56. |
| ACTION LIMITS(<>) * | 12.93 | 10.89 | 6.63 | 3.093 | 6.03 | 6.18 | 8.19 | 52.2 | 21.3 | 56.5314 |
| N * | 34 | 33 | 31 | 20 | 31 | 31 | 32 | 34 | 34 | 34 |

* 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 | 177.0 | 17.7 | | | 10 | | | ICP-MS |
| F009 | 232.0 | 25.7 | | BIASED HIGH* | 9 | 4.7 | 0.2340 | ICP-MS |
| F010 | 148.0 | 14.8 | | | 10 | | | ICP-MS |
| F011 | 80.5 | 8.0 | | | 10 | | | |
| F014 | 133.5 | 13.3 | | | 10 | | | ICP-MS |
| F015 | 224.5 | 22.4 | | | 10 | | | ICP-MS |
| F020 | 299.5 | 29.9 | WHAHWH WHWHAHAHWHWH | BIASED HIGH | 10 | 17.8 | -0.9552 | ICP-MS |
| F021 | 89.5 | 8.9 | | | 10 | | | ICP-MS |
| F021b | 120.5 | 13.3 | | | 9 | | | ICP-AES |
| F022 | 132.0 | 13.2 | | | 10 | | | ICP-MS |
| F024 | 157.5 | 15.7 | | | 10 | | | ICP-MS |
| F026 | 209.5 | 23.2 | | | 9 | | | ICP-AES |
| F032a | 276.0 | 27.6 | | BIASED HIGH | 10 | 5.6 | 1.4560 | ICP-AES-E3386 |
| F032c | 88.0 | 8.8 | | | 10 | | | ICP-MS-E3473 |
| F032d | 104.5 | 10.4 | | | 10 | | | ICP-MS-E3474 |
| F032g | 201.5 | 20.1 | AH | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 253.0 | 28.1 | WH WH | BIASED HIGH | 9 | 14.3 | -4.3862 | ICP-AES |
| F060 | 190.5 | 21.1 | | | 9 | | | ICP-MS |
| F068 | 61.0 | 6.1 | | BIASED LOW | 10 | -8.8 | 1.4799 | ICP-MS |
| F069 | 26.5 | 2.9 | WLWL | BIASED LOW* | 9 | -4.4 | -4.1290 | ICP-MS |
| F069b | 68.5 | 13.7 | | | 5 | | | ICP-AES |
| F139 | 183.5 | 20.3 | WL | | 9 | | | ICP-MS |
| F144 | 273.0 | 27.3 | AHAHAHAHAHAH AH | BIASED HIGH* | 10 | -4.2 | 17.1277 | GFAAS |
| F154 | 119.0 | 13.2 | AHAL | | 9 | | | ICP-MS |
| F158 | 208.5 | 20.8 | | | 10 | | | ICP-MS |
| F169 | 139.5 | 13.9 | WLWL | | 10 | | | ICP-MS |
| F183 | 134.5 | 13.4 | | | 10 | | | ICP-MS |
| F186 | 134.0 | 13.4 | | | 10 | | | ICP-MS |
| F193 | 57.5 | 6.3 | | BIASED LOW* | 9 | -2.3 | -1.1722 | ICP-MS |
| F196 | 98.5 | 10.9 | | | 9 | | | ICP-AES |
| F207 | 183.0 | 20.3 | | | 9 | | | ICP-AES |
| F223b | 65.5 | 16.3 | | INSUFFICIENT DATA | 4 | | | ICP-AES |
| F248 | 271.0 | 30.1 | WHAHWH WHWHWH | BIASED HIGH | 9 | 7.9 | 3.0335 | ICP-MS |
| F287 | 26.0 | 3.7 | ALALALAHALALALALALAL | BIASED LOW | 7 | -53.9 | 11.5135 | 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 16.4

PARAMETER: 51095 Antimony ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 3.30 | 2.88 | 16.3 | 0.269 | 24.0 | 4.10 | 15.2 | 201. | 63.4 | 132. |
| F009 | 3.6 | 3.0 | 18. WH | <1. | 24. | 4.4 | 16. | 201. | 66. | 138. |
| F010 | 3.18 | 2.75 | 16.1 | 0.355 | 23.4 | 3.99 | 14.8 | 185. | 60.2 | 121. |
| F011 | 3.1 | 2.7 | 15.8 | 0.3 | 20.8 AL | 4.0 | 14.3 | 185. | 64.4 | 127. |
| F014 | 3.4 | 2.9 | 16. | <1.0 | 23. | 4.5 | 15. | 189. | 66. | 131. |
| F015 | 3.2 | 2.72 | 15.9 | 0.355 | 23.6 | 3.96 | 14.9 | 199. | 60.4 | 128. |
| F020 | 3.28 | 2.83 | 16.4 | 0.35 | 22.6 | 4.01 | 15.3 | 171. WL | 65.8 | 126. |
| F021 | 3.3 | 2.8 | 16.8 | 0.4 | 25.2 | 4.2 | 15.2 | 206. | 64.3 | 133. |
| F021c | 3.0 | 2.6 | 15.4 | 0.4 | 22.8 | 3.7 | 14.3 | 197. | 62.2 | 129. |
| F022 | 3.30 | 2.83 | 16.3 | 0.374 | 23.7 | 4.76 | 15.6 | 210. | 60.5 | 129. |
| F024 | 3.2 | 2.9 | 16.7 | 0.4 | 23.3 | 4.2 | 15.2 | 189. | 64.0 | 132. |
| F032 | 3.2 | 2.9 | 15.8 | 0.5 WH | 23.0 | 3.9 | 14.1 | 195. | 60.1 | 124. |
| F032c | 3.0 | 2.6 | 15.2 | <0.5 | 23.2 | 3.8 | 14.2 | 191. | 59.4 | 124. |
| F032d | 3.20 | 2.72 | 16.0 | <1. | 23.3 | 3.84 | 14.5 | 193. | 60.4 | 125. |
| F042 | 4.29 AH | 3.00 | 16.8 | <2. | 23.7 | 5.18 AH | 15.3 | 193. | 64.9 | 131. |
| F060 | 3.30 | 2.85 | 16.4 | 0.372 | 23.3 | 4.24 | 15.2 | 182. | 60.9 | 124. |
| F068 | 3.26 | 2.8 | 16. | 0.356 | 24. | 4.08 | 14.8 | 204. | 61.6 | 136. |
| F069 | 3.36 | 2.89 | 16.9 | 0.375 | 25.4 WH | 4.13 | 15.5 | 198. | 64.3 | 132. |
| F139 | 3.20 | 2.76 | 16. | 0.36 | 23.6 | 3.95 | 15. | 198. | 61.1 | 126. |
| F154 | 3.5 | 2.9 | 17.1 | <1.0 | 24.8 | 4.4 | 16.2 | 216. | 140. AH | 65.8 AL |
| F158 | 3.4 | 3.0 | 17.0 | <2. | 23.9 | 4.2 | 15.8 | 198. | 65.8 | 138. |
| F183 | 3.90 WH | 3.26 WH | 18.3 WH | 0.405 | 25.9 WH | 4.76 | 16.6 | 195. | 72.3 WH | 139. |
| F186 | 4. AH | 3.5 AH | 17.4 | 0.8 AH | 24.4 | 4.6 | 16.2 | 207. | 66.5 | 137. |
| F193 | 3.26 | 2.83 | 15.9 | <0.4 | 23.7 | 3.98 | 15.1 | 189. | 61.4 | 129. |
| F196 | 3. | 3. | 17. | <2. | 24. | 4. | 16. | 201. | 60. | 137. |
| F223b | <10.0 | <10.0 | 14.9 | <10.0 | 24.6 | <10.0 | 14.7 | 214. | 65.5 | 139. |
| F248 | 3.40 | 2.80 | 15.8 | <0.50 | 23.1 | 3.60 | 13.9 | 192. | 59.5 | 127. |
| F287 | 0.0023 AL | 0.0040 AL | 0.0175 AL | 0.267 | 0.0492 AL | 1.63 AL | 14.4 | 0.384 AL | 1.30 AL | 0.252 AL |
| ASSIGNED VALUE * | 3.2700 | 2.8300 | 16.3000 | 0.366 | 23.7000 | 4.08 | 15.2 | 197 | 62.80 | 130 |
| R-STD DEV * | 0.21504 | 0.14449 | 0.78316 | 0.0534 | 0.84608 | 0.351 | 0.75 | 10.0947 | 3.190 | 6.6326 |
| ACCEPTABLE LIMITS(+-) * | 0.43008 | 0.28898 | 1.56632 | 0.1068 | 1.69216 | 0.702 | 1.50 | 20.1894 | 6.380 | 13.2652 |
| WARNING LIMITS(+-) * | .43008- .645 | .28898- .433 | 1.56632- 2.3 | .1068- .160 | 21.69216- 2.5 | .702- 1.053 | 1.50- 2.25 | 20.1894- 30. | 6.380- 9.570 | 13.2652- 19. |
| ACTION LIMITS(<>) * | 0.64512 | 0.43347 | 2.34948 | 0.1602 | 2.53824 | 1.053 | 2.25 | 30.2841 | 9.570 | 19.8978 |
| N * | 27 | 27 | 28 | 17 | 28 | 27 | 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 | 157.0 | 15.7 | | | 10 | | | ICP-MS |
| F009 | 212.0 | 23.5 | WH | BIASED HIGH* | 9 | 3.6 | 0.5207 | ICP-MS |
| F010 | 77.5 | 7.7 | | | 10 | | | ICP-MS |
| F011 | 70.0 | 7.0 | AL | | 10 | | | |
| F014 | 141.0 | 15.6 | | | 9 | | | ICP-MS |
| F015 | 99.5 | 9.9 | | | 10 | | | ICP-MS |
| F020 | 117.0 | 11.7 | WL | | 10 | | | ICP-MS |
| F021 | 183.0 | 18.3 | | | 10 | | | ICP-MS |
| F021c | 77.0 | 7.7 | | | 10 | | | ICP-MS |
| F022 | 167.5 | 16.7 | | | 10 | | | ICP-MS |
| F024 | 147.0 | 14.7 | | | 10 | | | ICP-MS |
| F032 | 87.5 | 8.7 | WH | | 10 | | | AAS hydride-E3089 |
| F032c | 39.5 | 4.3 | | BIASED LOW* | 9 | -2.8 | -0.4371 | ICP-MS-E3473 |
| F032d | 74.0 | 8.2 | | | 9 | | | ICP-MS-E3474 |
| F042 | 181.5 | 20.1 | AH AH | | 9 | | | ICP-AES |
| F060 | 122.5 | 12.2 | | | 10 | | | ICP-MS |
| F068 | 143.0 | 14.3 | | | 10 | | | ICP-MS |
| F069 | 186.5 | 18.6 | WH | | 10 | | | ICP-MS |
| F139 | 106.0 | 10.6 | | | 10 | | | ICP-MS |
| F154 | 198.5 | 22.0 | AHAL | BIASED HIGH* | 9 | -3.3 | 5.8331 | ICP-MS |
| F158 | 192.0 | 21.3 | | | 9 | | | ICP-MS |
| F183 | 243.5 | 24.3 | WHWHWH WH WH | BIASED HIGH* | 10 | 1.6 | 1.8836 | ICP-MS |
| F186 | 244.0 | 24.4 | AHAH AH | BIASED HIGH | 10 | 5.6 | 0.2637 | ICP-MS |
| F193 | 106.0 | 11.7 | | | 9 | | | ICP-MS |
| F196 | 155.0 | 17.2 | | | 9 | | | ICP-AES |
| F223b | 109.5 | 18.2 | | | 6 | | | ICP-AES |
| F248 | 70.5 | 7.8 | | | 9 | | | ICP-MS |
| F287 | 15.0 | 1.5 | ALALAL ALAL ALALAL | BIASED LOW | 10 | -101.0 | 2.3049 | 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 13.9

PARAMETER: 33095 Arsenic ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 8.06 | 8.77 | 15.9 | 1.13 | 26.9 | 19.8 | 41.5 | 200. | 58.0 | 165. |
| F009 | 9.6 AH | 9.9 | 17. | 1.6 AH | 29. | 22. | 43. | 212. | 61. | 171. |
| F010 | 7.84 | 8.37 | 15.2 | 1.08 | 26.1 | 18.9 | 39.8 | 191. | 52.2 | 152. |
| F011 | 8.0 | 8.5 | 15.1 | 1.2 | 26.1 | 19.4 | 40.5 | 198. | 56.2 | 158. |
| F014 | 8.0 | 8.5 | 15. | 1.1 | 26. | 20. | 41. | 194. | 57. | 160. |
| F015 | 8.1 | 8.8 | 15.6 | 1.2 | 27.4 | 20.0 | 41.5 | 191. | 57.8 | 164. |
| F020 | 7.98 | 8.42 | 15.2 | 1.09 | 27.7 | 19.6 | 41. | 197. | 57.1 | 158. |
| F021 | 7.8 | 8.0 | 15.1 | 1.1 | 26.2 | 18.9 | 38.9 | 198. | 55.5 | 156. |
| F021c | 8.1 | 8.5 | 15.2 | 1.1 | 26.7 | 19.3 | 41.0 | 199. | 56.7 | 162. |
| F022 | 8.25 | 8.83 | 15.8 | 1.13 | 27.2 | 20.3 | 42.2 | 202. | 59.0 | 169. |
| F024 | 8.4 | 8.7 | 15.6 | 1.1 | 27.0 | 19.8 | 41.3 | 202. | 55.8 | 160. |
| F026 | <15. | <15. | 16. | <15. | 28. | 21. | 42. | 208. | 55. | 159. |
| F032 | 7.4 | 7.9 | 14.0 WL | 1.1 | 24.8 | 18.9 | 37.1 WL | 188. | 52.1 | 150. |
| F032c | 8.3 | 9.0 | 16.1 | 1.1 | 28.6 | 20.4 | 42.2 | 211. | 61.5 | 168. |
| F032d | 8.22 | 8.77 | 15.9 | 1.16 | 28.6 | 20.2 | 41.0 | 207. | 59.3 | 166. |
| F060 | 8.64 | 9.40 | 16.4 | 1.19 | 29.0 | 20.8 | 42.4 | 204. | 59.5 | 167. |
| F068 | 8.26 | 8.76 | 14.6 | 1.2 | 26.6 | 19.2 | 41.2 | 196. | 55.4 | 156. |
| F069 | 8.73 | 9.31 | 16.7 | 1.20 | 29.2 | 20.9 | 44.7 WH | 205. | 61.6 | 167. |
| F139 | 8.08 | 8.75 | 15.9 | 1.16 | 26.6 | 20.1 | 41.6 | 197. | 59.1 | 164. |
| F144 | 10.6 AH | 11.1 AH | 22.1 AH | 1.06 | 36.0 AH | 28.2 AH | 54.0 AH | 240. AH | 78.7 AH | 209. AH |
| F154 | 8.64 | 9.05 | 16.2 | 1.15 | 28.4 | 21.2 | 42.7 | 212. | 168. AH | 60.1 AL |
| F158 | 8.8 | 9.7 | 17.3 | <2. | 30.8 WH | 22.0 | 45.6 WH | 211. | 63.6 | 180. WH |
| F169 | 8.17 | 8.43 | 15.5 | 1.13 | 27.1 | 19.0 | 40.2 | 200. | 57.3 | 160. |
| F183 | 8.25 | 9.51 | 16.7 | 1.11 | 29.6 | 20.7 | 42.6 | 208. | 60.3 | 163. |
| F186 | 6.2 AL | 6.4 AL | 12.9 AL | <0.5 AL | 25.7 | 16.3 AL | 40.3 | 193. | 53.0 | 151. |
| F193 | 8.04 | 8.66 | 15.3 | 1.14 | 26.6 | 19.5 | 40.7 | 198. | 55.7 | 162. |
| F196 | 8. | 9. | 16. | <2. | 29. | 21. | 46. AH | 199. | 56. | 156. |
| F207 | 8.8 | 9.3 | 16.7 | 1.2 | 28.1 | 21.3 | 42. | 196. | 57.4 | 160. |
| F223 | 8.7 | 9.3 | 16.2 | <4. | 28.7 | 20.6 | 42.2 | | 60.6 | 178. |
| F223b | <20.0 | <20.0 | <20.0 | <20.0 | 27.6 | <20.0 | 41.6 | 207. | 59.4 | 167. |
| F248 | 8.10 | 8.60 | 15.4 | 1.30 WH | 27.1 | 19.5 | 40.3 | 204. | 57.0 | 162. |
| F287 | 7.44 | 9.76 | 15. | 5.61 AH | 22.7 AL | 20.7 | 36.6 AL | 420. AH | 1110. AH | 834. AH |
| ASSIGNED VALUE * | 8.10 | 8.77 | 15.8 | 1.13 | 27.3 | 20.1 | 41.5 | 200 | 57.3 | 162 |
| R-STD DEV * | 0.441 | 0.596 | 0.84 | 0.061 | 1.51 | 1.04 | 1.46 | 8.1 | 3.45 | 8.00 |
| ACCEPTABLE LIMITS(+-) * | 0.882 | 1.192 | 1.68 | 0.122 | 3.02 | 2.08 | 2.92 | 16.2 | 6.90 | 16.00 |
| WARNING LIMITS(+-) * | .882- 1.323 | 1.192- 1.788 | 1.68- 2.52 | .122- .183 | 3.02- 4.53 | 2.08- 3.12 | 2.92- 4.38 | 16.2- 24.3 | 6.90- 10.35 | 16.00- 24.00 |
| ACTION LIMITS(<>) * | 1.323 | 1.788 | 2.52 | 0.183 | 4.53 | 3.12 | 4.38 | 24.3 | 10.35 | 24.00 |
| N * | 30 | 30 | 31 | 26 | 32 | 31 | 32 | 31 | 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 | 152.0 | 15.2 | | | 10 | | | ICP-MS |
| F009 | 279.0 | 27.9 | AH AH | BIASED HIGH | 10 | 5.6 | 0.3641 | ICP-MS |
| F010 | 41.0 | 4.1 | | BIASED LOW | 10 | -5.2 | -0.1679 | ICP-MS |
| F011 | 94.5 | 9.4 | | | 10 | | | |
| F014 | 87.0 | 8.7 | | | 10 | | | ICP-MS |
| F015 | 153.5 | 15.3 | | | 10 | | | ICP-MS |
| F020 | 95.5 | 9.5 | | | 10 | | | ICP-MS |
| F021 | 56.0 | 5.6 | | BIASED LOW* | 10 | -1.8 | -0.7317 | ICP-MS |
| F021c | 107.5 | 10.7 | | | 10 | | | ICP-MS |
| F022 | 185.0 | 18.5 | | | 10 | | | ICP-MS |
| F024 | 133.5 | 13.3 | | | 10 | | | ICP-MS |
| F026 | 125.0 | 17.8 | | | 7 | | | ICP-AES |
| F032 | 23.5 | 2.3 | WL WL | BIASED LOW | 10 | -6.3 | -0.6660 | AAS hydride-E3089 |
| F032c | 214.0 | 21.4 | | | 10 | | | ICP-MS-E3473 |
| F032d | 184.5 | 18.4 | | | 10 | | | ICP-MS-E3474 |
| F060 | 233.0 | 23.3 | | | 10 | | | ICP-MS |
| F068 | 104.5 | 10.4 | | | 10 | | | ICP-MS |
| F069 | 253.0 | 25.3 | WH | BIASED HIGH* | 10 | 2.5 | 0.8610 | ICP-MS |
| F139 | 151.0 | 15.1 | | | 10 | | | ICP-MS |
| F144 | 278.0 | 27.8 | AHAHAH AHAHAHAHAHAH | BIASED HIGH | 10 | 22.7 | 2.5510 | AAS hydride |
| F154 | 219.5 | 21.9 | AHAL | | 10 | | | ICP-MS |
| F158 | 260.5 | 28.9 | WH WH WH | BIASED HIGH | 9 | 7.3 | 0.8973 | ICP-MS |
| F169 | 114.5 | 11.4 | | | 10 | | | ICP-MS |
| F183 | 225.5 | 22.5 | | | 10 | | | ICP-MS |
| F186 | 23.5 | 2.6 | ALALALAL AL | BIASED LOW* | 9 | -3.7 | -1.7917 | ICP-MS |
| F193 | 107.5 | 10.7 | | | 10 | | | ICP-MS |
| F196 | 160.0 | 17.7 | AH | | 9 | | | ICP-AES |
| F207 | 202.5 | 20.2 | | | 10 | | | GFAAS |
| F223 | 193.0 | 24.1 | | | 8 | | | AAS hydride |
| F223b | 105.0 | 21.0 | | | 5 | | | ICP-AES |
| F248 | 138.5 | 13.8 | WH | | 10 | | | ICP-MS |
| F287 | 180.0 | 18.0 | AHAL ALAHAHAH | | 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 15.8

PARAMETER: 56095 Barium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 14.0 | 26.3 | 13.0 | 0.919 | 27.2 | 59.5 | 210. | 398. | 114. | 292. |
| F009 | 15. | 27. | 14. | <3. | 28. | 60. | 216. | 418. | 118. | 303. |
| F010 | 14.2 | 25.1 | 13.1 | 0.85 | 26.0 | 56.7 | 207. | 396. | 115. | 281. |
| F011 | 13.4 | 25.1 | 13.0 | 0.8 | 25.8 | 56.2 | 199. | 392. | 110. | 285. |
| F014 | 14. | 26. | 13. | <10. | 27. | 56. | 205. | 392. | 114. | 289. |
| F015 | 14.3 | 25.9 | 13.2 | 0.87 | 26.6 | 57.5 | 209. | 401. | 114. | 291. |
| F020 | 15. | 26.7 | 13.8 | 0.93 | 27.6 | 57.4 | 205. | 395. | 111. | 290. |
| F021 | 13.5 | 24.7 | 12.7 | 0.8 | 25.8 | 54.1 | 197. | 384. | 107. | 270. |
| F021b | 14. | 25. | 13. | <1. | 26. | 56. | 202. | 382. | 110. | 278. |
| F022 | 14.7 | 26.8 | 13.3 | 0.837 | 26.9 | 57.5 | 208. | 401. | 113. | 290. |
| F024 | 14.6 | 26.8 | 13.8 | 0.9 | 27.5 | 59.9 | 214. | 413. | 114. | 303. |
| F032a | 15.8 WH | 28.2 WH | 14.7 AH | 0.9 | 29.0 WH | 62.3 WH | 225. WH | 418. | 123. WH | 313. |
| F032c | 14.1 | 25.3 | 13.0 | 0.8 | 26.3 | 56.7 | 205. | 391. | 112. | 282. |
| F032d | 14.4 | 26.0 | 13.3 | 0.85 | 26.6 | 57.4 | 207. | 396. | 114. | 289. |
| F032g | 13.9 | 25.3 | 13. | 0.9 | 26. | 56.1 | 207. | 396. | 114. | 287. |
| F042 | 10.0 AL | 16.4 AL | <10. AL | <10. | 11.3 AL | 37.1 AL | 124. AL | 255. AL | 63.3 AL | 181. AL |
| F060 | 14.9 | 27.2 | 14.0 | <1. | 27.7 | 59.0 | 205. | 400. | 115. | 292. |
| F068 | 14. | 25.3 | 13. | 0.853 | 26. | 58. | 210. | 418. | 110. | 308. |
| F069 | 14.3 | 26.2 | 13.3 | 0.86 | 27.0 | 57.6 | 212. | 409. | 116. | 300. |
| F069b | 14.8 | 26.2 | 13.4 | 0.83 | 27.3 | 58.5 | 209. | 410. | 114. | 291. |
| F139 | 14.9 | 27.0 | 13.6 | 0.854 | 27.6 | 60.3 | 216. | 416. | 118. | 304. |
| F154 | 15.3 | 26.6 | 13.5 | 0.87 | 27.7 | 60.3 | 220. | 434. WH | 300. AH | 120. AL |
| F158 | 13.8 | 25.8 | 13.4 | <2. | 27.0 | 57.2 | 211. | 408. | 116. | 294. |
| F169 | 14.5 | 26.3 | 13.5 | 0.82 | 26.9 | 58.3 | 208. | 404. | 114. | 299. |
| F183 | 14.0 | 26.8 | 12.5 | 0.664 AL | 27.6 | 57.4 | 220. | 392. | 114. | 289. |
| F186 | 14.2 | 26.5 | 13.4 | 0.6 AL | 26.9 | 59.1 | 212. | 408. | 118. | 300. |
| F193 | 14.6 | 26.2 | 13.5 | 0.84 | 26.9 | 58.8 | 211. | 391. | 113. | 281. |
| F196 | 14. | 26. | 14. | <6. | 28. | 59. | 211. | 395. | 114. | 286. |
| F223b | <100. | <100. | <100. | <100. | <100. | <100. | 210. | 400. | 110. | 290. |
| F248 | <25.0 | 28.0 | <25.0 | <25.0 | 27.1 | 56.5 | 211. | 403. | 118. | 300. |
| F287 | <20. | 24. WL | <20. | <20. | 25. WL | 53.5 WL | 197. | 384. | 107. | 0.276 AL |
| ASSIGNED VALUE * | 14.3 | 26.2 | 13.3 | 0.853 | 27.0 | 57.5 | 210 | 400 | 114 | 290.500 |
| R-STD DEV * | 0.58 | 0.96 | 0.45 | 0.0505 | 0.87 | 1.90 | 6.1 | 12.7 | 3.57 | 11.7804 |
| ACCEPTABLE LIMITS(+-) * | 1.16 | 1.92 | 0.90 | 0.1010 | 1.74 | 3.80 | 12.2 | 25.4 | 7.14 | 23.5608 |
| WARNING LIMITS(+-) * | 1.16- 1.74 | 1.92- 2.88 | .90- 1.35 | .1010- .1515 | 1.74- 2.61 | 3.80- 5.70 | 12.2- 18.3 | 25.4- 38.1 | 7.14- 10.71 | 23.5608- 35. |
| ACTION LIMITS(<>) * | 1.74 | 2.88 | 1.35 | 0.1515 | 2.61 | 5.70 | 18.3 | 38.1 | 10.71 | 35.3412 |
| N * | 28 | 30 | 27 | 21 | 30 | 30 | 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 | 168.0 | 16.8 | | | 10 | | | ICP-MS |
| F009 | 244.0 | 27.1 | | BIASED HIGH* | 9 | 4.4 | -0.3444 | ICP-MS |
| F010 | 108.5 | 10.8 | | | 10 | | | ICP-MS |
| F011 | 54.5 | 5.4 | | BIASED LOW* | 10 | -2.1 | -0.7366 | |
| F014 | 94.0 | 10.4 | | | 9 | | | ICP-MS |
| F015 | 148.0 | 14.8 | | | 10 | | | ICP-MS |
| F020 | 170.0 | 17.0 | | | 10 | | | ICP-MS |
| F021 | 31.0 | 3.1 | | BIASED LOW | 10 | -5.0 | -0.5414 | ICP-MS |
| F021b | 47.0 | 5.2 | | BIASED LOW* | 9 | -4.4 | 0.5779 | ICP-AES |
| F022 | 153.5 | 15.3 | | | 10 | | | ICP-MS |
| F024 | 228.0 | 22.8 | | | 10 | | | ICP-MS |
| F032a | 284.0 | 28.4 | WHWHAH WHWHWH WH | BIASED HIGH | 10 | 5.6 | 1.3170 | ICP-AES-E3386 |
| F032c | 78.5 | 7.8 | | | 10 | | | ICP-MS-E3473 |
| F032d | 130.5 | 13.0 | | | 10 | | | ICP-MS-E3474 |
| F032g | 101.0 | 10.1 | | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 10.0 | 1.2 | ALALAL ALALALALALAL | BIASED LOW | 8 | -36.5 | -3.0673 | ICP-AES |
| F060 | 192.5 | 21.3 | | | 9 | | | ICP-MS |
| F068 | 141.5 | 14.1 | | | 10 | | | ICP-MS |
| F069 | 190.5 | 19.0 | | | 10 | | | ICP-MS |
| F069b | 177.5 | 17.7 | | | 10 | | | ICP-AES |
| F139 | 247.5 | 24.7 | | BIASED HIGH* | 10 | 4.2 | -0.2327 | ICP-MS |
| F154 | 231.0 | 23.1 | WHAHAL | | 10 | | | ICP-MS |
| F158 | 148.5 | 16.5 | | | 9 | | | ICP-MS |
| F169 | 168.0 | 16.8 | | | 10 | | | ICP-MS |
| F183 | 139.5 | 13.9 | AL | | 10 | | | ICP-MS |
| F186 | 187.5 | 18.7 | AL | | 10 | | | ICP-MS |
| F193 | 142.0 | 14.2 | | | 10 | | | ICP-MS |
| F196 | 156.0 | 17.3 | | | 9 | | | ICP-AES |
| F223b | 56.0 | 14.0 | | INSUFFICIENT DATA | 4 | | | ICP-AES |
| F248 | 150.0 | 21.4 | | | 7 | | | ICP-MS |
| F287 | 15.5 | 2.2 | WL WLWL AL | BIASED LOW | 7 | -32.5 | 4.5626 | 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 15.1

PARAMETER: 04095 Beryllium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.02 | 3.50 | 15.9 | 0.373 | 25.6 | 5.88 | 8.09 | 179. | 59.2 | 159. |
| F009 | 2.2 | 3.8 | 17. WH | <1. | 29. WH | 6.8 WH | 8.9 WH | 206. | 62. | 175. |
| F010 | 1.88 | 3.31 | 14.6 | 0.375 | 24.2 | 5.64 | 7.71 | 185. | 54.4 | 157. |
| F011 | 1.9 | 3.4 | 15.2 | 0.4 | 25.7 | 5.9 | 7.8 | 186. | 55.2 | 156. |
| F015 | 2.02 | 3.39 | 15.1 | 0.392 | 25.9 | 5.99 | 7.92 | 191. | 55.8 | 157. |
| F020 | 2.03 | 3.59 | 15.6 | 0.39 | 25.9 | 6.15 | 7.84 | 194. | 55.5 | 154. |
| F021 | 2.0 | 3.4 | 15.9 | 0.4 | 27.0 | 6.0 | 8.0 | 189. | 57.6 | 164. |
| F021b | 2. | 3. | 15. | <1. | 25. | 6. | 8. | 183. | 55. | 155. |
| F021c | 1.9 | 3.3 | 14.1 | 0.4 | 24.7 | 5.7 | 7.5 | 190. | 53.6 | 161. |
| F022 | 1.93 | 3.43 | 14.9 | 0.366 | 25.4 | 5.94 | 8.03 | 185. | 57. | 157. |
| F024 | 2.0 | 3.4 | 14.8 | 0.3 AL | 25.1 | 5.8 | 7.9 | 173. | 57.6 | 157. |
| F032a | 2.39 AH | 4.06 WH | 17.9 AH | 0.36 | 29.9 WH | 7.01 AH | 9.40 AH | 189. | 64.1 WH | 168. |
| F032c | 2.1 | 3.5 | 15.8 | <0.5 | 27.0 | 6.2 | 8.2 | 202. | 60.7 | 172. |
| F032d | 2.02 | 3.63 | 15.6 | <1. | 25.9 | 5.97 | 8.19 | 195. | 58.3 | 164. |
| F032g | 1.94 | 3.34 | 14.7 | 0.4 | 25.4 | 5.78 | 7.77 | 179. | 53.4 | 151. |
| F042 | 2.40 AH | 4.14 WH | 18.3 AH | 0.44 WH | 30.6 AH | 7.08 AH | 9.65 AH | 223. AH | 68.0 AH | 191. AH |
| F060 | 2.07 | 3.67 | 15.6 | 0.383 | 25.9 | 6.00 | 8.12 | 186. | 56.8 | 160. |
| F068 | 2.1 | 3.6 | 14.7 | 0.38 | 25.3 | 6.2 | 8.2 | 210. WH | 54.4 | 185. WH |
| F069 | 2.04 | 3.65 | 16.0 | 0.382 | 28.2 | 6.42 | 8.35 | 181. | 57.5 | 154. |
| F069b | 1.87 | 3.21 | 14.2 | 0.32 WL | 24.2 | 5.68 | 7.42 | 181. | 53.5 | 149. |
| F139 | 1.91 | 3.31 | 14.7 | 0.358 | 23.9 | 5.90 | 7.64 | 178. | 54.1 | 165. |
| F154 | 2.03 | 3.44 | 15.4 | 0.39 | 26.2 | 5.99 | 8.06 | 165. | 150. AH | 57.2 AL |
| F158 | 2.1 | 3.6 | 16.1 | <2. | 26.4 | 6.1 | 8.3 | 206. | 59.2 | 170. |
| F183 | 2.30 WH | 3.90 | 16.6 | 0.469 AH | 28.9 | 6.50 | 9.16 WH | 222. AH | 65.9 WH | 180. WH |
| F186 | <0.1 AL | 1.8 AL | 12.9 WL | <0.1 AL | 24.0 | 4.0 AL | 7.1 WL | 180. | 51.3 | 148. |
| F196 | 2. | 3. | 15. | <2. | 26. | 6. | 8. | 184. | 56. | 157. |
| F223b | 2.1 | 3.6 | 15.7 | <2.0 | 26.9 | 6.2 | 8.3 | 185. | 57. | 161. |
| F248 | 2.10 | 3.40 | 15.1 | <0.50 | 24.8 | 5.60 | 7.80 | 185. | 55.0 | 160. |
| F287 | 1.6 AL | 3.0 | 15. | <1.0 | 26. | 5.28 WL | 7.33 | 185. | 56. | 0.156 AL |
| ASSIGNED VALUE * | 2.02 | 3.44 | 15.1 | 0.383 | 25.9 | 5.99 | 8.00 | 185 | 56.0 | 159.500 |
| R-STD DEV * | 0.119 | 0.280 | 0.86 | 0.0243 | 1.50 | 0.336 | 0.418 | 11.3 | 3.51 | 10.2314 |
| ACCEPTABLE LIMITS(+-) * | 0.238 | 0.560 | 1.72 | 0.0486 | 3.00 | 0.672 | 0.836 | 22.6 | 7.02 | 20.4628 |
| WARNING LIMITS(+-) * | .238- .357 | .560- .840 | 1.72- 2.58 | .0486- .0729 | 3.00- 4.50 | .672- 1.008 | .836- 1.254 | 22.6- 33.9 | 7.02- 10.53 | 20.4628- 30. |
| ACTION LIMITS(<>) * | 0.357 | 0.840 | 2.58 | 0.0729 | 4.50 | 1.008 | 1.254 | 33.9 | 10.53 | 30.6942 |
| N * | 28 | 29 | 29 | 19 | 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 | 141.0 | 14.1 | | | 10 | | | ICP-MS |
| F009 | 234.5 | 26.0 | WH WHWHWH | BIASED HIGH | 9 | 10.8 | -0.0319 | ICP-MS |
| F010 | 66.5 | 6.6 | | BIASED LOW* | 10 | -0.4 | -0.5853 | ICP-MS |
| F011 | 115.0 | 11.5 | | | 10 | | | |
| F015 | 137.5 | 13.7 | | | 10 | | | ICP-MS |
| F020 | 151.0 | 15.1 | | | 10 | | | ICP-MS |
| F021 | 174.5 | 17.4 | | | 10 | | | ICP-MS |
| F021b | 88.5 | 9.8 | | | 9 | | | ICP-AES |
| F021c | 85.5 | 8.5 | | | 10 | | | ICP-MS |
| F022 | 116.0 | 11.6 | | | 10 | | | ICP-MS |
| F024 | 92.5 | 9.2 | AL | | 10 | | | ICP-MS |
| F032a | 238.5 | 23.8 | AHWHAH WHAHAH WH | BIASED HIGH* | 10 | 3.2 | 1.5739 | ICP-AES-E3386 |
| F032c | 201.5 | 22.3 | | | 9 | | | ICP-MS-E3473 |
| F032d | 168.0 | 18.6 | | | 9 | | | ICP-MS-E3474 |
| F032g | 74.5 | 7.4 | | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 277.0 | 27.7 | AHWHAHWHAHAHAHAHAHAH | BIASED HIGH | 10 | 20.4 | -0.1318 | ICP-AES |
| F060 | 172.0 | 17.2 | | | 10 | | | ICP-MS |
| F068 | 172.0 | 17.2 | WH WH | | 10 | | | ICP-MS |
| F069 | 182.0 | 18.2 | | | 10 | | | ICP-MS |
| F069b | 38.0 | 3.8 | WL | BIASED LOW* | 10 | -3.8 | -0.3915 | ICP-AES |
| F139 | 69.0 | 6.9 | | BIASED LOW* | 10 | -0.6 | -0.4304 | ICP-MS |
| F154 | 143.5 | 14.3 | AHAL | | 10 | | | ICP-MS |
| F158 | 204.5 | 22.7 | | BIASED HIGH | 9 | 9.8 | -0.9748 | ICP-MS |
| F183 | 259.0 | 25.9 | WH AH WHAHWHWH | BIASED HIGH | 10 | 17.4 | -0.6490 | ICP-MS |
| F186 | 16.0 | 2.0 | ALALWLAL ALWL | BIASED LOW* | 8 | -3.6 | -1.6879 | ICP-MS |
| F196 | 110.0 | 12.2 | | | 9 | | | ICP-AES |
| F223b | 179.5 | 19.9 | | | 9 | | | ICP-AES |
| F248 | 103.5 | 11.5 | | | 9 | | | ICP-MS |
| F287 | 65.0 | 7.2 | AL WL AL | | 9 | | | 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 14.6

PARAMETER: 83095 Bismuth ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 3.76 | 3.17 | 14.8 | 0.698 | 21.2 | 1.89 | 5.70 | 178. | 55.9 | 140. |
| F009 | 2.9 | 2.3 | 9.2 | <2. | 12. | <2. | 3.7 | 126. WL | 33. WL | 91. WL |
| F011 | 3.4 | 2.9 | 14.7 | 0.7 | 21.1 | 1.7 | 5.4 | 177. | 58.0 | 146. |
| F015 | 2.46 WL | 2.02 | 8.60 | 0.37 | 12.3 | 1.30 | 3.60 | 171. | 40.0 | 131. |
| F020 | 3.82 | 3.18 | 14.9 | 0.715 | 21. | 1.9 | 5.71 | 166. | 52.8 | 131. |
| F022 | 3.28 | 3.19 | 13.2 | 1.24 WH | 19. | 6.6 AH | 7.4 WH | 244. AH | 54.3 | 137. |
| F024 | 3.1 | 2.5 | 11.0 | 0.4 | 15.5 | 1.6 | 4.2 | 160. | 45.6 | 123. |
| F060 | 3.34 | 2.72 | 12.9 | 0.546 | 17.4 | 1.95 | 5.01 | 167. | 49.9 | 135. |
| F139 | 3.17 | 2.68 | 12.5 | 0.783 | 17.9 | 1.54 | 4.76 | 152. | 46.5 | 119. |
| F154 | 3.47 | 2.79 | 14. | 0.51 | 20.4 | 1.82 | 5.2 | 196. | 152. AH | 56.6 AL |
| F183 | 3.67 | 2.68 | 15.0 | 0.35 | 21.0 | 1.25 | 5.62 | 182. | 55.9 | 151. |
| F196 | <200. | <200. | <200. | <200. | <200. | <200. | <200. | <200. | <200. | <200. |
| ASSIGNED VALUE * | 3.34 | 2.72 | 13.20 | 0.622 | 19.0 | 1.70 | 5.20 | 169 | 51.4 | 133 |
| R-STD DEV * | 0.387 | 0.393 | 2.495 | 0.2215 | 3.79 | 0.346 | 1.046 | 20.2 | 9.28 | 18.86 |
| ACCEPTABLE LIMITS(+-) * | 0.774 | 0.786 | 4.990 | 0.4430 | 7.58 | 0.692 | 2.092 | 40.4 | 18.56 | 37.72 |
| WARNING LIMITS(+-) * | .774- 1.161 | .786- 1.179 | 4.990- 7.485 | .4430- .6645 | 7.58- 11.37 | .692- 1.038 | 2.092- 3.138 | 40.4- 60.6 | 18.56- 27.84 | 37.72- 56.58 |
| ACTION LIMITS(<>) * | 1.161 | 1.179 | 7.485 | 0.6645 | 11.37 | 1.038 | 3.138 | 60.6 | 27.84 | 56.58 |
| N * | 11 | 11 | 11 | 10 | 11 | 10 | 11 | 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 |
|---|---|---|---|---|---|---|---|---|
| F003 | 86.5 | 8.6 | | | 10 | | | ICP-MS |
| F009 | 13.0 | 1.6 | WLWLWL | BIASED LOW | 8 | -27.7 | -0.9806 | ICP-MS |
| F011 | 79.0 | 7.9 | | | 10 | | | |
| F015 | 23.5 | 2.3 | WL | BIASED LOW* | 10 | 0.7 | -3.0885 | ICP-MS |
| F020 | 81.0 | 8.1 | | | 10 | | | ICP-MS |
| F022 | 85.0 | 8.5 | WH AHWHAH | | 10 | | | ICP-MS |
| F024 | 32.0 | 3.2 | | BIASED LOW* | 10 | -6.1 | -0.9270 | ICP-MS |
| F060 | 57.0 | 5.7 | | | 10 | | | ICP-MS |
| F139 | 42.5 | 4.2 | | | 10 | | | ICP-MS |
| F154 | 67.0 | 6.7 | AHAL | | 10 | | | ICP-MS |
| F183 | 71.5 | 7.1 | | | 10 | | | ICP-MS |
| F196 | 0.0 | 0.0 | | INSUFFICIENT DATA | 0 | | | ICP-AES |

* 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 5.9

PARAMETER: 05095 Boron ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 18.4 | 48.4 | 25.0 | 0.871 | 41.6 | 30.4 | 48.4 | 385. | 124. | 281. |
| F009 | <40. | 43. | <40. | <40. | <40. | <40. | 43. AL | 385. | 119. | 277. |
| F010 | 18.2 | 45.4 | 23.5 | 1.2 | 39.6 | 30.8 | 46.8 | 382. | 120. | 279. |
| F011 | 17.1 | 45.5 | 23.8 | 1.3 | 40.3 | 30.6 | 46.5 | 422. | 122. | 282. |
| F015 | 20. | 50. | 20. WL | <10. | 40. | 30. | 50. | 390. | 120. | 290. |
| F020 | <50. | <50. | <50. | <50. | <50. | <50. | <50. | 429. | 132. WH | 298. |
| F022 | 17.3 | 44.7 | 21.7 | 1.24 | 38.6 | 30.6 | 47.8 | 388. | 120. | 283. |
| F024 | 18. | 44. | 22. | <10. | 39. | 29. | 47. | 375. | 124. | 282. |
| F026 | 20. | 47. | 24. | <20. | 42. | 32. | 47. | 392. | 125. | 282. |
| F032c | 19. | 47. | 24. | <2. | 42. | 32. | 48. | 406. | 124. | 292. |
| F032d | 18.1 | 45.7 | 22.9 | 1.09 | 41.3 | 31.7 | 46.8 | 402. | 123. | 287. |
| F060 | 18.4 | 45.0 | 24.6 | <2. | 39.7 | 31.4 | 47.5 | 401. | 124. | 290. |
| F069 | 18.3 | 47.8 | 24.2 | <4.0 | 43.1 | 32.6 | 48.4 | 406. | 125. | 291. |
| F069b | 19.1 | 47. | 23.7 | <2.0 | 42. | 31.8 | 46.9 | 411. | 125. | 297. |
| F154 | 18. | 45. | 23. | <10. | 40. | 30. | 46. | 381. | 278. AH | 123. AL |
| F158 | 18.3 | 46.6 | 24.5 | <5. | 40.8 | 31.5 | 47.7 | 396. | 125. | 281. |
| F183 | 19.8 | 52.5 WH | 25.5 | 1.57 | 44.2 | 35.9 AH | 50.5 WH | 457. WH | 136. AH | 310. WH |
| F186 | 13. AL | 36. AL | 17. AL | <2. | 34. AL | 23. AL | 42. AL | 344. WL | 101. AL | 241. AL |
| F193 | 17.7 | 46.2 | 23.2 | 1.10 | 40.9 | 31.1 | 47.4 | 420. | 122. | 284. |
| F196 | <30. | 49. | <30. | <30. | 44. | 34. | 49. | 406. | 127. | 297. |
| F287 | <100. | <100. | <100. | <100. | <100. | <100. | <100. | <100. AL | <100. AL | <100. AL |
| ASSIGNED VALUE * | 18.3 | 46.4 | 23.8 | 1.200 | 40.9 | 31.2 | 47.5 | 398 | 124 | 286 |
| R-STD DEV * | 1.08 | 2.33 | 1.44 | 0.2365 | 1.89 | 1.40 | 1.35 | 19.6 | 3.9 | 9.5 |
| ACCEPTABLE LIMITS(+-) * | 2.16 | 4.66 | 2.88 | 0.4730 | 3.78 | 2.80 | 2.70 | 39.2 | 7.8 | 19.0 |
| WARNING LIMITS(+-) * | 2.16- 3.24 | 4.66- 6.99 | 2.88- 4.32 | .4730- .7095 | 3.78- 5.67 | 2.80- 4.20 | 2.70- 4.05 | 39.2- 58.8 | 7.8- 11.7 | 19.0- 28.5 |
| ACTION LIMITS(<>) * | 3.24 | 6.99 | 4.32 | 0.7095 | 5.67 | 4.20 | 4.05 | 58.8 | 11.7 | 28.5 |
| N * | 17 | 19 | 17 | 7 | 18 | 18 | 19 | 20 | 20 | 20 |

* 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 | 98.5 | 9.8 | | | | 10 | | | ICP-MS |
| F009 | 14.5 | 2.9 | | AL | BIASED LOW* | 5 | -2.6 | -2.0997 | ICP-MS |
| F010 | 56.5 | 5.6 | | | | 10 | | | ICP-MS |
| F011 | 77.0 | 7.7 | | | | 10 | | | |
| F015 | 90.0 | 10.0 | WL | | | 9 | | | ICP-MS |
| F020 | 56.0 | 18.6 | | WH | INSUFFICIENT DATA | 3 | | | ICP-MS |
| F022 | 57.5 | 5.7 | | | | 10 | | | ICP-MS |
| F024 | 46.5 | 5.1 | | | | 9 | | | ICP-MS |
| F026 | 109.5 | 12.1 | | | | 9 | | | ICP-AES |
| F032c | 120.5 | 13.3 | | | | 9 | | | ICP-MS-E3473 |
| F032d | 83.5 | 8.3 | | | | 10 | | | ICP-MS-E3474 |
| F060 | 93.0 | 10.3 | | | | 9 | | | ICP-MS |
| F069 | 128.5 | 14.2 | | | | 9 | | | ICP-MS |
| F069b | 118.0 | 13.1 | | | | 9 | | | ICP-AES |
| F154 | 54.0 | 6.0 | | AHAL | | 9 | | | ICP-MS |
| F158 | 96.5 | 10.7 | | | | 9 | | | ICP-MS |
| F183 | 172.0 | 17.2 | WH | AHWHWHAHWH | BIASED HIGH | 10 | 13.1 | -1.5749 | ICP-MS |
| F186 | 10.0 | 1.1 | ALALAL | ALALALWLALAL | BIASED LOW | 9 | -13.5 | -2.9750 | ICP-MS |
| F193 | 87.5 | 8.7 | | | | 10 | | | ICP-MS |
| F196 | 116.5 | 16.6 | | | BIASED HIGH* | 7 | 2.1 | 1.8598 | ICP-AES |
| F287 | 0.0 | 0.0 | | ALALAL | INSUFFICIENT DATA | 0 | | | 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 9.6

PARAMETER: 48095 Cadmium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.85 | 6.81 | 12.6 | 0.499 | 22.5 | 3.82 | 14.2 | 300. | 92.8 | 263. |
| F009 | 3.1 | 7.3 | 13. | <1. | 24. | 4.2 | 15. | 323. | 95. | 276. |
| F010 | 287. AH | 6.97 | 12.7 | 0.526 | 23.0 | 3.87 | 14.7 | 304. | 91.7 | 262. |
| F011 | 2.71 | 7.02 | 12.6 | 0.52 | 22.7 | 3.83 | 14.2 | 300. | 90.0 | 261. |
| F014 | 2.9 | 7.0 | 13. | 0.5 | 24. | 3.9 | 15. | 317. | 94. | 268. |
| F015 | 3.09 | 7.57 | 13.7 | 0.55 | 24.9 | 4.16 | 15.8 | 317. | 99.4 | 274. |
| F020 | 2.89 | 7.12 | 12.7 | 0.526 | 23.5 | 3.81 | 14.3 | 302. | 92.6 | 261. |
| F021 | 2.7 | 6.6 | 12.4 | 0.5 | 22.3 | 3.8 | 13.7 | 290. | 88.4 | 252. |
| F021b | 3. | 7. | 13. | <3. | 23. | 4. | 15. | 305. | 93. | 264. |
| F021c | 2.7 | 6.7 | 12.0 | 0.5 | 21.9 | 3.6 | 13.7 | 303. | 93.1 | 260. |
| F022 | 2.90 | 7.16 | 12.7 | 0.521 | 23.4 | 4.03 | 15.5 | 307. | 93. | 268. |
| F024 | 2.9 | 7.1 | 13.0 | 0.5 | 23.9 | 3.9 | 14.7 | 311. | 95.8 | 270. |
| F026 | 3. | 8. WH | 14. | <1. | 25. | 4. | 16. | 313. | 97. | 273. |
| F032a | 3.6 AH | 7.5 | 13.1 | <0.8 | 23.2 | 3.9 | 15.5 | 298. | 93.8 | 266. |
| F032c | 2.8 | 6.7 | 12.2 | 0.5 | 22.7 | 3.8 | 14.0 | 291. | 89.3 | 253. |
| F032d | 2.95 | 7.22 | 12.9 | <1. | 23.4 | 3.87 | 14.6 | 301. | 92.6 | 259. |
| F032g | 2.8 | 6.9 | 12.6 | 0.7 AH | 23.1 | 3.7 | 14.7 | 301. | 92. | 260. |
| F042 | 3.16 | 7.54 | 13.4 | 0.58 | 24.3 | 4.19 | 15.4 | 317. | 96.9 | 274. |
| F060 | 2.88 | 7.06 | 12.7 | 0.522 | 22.8 | 3.87 | 14.6 | 309. | 90.1 | 268. |
| F068 | 3. | 7.2 | 13. | 0.52 | 23.7 | 4. | 14.8 | 302. | 94. | 264. |
| F069 | 3.05 | 7.36 | 13.4 | 0.547 | 24.5 | 4.07 | 15.4 | 321. | 102. WH | 286. WH |
| F069b | 2.9 | 7.2 | 13. | <0.6 | 24.5 | 3.6 | 14.9 | 312. | 95.5 | 268. |
| F139 | 2.79 | 6.82 | 12.3 | 0.513 | 22.3 | 3.82 | 14.2 | 296. | 89.8 | 251. |
| F144 | 2.83 | 7.02 | 13.6 | 0.48 | 23.9 | 3.79 | 14.3 | 300. | 94.3 | 291. WH |
| F154 | 3.01 | 7.23 | 13.5 | 0.581 | 24.8 | 4.07 | 14.8 | 319. | 290. AH | 96. AL |
| F158 | 3.2 | 7.5 | 13.6 | <1. | 25.3 | 4.1 | 16.0 | 324. WH | 100. | 276. |
| F169 | 2.93 | 7.10 | 12.8 | 0.53 | 24.1 | 3.92 | 14.6 | 306. | 93.9 | 269. |
| F183 | 3.29 | 7.61 | 13.9 | 0.705 AH | 25.6 | 4.22 | 16.3 WH | 286. | 94.2 | 256. |
| F186 | 1.9 AL | 7.5 | 14.7 AH | <0.1 AL | 28.1 AH | 3.1 AL | 16.2 WH | 295. | 108. AH | 264. |
| F193 | 2.97 | 7.31 | 12.9 | 0.54 | 23.7 | 3.97 | 15.1 | 302. | 93.3 | 260. |
| F196 | <6. | 7. | 13. | <6. | 24. | <6. | 15. | 295. | 92. | 257. |
| F207 | 2.8 | 6.6 | 12.7 | 0.5 | 22.3 | 3.7 | 14.1 | 304. | 94.4 | 278. |
| F223 | 2.6 | 7.3 | 13.1 | <1. | 25.3 | 3.8 | 15.3 | | | |
| F223b | <4.0 | 7.2 | 13.2 | <4.0 | 24.4 | <4.0 | 15.1 | 299. | 96.4 | 269. |
| F248 | 3.00 | 7.20 | 13.3 | 0.050 AL | 22.7 | 3.60 | 14.5 | 299. | 92.4 | 269. |
| F287 | 2.4 WL | 6.9 | 12. | <2.0 | 23. | 3.46 | 14.8 | 305. | 93. | 0.261 AL |
| ASSIGNED VALUE * | 2.90 | 7.14 | 13.0 | 0.520 | 23.7 | 3.87 | 14.8 | 303 | 93.3 | 266 |
| R-STD DEV * | 0.196 | 0.308 | 0.52 | 0.0335 | 1.12 | 0.207 | 0.68 | 10.0 | 3.10 | 9.4574 |
| ACCEPTABLE LIMITS(+-) * | 0.392 | 0.616 | 1.04 | 0.0670 | 2.24 | 0.414 | 1.36 | 20.0 | 6.20 | 18.9148 |
| WARNING LIMITS(+-) * | .392- .588 | .616- .924 | 1.04- 1.56 | .0670- .1005 | 2.24- 3.36 | .414- .621 | 1.36- 2.04 | 20.0- 30.0 | 6.20- 9.30 | 18.9148- 28. |
| ACTION LIMITS(<>) * | 0.588 | 0.924 | 1.56 | 0.1005 | 3.36 | 0.621 | 2.04 | 30.0 | 9.30 | 28.3722 |
| N * | 34 | 36 | 36 | 24 | 36 | 34 | 36 | 35 | 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 | 89.5 | 8.9 | | | 10 | | | ICP-MS |
| F009 | 244.5 | 27.1 | | | 9 | | | ICP-MS |
| F010 | 152.0 | 15.2 | AH | | 10 | | | ICP-MS |
| F011 | 93.5 | 9.3 | | | 10 | | | |
| F014 | 191.5 | 19.1 | | | 10 | | | ICP-MS |
| F015 | 299.5 | 29.9 | | BIASED HIGH* | 10 | 4.2 | 0.2569 | ICP-AES |
| F020 | 135.0 | 13.5 | | | 10 | | | ICP-MS |
| F021 | 39.0 | 3.9 | | BIASED LOW* | 10 | -4.4 | -0.2564 | ICP-MS |
| F021b | 165.5 | 18.3 | | | 9 | | | ICP-AES |
| F021c | 66.5 | 6.6 | | BIASED LOW* | 10 | -0.4 | -0.6430 | ICP-MS |
| F022 | 192.0 | 19.2 | | | 10 | | | ICP-MS |
| F024 | 195.0 | 19.5 | | | 10 | | | ICP-MS |
| F026 | 271.0 | 30.1 | WH | BIASED HIGH* | 9 | 3.2 | 0.3906 | ICP-AES |
| F032a | 197.0 | 21.8 | AH | | 9 | | | ICP-AES-E3386 |
| F032c | 52.0 | 5.2 | | BIASED LOW* | 10 | -4.0 | -0.1430 | ICP-MS-E3473 |
| F032d | 136.0 | 15.1 | | | 9 | | | ICP-MS-E3474 |
| F032g | 112.0 | 11.2 | AH | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 287.5 | 28.7 | | BIASED HIGH* | 10 | 4.3 | -0.1195 | ICP-AES |
| F060 | 142.5 | 14.2 | | | 10 | | | ICP-MS |
| F068 | 191.5 | 19.1 | | | 10 | | | ICP-MS |
| F069 | 289.0 | 28.9 | WHWH | BIASED HIGH | 10 | 7.1 | -0.0852 | ICP-MS |
| F069b | 185.0 | 20.5 | | | 9 | | | ICP-AES |
| F139 | 61.5 | 6.1 | | BIASED LOW* | 10 | -3.4 | -0.2621 | ICP-MS |
| F144 | 164.0 | 16.4 | WH | | 10 | | | GFAAS |
| F154 | 248.5 | 24.8 | AHAL | | 10 | | | ICP-MS |
| F158 | 289.0 | 32.1 | WH | BIASED HIGH | 9 | 5.9 | 0.0571 | ICP-MS |
| F169 | 192.5 | 19.2 | | | 10 | | | ICP-MS |
| F183 | 259.0 | 25.9 | AH WH | | 10 | | | ICP-MS |
| F186 | 195.5 | 21.7 | AL AHALAHALWH AH | | 9 | | | ICP-MS |
| F193 | 192.5 | 19.2 | | | 10 | | | ICP-MS |
| F196 | 95.5 | 13.6 | | | 7 | | | ICP-AES |
| F207 | 118.0 | 11.8 | | | 10 | | | GFAAS |
| F223 | 124.5 | 20.7 | | | 6 | | | GFAAS |
| F223b | 161.5 | 23.0 | | | 7 | | | ICP-AES |
| F248 | 136.5 | 13.6 | AL | | 10 | | | ICP-MS |
| F287 | 78.5 | 8.7 | WL AL | | 9 | | | 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 17.7

PARAMETER: 24095 Chromium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 6.92 | 12.9 | 17.2 | 0.879 | 24.3 | 4.10 | 13.2 | 394. | 98.8 | 293. |
| F009 | 7.1 | 13. | 18. WH | <1. | 26. WH | 4.4 | 14. | 414. | 99. | 306. |
| F010 | 7.10 | 12.8 | 16.6 | 0.91 | 24.7 | 4.42 | 13.7 | 384. | 96.2 | 280. |
| F011 | 6.8 | 12.0 | 16.0 | 0.9 | 23.4 | 4.0 | 12.6 | 398. | 93.0 | 288. |
| F014 | 7.0 | 13. | 17. | 1.0 | 25. | 5.2 AH | 14. | 398. | 97. | 299. |
| F015 | 6.6 | 12.4 | 16.2 | 0.8 | 24.0 | 4.2 | 13.0 | 400. | 93.0 | 288. |
| F020 | 6.8 | 12.6 | 16.6 | 0.9 | 25.4 | 4. | 13.1 | 413. | 96. | 301. |
| F021 | 6.7 | 11.7 | 15.8 | 0.9 | 23.9 | 4.1 | 12.4 | 383. | 90.4 | 277. |
| F021b | 7. | 13. | 16. | <2. | 24. | 4. | 13. | 405. | 95. | 292. |
| F021c | 6.4 | 11.9 | 15.5 | 0.9 | 23.1 | 3.9 | 12.4 | 401. | 91.2 | 294. |
| F022 | 6.96 | 13.0 | 17.0 | 0.807 | 24.7 | 4.42 | 13.7 | 410. | 94. | 294. |
| F024 | 6.5 | 12.2 | 16.2 | 0.6 AL | 23.7 | 3.8 | 12.6 | 406. | 93.8 | 291. |
| F026 | 7. | 12. | 16. | <1. | 24. | 4. | 13. | 402. | 94. | 289. |
| F032a | 7. | 13. | 17. | 1. | 25. | 4. | 14. | 410. | 98. | 305. |
| F032c | 6.6 | 12.3 | 16.2 | 0.8 | 24.1 | 4.3 | 13.1 | 390. | 94.3 | 287. |
| F032d | 6.88 | 12.6 | 16.7 | <1. | 23.9 | 4.09 | 12.7 | 407. | 95.2 | 291. |
| F032g | 7.1 | 12.6 | 16.4 | 1.2 AH | 23.7 | 4.3 | 13.1 | 408. | 95.5 | 292. |
| F042 | 5.70 AL | 10.9 WL | 15.0 WL | <2. | 22.1 WL | 3.22 AL | 11.7 | 393. | 89.0 | 286. |
| F060 | 6.89 | 12.4 | 16.7 | 0.888 | 24.5 | 4.01 | 12.8 | 393. | 93.4 | 287. |
| F068 | 7.2 | 13. | 17. | 0.9 | 24. | 4.3 | 13. | 407. | 97. | 300. |
| F069 | 6.93 | 12.9 | 17.1 | 0.9 | 24.4 | 4.0 | 13.2 | 402. | 92.6 | 293. |
| F069b | 6.61 | 11.9 | 16.1 | <1.20 | 23.9 | 3.87 | 12.4 | 412. | 94.2 | 294. |
| F139 | 6.73 | 11.8 | 15.8 | 0.802 | 22.6 | 3.96 | 12.2 | 379. WL | 90.2 | 147. AL |
| F144 | 6.71 | 12.3 | 15.1 WL | <3. | 20.4 AL | 4.24 | 11.9 | 348. AL | 75.2 AL | 287. |
| F154 | 6.69 | 12.5 | 16.8 | 0.87 | 24.6 | 4.31 | 12.8 | 424. | 314. AH | 95.7 AL |
| F158 | 6.7 | 12.4 | 16.3 | <2. | 24.0 | 4.1 | 12.9 | 410. | 96.0 | 296. |
| F169 | 6.94 | 12.4 | 16.5 | 0.86 | 24.0 | 4.09 | 13.0 | 401. | 94.3 | 287. |
| F183 | 7.37 | 12.6 | 17.2 | 0.87 | 24.9 | 4.24 | 13.9 | 407. | 95.8 | 282. |
| F186 | 23.3 AH | 41.4 AH | 53.5 AH | 3.0 AH | 77.9 AH | 11.8 AH | 36.3 AH | 777. AH | 197. AH | 445. AH |
| F193 | 6.56 | 12.2 | 16.1 | <0.4 AL | 23.8 | 3.42 WL | 12.4 | 403. | 95.1 | 290. |
| F196 | 7. | 13. | 17. | <4. | 24. | 4. | 13. | 390. | 94. | 282. |
| F207 | 7.7 WH | 13.5 | 17.2 | 1.1 WH | 25.3 | 4.9 AH | 14.0 | 404. | 92.4 | 296. |
| F223 | 6.6 | 12.4 | 16.5 | <5. | 23.6 | <5. | 12.6 | | 95.1 | |
| F223b | <10.0 | 12.1 | 16. | <10.0 | 24.1 | <10.0 | 12.5 | 405. | 95.9 | 295. |
| F248 | 7.30 | 13.4 | 17.3 | <1.50 | 26.2 WH | 4.20 | 13.5 | 429. WH | 97.8 | 308. |
| F287 | 5.9 AL | <10. AL | 16. | <4.0 | 23. | <4.0 | 11.5 WL | 394. | 90. | 0.282 AL |
| ASSIGNED VALUE * | 6.90 | 12.4 | 16.5 | 0.900 | 24.0 | 4.09 | 13.0 | 403 | 94.3 | 292 |
| R-STD DEV * | 0.307 | 0.54 | 0.65 | 0.0909 | 0.86 | 0.241 | 0.71 | 11.1 | 3.04 | 9.3131 |
| ACCEPTABLE LIMITS(+-) * | 0.614 | 1.08 | 1.30 | 0.1818 | 1.72 | 0.482 | 1.42 | 22.2 | 6.08 | 18.6262 |
| WARNING LIMITS(+-) * | .614- .921 | 1.08- 1.62 | 1.30- 1.95 | .1818- .2727 | 1.72- 2.58 | .482- .723 | 1.42- 2.13 | 22.2- 33.3 | 6.08- 9.12 | 18.6262- 27. |
| ACTION LIMITS(<>) * | 0.921 | 1.62 | 1.95 | 0.2727 | 2.58 | 0.723 | 2.13 | 33.3 | 9.12 | 27.9393 |
| N * | 35 | 35 | 36 | 22 | 36 | 33 | 36 | 35 | 36 | 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 | 216.0 | 21.6 | | | 10 | | | ICP-MS |
| F009 | 287.5 | 31.9 | WH WH | BIASED HIGH* | 9 | 3.4 | 0.7425 | ICP-MS |
| F010 | 213.0 | 21.3 | | | 10 | | | ICP-MS |
| F011 | 105.0 | 10.5 | | | 10 | | | |
| F014 | 265.5 | 26.5 | AH | | 10 | | | ICP-MS |
| F015 | 131.5 | 13.1 | | | 10 | | | ICP-MS |
| F020 | 225.5 | 22.5 | | | 10 | | | ICP-MS |
| F021 | 80.0 | 8.0 | | BIASED LOW | 10 | -5.0 | 0.2345 | ICP-MS |
| F021b | 167.5 | 18.6 | | | 9 | | | ICP-AES |
| F021c | 85.0 | 8.5 | | | 10 | | | ICP-MS |
| F022 | 235.5 | 23.5 | | | 10 | | | ICP-MS |
| F024 | 102.5 | 10.2 | AL | | 10 | | | ICP-MS |
| F026 | 131.5 | 14.6 | | | 9 | | | ICP-AES |
| F032a | 265.5 | 26.5 | | | 10 | | | ICP-AES-E3386 |
| F032c | 139.0 | 13.9 | | | 10 | | | ICP-MS-E3473 |
| F032d | 164.0 | 18.2 | | | 9 | | | ICP-MS-E3474 |
| F032g | 213.5 | 21.3 | AH | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 25.5 | 2.8 | ALWLWL WLAL | BIASED LOW* | 9 | -1.9 | -1.3797 | ICP-AES |
| F060 | 148.0 | 14.8 | | | 10 | | | ICP-MS |
| F068 | 245.5 | 24.5 | | | 10 | | | ICP-MS |
| F069 | 194.5 | 19.4 | | | 10 | | | ICP-MS |
| F069b | 117.5 | 13.0 | | | 9 | | | ICP-AES |
| F139 | 47.5 | 4.7 | WL AL | BIASED LOW | 10 | -20.2 | -0.1595 | ICP-MS |
| F144 | 65.5 | 7.2 | WL AL ALAL | BIASED LOW | 9 | -9.9 | 0.0480 | GFAAS |
| F154 | 198.0 | 19.8 | AHAL | | 10 | | | ICP-MS |
| F158 | 175.5 | 19.5 | | | 9 | | | ICP-MS |
| F169 | 155.0 | 15.5 | | | 10 | | | ICP-MS |
| F183 | 230.0 | 23.0 | | | 10 | | | ICP-MS |
| F186 | 338.0 | 33.8 | AHAHAHAHAHAHAHAHAHAH | BIASED HIGH | 10 | 76.1 | 14.0174 | ICP-MS |
| F193 | 99.0 | 11.0 | AL WL | | 9 | | | ICP-MS |
| F196 | 153.5 | 17.0 | | | 9 | | | ICP-AES |
| F207 | 270.0 | 27.0 | WH WH AH | | 10 | | | ICP-AES |
| F223 | 79.0 | 13.1 | | | 6 | | | GFAAS |
| F223b | 118.0 | 16.8 | | | 7 | | | ICP-AES |
| F248 | 281.5 | 31.2 | WH WH | BIASED HIGH | 9 | 6.3 | -0.3563 | ICP-MS |
| F287 | 28.5 | 4.0 | ALAL WL AL | BIASED LOW | 7 | -33.3 | -3.6698 | 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 17.6

PARAMETER: 27095 Cobalt ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 7.22 | 8.29 | 15.5 | 0.243 | 27.5 | 1.98 | 8.91 | 373. | 99.5 | 253. |
| F009 | 7.7 WH | 8.8 WH | 16. WH | <1. | 30. WH | 2.1 | 9.6 WH | 390. | 98. | 264. |
| F010 | 7.21 | 8.18 | 15.5 | 0.253 | 27.6 | 1.97 | 8.99 | 388. | 97.2 | 260. |
| F011 | 7.0 | 8.2 | 15.1 | 0.2 | 27.3 | 2.0 | 8.8 | 377. | 95.8 | 250. |
| F015 | 7.09 | 8.07 | 14.9 | 0.262 | 27.4 | 1.98 | 8.81 | 398. | 94.0 | 264. |
| F020 | 7.08 | 8.17 | 15.2 | 0.254 | 28.4 | 2.05 | 8.93 | 380. | 96. | 257. |
| F021 | 7.2 | 7.7 | 15.0 | 0.2 | 28.2 | 2.0 | 8.6 | 382. | 93.4 | 257. |
| F021b | 7. | 8. | 15. | <5. | 28. | <5. | 8. WL | 384. | 95. | 252. |
| F021c | 6.9 | 7.8 | 14.5 | 0.2 | 26.7 | 1.9 | 8.6 | 380. | 96.4 | 257. |
| F022 | 7.46 | 8.33 | 15.4 | 0.254 | 28.2 | 2.08 | 9.31 | 388. | 92. | 255. |
| F024 | 7.1 | 7.9 | 15.0 | 0.2 | 27.2 | 2.0 | 8.8 | 388. | 95.6 | 256. |
| F026 | 7. | 8. | 15. | <1. | 27. | 2. | 9. | 383. | 96. | 254. |
| F032a | 7.6 | 8.1 | 15.7 | <1.5 | 28.5 | 1.7 AL | 8.5 | 383. | 97.3 | 258. |
| F032c | 6.9 | 7.8 | 14.7 | 0.2 | 27.2 | 1.9 | 8.6 | 365. | 94.1 | 248. |
| F032d | 7.26 | 8.21 | 15.5 | <0.5 | 29.2 | 2.07 | 9.00 | 390. | 97.6 | 259. |
| F032g | 7.2 | 8.1 | 15.4 | 0.2 | 27.4 | 2.1 | 9.1 | 384. | 94.5 | 248. |
| F060 | 7.84 WH | 8.76 WH | 16.5 AH | 0.287 | 29.7 WH | 2.18 WH | 9.56 WH | 386. | 97.3 | 254. |
| F068 | 6.46 WL | 7.3 AL | 13. AL | 0.22 | 24. AL | 1.8 WL | 8.1 | 358. WL | 87. AL | 228. AL |
| F069 | 7.20 | 8.24 | 15.4 | 0.249 | 27.3 | 1.93 | 8.87 | 373. | 92.5 | 248. |
| F069b | 7.06 | 8.21 | 15.2 | <1.40 | 28.3 | 1.91 | 8.78 | 390. | 96.2 | 253. |
| F139 | 7.15 | 8.15 | 15.1 | 0.245 | 27. | 1.99 | 8.65 | 375. | 93.6 | 263. |
| F154 | 7.22 | 8.06 | 15.4 | 0.25 | 27. | 1.94 | 8.63 | 398. | 263. AH | 95. AL |
| F158 | 7.1 | 8.1 | 15.0 | <2. | 27.5 | 2.0 | 8.8 | 391. | 96.9 | 257. |
| F169 | 7.09 | 8.12 | 15.1 | 0.24 | 27.7 | 1.93 | 8.68 | 381. | 94.0 | 260. |
| F183 | 6.87 | 8.04 | 14.7 | 0.429 AH | 25.7 | 2.05 | 8.38 | 398. | 93.1 | 268. |
| F186 | 6.6 | 7.7 | 15.1 | <0.1 AL | 27.8 | 1.3 AL | 8.4 | 377. | 98.5 | 261. |
| F193 | 7.33 | 8.30 | 14.8 | 0.25 | 27.4 | 1.98 | 8.84 | 371. | 92.8 | 248. |
| F196 | <10. | <10. | 15. | <10. | 28. | <10. | <10. | 381. | 95. | 253. |
| F223b | 7.5 | 8.6 | 16.1 WH | <4.0 | 29. | <4.0 | 9.3 | 384. | 99.5 | 261. |
| F248 | 7.40 | 8.50 | 15.4 | <0.050 AL | 29.0 | 2.00 | 8.90 | 401. | 96.3 | 262. |
| F287 | 6.6 | 8.2 | 14. WL | <4.0 | 26. | <4.0 | 7.74 AL | 367. | 92. | 0.239 AL |
| ASSIGNED VALUE * | 7.12 | 8.15 | 15.1 | 0.244 | 27.6 | 2.00 | 8.80 | 383 | 95.8 | 257 |
| R-STD DEV * | 0.266 | 0.255 | 0.42 | 0.0331 | 0.97 | 0.085 | 0.350 | 10.2 | 2.59 | 6.8461 |
| ACCEPTABLE LIMITS(+-) * | 0.532 | 0.510 | 0.84 | 0.0662 | 1.94 | 0.170 | 0.700 | 20.4 | 5.18 | 13.6922 |
| WARNING LIMITS(+-) * | .532- .798 | .510- .765 | .84- 1.26 | .0662- .0993 | 1.94- 2.91 | .170- .255 | .700- 1.050 | 20.4- 30.6 | 5.18- 7.77 | 13.6922- 20. |
| ACTION LIMITS(<>) * | 0.798 | 0.765 | 1.26 | 0.0993 | 2.91 | 0.255 | 1.050 | 30.6 | 7.77 | 20.5383 |
| N * | 30 | 30 | 31 | 19 | 31 | 27 | 30 | 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 | 175.0 | 17.5 | | | 10 | | | ICP-MS |
| F009 | 256.0 | 28.4 | WHWHWH WH WH | BIASED HIGH* | 9 | 2.0 | 0.7462 | ICP-MS |
| F010 | 196.5 | 19.6 | | | 10 | | | ICP-MS |
| F011 | 122.0 | 12.2 | | | 10 | | | |
| F015 | 157.5 | 15.7 | | | 10 | | | ICP-MS |
| F020 | 177.0 | 17.7 | | | 10 | | | ICP-MS |
| F021 | 122.0 | 12.2 | | | 10 | | | ICP-MS |
| F021b | 89.0 | 11.1 | WL | | 8 | | | ICP-AES |
| F021c | 83.0 | 8.3 | | | 10 | | | ICP-MS |
| F022 | 203.5 | 20.3 | | | 10 | | | ICP-MS |
| F024 | 128.5 | 12.8 | | | 10 | | | ICP-MS |
| F026 | 120.5 | 13.3 | | | 9 | | | ICP-AES |
| F032a | 164.0 | 18.2 | AL | | 9 | | | ICP-AES-E3386 |
| F032c | 57.5 | 5.7 | | BIASED LOW* | 10 | -4.3 | 0.5135 | ICP-MS-E3473 |
| F032d | 220.0 | 24.4 | | BIASED HIGH* | 9 | 1.6 | 0.1811 | ICP-MS-E3474 |
| F032g | 156.5 | 15.6 | | | 10 | | | ICP-AES-system#2,Opt |
| F060 | 252.0 | 25.2 | WHWHAH WHWHWH | BIASED HIGH* | 10 | 0.1 | 0.7391 | ICP-MS |
| F068 | 22.0 | 2.2 | WLALAL ALWL WLALAL | BIASED LOW | 10 | -7.7 | -0.8169 | ICP-MS |
| F069 | 126.0 | 12.6 | | | 10 | | | ICP-MS |
| F069b | 148.0 | 16.4 | | | 9 | | | ICP-AES |
| F139 | 131.5 | 13.1 | | | 10 | | | ICP-MS |
| F154 | 153.0 | 15.3 | AHAL | | 10 | | | ICP-MS |
| F158 | 153.5 | 17.0 | | | 9 | | | ICP-MS |
| F169 | 134.0 | 13.4 | | | 10 | | | ICP-MS |
| F183 | 130.0 | 13.0 | AH | | 10 | | | ICP-MS |
| F186 | 107.5 | 11.9 | AL AL | | 9 | | | ICP-MS |
| F193 | 125.0 | 12.5 | | | 10 | | | ICP-MS |
| F196 | 68.0 | 13.6 | | | 5 | | | ICP-AES |
| F223b | 212.5 | 26.5 | WH | BIASED HIGH* | 8 | 0.5 | 1.1779 | ICP-AES |
| F248 | 217.0 | 24.1 | AL | BIASED HIGH* | 9 | 4.1 | -0.6145 | ICP-MS |
| F287 | 34.5 | 4.3 | WL AL AL | BIASED LOW | 8 | -30.9 | -3.9693 | 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 15.2

PARAMETER: 29095 Copper ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 8.65 | 15.0 | 17.8 | 6.96 | 27.0 | 35.1 | 116. | 389. | 98.5 | 282. |
| F009 | 9.1 | 16. | 18. | 7.6 | 28. | 37. | 122. WH | 404. | 100. | 290. |
| F010 | 8.32 | 14.5 | 17.0 | 7.01 | 26.0 | 34.1 | 111. | 395. | 95.0 | 279. |
| F011 | 8.9 | 15.0 | 17.4 | 7.4 | 26.9 | 35.4 | 113. | 390. | 95.0 | 276. |
| F014 | 8.4 | 15. | 17. | 6.7 | 25. | 34. | 107. | 394. | 93. | 266. |
| F015 | 8.59 | 14.9 | 17.0 | 7.30 | 26.7 | 34.3 | 111. | 394. | 92.5 | 278. |
| F020 | 8.45 | 15.1 | 17.4 | 7.14 | 27.5 | 34.8 | 112. | 383. | 92.7 | 274. |
| F021 | 9.1 | 15.0 | 17.8 | 7.4 | 27.8 | 35.4 | 110. | 397. | 95.9 | 275. |
| F021b | 8. | 16. | 18. | 7. | 28. | 36. | 117. | 410. | 99. | 288. |
| F021c | 8.6 | 15.1 | 17.6 | 7.5 | 27.4 | 34.8 | 115. | 412. | 95.3 | 295. |
| F022 | 8.81 | 15.1 | 17.4 | 7.06 | 26.9 | 35.3 | 113. | 402. | 97. | 281. |
| F024 | 8.5 | 14.9 | 17.0 | 6.9 | 26.1 | 34.1 | 110. | 394. | 94.6 | 278. |
| F026 | 9. | 15. | 18. | 7. | 27. | 35. | 114. | 410. | 96. | 290. |
| F032a | 8.6 | 12.9 AL | 14.8 AL | 6.1 WL | 23.1 AL | 32.7 | 115. | 387. | 90.2 | 281. |
| F032c | 8.6 | 14.9 | 17.1 | 7.0 | 26.2 | 34.0 | 108. | 383. | 91.6 | 262. |
| F032d | 8.56 | 14.8 | 17.2 | 7.38 | 27.3 | 35.1 | 111. | 390. | 93.6 | 272. |
| F032g | 9. | 14. | 17. | 7. | 26. | 33. | 111. | 373. | 95. | 274. |
| F042 | <10. | 12.7 AL | 15.5 WL | <10. | 24.0 WL | 32.4 | 113. | 378. | 94.5 | 274. |
| F060 | 8.94 | 15.2 | 17.7 | 7.22 | 27.1 | 35.2 | 110. | 383. | 95.6 | 266. |
| F068 | 8.66 | 15. | 17. | 7.2 | 25.3 | 36. | 112. | 398. | 92. | 280. |
| F069 | 8.57 | 15.2 | 17.5 | 7.18 | 26.1 | 33.4 | 114. | 375. | 87.8 | 266. |
| F069b | 7.7 | 14.3 | 16.6 | 7.1 | 26.1 | 34.7 | 112. | 384. | 93.7 | 275. |
| F139 | 10.1 AH | 14.6 | 16.8 | 6.81 | 25.6 | 33.7 | 107. | 378. | 89.9 | 275. |
| F144 | 7.25 WL | 12.4 AL | 14.3 AL | 4.80 AL | 21.9 AL | 28.5 AL | 98.7 AL | 313. AL | 82.4 AL | 225. AL |
| F154 | 9.09 | 15.5 | 18.1 | 7.51 | 27.5 | 36.1 | 120. | 424. WH | 304. AH | 97.6 AL |
| F158 | 9.1 | 15.6 | 18.2 | 7.5 | 28.1 | 36.0 | 118. | 422. WH | 99.4 | 300. WH |
| F169 | 8.62 | 15.0 | 17.4 | 6.74 | 28.2 | 34.4 | 111. | 395. | 92.8 | 272. |
| F183 | 8.14 | 14.7 | 16.2 | 7.37 | 24.3 WL | 33.6 | 99.2 WL | 370. | 86.2 WL | 259. |
| F186 | 7.8 | 13.8 WL | 16.5 | 6.5 | 26.4 | 33.5 | 110. | 384. | 93.4 | 275. |
| F193 | 8.45 | 15.1 | 17.2 | 7.08 | 26.8 | 34.7 | 108. | 375. | 90.4 | 263. |
| F196 | <10. | 15. | 18. | <10. | 26. | 34. | 110. | 383. | 92. | 270. |
| F207 | 8.7 | 15.0 | 17.2 | 6.9 | 26.8 | 34.2 | 112. | 391. | 90.2 | 279. |
| F223 | <100. | <100. | <100. | <100. | <100. | <100. | 118. | 392. | <100. | 277. |
| F223b | 8.6 | 14.9 | 17.4 | 6.1 WL | 26.8 | 35.2 | 119. | 392. | 96.3 | 279. |
| F248 | 9.40 | 15.8 | 17.7 | 7.00 | 27.8 | 35.7 | 114. | 394. | 94.9 | 278. |
| F273 | 9.11 | 15.6 | 17.5 | 7.95 WH | 27.4 | 35.6 | 115. | 392. | 96.6 | 284. |
| F287 | 6.6 AL | 14. | 15. AL | 5.78 AL | 26. | 31.4 WL | 104. | 372. | 90. | 0.261 AL |
| ASSIGNED VALUE * | 8.60 | 15.0 | 17.4 | 7.07 | 26.8 | 34.7 | 112 | 392 | 94.1 | 276.500 |
| R-STD DEV * | 0.449 | 0.56 | 0.66 | 0.384 | 1.14 | 1.20 | 4.24 | 13.4 | 3.60 | 10.2382 |
| ACCEPTABLE LIMITS(+-) * | 0.898 | 1.12 | 1.32 | 0.768 | 2.28 | 2.40 | 8.48 | 26.8 | 7.20 | 20.4764 |
| WARNING LIMITS(+-) * | .898- 1.347 | 1.12- 1.68 | 1.32- 1.98 | .768- 1.152 | 2.28- 3.42 | 2.40- 3.60 | 8.48- 12.72 | 26.8- 40.2 | 7.20- 10.80 | 20.4764- 30. |
| ACTION LIMITS(<>) * | 1.347 | 1.68 | 1.98 | 1.152 | 3.42 | 3.60 | 12.72 | 40.2 | 10.80 | 30.7146 |
| N * | 34 | 36 | 36 | 34 | 36 | 36 | 37 | 37 | 36 | 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 | 237.5 | 23.7 | | | 10 | | | ICP-MS |
| F009 | 339.0 | 33.9 | WH | BIASED HIGH* | 10 | 3.9 | 1.1767 | ICP-MS |
| F010 | 158.0 | 15.8 | | | 10 | | | ICP-MS |
| F011 | 227.0 | 22.7 | | | 10 | | | |
| F014 | 113.5 | 11.3 | | | 10 | | | ICP-MS |
| F015 | 171.5 | 17.1 | | | 10 | | | ICP-MS |
| F020 | 185.0 | 18.5 | | | 10 | | | ICP-MS |
| F021 | 251.5 | 25.1 | | | 10 | | | ICP-MS |
| F021b | 285.0 | 28.5 | | | 10 | | | ICP-AES |
| F021c | 272.5 | 27.2 | | | 10 | | | ICP-MS |
| F022 | 251.5 | 25.1 | | | 10 | | | ICP-MS |
| F024 | 149.5 | 14.9 | | | 10 | | | ICP-MS |
| F026 | 260.5 | 26.0 | | | 10 | | | ICP-AES |
| F032a | 111.0 | 11.1 | ALALWLAL | | 10 | | | ICP-AES-E3386 |
| F032c | 116.0 | 11.6 | | | 10 | | | ICP-MS-E3473 |
| F032d | 177.5 | 17.7 | | | 10 | | | ICP-MS-E3474 |
| F032g | 128.0 | 12.8 | | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 75.5 | 9.4 | ALWL WL | | 8 | | | ICP-AES |
| F060 | 211.0 | 21.1 | | | 10 | | | ICP-MS |
| F068 | 202.5 | 20.2 | | | 10 | | | ICP-MS |
| F069 | 150.5 | 15.0 | | | 10 | | | ICP-MS |
| F069b | 137.0 | 13.7 | | | 10 | | | ICP-AES |
| F139 | 108.5 | 10.8 | AH | | 10 | | | ICP-MS |
| F144 | 13.0 | 1.3 | WLALALALALALALALAL | BIASED LOW | 10 | -19.4 | 1.7157 | GFAAS |
| F154 | 301.5 | 30.1 | WHAHAL | BIASED HIGH | 10 | -14.6 | 22.1071 | ICP-MS |
| F158 | 337.5 | 33.7 | WH WH | BIASED HIGH | 10 | 8.4 | -1.0474 | ICP-MS |
| F169 | 188.0 | 18.8 | | | 10 | | | ICP-MS |
| F183 | 69.0 | 6.9 | WL WL WL | BIASED LOW | 10 | -5.6 | -0.7814 | ICP-MS |
| F186 | 99.0 | 9.9 | WL | | 10 | | | ICP-MS |
| F193 | 135.5 | 13.5 | | | 10 | | | ICP-MS |
| F196 | 114.0 | 14.2 | | | 8 | | | ICP-AES |
| F207 | 173.5 | 17.3 | | | 10 | | | ICP-AES |
| F223 | 75.5 | 25.1 | | INSUFFICIENT DATA | 3 | | | AAS |
| F223b | 210.0 | 21.0 | WL | | 10 | | | ICP-AES |
| F248 | 265.5 | 26.5 | | | 10 | | | ICP-MS |
| F273 | 292.5 | 29.2 | WH | BIASED HIGH* | 10 | 1.0 | 0.9028 | ICP-AES |
| F287 | 35.0 | 3.5 | AL ALAL WL AL | BIASED LOW | 10 | -34.2 | 1.9299 | 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 18.4

PARAMETER: 31095 Gallium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.09 | 5.36 | 0.100 | <0.001 | 8.78 | 2.90 | 6.76 | 0.0816 | 33.0 | 52.4 |
| F022 | 2. | 5.26 | 0.11 | <0.01 | 9.14 | 3.02 | 7.23 | 0.088 | 33.8 | 53.8 |
| F024 | 2.1 | 5.4 | 0.1 | <0.1 | 8.8 | 3.0 | 6.6 | <0.1 | 33.9 | 52.7 |
| F139 | 2.00 | 5.42 | 0.099 | <0.002 | 8.82 | 2.96 | 6.78 | 0.078 | 32.3 | 51.8 |
| F183 | 2.13 | 5.64 | 0.126 | 0.022 | 8.89 | 3.02 | 6.82 | 0.09 | 34.0 | 52.6 |
| ASSIGNED VALUE * | 2.09 | 5.40 | 0.100 | 0.022 | 8.82 | 3.00 | 6.78 | 0.0848 | 33.8 | 52.6 |
| R-STD DEV * | 0.068 | 0.158 | 0.0103 | - | 0.117 | 0.058 | 0.220 | 0.00632 | 0.83 | 0.82 |
| ACCEPTABLE LIMITS(+-) * | - | - | - | - | - | - | - | - | - | - |
| WARNING LIMITS(+-) * | - | - | - | - | - | - | - | - | - | - |
| ACTION LIMITS(<>) * | - | - | - | - | - | - | - | - | - | - |
| N * | 5 | 5 | 5 | 1 | 5 | 5 | 5 | 4 | 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 |
|---|---|---|---|---|---|---|---|---|
| F003 | 17.5 | 1.9 | | | 9 | | | ICP-MS |
| F022 | 32.0 | 3.5 | | | 9 | | | ICP-MS |
| F024 | 23.5 | 2.9 | | | 8 | | | ICP-MS |
| F139 | 17.5 | 1.9 | | | 9 | | | ICP-MS |
| F183 | 40.5 | 4.0 | | | 10 | | | ICP-MS |

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

OVERALL AVERAGE RANK IS 2.9

PARAMETER: 26095 Iron ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 15.2 | 22.1 | 27.1 | 25.9 | 31.2 | 118. | 217. | 414. | 121. | 311. |
| F009 | <20. | <20. | 21. | 24. | 25. | 119. | 212. | 407. | 114. | 303. |
| F010 | 15.0 | 21.7 | 26.7 | 24.5 | 31.6 | 120. | 205. | 393. | 118. | 292. |
| F011 | 16. | 22. | 28. | 26. | 35. | 134. | 212. | 409. | 119. | 319. |
| F014 | 16. | 21. | 26. | 27. | 32. | 124. | 220. | 432. | 121. | 319. |
| F015 | 15. | 22. | 28. | 26. | 33. | 127. | 226. | 444. | 127. | 327. |
| F020 | 16. | 23. | 28. | 27. | 33. | 119. | 210. | 426. | 121. | 310. |
| F021 | <20. | <20. | <20. | <20. WL | <20. WL | 93.7 WL | 180. WL | 417. | 96.3 AL | 290. |
| F021b | <20. | 23. | 27. | 25. | 31. | 117. | 208. | 417. | 118. | 304. |
| F022 | 13. | 19. | 24. | 23. | 31. | 119. | 211. | 420. | 119. | 308. |
| F024 | 14.4 | 21.1 | 25.9 | 24.9 | 30.6 | 118. | 208. | 418. | 118. | 302. |
| F026 | 15. | 22. | 27. | 25. | 32. | 122. | 214. | 427. | 123. | 314. |
| F032a | 16.0 | 22.6 | 27.9 | 22.9 | 32.9 | 122. | 217. | 426. | 123. | 319. |
| F032c | <20. | <20. | <20. | <20. WL | 23. | 110. | 201. | 438. | 111. | 317. |
| F032d | <50. | <50. | <50. | <50. | <50. | 110. | 205. | 435. | 117. | 309. |
| F032g | 13. | 20. | 25. | 24. | 28. | 116. | 249. AH | 438. | 120. | 308. |
| F042 | 11.7 | 17.6 | 22.3 | 22.9 | 27.5 | 109. | 196. | 422. | 110. | 297. |
| F060 | <20. | <20. | <20. | 24.1 | 22.5 | 106. | 201. | 418. | 108. | 304. |
| F068 | 14. | 21. | 26. | 26. | 31. | 117. | 213. | 413. | 110. | 310. |
| F069 | 15.3 | 20.7 | 25.5 | 23.9 | 29.6 | 115. | 205. | 414. | 114. | 301. |
| F139 | 16.2 | 22.8 | 28.1 | 26.5 | 32.3 | 126. | 217. | 442. | 128. | 168. AL |
| F144 | 11.4 | 17.5 | 20.1 | 18.8 WL | 23.2 | 105. | 190. | 343. AL | 119. | 295. |
| F154 | <10. WL | <10. AL | 17. WL | 22. | 23. | 109. | 195. | 409. | 291. AH | 106. AL |
| F158 | <50. | <50. | <50. | <50. | <50. | 97.4 WL | 186. WL | 404. | 98.1 WL | 284. |
| F169 | 14.8 | 20.6 | 25.4 | 24.5 | 32.0 | 115. | 211. | 422. | 117. | 309. |
| F183 | 14.3 | 21.1 | 26.0 | 25.0 | 29.7 | 118. | 204. | 414. | 118. | 295. |
| F186 | 21. AH | 27. AH | 31. | 33. AH | 35. | 132. | 226. | 340. AL | 123. | 260. WL |
| F193 | 14.3 | 21.4 | 25.9 | 26.0 | 31.0 | 121. | 206. | 405. | 117. | 294. |
| F196 | 9. AL | 13. AL | 17. WL | 15. AL | 21. WL | 83. AL | 162. AL | 373. WL | 91. AL | 259. AL |
| F207 | 15. | 21. | 26. | 25. | 31. | 119. | 211. | 430. | 116. | 309. |
| F223 | <200. | <200. | <200. | <200. | <200. | <200. | 214. | 404. | <200. | 307. |
| F223b | <20.0 | <20.0 | 23.9 | 22.6 | 29.2 | 121. | 216. | 425. | 120. | 312. |
| F248 | <50. | <50. | <50. | <50. | <50. | 130. | 212. | 430. | 122. | 321. |
| F287 | 7.6 AL | 14. AL | 18. WL | 18.6 AL | 23. | 106. | 198. | 397. | 106. | 0.286 AL |
| ASSIGNED VALUE * | 15.0 | 21.1 | 26.0 | 24.9 | 31.0 | 118 | 210 | 418 | 118 | 308 |
| R-STD DEV * | 1.80 | 1.86 | 2.99 | 1.98 | 4.42 | 9.13 | 10.9 | 16.4 | 6.89 | 15.1628 |
| ACCEPTABLE LIMITS(+-) * | 3.60 | 3.72 | 5.98 | 3.96 | 8.84 | 18.26 | 21.8 | 32.8 | 13.78 | 30.3256 |
| WARNING LIMITS(+-) * | 3.60- 5.40 | 3.72- 5.58 | 5.98- 8.97 | 3.96- 5.94 | 8.84- 13.26 | 18.26- 27.39 | 21.8- 32.7 | 32.8- 49.2 | 13.78- 20.67 | 30.3256- 45. |
| ACTION LIMITS(<>) * | 5.40 | 5.58 | 8.97 | 5.94 | 13.26 | 27.39 | 32.7 | 49.2 | 20.67 | 45.4884 |
| N * | 23 | 24 | 27 | 28 | 29 | 33 | 34 | 34 | 33 | 34 |

* 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 | 206.0 | 20.6 | | | 10 | | | ICP-MS |
| F009 | 98.5 | 12.3 | | | 8 | | | ICP-MS |
| F010 | 143.5 | 14.3 | | | 10 | | | ICP-MS |
| F011 | 228.0 | 22.8 | | | 10 | | | |
| F014 | 237.5 | 23.7 | | | 10 | | | ICP-AES |
| F015 | 265.0 | 26.5 | | BIASED HIGH | 10 | 6.6 | 0.1567 | ICP-AES |
| F020 | 230.5 | 23.0 | | | 10 | | | ICP-MS |
| F021 | 29.5 | 5.9 | WLWLWLWL AL | BIASED LOW | 5 | 7.2 | -35.5010 | ICP-MS |
| F021b | 155.0 | 17.2 | | | 9 | | | ICP-AES |
| F022 | 141.5 | 14.1 | | | 10 | | | ICP-AES |
| F024 | 144.5 | 14.4 | | | 10 | | | ICP-MS |
| F026 | 224.5 | 22.4 | | | 10 | | | ICP-AES |
| F032a | 233.0 | 23.3 | | | 10 | | | ICP-AES-E3386 |
| F032c | 90.5 | 15.0 | WL | | 6 | | | ICP-MS-E3473 |
| F032d | 86.5 | 17.3 | | | 5 | | | ICP-MS-E3474 |
| F032g | 160.5 | 16.0 | AH | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 82.0 | 8.2 | | | 10 | | | ICP-AES |
| F060 | 68.0 | 9.7 | | | 7 | | | ICP-MS |
| F068 | 152.5 | 15.2 | | | 10 | | | ICP-MS |
| F069 | 116.0 | 11.6 | | | 10 | | | ICP-AES |
| F139 | 244.0 | 24.4 | AL | BIASED HIGH | 10 | -10.1 | 4.8646 | ICP-MS |
| F144 | 59.5 | 5.9 | WL AL | BIASED LOW | 10 | -12.6 | 1.7085 | GFAAS |
| F154 | 67.5 | 8.4 | WLALWL AHAL | | 8 | | | ICP-MS |
| F158 | 21.5 | 4.3 | WLWL WL | BIASED LOW* | 5 | 1.8 | -24.3239 | ICP-MS |
| F169 | 150.5 | 15.0 | | | 10 | | | ICP-MS |
| F183 | 134.0 | 13.4 | | | 10 | | | ICP-MS |
| F186 | 230.0 | 23.0 | AHAH AH AL WL | | 10 | | | ICP-MS |
| F193 | 142.0 | 14.2 | | | 10 | | | ICP-MS |
| F196 | 16.5 | 1.6 | ALALWLALWLALALWLALAL | BIASED LOW | 10 | -11.3 | -9.9210 | ICP-AES |
| F207 | 172.5 | 17.2 | | | 10 | | | ICP-AES |
| F223 | 50.0 | 16.6 | | INSUFFICIENT DATA | 3 | | | AAS |
| F223b | 146.0 | 18.2 | | | 8 | | | ICP-AES |
| F248 | 140.5 | 28.1 | | BIASED HIGH* | 5 | 2.2 | 3.8492 | ICP-MS |
| F287 | 34.5 | 3.4 | ALALWLAL AL | BIASED LOW | 10 | -32.1 | 1.3875 | 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 15.7

PARAMETER: 82095 Lead ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 3.05 | 10.6 | 11.9 | 0.352 | 27.4 | 8.91 | 24.4 | 430. | 98.4 | 289. |
| F009 | 3.0 | 11. | 12. | <1. | 28. | 8.8 | 25. | 423. | 100. | 285. |
| F010 | 2.94 | 10.2 | 11.4 | 0.34 | 26.2 | 8.53 | 23.3 | 392. | 91.1 | 263. |
| F011 | 2.9 | 10.6 | 11.9 | 0.4 | 27.1 | 8.8 | 24.3 | 412. | 99.3 | 290. |
| F014 | 3.1 | 10. | 12. | <1.0 | 27. | 8.9 | 24. | 408. | 101. | 292. |
| F015 | 3.01 | 10.4 | 11.6 | 0.35 | 27.2 | 8.70 | 23.9 | 439. | 96.2 | 307. |
| F020 | 3.09 | 11. | 12.1 | 0.359 | 28.1 | 8.9 | 24.8 | 402. | 96.6 | 274. |
| F021 | 2.9 | 10.2 | 11.6 | 0.3 | 27.0 | 8.3 | 23.0 | 417. | 93.9 | 276. |
| F021b | <20. | <20. | <20. | <20. | 23. AL | <20. | 20. WL | 417. | 90. | 281. |
| F021c | 2.9 | 10.1 | 11.2 | 0.3 | 26.2 | 8.4 | 23.1 | 428. | 96.2 | 291. |
| F022 | 3.01 | 10.7 | 11.7 | 0.327 | 27.5 | 8.87 | 25.1 | 432. | 96. | 297. |
| F024 | 3.1 | 10.6 | 12.0 | 0.3 | 27.7 | 9.0 | 24.4 | 436. | 101. | 297. |
| F026 | 4. AH | 10. | 13. | <2. | 28. | 8. | 25. | 429. | 104. | 287. |
| F032a | <11. | 11. | <11. | <11. | 26. | <11. | 12. AL | 411. | 98. | 284. |
| F032c | 2.9 | 10.2 | 11.6 | 0.3 | 26.9 | 8.6 | 23.7 | 405. | 96.4 | 280. |
| F032d | 2.99 | 10.4 | 11.6 | <1. | 26.7 | 8.65 | 23.6 | 417. | 96.5 | 290. |
| F032g | <2. AL | 8. AL | 9. AL | 3. AH | 25. | 7. AL | 22. | 393. | 95. | 276. |
| F042 | <2. AL | 9.11 WL | 10.4 WL | <2. | 26.5 | 7.43 AL | 22.8 | 453. | 100. | 302. |
| F060 | 3.09 | 10.7 | 12.0 | 0.365 | 27.6 | 9.16 | 24.2 | 432. | 94.6 | 295. |
| F068 | 3. | 10. | 11. | 0.3 | 26. | 8.9 | 24. | 454. | 100. | 308. |
| F069 | 2.46 AL | 8.97 WL | 12.4 | 0.335 | 29.6 | 7.99 | 25.7 | 219. AL | 102. | 150. AL |
| F139 | 3.05 | 10.4 | 11.5 | 0.314 | 26.8 | 8.59 | 23.8 | 423. | 94.9 | 282. |
| F144 | 3.61 AH | 9.58 | 11.5 | <3. | 23.9 WL | 8.73 | 22.6 | 436. | 118. AH | 282. |
| F154 | 3.28 | 11. | 12.2 | 0.37 | 28.9 | 9.18 | 25.7 | 471. WH | 313. AH | 105. AL |
| F158 | 3.0 | 10.9 | 12.1 | <2. | 28.5 | 9.0 | 24.8 | 447. | 102. | 309. |
| F169 | 3.00 | 10.1 | 11.1 | <0.50 | 26.8 | 8.55 | 23.1 | 413. | 98.2 | 279. |
| F183 | 2.64 WL | 10.3 | 11.2 | 0.062 AL | 26.0 | 8.44 | 22.9 | 430. | 90.8 | 283. |
| F186 | 2.1 AL | 9.2 | 10.5 WL | <0.1 AL | 24.7 | 7.5 AL | 21.4 | 390. | 90.3 | 261. |
| F193 | 3.03 | 10.7 | 12.0 | <0.4 | 28.0 | 8.97 | 24.5 | 422. | 96.9 | 284. |
| F196 | <10. | <10. | <10. WL | <10. | 18. AL | <10. | 15. AL | 419. | 88. | 280. |
| F207 | 3. | 11. | 12.5 | <0.8 | 27.5 | 9.0 | 24.7 | 439. | 106. | 299. |
| F223 | <10. | 12.6 AH | 12.8 | <10. | 30.4 WH | <10. | 26.6 | | | |
| F223b | <20.0 | <20.0 | <20.0 | <20.0 | 26.8 | <20.0 | 23.3 | 441. | 102. | 301. |
| F248 | 3.30 WH | 11.1 | 12.3 | <1.00 | 27.0 | 8.60 | 24.1 | 355. AL | 95.8 | 257. |
| F287 | <10. | <10. | 13. | <10. | 26. | <10. | 19.8 WL | 417. | 92. | 0.285 AL |
| ASSIGNED VALUE * | 3.00 | 10.40 | 11.9 | 0.335 | 27.0 | 8.76 | 24.0 | 423 | 96.6 | 285 |
| R-STD DEV * | 0.140 | 0.608 | 0.64 | 0.0413 | 1.29 | 0.394 | 1.43 | 21.0 | 5.02 | 16.3715 |
| ACCEPTABLE LIMITS(+-) * | 0.280 | 1.216 | 1.28 | 0.0826 | 2.58 | 0.788 | 2.86 | 42.0 | 10.04 | 32.7430 |
| WARNING LIMITS(+-) * | .280- .420 | 1.216- 1.824 | 1.28- 1.92 | .0826- .1239 | 2.58- 3.87 | .788- 1.182 | 2.86- 4.29 | 42.0- 63.0 | 10.04- 15.06 | 32.7430- 49. |
| ACTION LIMITS(<>) * | 0.420 | 1.824 | 1.92 | 0.1239 | 3.87 | 1.182 | 4.29 | 63.0 | 15.06 | 49.1145 |
| N * | 27 | 31 | 31 | 17 | 35 | 29 | 35 | 34 | 34 | 34 |

* 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 | 201.0 | 20.1 | | | 10 | | | ICP-MS |
| F009 | 197.5 | 21.9 | | | 9 | | | ICP-MS |
| F010 | 86.0 | 8.6 | | | 10 | | | ICP-MS |
| F011 | 173.0 | 17.3 | | | 10 | | | |
| F014 | 168.5 | 18.7 | | | 9 | | | ICP-MS |
| F015 | 184.0 | 18.4 | | | 10 | | | ICP-MS |
| F020 | 194.5 | 19.4 | | | 10 | | | ICP-MS |
| F021 | 98.0 | 9.8 | | | 10 | | | ICP-MS |
| F021b | 34.5 | 6.9 | AL WL | | 5 | | | ICP-AES |
| F021c | 112.0 | 11.2 | | | 10 | | | ICP-MS |
| F022 | 200.0 | 20.0 | | | 10 | | | ICP-MS |
| F024 | 223.5 | 22.3 | | | 10 | | | ICP-MS |
| F026 | 201.0 | 22.3 | AH | | 9 | | | ICP-AES |
| F032a | 81.0 | 13.5 | AL | | 6 | | | ICP-AES-E3386 |
| F032c | 113.0 | 11.3 | | | 10 | | | ICP-MS-E3473 |
| F032d | 131.5 | 14.6 | | | 9 | | | ICP-MS-E3474 |
| F032g | 54.5 | 6.0 | ALALALAH AL | BIASED LOW | 9 | -5.8 | 0.3436 | ICP-AES-system#2,Opt |
| F042 | 114.0 | 14.2 | ALWLWL AL | | 8 | | | ICP-AES |
| F060 | 211.0 | 21.1 | | | 10 | | | ICP-MS |
| F068 | 165.0 | 16.5 | | | 10 | | | ICP-MS |
| F069 | 144.5 | 14.4 | ALWL AL AL | | 10 | | | ICP-MS |
| F139 | 136.0 | 13.6 | | | 10 | | | ICP-MS |
| F144 | 140.5 | 15.6 | AH WL AH | | 9 | | | GFAAS |
| F154 | 256.5 | 25.6 | WHAHAL | BIASED HIGH | 10 | -9.2 | 17.2043 | ICP-MS |
| F158 | 240.0 | 26.6 | | BIASED HIGH | 9 | 6.6 | -0.1564 | ICP-MS |
| F169 | 104.0 | 11.5 | | | 9 | | | ICP-MS |
| F183 | 91.5 | 9.1 | WL AL | | 10 | | | ICP-MS |
| F186 | 31.0 | 3.4 | AL WLAL AL | BIASED LOW | 9 | -7.8 | -0.3446 | ICP-MS |
| F193 | 190.5 | 21.1 | | | 9 | | | ICP-MS |
| F196 | 31.5 | 6.3 | WL AL AL | BIASED LOW* | 5 | 1.4 | -9.4129 | ICP-AES |
| F207 | 234.0 | 26.0 | | | 9 | | | GFAAS |
| F223 | 130.0 | 32.5 | AH WH | INSUFFICIENT DATA | 4 | | | GFAAS |
| F223b | 117.5 | 23.5 | | | 5 | | | ICP-AES |
| F248 | 150.5 | 16.7 | WH AL | | 9 | | | ICP-MS |
| F287 | 61.5 | 10.2 | WL AL | | 6 | | | 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 16.2

PARAMETER: 03095 Lithium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.14 | 5.23 | 16.4 | 0.539 | 24.9 | 4.20 | 10.6 | 179. | 61.9 | 156. |
| F010 | 2.10 | 4.96 | 15.5 | 0.56 | 25.2 | 4.43 | 10.3 | 182. | 61.3 | 152. |
| F011 | 1.9 | 4.8 | 14.7 | 0.6 | 23.3 | 4.0 | 9.6 | 179. | 59.3 | 152. |
| F015 | 2.22 | 5.43 WH | 16.3 | 0.56 | 25.6 | 4.59 | 10.7 | 198. | 64.1 | 169. |
| F020 | 1.8 | 5. | 15. | <0.5 | 24.2 | 4.2 | 9.6 | 195. | 60.7 | 149. |
| F022 | 2.2 | 5.07 | 14.5 | 0.496 | 22.9 | 4.42 | 10.2 | 180. | 57.5 | 148. |
| F024 | 2.1 | 4.9 | 14.2 | 0.5 | 22.8 | 4.0 | 9.4 | 177. | 55.9 | 147. |
| F060 | 2.01 | 4.94 | 15.3 | <1. | 23.4 | 4.09 | 9.56 | 176. | 57.2 | 150. |
| F069 | 1.98 | 5.04 | 15.1 | <1.0 | 24.9 | 4.26 | 9.96 | 164. | 54.4 | 137. |
| F069b | 2.21 | 5.4 | 15.9 | 0.446 | 24.4 | 4.61 | 10.4 | 186. | 63.9 | 164. |
| F139 | 1.89 | 4.81 | 14.4 | 0.516 | 22.2 | 4.34 | 9.69 | 165. | 57.5 | 154. |
| F154 | 1.79 | 4.85 | 14.8 | 0.44 | 24.4 | 4.37 | 11. | 194. | 162. AH | 60.4 AL |
| F183 | 2.09 | 5.04 | 15.4 | 0.569 | 25.6 | 4.16 | 9.95 | 196. | 61.2 | 171. |
| F196 | <40. | <40. | <40. | <40. | <40. | <40. | <40. | <40. AL | 67. | 174. |
| F223b | <10.0 | <10.0 | 12.6 WL | <10.0 | 19.7 AL | <10.0 | <10.0 | 179. | 52.9 | 161. |
| F287 | <60. | <60. | <60. | <60. | <60. | <60. | <60. | 186. | <60. | 157. |
| ASSIGNED VALUE * | 2.09 | 5.00 | 15.0 | 0.528 | 24.4 | 4.26 | 9.96 | 180 | 60.0 | 154 |
| R-STD DEV * | 0.171 | 0.201 | 0.87 | 0.0600 | 1.40 | 0.227 | 0.554 | 11.5 | 4.93 | 12.33 |
| ACCEPTABLE LIMITS(+-) * | 0.342 | 0.402 | 1.74 | 0.1200 | 2.80 | 0.454 | 1.108 | 23.0 | 9.86 | 24.66 |
| WARNING LIMITS(+-) * | .342- .513 | .402- .603 | 1.74- 2.61 | .1200- .1800 | 2.80- 4.20 | .454- .681 | 1.108- 1.662 | 23.0- 34.5 | 9.86- 14.79 | 24.66- 36.99 |
| ACTION LIMITS(<>) * | 0.513 | 0.603 | 2.61 | 0.1800 | 4.20 | 0.681 | 1.662 | 34.5 | 14.79 | 36.99 |
| N * | 13 | 13 | 14 | 10 | 14 | 13 | 13 | 15 | 15 | 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 | | | ICP-MS |
| F010 | 91.5 | 9.1 | | | 10 | | | ICP-MS |
| F011 | 50.5 | 5.0 | | | 10 | | | |
| F015 | 126.0 | 12.6 | WH | BIASED HIGH | 10 | 10.2 | -0.4942 | ICP-MS |
| F020 | 58.0 | 6.4 | | | 9 | | | ICP-MS |
| F022 | 67.5 | 6.7 | | | 10 | | | ICP-MS |
| F024 | 34.0 | 3.4 | | BIASED LOW* | 10 | -2.6 | -0.5389 | ICP-MS |
| F060 | 44.0 | 4.8 | | | 9 | | | ICP-MS |
| F069 | 51.0 | 5.6 | | | 9 | | | ICP-MS |
| F069b | 105.0 | 10.5 | | | 10 | | | ICP-AES |
| F139 | 44.5 | 4.4 | | | 10 | | | ICP-MS |
| F154 | 69.5 | 6.9 | AHAL | | 10 | | | ICP-MS |
| F183 | 96.0 | 9.6 | | | 10 | | | ICP-MS |
| F196 | 30.0 | 15.0 | AL | INSUFFICIENT DATA | 2 | | | ICP-AES |
| F223b | 21.0 | 4.2 | WL AL | | 5 | | | ICP-AES |
| F287 | 21.5 | 10.7 | | INSUFFICIENT DATA | 2 | | | 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 7.3

PARAMETER: 25095 Manganese ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 8.84 | 10.9 | 18.2 | 6.58 | 25.8 | 10.0 | 28.4 | 402. | 94.3 | 296. |
| F009 | 9.2 | 11. | 19. | 7.2 | 27. WH | 11. AH | 31. AH | 423. | 98. | 304. |
| F010 | 8.99 | 10.9 | 18.1 | 6.93 | 25.2 | 10.0 | 28.0 | 410. | 90.7 | 296. |
| F011 | 8.4 | 10.8 | 17.8 | 6.8 | 24.7 | 9.8 | 27.9 | 405. | 95.6 | 292. |
| F014 | 9. | 11. | 18. | 7. | 25. | 10. | 28. | 415. | 93. | 291. |
| F015 | 8.84 | 10.8 | 18.1 | 6.85 | 25.4 | 9.98 | 28.6 | 429. | 94.6 | 294. |
| F020 | 8.98 | 11.3 | 18.7 | 6.63 | 26.7 WH | 9.94 | 28.9 | 419. | 95.6 | 301. |
| F021 | 8.7 | 10.3 | 17.4 | 6.6 | 25.2 | 9.8 | 27.0 | 406. | 91.7 | 293. |
| F021b | 9. | 11. | 18. | 7. | 25. | 10. | 29. | 412. | 95. | 296. |
| F022 | 9.13 | 11.1 | 18.3 | 6.73 | 25.8 | 10.2 | 30.0 | 413. | 95. | 295. |
| F024 | 9.0 | 11.2 | 18.2 | 6.8 | 25.6 | 10.2 | 28.7 | 419. | 94.8 | 299. |
| F026 | 8. WL | 11. | 19. | 7. | 26. | 10. | 29. | 417. | 97. | 298. |
| F032a | 9.0 | 11.0 | 18.8 | 5.9 WL | 26.2 | 10.0 | 29.4 | 417. | 98.7 | 307. |
| F032c | 8.6 | 10.6 | 17.9 | 6.7 | 25.0 | 9.8 | 27.7 | 392. | 93.7 | 288. |
| F032d | 8.87 | 10.9 | 18.3 | 6.83 | 25.1 | 9.99 | 28.7 | 414. | 96.2 | 299. |
| F032g | 8.78 | 10.9 | 18.3 | 6.88 | 25.5 | 9.87 | 29.5 | 410. | 100. | 294. |
| F042 | 8.93 | 11.0 | 18.2 | 7.06 | 25.5 | 10.0 | 28.5 | 416. | 93.0 | 293. |
| F060 | 9.1 | 11.7 WH | 18.5 | 6.1 | 25.6 | 9.3 WL | 29.1 | 422. | 97.5 | 307. |
| F068 | 7.9 WL | 9.8 AL | 16. AL | 6. WL | 22. AL | 9.1 WL | 27. | 396. | 88. WL | 284. |
| F069 | 8.41 | 10.7 | 17.8 | 6.49 | 24.7 | 9.77 | 27.6 | 391. | 90.0 | 284. |
| F069b | 8.85 | 10.7 | 17.6 | 6.77 | 25. | 9.8 | 28.1 | 408. | 93.1 | 289. |
| F139 | 8.8 | 10.9 | 18.3 | 6.6 | 25.3 | 10.1 | 28.8 | 409. | 95.1 | 301. |
| F144 | 10.6 AH | 14.0 AH | 20.9 AH | 7.63 WH | 31.2 AH | 11.8 AH | 33.3 AH | 537. AH | 122. AH | 385. AH |
| F154 | 9.34 | 10.9 | 18.4 | 6.68 | 25.6 | 10.3 | 28.2 | 445. WH | 314. AH | 98.5 AL |
| F158 | 8.6 | 11.0 | 17.9 | 7.1 | 25.4 | 9.8 | 28.2 | 421. | 97.3 | 301. |
| F169 | 8.96 | 10.9 | 18.2 | 6.74 | 25.9 | 9.93 | 28.6 | 408. | 96.8 | 293. |
| F183 | 8.18 | 11.4 | 17.9 | 6.21 | 25.9 | 10.5 | 29.5 | 387. | 98.3 | 265. AL |
| F186 | 8.5 | 10.7 | 17.7 | 6.1 | 25.5 | 9.5 | 28.4 | 412. | 101. | 297. |
| F193 | 8.53 | 10.6 | 17.9 | 6.44 | 25.2 | 9.73 | 28.2 | 401. | 94.5 | 290. |
| F196 | 9. | 11. | 18. | 7. | 25. | 10. | 28. | 401. | 93. | 288. |
| F223 | <100. | <100. | <100. | <100. | <100. | <100. | <100. | 421. | <100. | 293. |
| F223b | 8.3 | 10.3 | 17.5 | 6.6 | 25.1 | 9.3 WL | 28.5 | 405. | 95.2 | 300. |
| F248 | 9.20 | 11.4 | 18.7 | 6.70 | 26.9 WH | 10.5 | 29.0 | 428. | 97.5 | 305. |
| F287 | <100. | 9.9 AL | 17. WL | 182. AH | 24. WL | 8.71 AL | 26.6 WL | 394. | 90. | 0.279 AL |
| ASSIGNED VALUE * | 8.85 | 10.9 | 18.1 | 6.74 | 25.4 | 9.98 | 28.5 | 412 | 95.0 | 295.500 |
| R-STD DEV * | 0.356 | 0.31 | 0.49 | 0.340 | 0.61 | 0.316 | 0.80 | 12.4 | 3.37 | 8.1332 |
| ACCEPTABLE LIMITS(+-) * | 0.712 | 0.62 | 0.98 | 0.680 | 1.22 | 0.632 | 1.60 | 24.8 | 6.74 | 16.2664 |
| WARNING LIMITS(+-) * | .712- 1.068 | .62- .93 | .98- 1.47 | .680- 1.020 | 1.22- 1.83 | .632- .948 | 1.60- 2.40 | 24.8- 37.2 | 6.74- 10.11 | 16.2664- 24. |
| ACTION LIMITS(<>) * | 1.068 | 0.93 | 1.47 | 1.020 | 1.83 | 0.948 | 2.40 | 37.2 | 10.11 | 24.3996 |
| N * | 32 | 33 | 33 | 33 | 33 | 33 | 33 | 34 | 33 | 34 |

* 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 | 156.5 | 15.6 | | | 10 | | | ICP-MS |
| F009 | 297.5 | 29.7 | WHAHAH | BIASED HIGH* | 10 | 2.7 | 0.5726 | ICP-MS |
| F010 | 158.5 | 15.8 | | | 10 | | | ICP-MS |
| F011 | 102.0 | 10.2 | | | 10 | | | |
| F014 | 161.5 | 16.1 | | | 10 | | | ICP-MS |
| F015 | 176.0 | 17.6 | | | 10 | | | ICP-MS |
| F020 | 230.5 | 23.0 | WH | | 10 | | | ICP-MS |
| F021 | 82.5 | 8.2 | | | 10 | | | ICP-MS |
| F021b | 193.5 | 19.3 | | | 10 | | | ICP-AES |
| F022 | 230.0 | 23.0 | | | 10 | | | ICP-MS |
| F024 | 225.0 | 22.5 | | | 10 | | | ICP-MS |
| F026 | 226.5 | 22.6 | WL | | 10 | | | ICP-AES |
| F032a | 241.0 | 24.1 | WL | | 10 | | | ICP-AES-E3386 |
| F032c | 81.5 | 8.1 | | | 10 | | | ICP-MS-E3473 |
| F032d | 190.0 | 19.0 | | | 10 | | | ICP-MS-E3474 |
| F032g | 197.0 | 19.7 | | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 188.5 | 18.8 | | | 10 | | | ICP-AES |
| F060 | 229.0 | 22.9 | WH WL | | 10 | | | ICP-AES |
| F068 | 21.0 | 2.1 | WLALALWLALWL WL | BIASED LOW* | 10 | -3.5 | -1.2134 | ICP-MS |
| F069 | 52.0 | 5.2 | | BIASED LOW* | 10 | -4.7 | 0.3134 | ICP-MS |
| F069b | 103.5 | 10.3 | | | 10 | | | ICP-AES |
| F139 | 183.5 | 18.3 | | | 10 | | | ICP-MS |
| F144 | 329.0 | 32.9 | AHAHAHWHAHAHAHAHAHAH | BIASED HIGH | 10 | 30.9 | -1.8090 | GFAAS |
| F154 | 216.0 | 21.6 | WHAHAL | | 10 | | | ICP-MS |
| F158 | 190.5 | 19.0 | | | 10 | | | ICP-MS |
| F169 | 177.5 | 17.7 | | | 10 | | | ICP-MS |
| F183 | 167.5 | 16.7 | AL | | 10 | | | ICP-MS |
| F186 | 133.5 | 13.3 | | | 10 | | | ICP-MS |
| F193 | 88.5 | 8.8 | | | 10 | | | ICP-MS |
| F196 | 143.5 | 14.3 | | | 10 | | | ICP-AES |
| F223 | 41.0 | 20.5 | | INSUFFICIENT DATA | 2 | | | AAS |
| F223b | 105.5 | 10.5 | WL | | 10 | | | ICP-AES |
| F248 | 277.0 | 27.7 | WH | BIASED HIGH* | 10 | 3.8 | -0.1674 | ICP-MS |
| F287 | 48.5 | 5.3 | ALWLAHWLALWL AL | BIASED LOW | 9 | -44.3 | 27.8640 | 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 17.0

PARAMETER: 42095 Molybdenum ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 4.08 | 7.56 | 14.2 | 0.204 | 27.3 | 12.2 | 30.7 | 384. | 102. | 295. |
| F009 | <5. | 6.9 WL | 13. | <5. | 26. | 12. | 29. | 370. | 100. | 280. |
| F010 | 4.20 | 7.78 | 14.6 | 0.25 | 27.8 | 12.7 | 31.7 | 385. | 100. | 289. |
| F011 | 3.8 WL | 7.3 | 13.8 | 0.4 AH | 26.3 | 12.0 | 29.7 | 379. | 100. | 292. |
| F015 | 4.16 | 7.62 | 14.3 | 0.24 | 27.8 | 12.6 | 31.7 | 388. | 102. | 297. |
| F020 | 4.16 | 7.75 | 14.4 | 0.23 | 28.5 | 12.7 | 31.4 | 386. | 106. | 296. |
| F021 | 4.1 | 7.2 | 14.0 | 0.2 | 26.8 | 12.0 | 29.2 | 380. | 97.6 | 286. |
| F021b | <5. | 8. | 13. | <5. | 26. | 12. | 29. | 374. | 99. | 280. |
| F021c | 4. | 7. | 13. | <4. | 25. | 12. | 28. | 370. | 100. | 280. |
| F022 | 4.24 | 7.92 | 14.7 | 0.233 | 28.3 | 13.5 | 32.8 | 381. | 103. | 288. |
| F024 | 4.0 | 7.1 | 13.6 | 0.2 | 26.4 | 11.8 | 29.4 | 372. | 100. | 281. |
| F026 | <5. | 8. | 14. | <5. | 28. | 13. | 31. | 390. | 103. | 292. |
| F032a | 4.5 | 7.7 | 15.0 | <1.5 | 28.7 | 13.3 | 32.0 | 392. | 104. | 301. |
| F032c | 4.1 | 7.5 | 14.1 | <1.0 | 27.6 | 12.5 | 30.9 | 373. | 102. | 293. |
| F032d | 4.24 | 7.80 | 14.5 | <1. | 28.0 | 12.6 | 31.4 | 393. | 103. | 297. |
| F032g | 4.4 | 7.5 | 14.2 | <0.7 | 26.7 | 12.3 | 30. | 369. | 99.2 | 280. |
| F060 | 4.25 | 7.69 | 14.6 | <1. | 27.9 | 12.6 | 31.2 | 384. | 99.9 | 288. |
| F068 | 4.2 | 7.7 | 14. | 0.2 | 27. | 12. | 31. | 418. WH | 98. | 328. WH |
| F069 | 4.25 | 7.81 | 14.6 | 0.202 | 28.2 | 12.7 | 32.4 | 393. | 106. | 306. |
| F069b | 4.4 | 7.6 | 14.6 | <2.0 | 29.8 WH | 13.4 | 32.6 | 414. WH | 105. | 304. |
| F139 | 4.18 | 7.61 | 14.3 | 0.262 | 27.1 | 12.6 | 30.9 | 389. | 101. | 300. |
| F154 | 4.27 | 7.7 | 14.6 | 0.25 | 28.2 | 12.9 | 31.3 | 442. AH | 317. AH | 106. AL |
| F158 | <10. | <10. | 13.8 | <10. | 26.7 | 12.2 | 30.5 | 393. | 100. | 294. |
| F183 | 3.83 | 7.12 | 14.1 | 0.184 | 26.6 | 11.7 | 31.2 | 393. | 101. | 294. |
| F186 | 3.4 AL | 6.4 AL | 12.1 AL | <0.1 AL | 23.6 WL | 10.2 AL | 26.1 WL | 343. AL | 89.7 AL | 262. WL |
| F193 | 4.10 | 7.72 | 13.7 | <0.6 | 26.8 | 12.3 | 30.9 | 381. | 101. | 293. |
| F196 | <20. | <20. | <20. | <20. | <20. AL | <20. | 22. AL | 352. WL | 98. | 273. |
| F223b | <20.0 | <20.0 | <20.0 | <20.0 | 26. | <20.0 | 29.5 | 392. | 102. | 296. |
| F248 | <5.0 | 7.4 | 13.2 | <5.0 | 24.2 WL | 10.4 AL | 27.4 | 345. WL | 90.6 AL | 269. |
| F287 | <7. | <100. | <100. | 0. AL | <100. | 10.4 AL | 27.0 WL | 381. | <100. | 0.284 AL |
| ASSIGNED VALUE * | 4.18 | 7.62 | 14.2 | 0.217 | 27.0 | 12.5 | 30.9 | 384 | 101 | 292.500 |
| R-STD DEV * | 0.178 | 0.345 | 0.64 | 0.0360 | 1.20 | 0.62 | 1.73 | 13.1 | 2.85 | 12.7020 |
| ACCEPTABLE LIMITS(+-) * | 0.356 | 0.690 | 1.28 | 0.0720 | 2.40 | 1.24 | 3.46 | 26.2 | 5.70 | 25.4040 |
| WARNING LIMITS(+-) * | .356- .534 | .690- 1.035 | 1.28- 1.92 | .0720- .1080 | 2.40- 3.60 | 1.24- 1.86 | 3.46- 5.19 | 26.2- 39.3 | 5.70- 8.55 | 25.4040- 38. |
| ACTION LIMITS(<>) * | 0.534 | 1.035 | 1.92 | 0.1080 | 3.60 | 1.86 | 5.19 | 39.3 | 8.55 | 38.1060 |
| N * | 22 | 26 | 27 | 14 | 28 | 28 | 30 | 30 | 29 | 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 | 138.0 | 13.8 | | | 10 | | | ICP-MS |
| F009 | 49.5 | 6.1 | WL | BIASED LOW* | 8 | -3.7 | 0.0274 | ICP-MS |
| F010 | 177.5 | 17.7 | | | 10 | | | ICP-MS |
| F011 | 95.0 | 9.5 | WL AH | | 10 | | | |
| F015 | 177.5 | 17.7 | | | 10 | | | ICP-MS |
| F020 | 197.0 | 19.7 | | | 10 | | | ICP-MS |
| F021 | 83.0 | 8.3 | | | 10 | | | ICP-MS |
| F021b | 71.0 | 8.8 | | | 8 | | | ICP-AES |
| F021c | 51.5 | 5.7 | | BIASED LOW* | 9 | -3.6 | -0.2677 | ICP-MS |
| F022 | 206.0 | 20.6 | | | 10 | | | ICP-MS |
| F024 | 69.0 | 6.9 | | BIASED LOW* | 10 | -3.3 | 0.0905 | ICP-MS |
| F026 | 161.0 | 20.1 | | | 8 | | | ICP-AES |
| F032a | 220.5 | 24.5 | | BIASED HIGH* | 9 | 2.3 | 0.5513 | ICP-AES-E3386 |
| F032c | 125.0 | 13.8 | | | 9 | | | ICP-MS-E3473 |
| F032d | 194.0 | 21.5 | | | 9 | | | ICP-MS-E3474 |
| F032g | 101.0 | 11.2 | | | 9 | | | ICP-AES-system#2,Opt |
| F060 | 150.5 | 16.7 | | | 9 | | | ICP-MS |
| F068 | 150.0 | 15.0 | WH WH | | 10 | | | ICP-MS |
| F069 | 225.0 | 22.5 | | BIASED HIGH* | 10 | 3.2 | 0.3985 | ICP-MS |
| F069b | 221.5 | 24.6 | WH WH | BIASED HIGH | 9 | 6.6 | -0.5591 | ICP-AES |
| F139 | 167.0 | 16.7 | | | 10 | | | ICP-MS |
| F154 | 201.0 | 20.1 | AHAHAL | | 10 | | | ICP-MS |
| F158 | 101.0 | 14.4 | | | 7 | | | ICP-MS |
| F183 | 118.0 | 11.8 | | | 10 | | | ICP-MS |
| F186 | 12.0 | 1.3 | ALALALALWLALWLALALWL | BIASED LOW | 9 | -10.3 | -0.7131 | ICP-MS |
| F193 | 123.5 | 13.7 | | | 9 | | | ICP-MS |
| F196 | 13.5 | 3.3 | AL ALWL | INSUFFICIENT DATA | 4 | | | ICP-AES |
| F223b | 79.5 | 15.9 | | | 5 | | | ICP-AES |
| F248 | 29.5 | 3.6 | WLAL WLAL | BIASED LOW | 8 | -9.3 | -0.0736 | ICP-MS |
| F287 | 20.5 | 4.1 | AL ALWL AL | BIASED LOW | 5 | -33.2 | -12.4411 | 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: 28095 Nickel ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 4.85 | 11.2 | 17.7 | 0.911 | 16.0 | 19.5 | 70.5 | 396. | 97.8 | 268. |
| F009 | 5.1 | 11. | 19. | <1. | 17. | 20. | 71. | 407. | 99. | 274. |
| F010 | 5.00 | 11.0 | 17.9 | 0.92 | 16.3 | 19.3 | 68.0 | 384. | 95. | 254. |
| F011 | 5.0 | 10.9 | 17.3 | 0.9 | 15.8 | 19.5 | 68.5 | 390. | 97.0 | 261. |
| F014 | <5. | 11. | 18. | <5. | 16. | 19. | 68. | 390. | 99. | 269. |
| F015 | 5.68 | 11.8 | 18.1 | 0.94 | 16.4 | 19.7 | 68.2 | 387. | 95.1 | 257. |
| F020 | 4.8 | 11.2 | 17.7 | 0.9 | 16.7 | 19.5 | 69.9 | 396. | 97.9 | 265. |
| F021 | 4.9 | 10.6 | 17.3 | 0.8 | 15.9 | 18.4 | 64.6 | 377. | 92.5 | 252. |
| F021b | <6. | 9. AL | 16. WL | <6. | 16. | 20. | 68. | 397. | 96. | 263. |
| F021c | 4.6 | 10.6 | 16.4 | 0.9 | 15.3 | 18.2 | 65.7 | 395. | 92.8 | 249. |
| F022 | 4.84 | 11.4 | 17.6 | 0.853 | 15.7 | 19.6 | 69.9 | 403. | 98. | 264. |
| F024 | 4.7 | 10.9 | 17.3 | 0.9 | 15.7 | 18.9 | 67.4 | 393. | 97.8 | 262. |
| F026 | 5. | 11. | 18. | <2. | 17. | 20. | 71. | 403. | 101. | 270. |
| F032a | 5.8 WH | 11.6 | 19.1 | <1.5 | 15.9 | 19.6 | 72.2 | 399. | 99.5 | 273. |
| F032c | 5.6 | 12.1 | 18.2 | <1.0 | 16.3 | 20.0 | 68.7 | 391. | 96.8 | 256. |
| F032d | 4.91 | 11.0 | 17.7 | 1.01 | 16.9 | 19.6 | 68.9 | 395. | 98.3 | 261. |
| F032g | 5.3 | 11.2 | 18.1 | 0.6 AL | 16.2 | 19.4 | 69.8 | 381. | 99.2 | 262. |
| F042 | 3.97 WL | 9.45 WL | 15.9 WL | <2. | 14.7 WL | 17.2 AL | 64.7 | 379. | 89.5 WL | 250. |
| F060 | 4.83 | 11.2 | 17.5 | 0.928 | 16.2 | 19.1 | 68.0 | 379. | 96.0 | 258. |
| F068 | 4.9 | 11. | 17. | 0.9 | 15. | 19. | 70. | 400. | 94. | 264. |
| F069 | 5.05 | 11.7 | 18.4 | 0.941 | 16.4 | 19.3 | 70.6 | 385. | 94.5 | 258. |
| F069b | <4.0 WL | 10.4 | 16.3 | <4.0 | 15.3 | 18.1 WL | 64.1 WL | 370. | 90.6 WL | 242. |
| F139 | 5.00 | 11.5 | 18.0 | 0.844 | 16.0 | 19.7 | 68.7 | 389. | 96.6 | 278. |
| F144 | 4.01 WL | 9.95 | 15.8 WL | <0.3 AL | 13.9 AL | 17.0 AL | 65.3 | 355. WL | 93.2 | 218. AL |
| F154 | 5.16 | 11.5 | 18. | 0.92 | 16.2 | 20. | 69.2 | 417. WH | 271. AH | 99.8 AL |
| F158 | 5.3 | 11.9 | 18.6 | <2. | 17.2 | 20.0 | 71.0 | 420. WH | 101. | 282. |
| F169 | 5.06 | 11.2 | 17.7 | 0.93 | 16.2 | 18.6 | 69.5 | 397. | 97.5 | 264. |
| F183 | 4.96 | 11.5 | 17.5 | 1.40 AH | 15.8 | 19.6 | 67.1 | 387. | 98.2 | 266. |
| F186 | 4.2 WL | 10.6 | 18.3 | <0.2 AL | 16.0 | 19.1 | 72. | 397. | 98.9 | 271. |
| F193 | 5.26 | 11.5 | 18.1 | 1.43 AH | 16.6 | 19.7 | 68.7 | 375. | 94.3 | 254. |
| F196 | 5. | 11. | 18. | <1. | 16. | 19. | 68. | 379. | 95. | 254. |
| F223b | 4.1 WL | 10.6 | 17.4 | <4.0 | 15.8 | 19.6 | 71.5 | 384. | 102. | 265. |
| F248 | 4.80 | 11.4 | 17.6 | <1.00 | 16.9 | 19.4 | 69.3 | 401. | 96.9 | 264. |
| F273 | 6.38 AH | 11.6 | 17.5 | 1.72 AH | 16.1 | 19.1 | 69.8 | 408. | 100. | 267. |
| F287 | <7.0 | 9.2 AL | 16. WL | <7.0 | 15. | 17.1 AL | 64.5 | 377. | 94. | 0.250 AL |
| ASSIGNED VALUE * | 4.98 | 11.20 | 17.7 | 0.906 | 16.0 | 19.5 | 68.7 | 391 | 97.0 | 263.500 |
| R-STD DEV * | 0.357 | 0.549 | 0.73 | 0.0733 | 0.63 | 0.63 | 2.23 | 12.3 | 3.10 | 10.0282 |
| ACCEPTABLE LIMITS(+-) * | 0.714 | 1.098 | 1.46 | 0.1466 | 1.26 | 1.26 | 4.46 | 24.6 | 6.20 | 20.0564 |
| WARNING LIMITS(+-) * | .714- 1.071 | 1.098- 1.647 | 1.46- 2.19 | .1466- .2199 | 1.26- 1.89 | 1.26- 1.89 | 4.46- 6.69 | 24.6- 36.9 | 6.20- 9.30 | 20.0564- 30. |
| ACTION LIMITS(<>) * | 1.071 | 1.647 | 2.19 | 0.2199 | 1.89 | 1.89 | 6.69 | 36.9 | 9.30 | 30.0846 |
| N * | 31 | 35 | 35 | 20 | 35 | 35 | 35 | 35 | 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 | 196.0 | 19.6 | | | 10 | | | ICP-MS |
| F009 | 261.5 | 29.0 | | BIASED HIGH* | 9 | 4.2 | -0.2578 | ICP-MS |
| F010 | 147.5 | 14.7 | | | 10 | | | ICP-MS |
| F011 | 139.5 | 13.9 | | | 10 | | | |
| F014 | 149.5 | 18.6 | | | 8 | | | ICP-MS |
| F015 | 212.0 | 21.2 | | | 10 | | | ICP-MS |
| F020 | 198.5 | 19.8 | | | 10 | | | ICP-MS |
| F021 | 67.0 | 6.7 | | BIASED LOW* | 10 | -3.7 | -0.2269 | ICP-MS |
| F021b | 122.0 | 15.2 | ALWL | | 8 | | | ICP-AES |
| F021c | 71.5 | 7.1 | | BIASED LOW* | 10 | -0.5 | -1.6144 | ICP-MS |
| F022 | 186.0 | 18.6 | | | 10 | | | ICP-MS |
| F024 | 113.0 | 11.3 | | | 10 | | | ICP-MS |
| F026 | 247.0 | 27.4 | | BIASED HIGH* | 9 | 3.1 | 0.1012 | ICP-AES |
| F032a | 256.0 | 28.4 | WH | BIASED HIGH* | 9 | 2.5 | 0.6013 | ICP-AES-E3386 |
| F032c | 213.0 | 23.6 | | | 9 | | | ICP-MS-E3473 |
| F032d | 200.0 | 20.0 | | | 10 | | | ICP-MS-E3474 |
| F032g | 195.5 | 19.5 | AL | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 29.0 | 3.2 | WLWLWL WLAL WL | BIASED LOW* | 9 | -3.1 | -1.7274 | ICP-AES |
| F060 | 136.5 | 13.6 | | | 10 | | | ICP-MS |
| F068 | 138.0 | 13.8 | | | 10 | | | ICP-MS |
| F069 | 207.5 | 20.7 | | | 10 | | | ICP-MS |
| F069b | 28.5 | 3.5 | WL WLWL WL | BIASED LOW | 8 | -5.9 | -0.4441 | ICP-AES |
| F139 | 198.0 | 19.8 | | | 10 | | | ICP-MS |
| F144 | 23.0 | 2.5 | WL WLALALAL WL AL | BIASED LOW | 9 | -11.3 | 0.5506 | GFAAS |
| F154 | 233.0 | 23.3 | WHAHAL | | 10 | | | ICP-MS |
| F158 | 294.5 | 32.7 | WH | BIASED HIGH | 9 | 7.6 | -0.9236 | ICP-MS |
| F169 | 192.5 | 19.2 | | | 10 | | | ICP-MS |
| F183 | 178.0 | 17.8 | AH | | 10 | | | ICP-MS |
| F186 | 188.0 | 20.8 | WL AL | | 9 | | | ICP-MS |
| F193 | 193.5 | 19.3 | AH | | 10 | | | ICP-MS |
| F196 | 121.0 | 13.4 | | | 9 | | | ICP-AES |
| F223b | 157.5 | 17.5 | WL | | 9 | | | ICP-AES |
| F248 | 185.0 | 20.5 | | | 9 | | | ICP-MS |
| F273 | 242.0 | 24.2 | AH AH | | 10 | | | ICP-AES |
| F287 | 25.0 | 3.1 | ALWL AL AL | BIASED LOW | 8 | -30.7 | -2.3393 | 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 17.3

PARAMETER: 37095 Rubidium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | TM-23.4 LAB RESULT | TM-26.4 LAB RESULT | TM-15.2 LAB RESULT | TMRain-04 LAB RESULT | TM25.4 LAB RESULT | TM-09 LAB RESULT | TM-16 LAB RESULT | TMDA-65 LAB RESULT | TMDA-62.2 LAB RESULT | TMDA-64.2 LAB RESULT |
| F003 | 0.780 | 10.9 | 0.763 | 0.0239 | 20.1 | 4.58 | 12.7 | 0.444 | 16.1 | 31.5 |
| F011 | 0.7 | 10.5 | 0.7 WL | <0.1 | 19.1 | 4.5 | 12.0 | 0.5 AH | 15.5 | 30.6 |
| F022 | 0.753 | 10.8 | 0.773 | 0.027 | 19.6 | 4.59 | 12.9 | 0.446 | 16.3 | 31.5 |
| F024 | 0.78 | 11.0 | 0.81 | <0.05 | 19.7 | 4.7 | 12.7 | 0.43 | 15.6 | 31.6 |
| F060 | 0.729 | 10.0 | 0.727 | 0.03 | 18.0 AL | 4.3 | 11.6 | 0.429 | 15.0 | 28.2 |
| F139 | 0.758 | 10.7 | 0.758 | 0.030 | 19.5 | 4.52 | 12.3 | 0.436 | 16.1 | 30.8 |
| F154 | 0.75 | 10.5 | 0.76 | <0.2 | 19.7 | 4.41 | 11.8 | 0.42 | 31.5 AH | 15.6 AL |
| F169 | 0.75 | 10.1 | 0.74 | <0.10 | 19.0 | 4.29 | 11.9 | 0.43 | 15.4 | 29.8 |
| F183 | 0.793 | 10.7 | 0.76 | 0.042 | 19.4 | 4.64 | 12.8 | 0.436 | 16.6 | 30.8 |
| ASSIGNED VALUE * | 0.753 | 10.7 | 0.760 | 0.0300 | 19.6 | 4.52 | 12.3 | 0.433 | 15.8 | 30.8 |
| R-STD DEV * | 0.0289 | 0.39 | 0.0287 | 0.00760 | 0.49 | 0.164 | 0.56 | 0.0117 | 0.74 | 1.57 |
| ACCEPTABLE LIMITS(+-) * | 0.0578 | 0.78 | 0.0574 | - | 0.98 | 0.328 | 1.12 | 0.0234 | 1.48 | 3.14 |
| WARNING LIMITS(+-) * | .0578- .0867 | .78- 1.17 | .0574- .0861 | - | .98- 1.47 | .328- .492 | 1.12- 1.68 | .0234- .0351 | 1.48- 2.22 | 3.14- 4.71 |
| ACTION LIMITS(<>) * | 0.0867 | 1.17 | 0.0861 | - | 1.47 | 0.492 | 1.68 | 0.0351 | 2.22 | 4.71 |
| N * | 9 | 9 | 9 | 5 | 9 | 9 | 9 | 9 | 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 |
|---|---|---|---|---|---|---|---|---|
| F003 | 65.0 | 6.5 | | | 10 | | | ICP-MS |
| F011 | 32.5 | 3.6 | WL AH | | 9 | | | |
| F022 | 66.5 | 6.6 | | | 10 | | | ICP-MS |
| F024 | 65.0 | 7.2 | | | 9 | | | ICP-MS |
| F060 | 17.5 | 1.7 | AL | | 10 | | | ICP-MS |
| F139 | 50.5 | 5.0 | | | 10 | | | ICP-MS |
| F154 | 36.0 | 4.0 | AHAL | | 9 | | | ICP-MS |
| F169 | 23.0 | 2.5 | | | 9 | | | ICP-MS |
| F183 | 64.0 | 6.4 | | | 10 | | | ICP-MS |

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

OVERALL AVERAGE RANK IS 4.8

PARAMETER: 34095 Selenium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 4.47 | 5.34 | 15.0 | 0.804 | 28.6 | 14.1 | 22.6 | 196. | 54.1 | 156. |
| F009 | 4.7 | 5.7 | 17. | <1. | 34. | 16. | 25. | 229. WH | 60. | 178. WH |
| F010 | 4.52 | 5.29 | 14.4 | 0.81 | 27.1 | 13.6 | 20.3 | 189. | 47.7 | 145. |
| F011 | 4.5 | 5.0 | 14.6 | 0.9 | 30.0 | 14.8 | 21.3 | 184. | 51.4 | 146. |
| F014 | 4.7 | 5.1 | 14. | <1.5 | 29. | 14. | 22. | 187. | 53. | 153. |
| F015 | 4.8 | 5.7 | 14.9 | 0.9 | 29.5 | 15.0 | 22.8 | 193. | 53.5 | 154. |
| F020 | 4.42 | 5.26 | 14.5 | 0.8 | 28.4 | 13.8 | 21.9 | 194. | 52.4 | 152. |
| F021 | 4.3 | 4.9 | 14.3 | 0.7 | 28.1 | 13.9 | 21.4 | 193. | 51.1 | 145. |
| F021c | 4.4 | 5.3 | 14.7 | 0.8 | 29.2 | 14.0 | 22.2 | 197. | 54.3 | 153. |
| F022 | 4.92 | 4.97 | 14.8 | 1.1 WH | 29.6 | 15.7 | 24.1 | 203. | 54.8 | 159. |
| F024 | 4.6 | 5.7 | 15.4 | 0.8 | 29.8 | 14.6 | 23.6 | 196. | 55.0 | 151. |
| F026 | <15. | <15. | 17. | <15. | 27. | 15. | 24. | 188. | 51. | 148. |
| F032 | 4.2 | 5.0 | 13.7 | 0.8 | 27.0 | 13.2 | 22.3 | 188. | 49.4 | 143. |
| F032c | 5. | 6. | 16. | <1. | 32. | 16. | 24. | 213. | 58. | 164. |
| F032d | 4.6 | 5.40 | 15.5 | <1. | 31.5 | 15.0 | 23.3 | 204. | 55.2 | 158. |
| F042 | 7.22 AH | 7.87 AH | 16.1 | <1. | 27.9 | 15.9 | 23.9 | 184. | 50.6 | 141. |
| F060 | 4.71 | 5.84 | 15.9 | 0.874 | 31.4 | 15.4 | 24.0 | 211. | 58.0 | 162. |
| F068 | 4.6 | 5.7 | 15. | 0.9 | 29. | 14. | 22. | 200. | 55. | 153. |
| F069 | 5.21 | 6.14 | 17.1 | 0.954 | 33.9 | 16.4 | 25.9 | 211. | 66.3 AH | 165. |
| F139 | 4.11 | 5.07 | 14.3 | 0.69 | 27.2 | 14.1 | 21.2 | 188. | 51.8 | 144. |
| F154 | 5.2 | 6.2 | 16.6 | 1.1 WH | 33. | 16.5 | 24.6 | 213. | 154. AH | 59.8 AL |
| F158 | 5.3 | 6.2 | 17.6 WH | <2. | 34.8 | 16.3 | 26.8 WH | 209. | 62.5 WH | 179. WH |
| F169 | 4.82 | 5.17 | 14.9 | 0.81 | 29.4 | 14.3 | 22.4 | 197. | 53.5 | 155. |
| F183 | 4.61 | 6.06 | 15.7 | <1.0 | 33.4 | 16.7 | 24.4 | 203. | 56.4 | 164. |
| F186 | 4.0 | 3.0 AL | 14. | <1.0 | 31. | 13. | 24. | 210. | 55. | 161. |
| F193 | 4.54 | 5.36 | 14.7 | 0.79 | 29.2 | 14.4 | 22.4 | 199. | 53.4 | 156. |
| F196 | 4. | 5. | 14. | <2. | 24. | 17. | 21. | 202. | 51. | 147. |
| F223 | 4.4 | 5.1 | 14.9 | <4. | 30.0 | 14.8 | 23.5 | | 56.6 | |
| F248 | 4.50 | 5.40 | 14.5 | <2.50 | 27.5 | 13.7 | 21.8 | 199. | 51.7 | 148. |
| F287 | 1.09 AL | 13.8 AH | 28. AH | 0. AL | 50.9 AH | 13.0 | 36.2 AH | 441. AH | 1235. AH | 0.181 AL |
| ASSIGNED VALUE * | 4.60 | 5.35 | 14.9 | 0.810 | 29.4 | 14.7 | 22.8 | 198 | 53.5 | 153 |
| R-STD DEV * | 0.404 | 0.542 | 1.19 | 0.1084 | 2.72 | 1.29 | 1.61 | 11.2 | 3.97 | 9.7241 |
| ACCEPTABLE LIMITS(+-) * | 0.808 | 1.084 | 2.38 | 0.2168 | 5.44 | 2.58 | 3.22 | 22.4 | 7.94 | 19.4482 |
| WARNING LIMITS(+-) * | .808- 1.212 | 1.084- 1.626 | 2.38- 3.57 | .2168- .3252 | 5.44- 8.16 | 2.58- 3.87 | 3.22- 4.83 | 22.4- 33.6 | 7.94- 11.91 | 19.4482- 29. |
| ACTION LIMITS(<>) * | 1.212 | 1.626 | 3.57 | 0.3252 | 8.16 | 3.87 | 4.83 | 33.6 | 11.91 | 29.1723 |
| N * | 29 | 29 | 30 | 18 | 30 | 30 | 30 | 29 | 30 | 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 | 132.0 | 13.2 | | | 10 | | | ICP-MS |
| F009 | 227.0 | 25.2 | WH WH | BIASED HIGH | 9 | 15.9 | -0.9196 | ICP-MS |
| F010 | 66.0 | 6.6 | | BIASED LOW | 10 | -5.0 | -0.6370 | ICP-MS |
| F011 | 97.0 | 9.7 | | | 10 | | | |
| F014 | 89.0 | 9.8 | | | 9 | | | ICP-MS |
| F015 | 159.5 | 15.9 | | | 10 | | | ICP-MS |
| F020 | 90.0 | 9.0 | | | 10 | | | ICP-MS |
| F021 | 57.5 | 5.7 | | BIASED LOW* | 10 | -3.7 | -0.4212 | ICP-MS |
| F021c | 115.5 | 11.5 | | | 10 | | | ICP-MS |
| F022 | 179.0 | 17.9 | WH | | 10 | | | ICP-MS |
| F024 | 154.5 | 15.4 | | | 10 | | | ICP-MS |
| F026 | 89.5 | 12.7 | | | 7 | | | ICP-AES |
| F032 | 45.0 | 4.5 | | BIASED LOW | 10 | -5.8 | -0.3616 | AAS hydride-E3089 |
| F032c | 217.5 | 24.1 | | BIASED HIGH | 9 | 7.0 | 0.0567 | ICP-MS-E3473 |
| F032d | 173.5 | 19.2 | | | 9 | | | ICP-MS-E3474 |
| F042 | 137.5 | 15.2 | AHAH | | 9 | | | ICP-AES |
| F060 | 214.5 | 21.4 | | | 10 | | | ICP-MS |
| F068 | 147.0 | 14.7 | | | 10 | | | ICP-MS |
| F069 | 257.5 | 25.7 | AH | BIASED HIGH | 10 | 6.3 | 1.7264 | ICP-MS |
| F139 | 57.0 | 5.7 | | BIASED LOW | 10 | -5.6 | -0.0821 | ICP-MS |
| F154 | 231.5 | 23.1 | WH AHAL | BIASED HIGH | 10 | -17.3 | 11.6963 | ICP-MS |
| F158 | 245.5 | 27.2 | WH WH WHWH | BIASED HIGH | 9 | 8.6 | 1.8153 | ICP-MS |
| F169 | 144.0 | 14.4 | | | 10 | | | ICP-MS |
| F183 | 210.0 | 23.3 | | BIASED HIGH* | 9 | 3.4 | 1.0162 | ICP-MS |
| F186 | 115.5 | 12.8 | AL | | 9 | | | ICP-MS |
| F193 | 131.5 | 13.1 | | | 10 | | | ICP-MS |
| F196 | 75.0 | 8.3 | | | 9 | | | ICP-AES |
| F223 | 107.0 | 15.2 | | | 7 | | | AAS hydride |
| F248 | 87.5 | 9.7 | | | 9 | | | ICP-MS |
| F287 | 182.5 | 18.2 | ALAHAHALAH AHAHAHAL | | 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 14.9

PARAMETER: 47095 Silver ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 0= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | TM-23.4 LAB RESULT | TM-26.4 LAB RESULT | TM-15.2 LAB RESULT | TMRain-04 LAB RESULT | TM25.4 LAB RESULT | TM-09 LAB RESULT | TM-16 LAB RESULT | LAB RESULT | TMDA-62.2 LAB RESULT | TMDA-64.2 LAB RESULT |
| F003 | 4.74 | 6.76 | 11.1 | <0.001 | 22.4 | 3.81 | 7.47 | | 12.0 | 12.0 |
| F009 | 5.0 | 7.2 | 11. | <1. | 22. | 3.8 | 7.8 | | 12. | 12. |
| F010 | 4.7 | 6.7 | 11.0 | <0.001 | 21.0 | 3.7 | 7.4 | | 11.9 | 11.7 |
| F011 | 4.5 | 6.8 | 11.2 | 0.1 | 21.7 | 3.7 | 7.3 | | 11.9 | 12.1 |
| F015 | 4.70 | 6.71 | 11.0 | <0.02 | 21.7 | 3.77 | 7.50 | | 11.9 | 11.9 |
| F020 | 4.88 | 7.1 | 11.4 | 0.04 | 22.9 | 3.92 | 7.72 | | 12.5 | 12.5 |
| F021 | 4.8 | 6.8 | 11.6 | <0.1 | 22.3 | 3.9 | 7.7 | | 12.4 | 12.2 |
| F021b | 5. | 6. WL | 11. | <2. | 22. | 3. AL | 7. | | 12. | 12. |
| F021c | 4.6 | 6.8 | 11.0 | <0.03 | 21.5 | 3.8 | 7.5 | | 11.8 | 11.9 |
| F022 | 4.94 | 7.07 | 11.4 | <0.05 | 22.2 | 3.98 | 7.49 | | 12.2 | 12.1 |
| F024 | 4.8 | 6.9 | 11.4 | <0.1 | 21.9 | 3.8 | 7.6 | | 12.3 | 11.9 |
| F032c | 4.6 | 6.5 | 10.6 | <0.1 | 21.1 | 3.6 | 7.2 | | 11.5 | 11.3 |
| F032d | 4.80 | 6.85 | 11.0 | <0.5 | 21.8 | 3.77 | 7.44 | | 11.8 | 11.7 |
| F042 | 4.89 | 6.98 | 11.4 | <2. | 21.8 | 3.72 | 7.67 | | 12.4 | 12.5 |
| F060 | 4.45 | 7.02 | 11.3 | 0.209 | 21.8 | 3.97 | 7.67 | | 12.3 | 12.4 |
| F068 | 4.9 | 6.9 | 11. | <0.04 | 22. | 3.9 | 7.8 | | 11.8 | 11.4 |
| F069 | 5.30 WH | 7.64 WH | 12.5 AH | <0.008 | 25.4 AH | 4.27 WH | 8.40 WH | | 12.9 WH | 13.1 |
| F069b | 4.7 | 6.7 | 11. | <4.0 | 21.3 | <4.0 | 7.4 | | 11.8 | 11. |
| F139 | 4.54 | 6.61 | 10.8 | <0.05 | 21.1 | 3.76 | 7.37 | | 11.7 | 11.7 |
| F154 | 1.23 AL | 2.19 AL | 4.51 AL | <0.5 | 16.8 AL | 0.62 AL | 1.81 AL | | 4.63 AL | 5.92 AL |
| F158 | 4.7 | 6.8 | 11.3 | <2. | 22.8 | 3.9 | 7.7 | | 12.4 | 12.4 |
| F183 | 5.23 | 8.30 AH | 10.6 | <0.05 | 25.0 AH | 3.89 | 8.53 AH | | 13.6 AH | 12.4 |
| F186 | 4.7 | 6.7 | 11.3 | <0.2 | 21.8 | 3.8 | 7.6 | | 11.9 | 12.0 |
| F196 | 6. AH | 8. AH | 13. AH | <2. | 26. AH | 5. AH | 8. | | 12. | 8. AL |
| F248 | 5.0 | 7.10 | 11.4 | <0.50 | 21.7 | 3.60 | 7.50 | | 12.2 | 12.3 |
| F287 | <5.0 | 6.4 | 11. | <5.0 | 22. | <5.0 | 36.2 AH | | 11. WL | 0.0103 AL |
| ASSIGNED VALUE * | 4.80 | 6.80 | 11.00 | 0.100 | 21.8 | 3.80 | 7.50 | 0. | 12.00 | 12.0000 |
| R-STD DEV * | 0.242 | 0.319 | 0.334 | 0.0972 | 0.71 | 0.159 | 0.299 | - | 0.380 | 0.55868 |
| ACCEPTABLE LIMITS(+-) * | 0.484 | 0.638 | 0.668 | - | 1.42 | 0.318 | 0.598 | - | 0.760 | 1.11736 |
| WARNING LIMITS(+-) * | .484- .726 | .638- .957 | .668- 1.002 | - | 1.42- 2.13 | .318- .477 | .598- .897 | - | .760- 1.140 | 1.11736- 1.6 |
| ACTION LIMITS(<>) * | 0.726 | 0.957 | 1.002 | - | 2.13 | 0.477 | 0.897 | - | 1.140 | 1.67604 |
| N * | 25 | 26 | 26 | 3 | 26 | 24 | 26 | 0 | 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 |
|---|---|---|---|---|---|---|---|---|
| F003 | 110.0 | 13.7 | | | 8 | | | ICP-MS |
| F009 | 132.5 | 16.5 | | | 8 | | | ICP-MS |
| F010 | 57.5 | 7.1 | | | 8 | | | ICP-MS |
| F011 | 78.0 | 8.6 | | | 9 | | | |
| F015 | 78.0 | 9.7 | | | 8 | | | ICP-MS |
| F020 | 171.0 | 19.0 | | | 9 | | | ICP-MS |
| F021 | 148.0 | 18.5 | | | 8 | | | ICP-MS |
| F021b | 81.5 | 10.1 | WL AL | | 8 | | | ICP-AES |
| F021c | 75.0 | 9.3 | | | 8 | | | ICP-MS |
| F022 | 146.0 | 18.2 | | | 8 | | | ICP-MS |
| F024 | 123.0 | 15.3 | | | 8 | | | ICP-MS |
| F032c | 30.0 | 3.7 | | BIASED LOW* | 8 | -3.6 | -0.0792 | ICP-MS-E3473 |
| F032d | 81.5 | 10.1 | | | 8 | | | ICP-MS-E3474 |
| F042 | 137.5 | 17.1 | | | 8 | | | ICP-AES |
| F060 | 131.5 | 14.6 | | | 9 | | | ICP-MS |
| F068 | 112.0 | 14.0 | | | 8 | | | ICP-MS |
| F069 | 196.0 | 24.5 | WHWHAHAHWHWHWH | BIASED HIGH | 8 | 15.9 | -0.3890 | ICP-MS |
| F069b | 47.0 | 6.7 | | | 7 | | | ICP-AES |
| F139 | 41.5 | 5.1 | | BIASED LOW* | 8 | -3.6 | 0.0693 | ICP-MS |
| F154 | 9.0 | 1.1 | ALALALALALALALAL | BIASED LOW | 8 | -12.0 | -4.0754 | ICP-MS |
| F158 | 141.0 | 17.6 | | | 8 | | | ICP-MS |
| F183 | 164.5 | 20.5 | AH AH AHAH | BIASED HIGH | 8 | 13.1 | -0.3551 | ICP-MS |
| F186 | 96.5 | 12.0 | | | 8 | | | ICP-MS |
| F196 | 166.5 | 20.8 | AHAHAHAHAH AL | BIASED HIGH | 8 | 10.5 | -0.2813 | ICP-AES |
| F248 | 124.5 | 15.5 | | | 8 | | | ICP-MS |
| F287 | 57.5 | 9.5 | AHWLAL | | 6 | | | 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 13.1

PARAMETER: 38095 Strontium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 113. | 107. | 114. | 1.74 | 73.9 | 109. | 258. | 389. | 150. | 640. |
| F009 | 117. | 111. | 115. | <20. | 77. | 111. | 259. | 398. | 153. | 660. |
| F010 | 110. | 105. | 114. | 1.84 | 73.1 | 107. | 249. | 387. | 150. | 640. |
| F011 | 104. WL | 104. | 109. | 1.8 | 72.1 | 104. | 244. | 380. | 143. | 630. |
| F015 | 115. | 109. | 113. | 1.69 | 68.8 | 109. | 257. | 396. | 152. | 659. |
| F020 | 110. | 105. | 109. | 1.87 | 72.7 | 103. | 247. | 389. | 145. | 651. |
| F021 | 113. | 104. | 112. | 1.8 | 73.9 | 106. | 248. | 392. | 149. | 640. |
| F021b | 112. | 106. | 111. | 2. | 73. | 105. | 249. | 388. | 146. | 632. |
| F022 | 112. | 107. | 112. | 1.79 | 74. | 106. | 254. | 394. | 149. | 644. |
| F024 | 116. | 108. | 114. | 1.8 | 74.9 | 108. | 256. | 396. | 150. | 650. |
| F026 | 108. | 103. | 108. | 2. | 72. | 103. | 241. | 377. | 143. | 612. WL |
| F032a | 119. | 112. | 118. | 1.7 | 77.4 | 111. | 268. | 406. | 156. | 686. WH |
| F032c | 114. | 111. | 114. | 1.9 | 81.3 WH | 110. | 259. | 393. | 156. | 657. |
| F032d | 114. | 113. | 114. | 1.86 | 83.3 AH | 110. | 261. | 399. | 157. | 660. |
| F032g | 115. | 108. | 112. | 1.9 | 74.6 | 109. | 255. | 396. | 149. | 643. |
| F060 | 112. | 105. | 110. | 2.07 | 74.3 | 104. | 248. | 388. | 148. | 635. |
| F068 | 107. | 100. | 103. WL | 1.5 WL | 72. | 98. WL | 242. | 378. | 130. AL | 624. |
| F069 | 107. | 101. | 105. | 1.72 | 69.9 | 100. | 239. | 388. | 147. | 645. |
| F069b | 115. | 109. | 114. | 1.73 | 73.8 | 108. | 253. | 404. | 148. | 669. |
| F139 | 114. | 109. | 115. | 1.80 | 75.2 | 109. | 260. | 405. | 152. | 652. |
| F154 | 119. | 115. | 121. WH | 1.76 | 76.3 | 113. | 262. | 424. AH | 651. AH | 158. AL |
| F158 | 114. | 108. | 113. | <2. | 74.7 | 108. | 254. | 399. | 152. | 647. |
| F169 | 113. | 96. WL | 100. AL | 1.79 | 70.0 | 99. WL | 254. | 391. | 156. | 646. |
| F183 | 112. | 108. | 107. | 0.183 AL | 71.5 | 107. | 244. | 384. | 151. | 631. |
| F186 | 112. | 106. | 111. | 1.7 | 74.8 | 106. | 248. | 381. | 151. | 637. |
| F196 | 112. | 106. | 111. | 2. | 74. | 106. | 250. | 384. | 146. | 633. |
| F207 | 109. | 104. | 110. | 1.8 | 71.3 | 103. | 249. | 384. | 144. | 625. |
| F223b | 110. | 110. | 110. | <100. | <100. | 110. | 260. | 400. | 150. | 650. |
| F287 | 105. | 100. | 105. | 1.33 AL | 70. | 99.1 | 235. WL | 369. WL | 138. WL | |
| ASSIGNED VALUE * | 112 | 107 | 112 | 1.800 | 73.9 | 107 | 253 | 390 | 150 | 644 |
| R-STD DEV * | 3.7 | 4.1 | 3.8 | 0.1382 | 2.66 | 3.95 | 8.0 | 10.0 | 5.1 | 14.9 |
| ACCEPTABLE LIMITS(+-) * | 7.4 | 8.2 | 7.6 | 0.2764 | 5.32 | 7.90 | 16.0 | 20.0 | 10.2 | 29.8 |
| WARNING LIMITS(+-) * | 7.4- 11.1 | 8.2- 12.3 | 7.6- 11.4 | .2764- .4146 | 5.32- 7.98 | 7.90- 11.85 | 16.0- 24.0 | 20.0- 30.0 | 10.2- 15.3 | 29.8- 44.7 |
| ACTION LIMITS(<>) * | 11.1 | 12.3 | 11.4 | 0.4146 | 7.98 | 11.85 | 24.0 | 30.0 | 15.3 | 44.7 |
| N * | 29 | 29 | 29 | 26 | 28 | 29 | 29 | 29 | 29 | 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 | 164.0 | 16.4 | | | 10 | | | ICP-MS |
| F009 | 226.5 | 25.1 | | BIASED HIGH* | 9 | 2.1 | 1.1800 | ICP-MS |
| F010 | 135.5 | 13.5 | | | 10 | | | ICP-MS |
| F011 | 66.0 | 6.6 | WL | BIASED LOW* | 10 | -2.1 | -1.8098 | |
| F015 | 178.0 | 17.8 | | | 10 | | | ICP-MS |
| F020 | 109.0 | 10.9 | | | 10 | | | ICP-MS |
| F021 | 132.0 | 13.2 | | | 10 | | | ICP-MS |
| F021b | 121.0 | 12.1 | | | 10 | | | ICP-AES |
| F022 | 147.5 | 14.7 | | | 10 | | | ICP-AES |
| F024 | 198.0 | 19.8 | | | 10 | | | ICP-MS |
| F026 | 64.0 | 6.4 | WL | BIASED LOW* | 10 | -4.9 | 1.2413 | ICP-AES |
| F032a | 253.5 | 25.3 | WH | BIASED HIGH | 10 | 6.2 | -1.6720 | ICP-AES-E3386 |
| F032c | 231.5 | 23.1 | WH | BIASED HIGH* | 10 | 1.4 | 1.8998 | ICP-MS-E3473 |
| F032d | 247.0 | 24.7 | AH | BIASED HIGH* | 10 | 2.0 | 2.1928 | ICP-MS-E3474 |
| F032g | 186.5 | 18.6 | | | 10 | | | ICP-AES-system#2,Opt |
| F060 | 124.5 | 12.4 | | | 10 | | | ICP-MS |
| F068 | 30.5 | 3.0 | WLWL WL AL | BIASED LOW* | 10 | -2.6 | -4.6063 | ICP-MS |
| F069 | 62.0 | 6.2 | | BIASED LOW* | 10 | 0.6 | -5.9026 | ICP-MS |
| F069b | 186.0 | 18.6 | | | 10 | | | ICP-AES |
| F139 | 225.0 | 22.5 | | | 10 | | | ICP-MS |
| F154 | 236.5 | 23.6 | WH AHAHAL | BIASED HIGH | 10 | -72.4 | 150.3126 | ICP-MS |
| F158 | 176.0 | 19.5 | | | 9 | | | ICP-MS |
| F169 | 111.0 | 11.1 | WLAL WL | | 10 | | | ICP-MS |
| F183 | 96.5 | 9.6 | AL | | 10 | | | ICP-MS |
| F186 | 121.0 | 12.1 | | | 10 | | | ICP-MS |
| F196 | 128.0 | 12.8 | | | 10 | | | ICP-AES |
| F207 | 77.0 | 7.7 | | | 10 | | | ICP-AES |
| F223b | 153.5 | 19.1 | | | 8 | | | ICP-AES |
| F287 | 20.5 | 2.2 | AL WLWLWL | BIASED LOW | 9 | -5.9 | -0.9716 | 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 14.7

PARAMETER: 81095 Thallium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | TM-23.4 LAB RESULT | TM-26.4 LAB RESULT | TM-15.2 LAB RESULT | TMRain-04 LAB RESULT | TM25.4 LAB RESULT | TM-09 LAB RESULT | TM-16 LAB RESULT | TMDA-65 LAB RESULT | TMDA-62.2 LAB RESULT | TMDA-64.2 LAB RESULT |
| F003 | 3.96 | 5.24 | 18.1 | 0.347 | 31.4 | 1.93 | 6.73 | 202. | 52.8 | 147. |
| F009 | <10. | <10. | 19. | <10. | 32. | <10. | <10. | 202. | 52. | 148. |
| F010 | 3.81 | 5.14 | 17.9 | 0.37 | 30.9 | 1.98 | 6.58 | 190. | 50.5 | 140. |
| F011 | 3.8 | 5.2 | 18.2 | 0.4 | 29.9 | 2.0 | 6.7 | 191. | 52.0 | 146. |
| F014 | 4.0 | 5.2 | 19. | <1.0 | 31. | 1.9 | 6.7 | 210. | 56. | 148. |
| F015 | 3.79 | 5.01 | 17.1 | 0.377 | 29.1 | 1.93 | 6.37 | 205. | 48.6 | 152. |
| F020 | 4.04 | 5.42 | 18. | 0.379 | 30.4 | 1.97 | 6.82 | 187. | 50. | 138. |
| F021 | 3.7 | 5.0 | 17.4 | 0.4 | 29.6 | 1.9 | 6.2 | 191. | 48.4 | 137. |
| F021b | <25. | <25. | <25. | <25. | <25. AL | <25. | <25. | 192. | 39. AL | 138. |
| F021c | 3.8 | 5.0 | 17.3 | 0.4 | 29.2 | 1.9 | 6.5 | 201. | 52.7 | 148. |
| F022 | 4.01 | 5.47 | 18.1 | 0.373 | 30.7 | 2.03 | 7.05 | 209. | 52. | 152. |
| F024 | 4.1 | 5.4 | 19.0 | 0.4 | 31.5 | 2.1 | 6.9 | 208. | 54.1 | 154. |
| F032c | 4.1 | 5.4 | 18.6 | 0.4 | 31.2 | 2.2 | 6.9 | 200. | 52.4 | 147. |
| F032d | 4.25 | 5.52 | 18.6 | <0.5 | 30.9 | 2.18 | 6.94 | 203. | 52.7 | 148. |
| F042 | <10. | <10. | 21.7 AH | <10. | 33.8 | <10. | 11.1 AH | 206. | 55.5 | 150. |
| F060 | 4.32 | 5.63 | 18.9 | 0.427 | 31.1 | 2.17 | 7.05 | 195. | 51.4 | 146. |
| F068 | 3.7 | 4.9 | 16. | 0.35 | 28. | 1.9 | 6.3 | 194. | 50. | 148. |
| F069 | 4.31 | 5.73 | 20.7 WH | 0.413 | 34.7 WH | 2.18 | 7.40 | 215. | 55.9 | 160. |
| F139 | 3.96 | 5.25 | 18.0 | 0.390 | 30.3 | 1.95 | 6.66 | 200. | 50.7 | 145. |
| F154 | 4.17 | 5.45 | 18.7 | 0.41 | 31.7 | 2.04 | 6.91 | 217. | 158. AH | 53.8 AL |
| F158 | 4.0 | 5.4 | 18.7 | <2. | 31.5 | 2.0 | 6.9 | 210. | 52.7 | 153. |
| F169 | 3.81 | 5.01 | 17.0 | <0.50 | 29.0 | 1.91 | 6.25 | 201. | 52.2 | 134. |
| F183 | 3.94 | 5.37 | 18.7 | 0.36 | 30.6 | 2.08 | 6.90 | 211. | 51.1 | 156. |
| F186 | 2.7 AL | 3.9 AL | 16.2 | <0.1 AL | 27.8 | 0.8 AL | 5.0 AL | 184. | 48.7 | 135. |
| F196 | <40. | <40. | <40. | <40. | <40. | <40. | <40. | 209. | 53. | 148. |
| F223b | <10.0 | <10.0 | 19.1 | <10.0 | 32.4 | <10.0 | <10.0 | 211. | 54.6 | 154. |
| F248 | 4.80 AH | 5.30 | 17.2 | <1.00 | 27.5 WL | 2.00 | 6.10 | 153. AL | 45.9 WL | 119. AL |
| F287 | 3.1 AL | 7.0 AH | 16. | <3.0 | 32. | 0. AL | 9.56 AH | 193. | 54. | 0.139 AL |
| ASSIGNED VALUE * | 3.98 | 5.30 | 18.1 | 0.395 | 30.9 | 2.00 | 6.73 | 202 | 52.1 | 148 |
| R-STD DEV * | 0.259 | 0.278 | 1.09 | 0.0259 | 1.54 | 0.130 | 0.441 | 10.4 | 2.79 | 8.7957 |
| ACCEPTABLE LIMITS(+-) * | 0.518 | 0.556 | 2.18 | 0.0518 | 3.08 | 0.260 | 0.882 | 20.8 | 5.58 | 17.5914 |
| WARNING LIMITS(+-) * | .518- .777 | .556- .834 | 2.18- 3.27 | .0518- .0777 | 3.08- 4.62 | .260- .390 | .882- 1.323 | 20.8- 31.2 | 5.58- 8.37 | 17.5914- 26. |
| ACTION LIMITS(<>) * | 0.777 | 0.834 | 3.27 | 0.0777 | 4.62 | 0.390 | 1.323 | 31.2 | 8.37 | 26.3871 |
| N * | 23 | 23 | 26 | 16 | 26 | 23 | 24 | 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 | 122.5 | 12.2 | | | 10 | | | ICP-MS |
| F009 | 90.5 | 18.1 | | | 5 | | | ICP-MS |
| F010 | 83.0 | 8.3 | | | 10 | | | ICP-MS |
| F011 | 102.5 | 10.2 | | | 10 | | | |
| F014 | 142.0 | 15.7 | | | 9 | | | ICP-MS |
| F015 | 85.5 | 8.5 | | | 10 | | | ICP-MS |
| F020 | 101.5 | 10.1 | | | 10 | | | ICP-MS |
| F021 | 55.0 | 5.5 | | BIASED LOW* | 10 | -6.0 | -0.0280 | ICP-MS |
| F021b | 15.5 | 5.1 | AL AL | INSUFFICIENT DATA | 3 | | | ICP-AES |
| F021c | 94.5 | 9.4 | | | 10 | | | ICP-MS |
| F022 | 157.0 | 15.7 | | | 10 | | | ICP-MS |
| F024 | 188.0 | 18.8 | | | 10 | | | ICP-MS |
| F032c | 155.5 | 15.5 | | | 10 | | | ICP-MS-E3473 |
| F032d | 162.0 | 18.0 | | | 9 | | | ICP-MS-E3474 |
| F042 | 140.0 | 23.3 | AH AH | BIASED HIGH* | 6 | -0.1 | 3.5225 | ICP-AES |
| F060 | 168.0 | 16.8 | | | 10 | | | ICP-MS |
| F068 | 54.5 | 5.4 | | BIASED LOW* | 10 | -2.3 | -0.5049 | ICP-MS |
| F069 | 233.5 | 23.3 | WH WH | BIASED HIGH* | 10 | 6.9 | 0.4720 | ICP-MS |
| F139 | 99.5 | 9.9 | | | 10 | | | ICP-MS |
| F154 | 183.0 | 18.3 | AHAL | | 10 | | | ICP-MS |
| F158 | 161.0 | 17.8 | | | 9 | | | ICP-MS |
| F169 | 65.5 | 7.2 | | | 9 | | | ICP-MS |
| F183 | 151.0 | 15.1 | | | 10 | | | ICP-MS |
| F186 | 22.0 | 2.4 | ALAL AL ALAL | BIASED LOW* | 9 | -8.3 | -0.6525 | ICP-MS |
| F196 | 60.0 | 20.0 | | INSUFFICIENT DATA | 3 | | | ICP-AES |
| F223b | 123.0 | 24.6 | | BIASED HIGH* | 5 | 4.4 | 0.1495 | ICP-AES |
| F248 | 64.0 | 7.1 | AH WL ALWLAL | | 9 | | | ICP-MS |
| F287 | 104.0 | 11.5 | ALAH ALAH AL | | 9 | | | ICP-AES |

* 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 12.9

PARAMETER: 50095 Tin ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.76 | 5.79 | 15.3 | 0.703 | 23.8 | 2.85 | 8.56 | 390. | 109. | 300. |
| F009 | <5. | <5. WL | 12. AL | <5. | 19. AL | <5. | 7.6 | 368. | 102. | 279. |
| F010 | 2.88 | 5.72 | 15.1 | 0.90 | 25.4 | 3.17 | 8.81 | 390. | 116. | 300. |
| F011 | 2.6 | 5.7 | 15.0 | 0.8 | 23.7 | 2.9 | 8.3 | 387. | 112. | 295. |
| F015 | 2.62 | 5.45 | 14.3 | 0.75 | 22.7 | 2.82 | 8.24 | 408. | 105. | 311. |
| F020 | 2.78 | 5.89 | 15.2 | 0.71 | 24.7 | 2.86 | 8.6 | 371. | 111. | 277. |
| F021 | 2.7 | 5.5 | 15.0 | 0.7 | 23.2 | 2.9 | 7.9 | 373. | 106. | 279. |
| F021c | 2.7 | 5.6 | 14.5 | 0.7 | 22.9 | 2.7 | 8.3 | 388. | 113. | 294. |
| F022 | 2.80 | 5.94 | 15.0 | 0.772 | 23.8 | 3.91 AH | 9.23 | 384. | 108. | 291. |
| F024 | 2.6 | 5.6 | 14.8 | 0.7 | 23.6 | 3.0 | 8.6 | 375. | 109. | 281. |
| F042 | <10. | <10. | <10. AL | <10. | 10.9 AL | <10. | <10. | 387. | 102. | 291. |
| F060 | 2.80 | 5.85 | 15.1 | <1. | 23.7 | 2.94 | 8.37 | 356. | 105. | 273. |
| F068 | 2.8 | 5.9 | 15. | 0.77 | 24. | 2.9 | 8.8 | 396. | 108. | 308. |
| F139 | 2.73 | 5.81 | 15.2 | 0.756 | 24.1 | 2.90 | 8.78 | 394. | 113. | 292. |
| F154 | 2.71 | 5.68 | 15.3 | 0.82 | 24.4 | 3.07 | 8.61 | 411. | 315. AH | 115. AL |
| F158 | 2.5 | 5.3 | 14.2 | <2. | 22.9 | 2.7 | 8.2 | 397. | 109. | 295. |
| F183 | 2.59 | 5.61 | 15.8 | 0.64 | 23.9 | 2.62 | 8.60 | 342. WL | 109. | 266. |
| F186 | 2.9 | 4.6 AL | 9.6 AL | 2.1 AH | 14.8 AL | 3.4 WH | 6.8 AL | 306. AL | 82.2 AL | 236. WL |
| F196 | <80. | <80. | <80. | <80. | <80. | <80. | <80. | 283. AL | 92. WL | 206. AL |
| F223b | <8.0 | <8.0 | 14.8 | <8.0 | 24.5 | <8.0 | 8.1 | 395. | 117. | 299. |
| F248 | 4.80 AH | 6.30 WH | 14.6 | 1.10 AH | 21.8 | 2.90 | 7.90 | 362. | 104. | 282. |
| F287 | <10. | <10. | <10. AL | <10. | <10. AL | 15.8 AH | 47.8 AH | 385. | 88. WL | 0.273 AL |
| ASSIGNED VALUE * | 2.72 | 5.71 | 15.0 | 0.750 | 23.8 | 2.90 | 8.46 | 387 | 108.5 | 291 |
| R-STD DEV * | 0.131 | 0.234 | 0.49 | 0.0975 | 1.27 | 0.230 | 0.480 | 21.2 | 6.87 | 21.5732 |
| ACCEPTABLE LIMITS(+-) * | 0.262 | 0.468 | 0.98 | 0.1950 | 2.54 | 0.460 | 0.960 | 42.4 | 13.74 | 43.1464 |
| WARNING LIMITS(+-) * | .262- .393 | .468- .702 | .98- 1.47 | .1950- .2925 | 2.54- 3.81 | .460- .690 | .960- 1.440 | 42.4- 63.6 | 13.74- 20.61 | 43.1464- 64. |
| ACTION LIMITS(<>) * | 0.393 | 0.702 | 1.47 | 0.2925 | 3.81 | 0.690 | 1.440 | 63.6 | 20.61 | 64.7196 |
| N * | 17 | 17 | 19 | 15 | 20 | 18 | 20 | 22 | 22 | 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 | 120.5 | 12.0 | | | 10 | | | ICP-MS |
| F009 | 26.0 | 4.3 | WLAL AL | BIASED LOW* | 6 | -3.4 | -2.1045 | ICP-MS |
| F010 | 159.5 | 15.9 | | | 10 | | | ICP-MS |
| F011 | 108.0 | 10.8 | | | 10 | | | |
| F015 | 85.5 | 8.5 | | | 10 | | | ICP-MS |
| F020 | 114.5 | 11.4 | | | 10 | | | ICP-MS |
| F021 | 70.0 | 7.0 | | | 10 | | | ICP-MS |
| F021c | 85.0 | 8.5 | | | 10 | | | ICP-MS |
| F022 | 131.0 | 13.1 | AH | | 10 | | | ICP-MS |
| F024 | 87.0 | 8.7 | | | 10 | | | ICP-MS |
| F042 | 30.5 | 7.6 | AL AL | INSUFFICIENT DATA | 4 | | | ICP-AES |
| F060 | 89.5 | 9.9 | | | 9 | | | ICP-MS |
| F068 | 139.0 | 13.9 | | | 10 | | | ICP-MS |
| F139 | 135.0 | 13.5 | | | 10 | | | ICP-MS |
| F154 | 137.5 | 13.7 | AHAL | | 10 | | | ICP-MS |
| F158 | 71.0 | 7.8 | | | 9 | | | ICP-MS |
| F183 | 78.5 | 7.8 | WL | | 10 | | | ICP-MS |
| F186 | 59.0 | 5.9 | ALALAHALWHALALALWL | | 10 | | | ICP-MS |
| F196 | 7.0 | 2.3 | ALWLAL | INSUFFICIENT DATA | 3 | | | ICP-AES |
| F223b | 87.5 | 14.5 | | | 6 | | | ICP-AES |
| F248 | 92.5 | 9.2 | AHWH AH | | 10 | | | ICP-MS |
| F287 | 52.0 | 10.4 | AL ALAHAH WLAL | | 5 | | | ICP-AES |

* 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 10.2

PARAMETER: 22095 Titanium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 3.18 | 6.37 | 15.0 | 0.519 | 25.5 | 8.18 | 11.8 | 183. | 58.6 | 129. |
| F011 | 2.9 | 6.0 | 14.2 | 0.5 | 24.6 | 7.9 | 11.6 | 185. | 57.5 | 127. |
| F015 | 3. | 6. | 15. | <2. | 26. | 8. | 12. | 190. | 60. | 130. |
| F020 | 2.7 | 6. | 14.1 | <0.5 | 26.6 | 8.8 | 13. | 196. | 59.8 | 131. |
| F021 | 3.3 | 5.8 | 14.3 | 0.5 | 24.4 | 7.6 | 11.1 | 177. | 54.9 | 119. |
| F021b | 3. | 6. | 14. | <1. | 25. | 8. | 12. | 185. | 57. | 125. |
| F021c | 3.0 | 5.8 | 13.7 | 0.5 | 23.5 WL | 7.0 WL | 11.3 | 176. | 55.9 | 123. |
| F022 | 3.68 | 6.45 | 15.1 | 0.561 | 25.5 | 8.42 | 12.4 | 188. | 57. | 127. |
| F024 | 3.0 | 5.9 | 13.7 | 0.4 WL | 24.9 | 7.8 | 12.2 | 191. | 59.2 | 127. |
| F032a | 3.7 | 6.8 | 16.0 | 0.8 AH | 27.0 | 8.7 | 13.0 | 195. | 62.3 | 137. |
| F032c | 3.6 | 6.4 | 15.4 | 0.5 | 26.2 | 8.4 | 12.5 | 194. | 60.3 | 132. |
| F032d | 3.66 | 6.85 | 15.5 | <1. | 25.9 | 8.44 | 12.6 | 194. | 60.8 | 133. |
| F032g | 3.3 | 6.4 | 15. | 0.5 | 25.6 | 8.3 | 12.7 | 193. | 61.5 | 132. |
| F042 | 2.12 WL | 5.27 WL | 14.4 | <2. | 26.2 | 7.23 WL | 11.5 | 200. | 61.4 | 134. |
| F060 | 3.2 | 6.26 | 14.7 | 0.525 | 25.6 | 8.19 | 11.9 | 183. | 57.7 | 127. |
| F068 | 3.1 | 6.2 | 14. | 0.6 | 24. | 8.2 | 12. | 180. | 56.4 | 120. |
| F139 | 3.28 | 6.41 | 14.9 | 0.542 | 25.4 | 8.29 | 11.8 | 187. | 58.4 | 137. |
| F154 | 3.24 | 6.02 | 14.9 | 0.51 | 25.8 | 8.26 | 11.9 | 194. | 130. AH | 60.8 AL |
| F158 | 3.0 | 6.1 | 14.6 | <2. | 25.6 | 8.0 | 11.9 | 188. | 58.9 | 128. |
| F183 | 3.13 | 6.83 | 15.5 | 0.567 | 26.1 | 8.68 | 12.4 | 204. | 64.4 | 131. |
| F186 | 11.8 AH | 20.6 AH | 47.6 AH | 1.6 AH | 81.8 AH | 24.6 AH | 33.9 AH | 368. AH | 123. AH | 201. AH |
| F196 | <10. | <10. | 12. AL | <10. | 21. AL | <10. | 11. | 184. | 55. | 124. |
| F287 | 3.6 | 6.1 | 14. | 0.504 | 25. | 7.85 | 11.8 | 182. | 57. | 0.123 AL |
| ASSIGNED VALUE * | 3.18 | 6.10 | 14.7 | 0.507 | 25.6 | 8.19 | 12.0 | 188 | 58.6 | 128.500 |
| R-STD DEV * | 0.365 | 0.411 | 0.79 | 0.0513 | 1.01 | 0.443 | 0.64 | 8.3 | 3.10 | 6.7625 |
| ACCEPTABLE LIMITS(+-) * | 0.730 | 0.822 | 1.58 | 0.1026 | 2.02 | 0.886 | 1.28 | 16.6 | 6.20 | 13.5250 |
| WARNING LIMITS(+-) * | .730- 1.095 | .822- 1.233 | 1.58- 2.37 | .1026- .1539 | 2.02- 3.03 | .886- 1.329 | 1.28- 1.92 | 16.6- 24.9 | 6.20- 9.30 | 13.5250- 20. |
| ACTION LIMITS(<>) * | 1.095 | 1.233 | 2.37 | 0.1539 | 3.03 | 1.329 | 1.92 | 24.9 | 9.30 | 20.2875 |
| N * | 22 | 22 | 23 | 16 | 23 | 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 |
|---|---|---|---|---|---|---|---|---|
| F003 | 107.0 | 10.7 | | | 10 | | | ICP-MS |
| F011 | 63.5 | 6.3 | | | 10 | | | |
| F015 | 108.5 | 12.0 | | | 9 | | | ICP-AES |
| F020 | 128.5 | 14.2 | | | 9 | | | ICP-MS |
| F021 | 46.0 | 4.6 | | BIASED LOW | 10 | -6.3 | 0.0599 | ICP-MS |
| F021b | 67.5 | 7.5 | | | 9 | | | ICP-AES |
| F021c | 30.0 | 3.0 | WLWL | BIASED LOW | 10 | -5.5 | -0.0863 | ICP-MS |
| F022 | 139.0 | 13.9 | | | 10 | | | ICP-MS |
| F024 | 75.0 | 7.5 | WL | | 10 | | | ICP-MS |
| F032a | 201.0 | 20.1 | AH | BIASED HIGH* | 10 | 4.5 | 0.5163 | ICP-AES-E3386 |
| F032c | 160.0 | 16.0 | | | 10 | | | ICP-MS-E3473 |
| F032d | 166.5 | 18.5 | | BIASED HIGH* | 9 | 3.3 | 0.1631 | ICP-MS-E3474 |
| F032g | 150.5 | 15.0 | | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 96.5 | 10.7 | WLWL WL | | 9 | | | ICP-AES |
| F060 | 105.0 | 10.5 | | | 10 | | | ICP-MS |
| F068 | 79.0 | 7.9 | | | 10 | | | ICP-MS |
| F139 | 127.0 | 12.7 | | | 10 | | | ICP-MS |
| F154 | 123.5 | 12.3 | AHAL | | 10 | | | ICP-MS |
| F158 | 94.0 | 10.4 | | | 9 | | | ICP-MS |
| F183 | 175.5 | 17.5 | | | 10 | | | ICP-MS |
| F186 | 219.0 | 21.9 | AHAHAHAHAHAHAHAHAHAH | BIASED HIGH | 10 | 78.2 | 12.0650 | ICP-MS |
| F196 | 18.0 | 3.0 | AL AL | BIASED LOW* | 6 | -0.9 | -2.7459 | ICP-AES |
| F287 | 70.5 | 7.0 | AL | | 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 11.5

PARAMETER: 74095 Tungsten ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | TM-23.4 LAB RESULT | TM-26.4 LAB RESULT | TM-15.2 LAB RESULT | TMRain-04 LAB RESULT | TM25.4 LAB RESULT | TM-09 LAB RESULT | TM-16 LAB RESULT | TMDA-65 LAB RESULT | TMDA-62.2 LAB RESULT | TMDA-64.2 LAB RESULT |
| F022 | 4.78 | 6.19 | 6.72 | 0.034 | 9.50 | 1.89 | 3.26 | 0.112 | 0.117 | 0.075 |
| F069 | 4.80 | 6.18 | 3.83 | <0.020 | 4.45 | 1.88 | 2.68 | <0.040 | <0.020 | <0.040 |
| F139 | 5.36 | 7.03 | 7.36 | 0.049 | 10.6 | 2.03 | 3.57 | 0.119 | 0.070 | 0.085 |
| F154 | 5.3 | 6.56 | 7.04 | <0.2 | 10.4 | 2. | 3.47 | <0.2 | <0.2 | <0.2 |
| ASSIGNED VALUE * | 5.05 | 6.38 | 6.88 | 0.042 | 9.95 | 1.94 | 3.36 | 0.115 | 0.094 | 0.080 |
| R-STD DEV * | 0.355 | 0.455 | 1.798 | - | 3.159 | 0.086 | 0.452 | - | - | - |
| ACCEPTABLE LIMITS(+-) * | - | - | - | - | - | - | - | - | - | - |
| WARNING LIMITS(+-) * | - | - | - | - | - | - | - | - | - | - |
| ACTION LIMITS(<>) * | - | - | - | - | - | - | - | - | - | - |
| N * | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 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 |
|---|---|---|---|---|---|---|---|---|
| F022 | 16.0 | 1.6 | | | 10 | | | ICP-MS |
| F069 | 7.0 | 1.1 | | | 6 | | | ICP-MS |
| F139 | 31.0 | 3.1 | | | 10 | | | ICP-MS |
| F154 | 18.0 | 3.0 | | | 6 | | | 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 | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 4.98 | 7.54 | 15.8 | 0.278 | 27.7 | 1.95 | 4.87 | 208. | 56.5 | 143. |
| F009 | 4.8 | 6.9 WL | 15. | <1. | 26. | 1.8 | 4.6 | 201. | 54. | 138. |
| F010 | 5.07 | 7.54 | 15.3 | 0.301 | 27.0 | 1.98 | 4.88 | 199. | 52.8 | 139. |
| F011 | 4.8 | 7.4 | 15.4 | 0.3 | 27.1 | 1.9 | 4.8 | 197. | 56.8 | 143. |
| F014 | 5.0 | 7.3 | 16. | <0.5 | 27. | 2.0 | 4.7 | 196. | 57. | 141. |
| F015 | 4.88 | 7.17 | 15.0 | 0.285 | 26.9 | 1.90 | 4.72 | 221. | 54.7 | 156. |
| F020 | 5.39 | 8.08 | 16. | 0.315 | 28.2 | 2.05 | 5.17 | 205. | 56.5 | 143. |
| F021 | 5.2 | 7.5 | 16.2 | 0.3 | 28.4 | 1.9 | 4.9 | 215. | 56.9 | 150. |
| F021c | 4.7 | 7.0 | 14.4 WL | 0.3 | 28.6 | 1.8 | 4.6 | 209. | 57.7 | 145. |
| F022 | 5.12 | 7.5 | 15.5 | 0.292 | 27. | 1.97 | 4.88 | 197. | 55.1 | 140. |
| F024 | 5.2 | 7.6 | 15.9 | 0.3 | 28.2 | 2.0 | 5.0 | 213. | 57.5 | 149. |
| F032c | 5.3 | 7.7 | 16.1 | 0.3 | 28.3 | 2.0 | 5.0 | 211. | 58.1 | 149. |
| F032d | 5.22 | 7.66 | 16.2 | <1. | 28.7 | 2.04 | 5.04 | 215. | 58.1 | 152. |
| F042 | <10. | <10. | 18.2 AH | <10. | 29.2 | <10. | <10. | 222. | 61.5 | 156. |
| F060 | 5.39 | 7.98 | 16.1 | <0.5 | 26.7 | 2.15 | 5.17 | 207. | 56.0 | 145. |
| F068 | 5.1 | 7.5 | 15. | 0.28 | 27. | 2. | 4.9 | 228. | 63. WH | 154. |
| F069 | 5.17 | 7.66 | 16.4 | 0.298 | 28.7 | 1.99 | 5.00 | 209. | 57.1 | 146. |
| F139 | 5.31 | 7.78 | 16. | 0.311 | 28.7 | 2. | 5.07 | 217. | 57.3 | 150. |
| F154 | 5.41 | 7.74 | 16.1 | 0.31 | 28.8 | 2.02 | 5.09 | 243. WH | 167. AH | 59.5 AL |
| F158 | 5.0 | 7.5 | 15.5 | <2. | 28.0 | <2. | 4.8 | 218. | 56.4 | 150. |
| F183 | 4.92 | 7.77 | 15.4 | 0.311 | 27.1 | 2.19 | 4.71 | 208. | 53.4 | 139. |
| F186 | 3.0 AL | 4.9 AL | 11. AL | <0.1 AL | 20.7 AL | 0.7 AL | 3.0 AL | 182. WL | 45.5 AL | 115. AL |
| F193 | 5.13 | 7.65 | 15.2 | <1.0 | 26.9 | 1.93 | 4.88 | 203. | 55.6 | 145. |
| F248 | 5.20 | 7.60 | 15.3 | <0.50 | 26.0 | 1.80 | 4.70 | 168. AL | 52.5 | 123. WL |
| ASSIGNED VALUE * | 5.12 | 7.57 | 15.6 | 0.300 | 27.7 | 1.99 | 4.88 | 209 | 56.6 | 145 |
| R-STD DEV * | 0.237 | 0.274 | 0.61 | 0.0120 | 1.12 | 0.110 | 0.203 | 11.7 | 2.56 | 7.79 |
| ACCEPTABLE LIMITS(+-) * | 0.474 | 0.548 | 1.22 | 0.0240 | 2.24 | 0.220 | 0.406 | 23.4 | 5.12 | 15.58 |
| WARNING LIMITS(+-) * | .474- .711 | .548- .822 | 1.22- 1.83 | .0240- .0360 | 2.24- 3.36 | .220- .330 | .406- .609 | 23.4- 35.1 | 5.12- 7.68 | 15.58- 23.37 |
| ACTION LIMITS(<>) * | 0.711 | 0.822 | 1.83 | 0.0360 | 3.36 | 0.330 | 0.609 | 35.1 | 7.68 | 23.37 |
| N * | 23 | 23 | 24 | 15 | 24 | 22 | 23 | 24 | 24 | 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 | 97.5 | 9.7 | | | 10 | | | ICP-MS |
| F009 | 33.5 | 3.7 | WL | BIASED LOW* | 9 | -4.0 | -0.2365 | ICP-MS |
| F010 | 86.0 | 8.6 | | | 10 | | | ICP-MS |
| F011 | 80.5 | 8.0 | | | 10 | | | |
| F014 | 83.5 | 9.2 | | | 9 | | | ICP-MS |
| F015 | 85.0 | 8.5 | | | 10 | | | ICP-MS |
| F020 | 164.0 | 16.4 | | | 10 | | | ICP-MS |
| F021 | 143.0 | 14.3 | | | 10 | | | ICP-MS |
| F021c | 85.0 | 8.5 | WL | | 10 | | | ICP-MS |
| F022 | 85.0 | 8.5 | | | 10 | | | ICP-MS |
| F024 | 149.5 | 14.9 | | | 10 | | | ICP-MS |
| F032c | 165.0 | 16.5 | | | 10 | | | ICP-MS-E3473 |
| F032d | 174.0 | 19.3 | | BIASED HIGH* | 9 | 3.4 | 0.0371 | ICP-MS-E3474 |
| F042 | 115.5 | 23.1 | AH | BIASED HIGH | 5 | 6.0 | 1.1590 | ICP-AES |
| F060 | 142.0 | 15.7 | | | 9 | | | ICP-MS |
| F068 | 131.5 | 13.1 | WH | | 10 | | | ICP-MS |
| F069 | 153.0 | 15.3 | | | 10 | | | ICP-MS |
| F139 | 181.5 | 18.1 | | | 10 | | | ICP-MS |
| F154 | 184.0 | 18.4 | WHAHAL | BIASED HIGH* | 10 | -4.1 | 8.0592 | ICP-MS |
| F158 | 100.0 | 12.5 | | | 8 | | | ICP-MS |
| F183 | 109.5 | 10.9 | | | 10 | | | ICP-MS |
| F186 | 11.0 | 1.2 | ALALALALALALWLALAL | BIASED LOW | 9 | -14.3 | -2.1892 | ICP-MS |
| F193 | 88.5 | 9.8 | | | 9 | | | ICP-MS |
| F248 | 53.0 | 5.8 | AL WL | | 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 11.9

PARAMETER: 23095 Vanadium ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= TM-23.4 | 2= TM-26.4 | 3= TM-15.2 | 4= TMRain-04 | 5= TM25.4 | 6= TM-09 | 7= TM-16 | 8= TMDA-65 | 9= TMDA-62.2 | 10= TMDA-64.2 |
|---|---|---|---|---|---|---|---|---|---|---|
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 1.92 | 12.5 | 13.1 | 0.660 WL | 26.7 | 2.95 | 14.9 | 361. | 118. | 289. |
| F009 | 1.9 | 13. | 14. | <1. | 29. | 3.0 | 16. | 385. | 122. | 305. |
| F010 | 2.09 | 12.7 | 13.0 | 0.69 | 27.5 | 3.01 | 15.0 | 370. | 114. | 290. |
| F011 | 1.9 | 12.2 | 12.8 | 0.7 | 26.3 | 2.9 | 14.7 | 372. | 112. | 286. |
| F014 | 2.1 | 12. | 14. | <1.0 | 27. | 3.1 | 16. | 370. | 114. | 295. |
| F015 | 1.89 | 12.7 | 13.2 | 0.71 | 27.6 | 3.03 | 15.3 | 389. | 116. | 296. |
| F020 | 1.8 | 12.7 | 13.2 | 0.7 | 28.7 | 3. | 15.7 | 379. | 117. | 299. |
| F021 | 1.9 | 11.7 | 13.0 | 0.7 | 27.5 | 2.9 | 14.4 | 370. | 111. | 291. |
| F021b | <4. | 10. AL | 12. | <4. | 26. | <4. | 13. WL | 365. | 111. | 282. |
| F021c | 1.8 | 12.0 | 12.4 | 0.6 AL | 25.9 | 2.8 | 14.4 | 366. | 110. | 289. |
| F022 | 1.95 | 13.0 | 13.6 | 0.38 AL | 27.9 | 2.95 | 15.8 | 385. | 116. | 296. |
| F024 | 1.9 | 12.7 | 13.3 | 0.7 | 27.5 | 3.0 | 15.2 | 376. | 116. | 291. |
| F032a | 2. | 14. | 16. AH | 2. AH | 30. | 4. AH | 17. WH | 388. | 123. | 310. |
| F032c | 1.8 | 12.5 | 13.2 | 0.7 | 27.5 | 3.0 | 15.2 | 356. | 115. | 282. |
| F032d | 1.79 | 12.9 | 13.2 | <1. | 27.5 | 2.85 | 15.2 | 378. | 118. | 298. |
| F042 | <5. | 11.2 | 12.1 | <5. | 25.8 | <5. | 13.9 | 367. | 109. | 287. |
| F060 | 2.07 | 13.6 | 14.2 | 0.729 | 29.2 | 3.28 WH | 15.8 | 362. | 116. | 285. |
| F068 | 1.9 | 11. WL | 11. WL | 0.7 | 24. WL | 3. | 13. WL | 366. | 103. AL | 280. |
| F069 | 1.89 | 12.8 | 13.5 | 0.692 | 27.2 | 2.89 | 15.2 | 367. | 114. | 285. |
| F069b | 1.99 | 12.4 | 12.7 | <1. | 26.8 | 2.88 | 14.3 | 375. | 114. | 289. |
| F139 | 2.10 | 13.6 | 14.6 | 0.708 | 29.4 | 3.17 | 16.0 | 383. | 116. | 159. AL |
| F154 | 1.9 | 12.6 | 13.3 | <1.0 | 27.3 | 3.2 | 15. | 376. | 293. AH | 118. AL |
| F158 | <2. | 12.3 | 12.9 | <2. | 26.7 | 2.9 | 14.8 | 365. | 116. | 284. |
| F169 | 1.99 | 12.7 | 13.3 | 0.70 | 27.4 | 3.04 | 15.3 | 375. | 116. | 295. |
| F183 | 1.85 | 12.8 | 12.9 | 0.693 | 27.8 | 2.94 | 15.2 | 393. | 116. | 277. |
| F186 | 6.6 AH | 42.9 AH | 43.4 AH | 1.9 AH | 89.6 AH | 8.5 AH | 42.6 AH | 733. AH | 252. AH | 456. AH |
| F193 | 1.94 | 13.1 | 13.9 | 0.69 | 28.2 | 3.02 | 15.6 | 368. | 114. | 281. |
| F196 | <15. | <15. | <15. | <15. | 27. | <15. | <15. | 364. | 114. | 285. |
| F248 | 2.00 | 13.4 | 13.7 | <1.00 | 29.3 | 3.10 | 15.7 | 392. | 119. | 303. |
| F287 | <4.0 | 15. WH | 14. | <4.0 | 26. | <4.0 | 14.3 | 367. | 118. | 0.285 AL |
| ASSIGNED VALUE * | 1.90 | 12.7 | 13.2 | 0.700 | 27.5 | 3.00 | 15.2 | 370 | 116 | 289 |
| R-STD DEV * | 0.112 | 0.78 | 0.77 | 0.0194 | 1.33 | 0.133 | 0.81 | 11.3 | 3.8 | 10.6605 |
| ACCEPTABLE LIMITS(+-) * | 0.224 | 1.56 | 1.54 | 0.0388 | 2.66 | 0.266 | 1.62 | 22.6 | 7.6 | 21.3210 |
| WARNING LIMITS(+-) * | .224- .336 | 1.56- 2.34 | 1.54- 2.31 | .0388- .0582 | 2.66- 3.99 | .266- .399 | 1.62- 2.43 | 22.6- 33.9 | 7.6- 11.4 | 21.3210- 31. |
| ACTION LIMITS(<>) * | 0.336 | 2.34 | 2.31 | 0.0582 | 3.99 | 0.399 | 2.43 | 33.9 | 11.4 | 31.9815 |
| N * | 25 | 29 | 29 | 19 | 30 | 26 | 29 | 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 | 107.5 | 10.7 | WL | | 10 | | | ICP-MS |
| F009 | 199.5 | 22.1 | | | 9 | | | ICP-MS |
| F010 | 137.0 | 13.7 | | | 10 | | | ICP-MS |
| F011 | 89.5 | 8.9 | | | 10 | | | |
| F014 | 155.0 | 17.2 | | | 9 | | | ICP-MS |
| F015 | 175.5 | 17.5 | | | 10 | | | ICP-MS |
| F020 | 171.0 | 17.1 | | | 10 | | | ICP-MS |
| F021 | 102.5 | 10.2 | | | 10 | | | ICP-MS |
| F021b | 26.5 | 3.7 | AL WL | BIASED LOW* | 7 | -1.4 | -1.9783 | ICP-AES |
| F021c | 51.5 | 5.1 | AL | BIASED LOW* | 10 | -0.8 | -0.8409 | ICP-MS |
| F022 | 179.0 | 17.9 | AL | | 10 | | | ICP-MS |
| F024 | 155.0 | 15.5 | | | 10 | | | ICP-MS |
| F032a | 258.5 | 25.8 | AHAH AHWH | BIASED HIGH | 10 | 5.3 | 1.1139 | ICP-AES-E3386 |
| F032c | 104.5 | 10.4 | | | 10 | | | ICP-MS-E3473 |
| F032d | 138.5 | 15.3 | | | 9 | | | ICP-MS-E3474 |
| F042 | 37.0 | 5.2 | | BIASED LOW* | 7 | -0.5 | -2.0001 | ICP-AES |
| F060 | 194.5 | 19.4 | WH | | 10 | | | ICP-MS |
| F068 | 53.5 | 5.3 | WLWL WL WL AL | BIASED LOW* | 10 | -1.9 | -2.0847 | ICP-MS |
| F069 | 111.5 | 11.1 | | | 10 | | | ICP-MS |
| F069b | 91.0 | 10.1 | | | 9 | | | ICP-AES |
| F139 | 210.5 | 21.0 | AL | | 10 | | | ICP-MS |
| F154 | 138.5 | 15.3 | AHAL | | 9 | | | ICP-MS |
| F158 | 70.0 | 8.7 | | | 8 | | | ICP-MS |
| F169 | 168.5 | 16.8 | | | 10 | | | ICP-MS |
| F183 | 132.5 | 13.2 | | | 10 | | | ICP-MS |
| F186 | 275.0 | 27.5 | AHAHAHAHAHAHAHAHAHAH | BIASED HIGH | 10 | 80.1 | 14.5695 | ICP-MS |
| F193 | 152.0 | 15.2 | | | 10 | | | ICP-MS |
| F196 | 35.0 | 8.7 | | INSUFFICIENT DATA | 4 | | | ICP-AES |
| F248 | 214.5 | 23.8 | | | 9 | | | ICP-MS |
| F287 | 96.0 | 13.7 | WH AL | | 7 | | | 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: 30095 Zinc ug/L

WATER SCIENCE & TECHNOLOGY
ENVIRONMENT CANADA

EC PT for Trace Elements in Water

| SAMPLE | 1= | 2= | 3= | 4= | 5= | 6= | 7= | 8= | 9= | 10= |
|---|---|---|---|---|---|---|---|---|---|---|
| | TM-23.4 | TM-26.4 | TM-15.2 | TMRain-04 | TM25.4 | TM-09 | TM-16 | TMDA-65 | TMDA-62.2 | TMDA-64.2 |
| LAB NO | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT | LAB RESULT |
| F003 | 2.37 | 37.9 | 35.7 | 8.94 | 43.4 | 43.5 | 99.0 | 384. | 119. | 309. |
| F009 | <5. | 42. | 38. | 9.9 | 49. | 51. | 110. | 445. WH | 131. | 345. WH |
| F010 | 231. AH | 35.0 | 32.2 | 8.67 | 41.1 | 44.0 | 91.3 | 379. | 112. | 292. |
| F011 | 2.4 | 37.3 | 34.1 | 8.7 | 43.3 | 51.6 | 96.4 | 384. | 117. | 302. |
| F014 | <5. | 36. | 33. | 8. | 41. | 46. | 93. | 376. | 117. | 292. |
| F015 | 2.4 | 38.2 | 34.4 | 9.2 | 43.4 | 45.6 | 99.2 | 397. | 121. | 312. |
| F020 | 2.3 | 36.6 | 32.6 | 8.2 | 43.4 | 47.7 | 95.4 | 385. | 114. | 300. |
| F021 | 2.7 | 33.7 | 31.8 | 7.6 | 40.9 | 43.6 | 92.8 | 383. | 114. | 296. |
| F021b | 2. | 37. | 34. | 8. | 42. | 46. | 95. | 380. | 114. | 298. |
| F021c | 2.4 | 34.4 | 31.9 | 7.9 | 40.0 | 43.8 | 93.9 | 372. | 112. | 294. |
| F022 | 2.21 | 38. | 35. | 7.8 | 44. | 47. | 101. | 403. | 121. | 317. |
| F024 | 2.4 | 38.1 | 35.0 | 9.6 | 43.2 | 43.8 | 98.5 | 401. | 121. | 314. |
| F026 | <5. | 39. | 36. | 10. | 45. | 47. | 100. | 405. | 121. | 316. |
| F032a | 2.9 | 39.5 | 37.1 | 7.4 | 44.2 | 49.8 | 101. | 398. | 123. | 317. |
| F032c | 2.7 | 40.9 | 37.0 | 9.0 | 46.0 | 54.0 | 104. | 414. | 124. | 320. |
| F032d | 2.99 | 38.7 | 35.1 | 8.63 | 46.0 | 52.0 | 105. | 407. | 123. | 316. |
| F032g | 2. | 38. | 36. | 5. AL | 44. | 48. | 101. | 410. | 126. | 323. |
| F042 | 1.66 | 37.6 | 34.7 | 8.40 | 46.8 | 42.8 | 99.7 | 402. | 117. | 317. |
| F060 | 2.77 | 42.1 | 38.5 | 8.87 | 48.0 | 47.9 | 105. | 415. | 127. | 320. |
| F068 | 3. | 38. | 33. | 8. | 44. | 56. WH | 99. | 414. | 110. | 320. |
| F069 | 2.5 | 40.4 | 36.6 | 8.8 | 45.9 | 44.7 | 105. | 383. | 126. | 301. |
| F069b | <2. | 37. | 34.4 | 7.1 | 43. | 43. | 98.7 | 389. | 117. | 307. |
| F139 | 3.56 WH | 37.4 | 34.4 | 8.18 | 43.4 | 43.2 | 98.6 | 390. | 117. | 307. |
| F154 | 4.4 AH | 45.6 AH | 40. WH | 11.1 WH | 49.4 WH | 51.9 | 105. | 334. AL | 267. AH | 128. AL |
| F158 | <5. | 39.8 | 36.4 | 9.0 | 46.1 | 56.5 WH | 104. | 410. | 128. | 320. |
| F169 | 2.91 | 38.0 | 35.4 | 7.69 | 44.1 | 45.7 | 102. | 404. | 117. | 313. |
| F183 | 2.05 | 43.2 WH | 37.0 | 10.4 | 48.7 | 47.4 | 110. | 458. AH | 135. WH | 341. WH |
| F186 | <0.5 AL | 33.7 | 31.9 | 5.7 WL | 43.7 | 38.8 | 104. | 401. | 113. | 301. |
| F193 | <3.0 | 36.8 | 34.1 | 7.97 | 42.5 | 46.9 | 99.2 | 399. | 116. | 309. |
| F196 | <2. | 38. | 35. | 8. | 44. | 45. | 100. | 395. | 121. | 311. |
| F207 | <4. | 38. | 34. | 9. | 43. | 43. | 99. | 390. | 118. | 306. |
| F223 | <100. | <100. | <100. | <100. | <100. | <100. | 105. | 409. | 127. | 323. |
| F223b | <10.0 | 38.4 | 35.3 | <10.0 | 44.6 | 46.1 | 103. | 391. | 127. | 312. |
| F248 | <15.0 | 43.1 WH | 39.9 WH | <15.0 | 48.9 | 61.2 AH | 107. | 423. | 128. | 330. |
| F287 | <3.0 | 36. | 32. | 5.65 WL | 41. | 46.8 | 93.6 | 383. | 116. | 0.303 AL |
| ASSIGNED VALUE * | 2.40 | 38.0 | 35.0 | 8.40 | 44.0 | 46.1 | 100 | 398 | 120 | 312 |
| R-STD DEV * | 0.521 | 2.44 | 2.21 | 1.048 | 2.52 | 3.99 | 4.97 | 16.3 | 6.7 | 13.0889 |
| ACCEPTABLE LIMITS(+-) * | 1.042 | 4.88 | 4.42 | 2.096 | 5.04 | 7.98 | 9.94 | 32.6 | 13.4 | 26.1778 |
| WARNING LIMITS(+-) * | 1.042- 1.563 | 4.88- 7.32 | 4.42- 6.63 | 2.096- 3.144 | 5.04- 7.56 | 7.98- 11.97 | 9.94- 14.91 | 32.6- 48.9 | 13.4- 20.1 | 26.1778- 39. |
| ACTION LIMITS(<>) * | 1.563 | 7.32 | 6.63 | 3.144 | 7.56 | 11.97 | 14.91 | 48.9 | 20.1 | 39.2667 |
| N * | 22 | 34 | 34 | 32 | 34 | 34 | 35 | 35 | 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 | 141.5 | 14.1 | | | 10 | | | ICP-MS |
| F009 | 286.5 | 31.8 | WH WH | BIASED HIGH | 9 | 11.5 | -0.9283 | ICP-MS |
| F010 | 76.0 | 7.6 | AH | BIASED LOW | 10 | -20.3 | 38.4989 | ICP-MS |
| F011 | 132.0 | 13.2 | | | 10 | | | |
| F014 | 66.5 | 7.3 | | BIASED LOW | 9 | -5.9 | 0.5223 | ICP-MS |
| F015 | 170.0 | 17.0 | | | 10 | | | ICP-MS |
| F020 | 103.5 | 10.3 | | | 10 | | | ICP-MS |
| F021 | 52.0 | 5.2 | | BIASED LOW* | 10 | -4.0 | -1.5339 | ICP-MS |
| F021b | 79.5 | 7.9 | | BIASED LOW* | 10 | -4.6 | 0.1793 | ICP-AES |
| F021c | 48.0 | 4.8 | | BIASED LOW | 10 | -6.1 | -0.4987 | ICP-MS |
| F022 | 176.5 | 17.6 | | | 10 | | | ICP-AES |
| F024 | 165.5 | 16.5 | | | 10 | | | ICP-MS |
| F026 | 210.0 | 23.3 | | | 9 | | | ICP-AES |
| F032a | 212.5 | 21.2 | | | 10 | | | ICP-AES-E3386 |
| F032c | 263.5 | 26.3 | | | 10 | | | ICP-MS-E3473 |
| F032d | 238.5 | 23.8 | | | 10 | | | ICP-MS-E3474 |
| F032g | 196.5 | 19.6 | AL | | 10 | | | ICP-AES-system#2,Opt |
| F042 | 154.5 | 15.4 | | | 10 | | | ICP-AES |
| F060 | 273.5 | 27.3 | | BIASED HIGH* | 10 | 3.3 | 1.3073 | ICP-MS |
| F068 | 180.0 | 18.0 | WH | | 10 | | | ICP-MS |
| F069 | 197.0 | 19.7 | | | 10 | | | ICP-MS |
| F069b | 88.5 | 9.8 | | | 9 | | | ICP-AES |
| F139 | 129.0 | 12.9 | WH | | 10 | | | ICP-MS |
| F154 | 252.0 | 25.2 | AHAHWHWHWH ALAHAL | | 10 | | | ICP-MS |
| F158 | 253.5 | 28.1 | WH | BIASED HIGH* | 9 | 2.3 | 2.4504 | ICP-MS |
| F169 | 178.0 | 17.8 | | | 10 | | | ICP-MS |
| F183 | 287.0 | 28.7 | WH AHWHWH | BIASED HIGH | 10 | 13.4 | -2.0221 | ICP-MS |
| F186 | 84.0 | 9.3 | AL WL | | 9 | | | ICP-MS |
| F193 | 114.0 | 12.6 | | | 9 | | | ICP-MS |
| F196 | 150.0 | 16.6 | | | 9 | | | ICP-AES |
| F207 | 118.5 | 13.1 | | | 9 | | | ICP-AES |
| F223 | 117.5 | 29.3 | | INSUFFICIENT DATA | 4 | | | AAS |
| F223b | 170.5 | 21.3 | | | 8 | | | ICP-AES |
| F248 | 261.5 | 32.6 | WHWH AH | BIASED HIGH* | 8 | 4.8 | 4.3241 | ICP-MS |
| F287 | 53.5 | 5.9 | WL AL | BIASED LOW | 9 | -40.8 | 11.3048 | 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 17.2

Printed on 100% recycled paper

Emergencies, Analytical Operations Laboratories
and Research Support Division (EAOLRSD)
Water Science & Technology Directorate
Science & Technology Branch
Environment Canada
Canada Centre for Inland Waters
PO Box 5050
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

Urgences, laboratories d'analyses opérationelles
et soutien à la recherche division (ULAOSRD)
Direction générale des sciences et de la technologie, eau
Branches des Sciences et technologie
Environnement Canada
Centre canadien des eaux intérieures
Case postale 5050
867, chemin Lakeshore
Burlington (Ontario)
L7R 4A6 Canada

Environment Canada Environnement Canada

Canada