Test Group Summary Report
C020 Metals in Water-Full Range
March 2024 PT Round

Issued: May 8, 2024

PTC | Proficiency Testing Canada

Table of Contents

1.0 The Proficiency Testing Report

The Proficiency Testing Report consists of two parts.

- *PTC Proficiency Testing Report*: This report contains participant-specific data and other confidential information. This report is emailed to participants at the end of the PT round.
- *Test Group Summary Report*: A Test Group Summary Report is created for each quantified test group at the end of the PT round. These reports contain more detailed information on the round than is found in the participant-specific PTC Proficiency Testing Report. These reports do not contain any confidential information and are made available on the PTC web site.

2.0 Definitions

The participant-specific PTC Proficiency Testing Report contains some terms that new participants may not be familiar with.

Code:	The registration code that is unique to each analyte that a participant is registered for.
App:	If a participant is accredited by CALA, this three-digit number is the appendix number that the accredited method is assigned to.
N:	The number of participants results that were used to calculate the summary statistics. This excludes qualified data (e.g., <) and any results that were flagged as outliers.
Assigned:	The Assigned Value is the robust mean of the reported results, outliers excluded. This is often referred to as the "target" value.
$\pm u$:	The uncertainty of the assigned value.
Reported:	The result reported by the participant.
s:	The Standard Deviation of Proficiency Assessment (SDPA). This value is used to determine the acceptance limits for the PT evaluation.
z-Score:	A value assigned to each reported result that is a measure of the degree to which it deviates from the Assigned Value.
Score:	The composite score of the four results reported for each analyte. It is normalized to a score out of 100.
Bias:	A flag assigned if bias is detected using the re-scaled *z*-score procedure.

3.0 Scoring System

Participant performance is evaluated for each proficiency testing sample by a quantitative method that is consistent with ISO/IEC 17043 - *Conformity assessment- General requirements for the competence of proficiency testing providers*, the *International Harmonized Protocol for Proficiency Testing of (Chemical) Analytical Laboratories* (2006), and ISO 13528:2015 *Statistical methods for use in proficiency testing by interlaboratory comparisons*.

The following is a brief description of the evaluation procedure used by PTC. The detailed evaluation procedure is described in PROC09 – PT Evaluation *Procedure*, which is available on the PTC website www.PTCanada.org).

3.1 HOMOGENEITY AND STABILITY ASSESSMENT

Homogeneity and stability are assessed using participant data. Regression analysis is performed on reported result against order of sample production (Homogeneity) and reported result against date of analysis (Stability). If the slope is significantly different than zero for either then the Standard Deviation of Proficiency Assessment (s) is increased to minimize the impact.

3.2 THE Z SCORE

A "z-score" is calculated for each reported result as follows:

$$z - Score = \frac{(x - \bar{X})}{SDPA}$$

where: x = participant result;
$\overline{X}$ = the Assigned Value;
SDPA = the Standard Deviation for Proficiency Assessment.

The assigned value $\overline{X}$ is generally estimated from the inter-laboratory Robust mean after outliers due to obvious gross errors (e.g., reported in wrong units) have been removed.

The Standard Deviation for Proficiency Assessment, s, is determined as follows:

- The inter-laboratory Robust standard deviation ($Stdev_{rob}$) is calculated using reported results, obvious outliers removed;
- The regression equation standard deviation ($Stdev_{reg}$) is estimated from regression equations derived from previous studies (see PROC11- *PT Regression Equations* for details);
- The SDPA is the higher of $Stdev_{rob}$ and $Stdev_{reg}$;
- When a laboratory reports its detection limit, s will be estimated using a pooled variance procedure that uses both the inter-laboratory data and the reported detection limit.

3.2 COMPOSITE (PT) SCORE

Since each PT round involves four or two separate samples of distinct concentration for each test, it is necessary to calculate a composite PT score for each test to determine overall performance. The composite score is calculated by first averaging the absolute *z*-scores for the four results and then calculating a final score as 100 + (-15 x avg |z|).

Acceptable PT Scores equal or exceed 70.

3.3 IDENTIFYING BIAS

The proficiency testing report provides flags for bias. These are determined using the re-scaled *z*-score procedure.

$$RSZ = \frac{\sum z}{\sqrt{N}}$$

where *z* = the *z*- score
N = the number of samples

Flags are assigned for each test group/parameter combination as follows:

RSZ ≥ -2 and ≤ 2	no flag assigned
RSZ > 2	H (High)
RSZ > 3	VH (Very High)
RSZ < -2	L (LOW)
RSZ < -3	VL (Very Low)

3.4 DEVIATIONS FROM EVALUATION PROCEDURE

Other than changes to the Standard Deviation of Proficiency Assessment due to homogeneity or stability flags, any deviation from the published evaluation procedure is described on the cover page(s) of the final *PTC Proficiency Testing Report*.

4.0 PT Round Specific Data Summary

The following pages provide more detailed information about the PT round indicated in the cover page of this report than is found in the participant-specific PTC Proficiency Testing Report. The graphical representations and the statistical summaries are based upon the data after outliers have been removed.

4.1 SUMMARY STATISTICS

In addition to some of the statistics found in the customer reports, this table includes additional summary statistics such as Median, different measures of dispersion, the number of outliers removed, the number of results in the Questionable range (|z| between 2 and 3) and the Unacceptable range (z > 3), and whether a data set was flagged for Homogeneity or Stability. This section also includes sorted scatter plots of the data for each sample.

4.2 *z*- SCORE PLOTS

The z -scores for each sample are ranked in increasing order and plotted. When the data is normally distributed, the plot should show a slight sigmoidal curve, with an equal number of points above zero as below. Each bar in these plots is colour-coded to indicate the analytical method used by the participant.

4.3 KERNEL DENSITY PLOTS

Kernel density plots are generated for each data set. These plots are a graphical way to represent the overall data distribution and are used to visualize possible deviations from normality and unimodality.

4.4 STABILITY AND HOMOGENEITY PLOTS

Plots of reported result against analysis date, and reported result against order of bottling are displayed, along with the regression line. These regression analyses are used to determine if the SDPA should be adjusted due to homogeneity or stability.

4.5 BOX-AND-WHISKER PLOTS

Box-and-Whisker plots are another way to display the distribution of the data. The box denotes the first and third quartile and the whiskers are the 5^{th} and 95th percentile.

4.6 HISTORIC COMPARISON PLOT

The Historic Comparison Plot is a plot of robust mean against robust standard deviation for the previous ten PT rounds as well as the current PT round. This plot can be used to identify possible changes in the sample formulation.

ALUMINUM

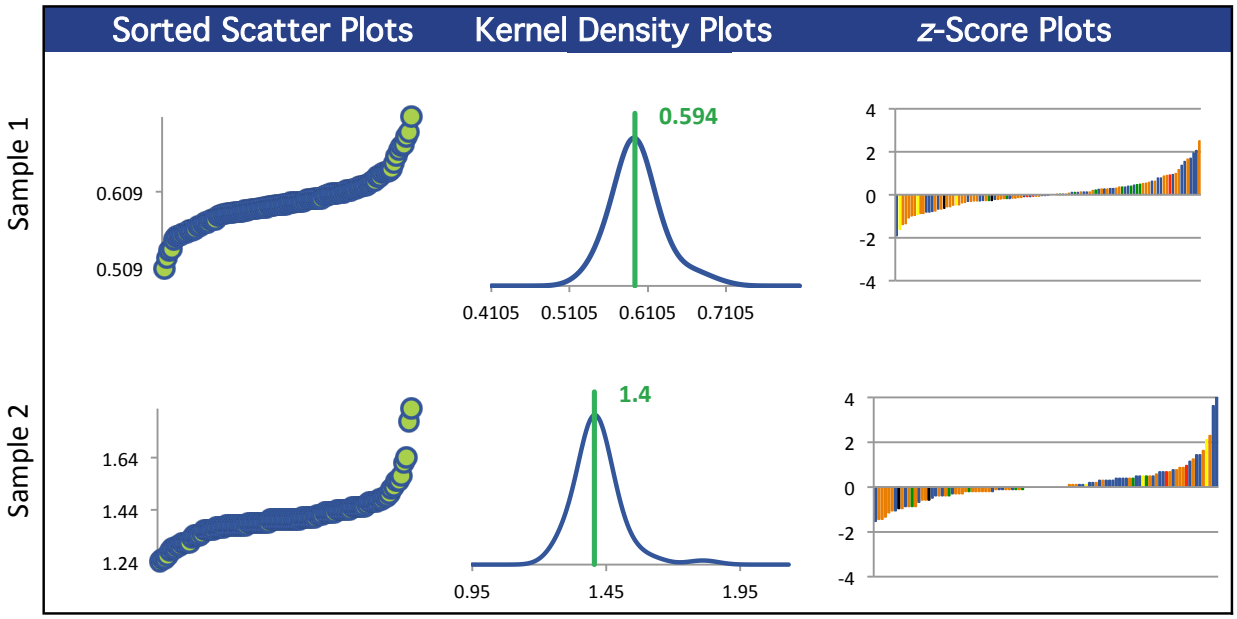
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	103	103	94	102
Median mg/L	0.593	1.40	0.0140	0.269
Robust Mean mg/L	0.594	1.40	0.0139	0.269
U mg/L	0.00346	0.00786	0.000174	0.00151
Robust Standard Deviation mg/L	0.0281	0.0638	0.00135	0.0122
Regression Standard Deviation mg/L	0.0446	0.105	0.00104	0.0202
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0446	0.105	0.00135	0.0202
Outliers	0	0	2	1
|z|>3.0	0	2	8	0
2<|z|<3	2	2	7	4

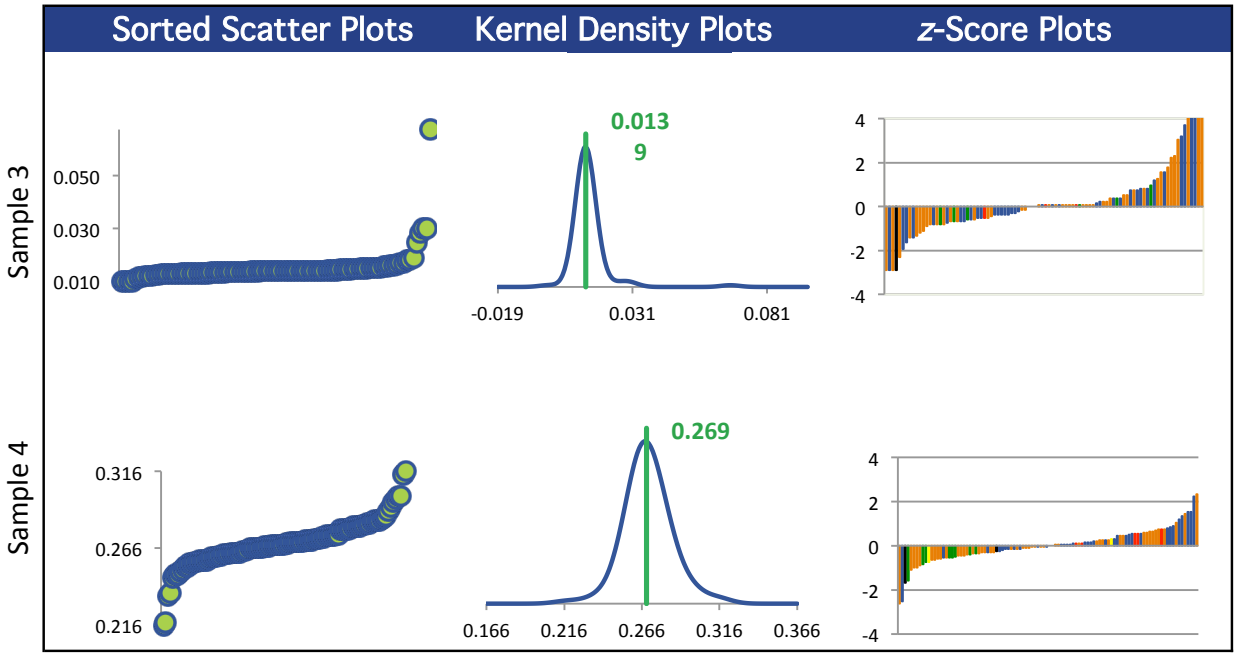
Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	24	24	18	23
AA GRAPHITE (Red)	1	1	1	1
ICP/MS (Green)	77	77	74	77
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



ALUMINUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
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0.030
0.010
0.013
9
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0.031
0.081
4
2
0
-2
-4
Sample 4
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0.366
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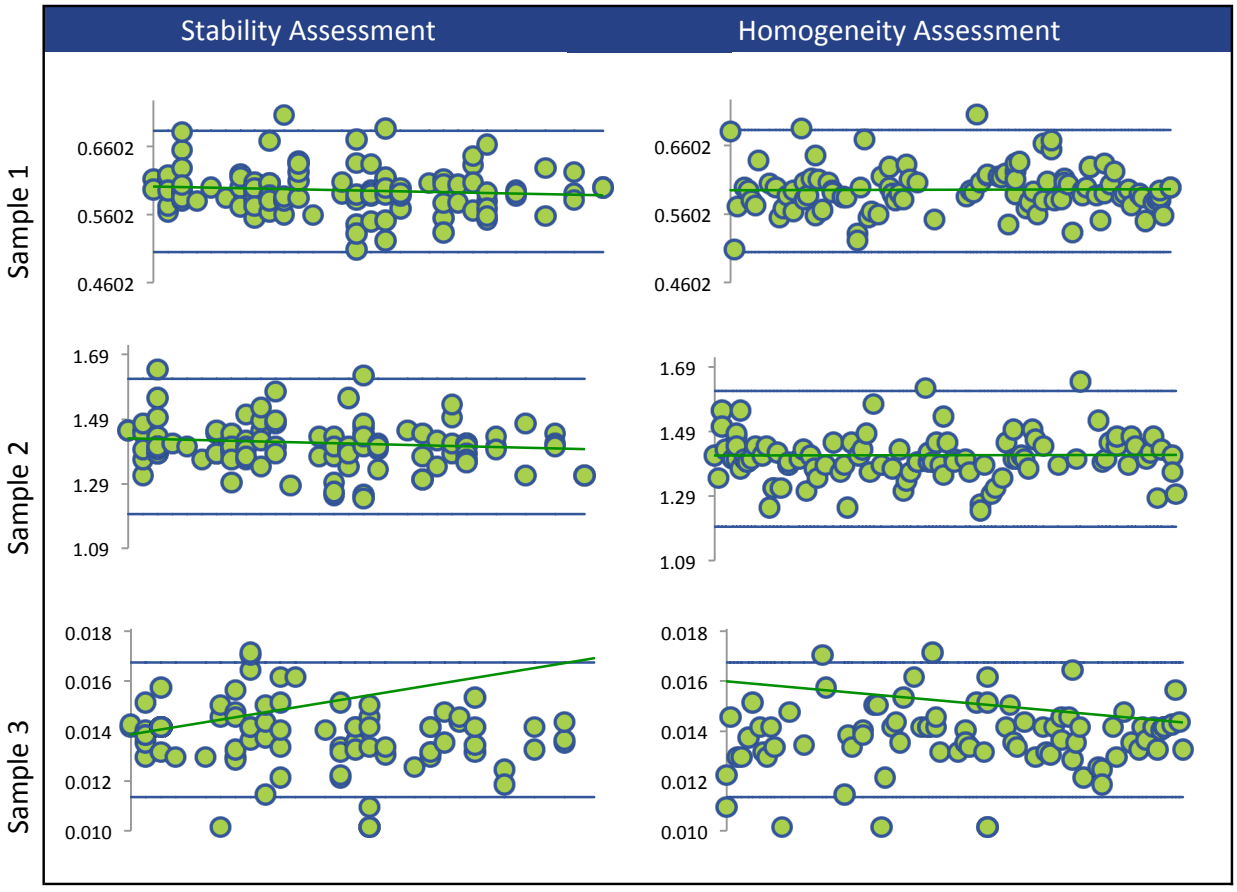
-4


Stability Assessment
Homogeneity Assessment
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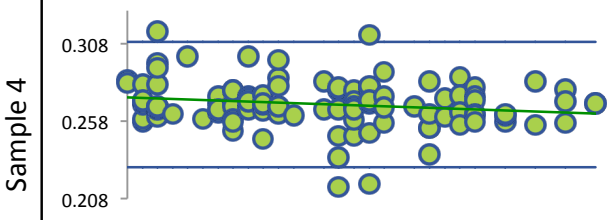
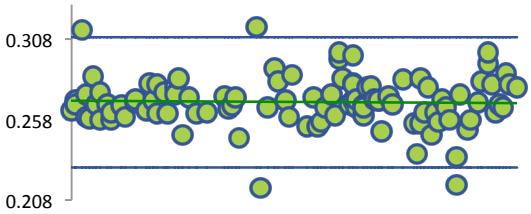
0.4602
0.6602
0.5602
0.4602
Sample 2
1.69
1.49
1.29
1.09
1.69
1.49
1.29
1.09
Sample 3
0.018
0.016
0.014
0.012
0.010
0.018
0.016
0.014
0.012
0.010

ALUMINUM

Stability Assessment



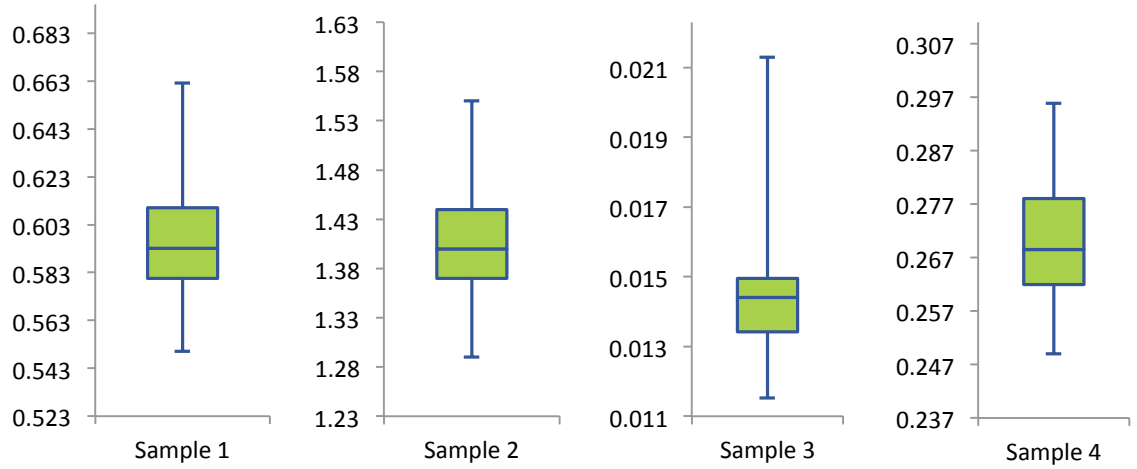
Homogeneity Assessment



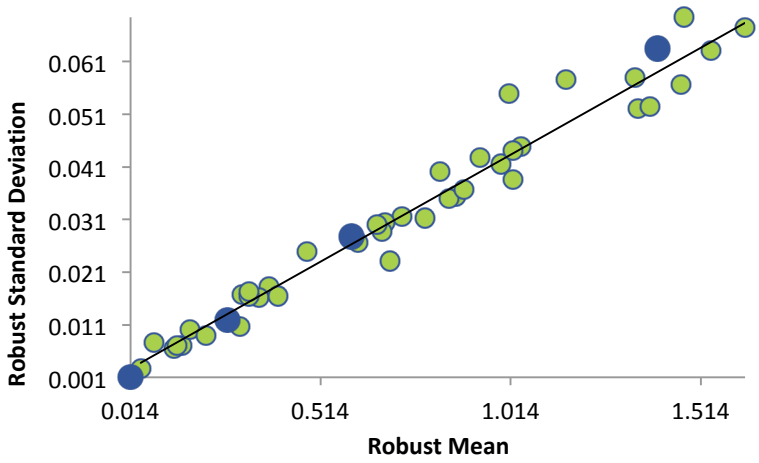
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ANTIMONY

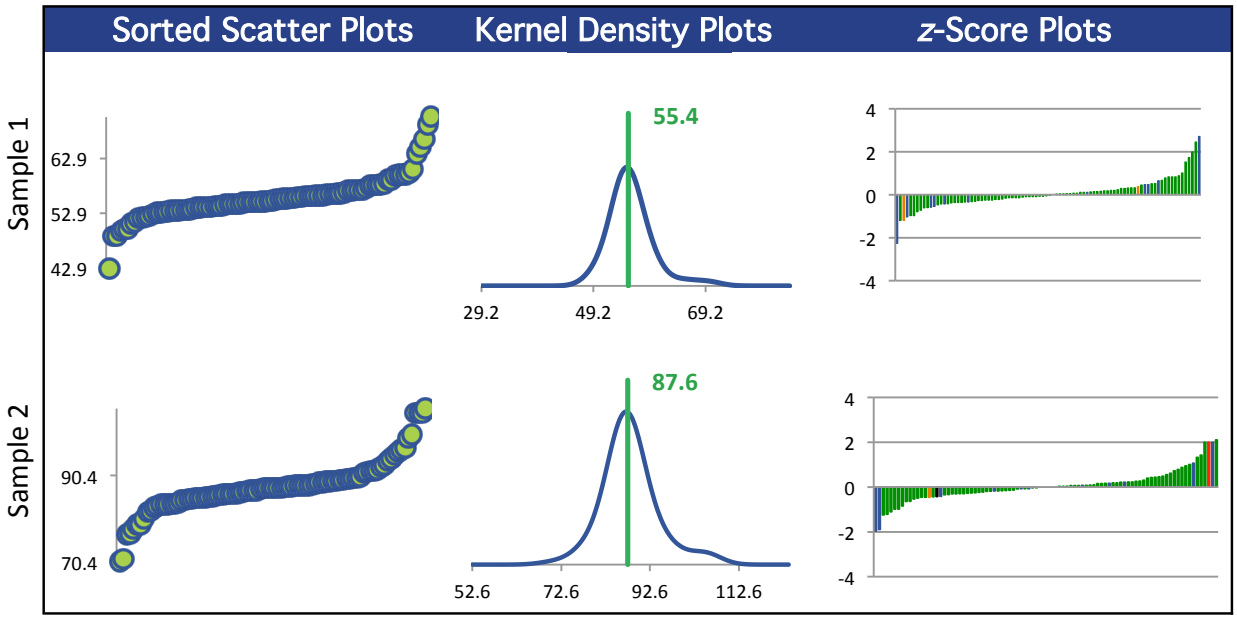
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	90	90	87	90
Median mg/L	55.2	87.6	17.6	44.5
Robust Mean mg/L	55.4	87.6	17.6	44.5
U mg/L	0.366	0.561	0.125	0.323
Robust Standard Deviation mg/L	2.78	4.26	0.936	2.45
Regression Standard Deviation mg/L	5.54	8.76	1.76	4.45
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	5.54	8.76	1.76	4.45
Outliers	3	3	2	2
|z|>3.0	0	0	1	0
2<|z|<3	3	1	1	3

Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	9	9	6	9
ICP/MS (Red)	76	76	76	76
AA GRAPHITE (Green)	2	2	2	2
HYDRIDE AA (Orange)	2	2	2	2
HYDRIDE ICP (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



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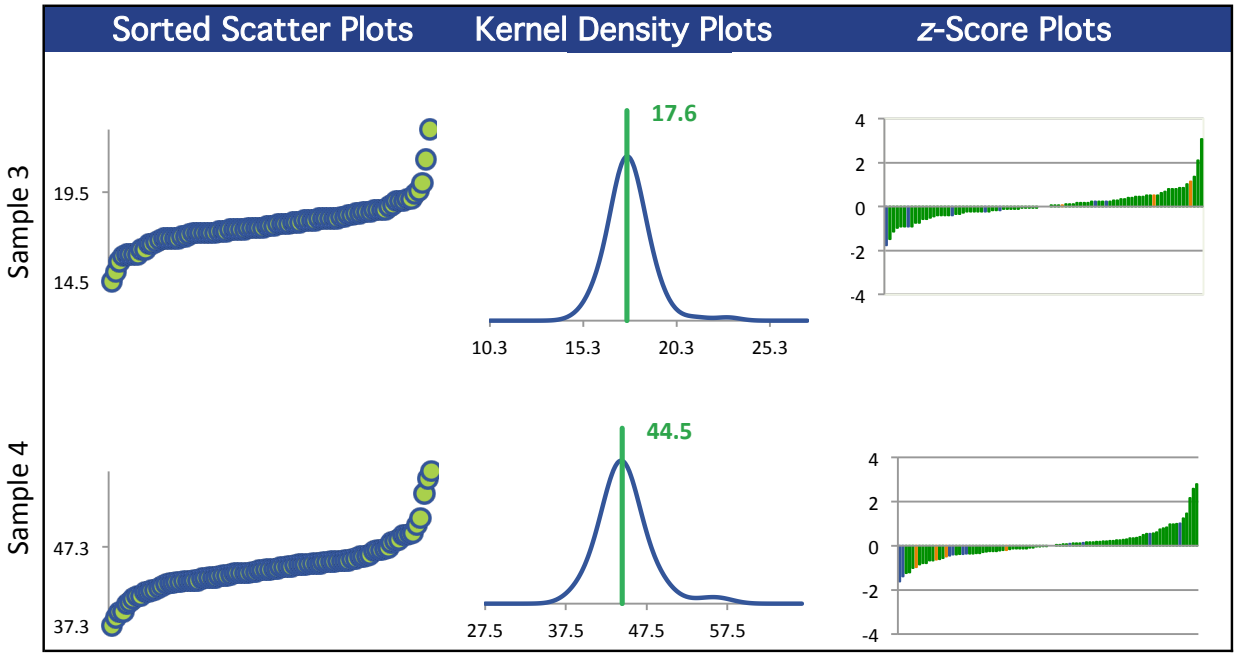
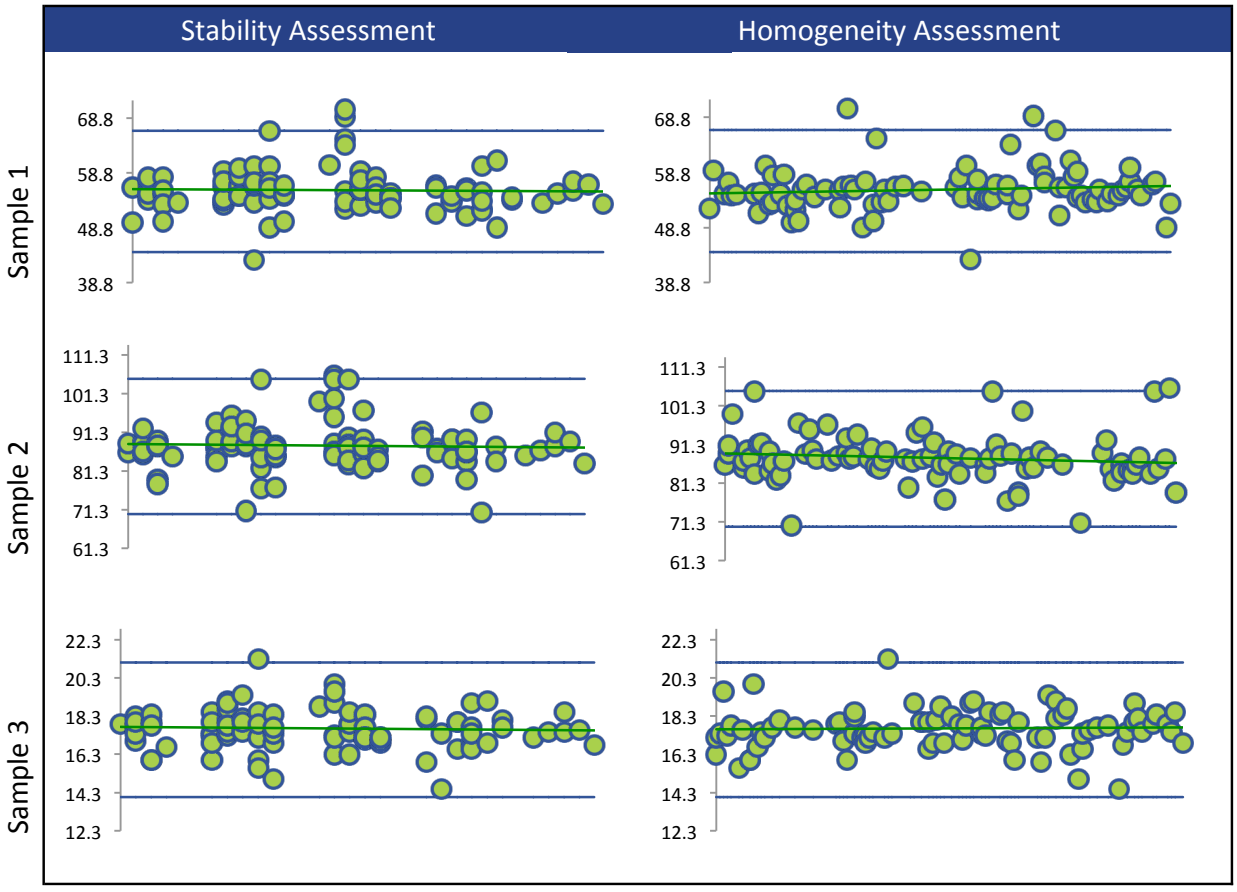
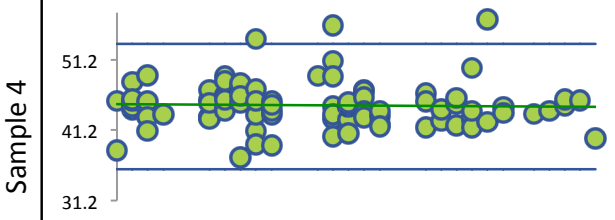

Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
19.5
14.5
17.6
10.3
15.3
20.3
25.3
4
2
0
-2
-4
Sample 4
47.3
37.3
44.5
27.5
37.5
47.5
57.5
4
2
0
-2
-4

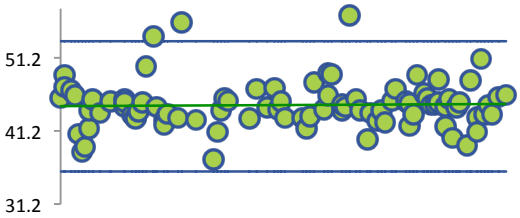

Stability Assessment
Homogeneity Assessment
Sample 1
68.8
58.8
48.8
38.8
68.8
58.8
48.8
38.8
Sample 2
111.3
101.3
91.3
81.3
71.3
61.3
111.3
101.3
91.3
81.3
71.3
61.3
Sample 3
22.3
20.3
18.3
16.3
14.3
12.3
22.3
20.3
18.3
16.3
14.3
12.3

ANTIMONY

Stability Assessment



Homogeneity Assessment



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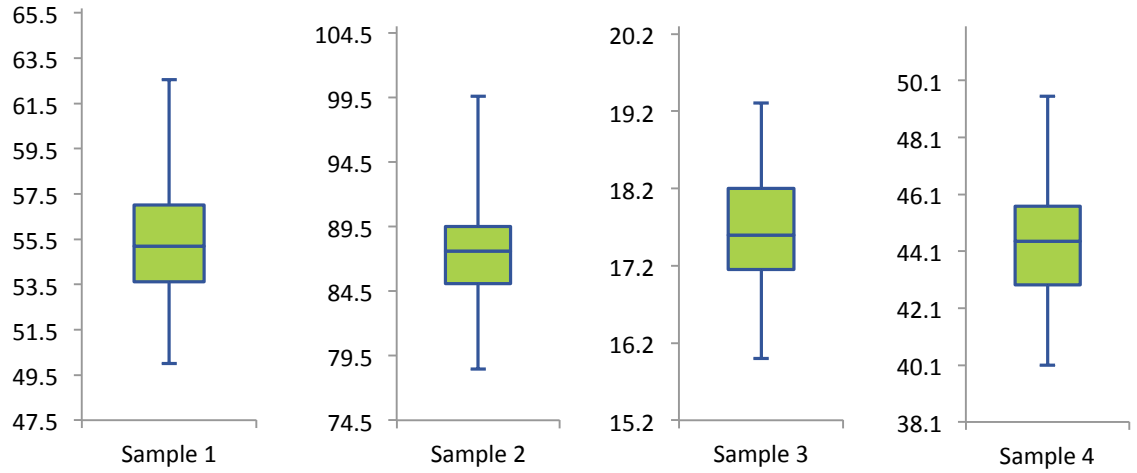
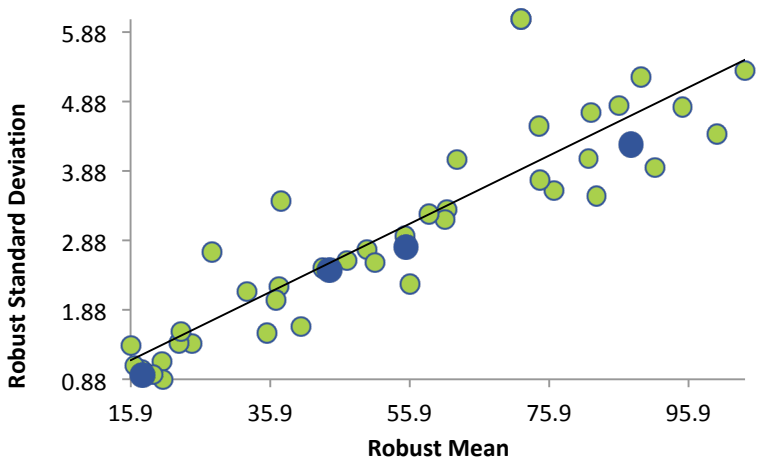
Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ARSENIC

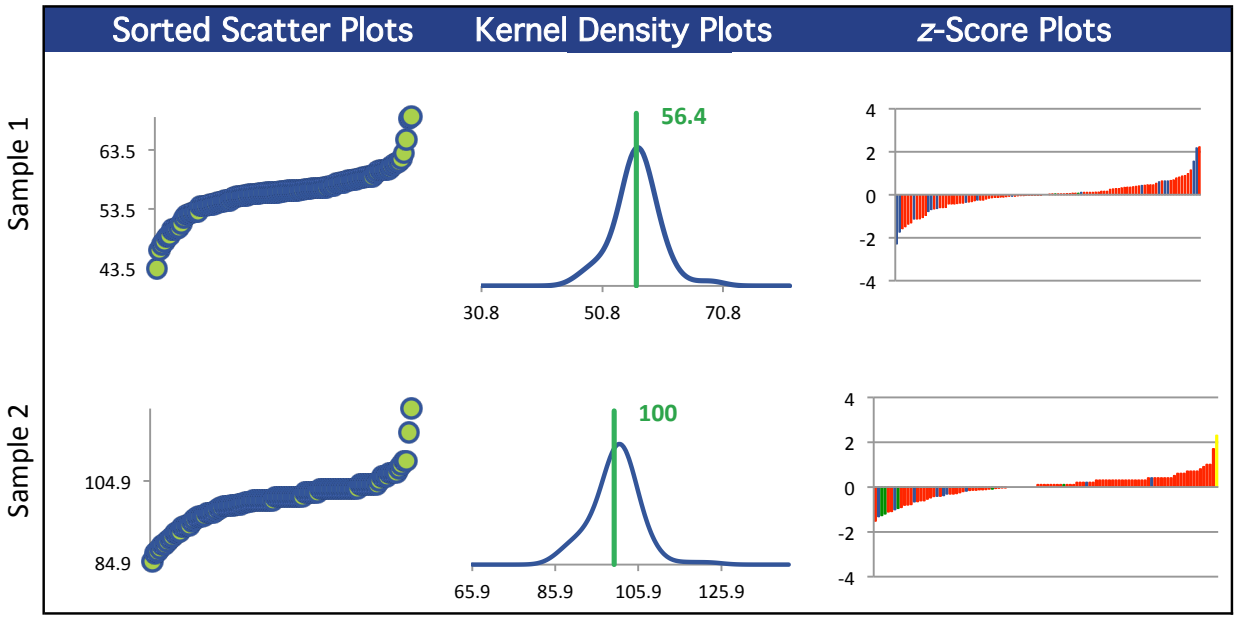
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	106	106	106	106
Median mg/L	56.5	101	13.6	46.7
Robust Mean mg/L	56.4	100	13.6	46.6
U mg/L	0.357	0.573	0.106	0.330
Robust Standard Deviation mg/L	2.94	4.72	0.874	2.72
Regression Standard Deviation mg/L	5.64	10.0	1.36	4.66
Stability Flag				
Homogeneity Flag			Homogeneity	
Standard Deviation Used (SDPA) mg/L	5.64	10.0	1.67	4.66
Outliers	3	3	3	3
|z|>3.0	0	0	4	2
2<|z|<3	3	1	4	1

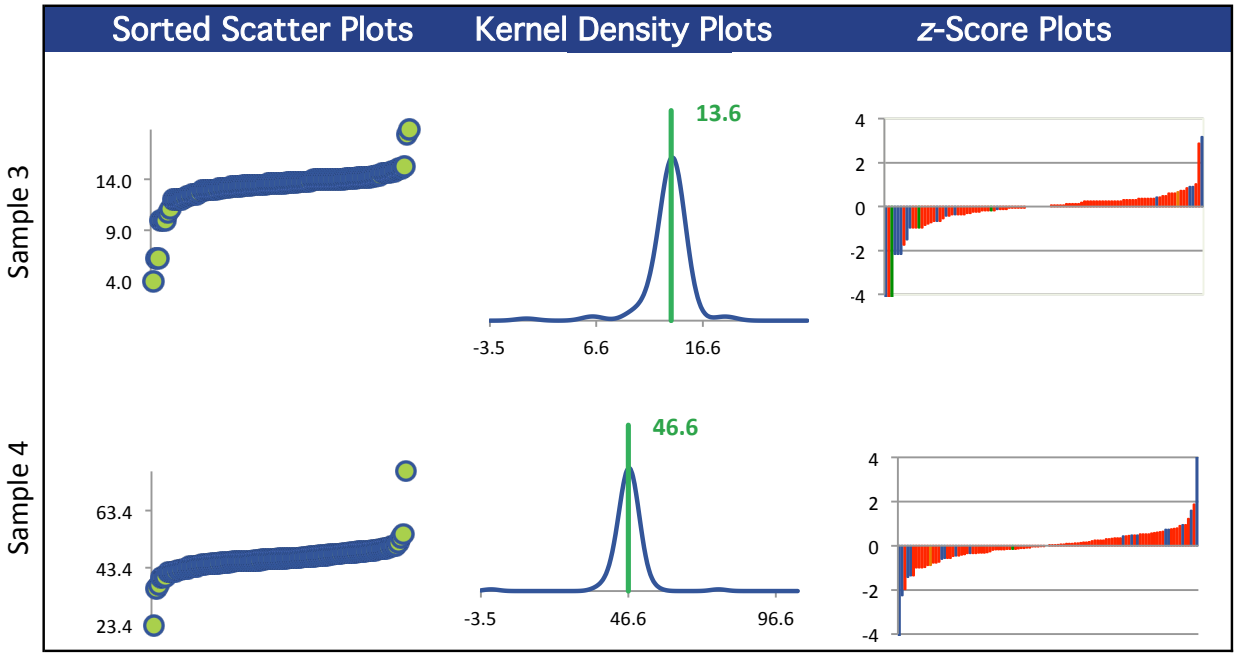
Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
AA GRAPHITE (Blue)	2	2	2	2
ICP/OES (Red)	12	12	12	12
ICP/MS (Green)	88	88	88	88
HYDRIDE AA (Orange)	3	3	3	3
HYDRIDE ICP (Black)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



ARSENIC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
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9.0
4.0
13.6
-3.5
6.6
16.6
4
2
0
-2
-4
Sample 4
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43.4
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46.6
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46.6
96.6
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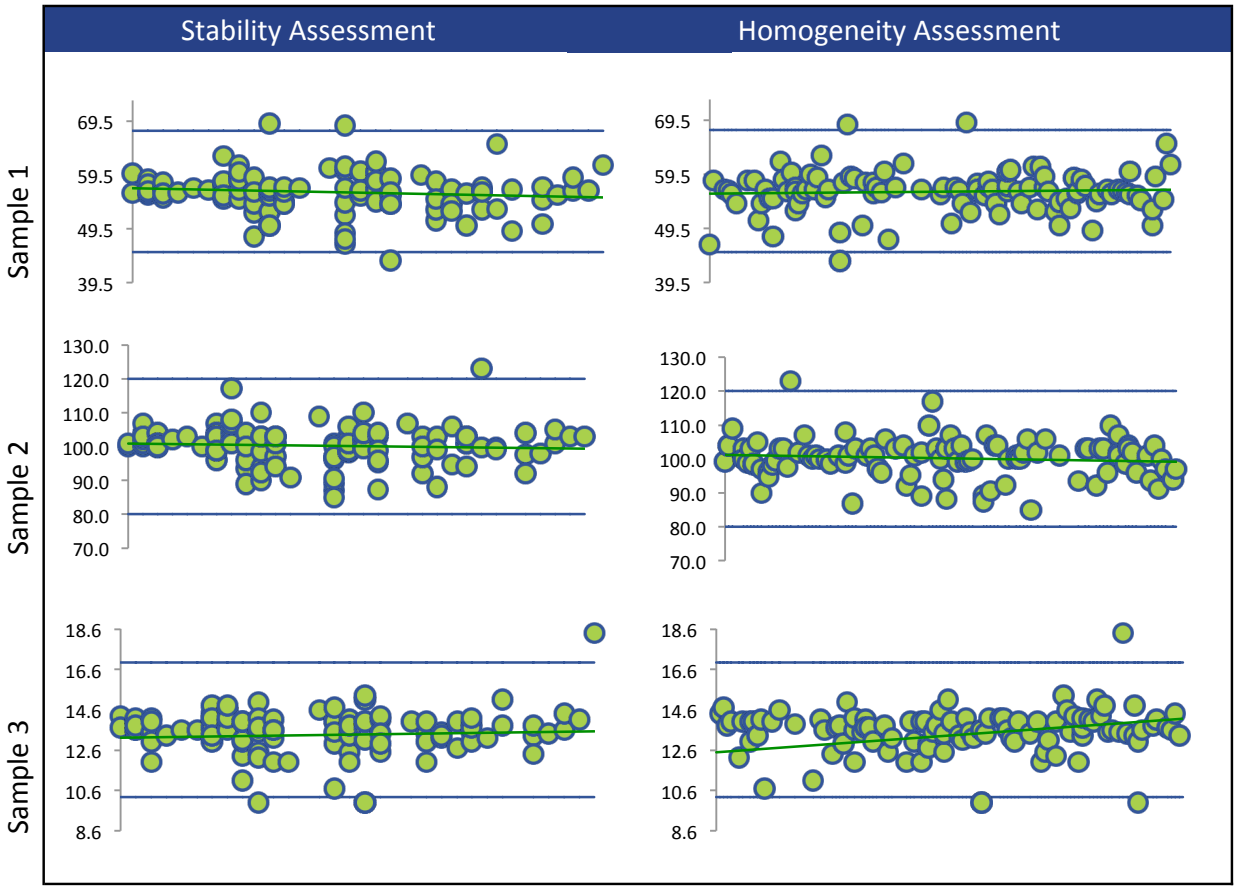
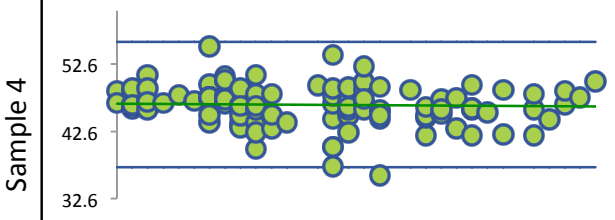
2
0
-2
-4

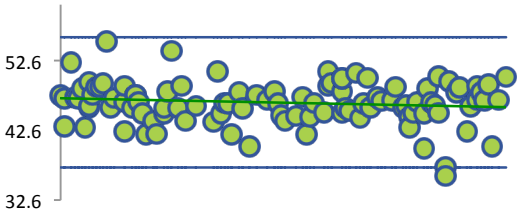

Stability Assessment
Homogeneity Assessment
Sample 1
69.5
59.5
49.5
39.5
Sample 2
130.0
120.0
110.0
100.0
90.0
80.0
70.0
Sample 3
18.6
16.6
14.6
12.6
10.6
8.6

ARSENIC

Stability Assessment



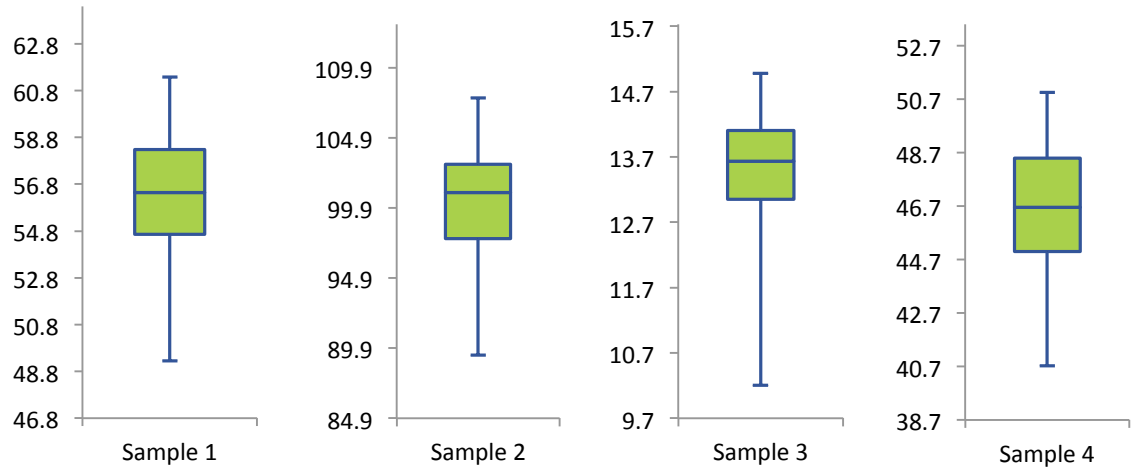
Homogeneity Assessment



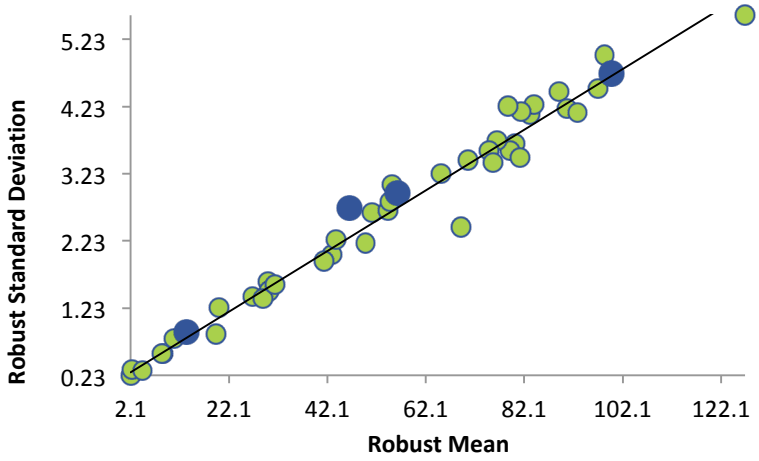
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BARIUM

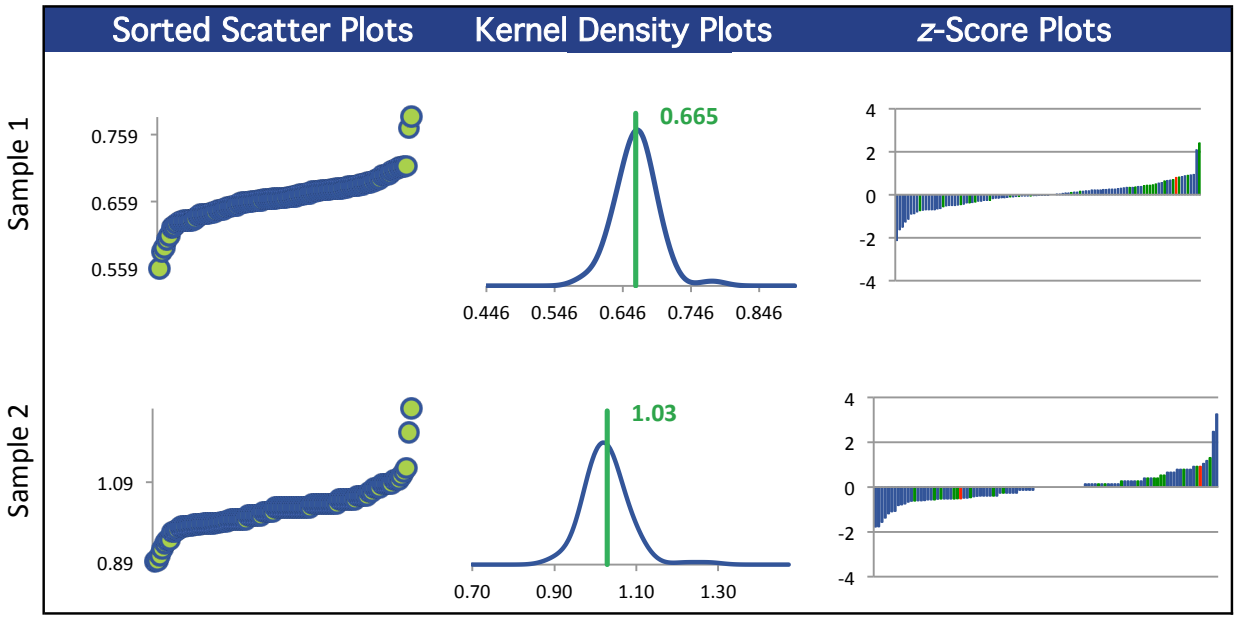
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	105	105	98	103
Median mg/L	0.664	1.03	0.0106	0.356
Robust Mean mg/L	0.665	1.03	0.0106	0.356
U mg/L	0.00324	0.00536	0.000	0.00190
Robust Standard Deviation mg/L	0.0266	0.0439	0.000519	0.0154
Regression Standard Deviation mg/L	0.0498	0.0769	0.000794	0.0267
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0498	0.0769	0.000794	0.0267
Outliers	0	0	2	1
|z|>3.0	0	1	0	1
2<|z|<3	3	1	4	0

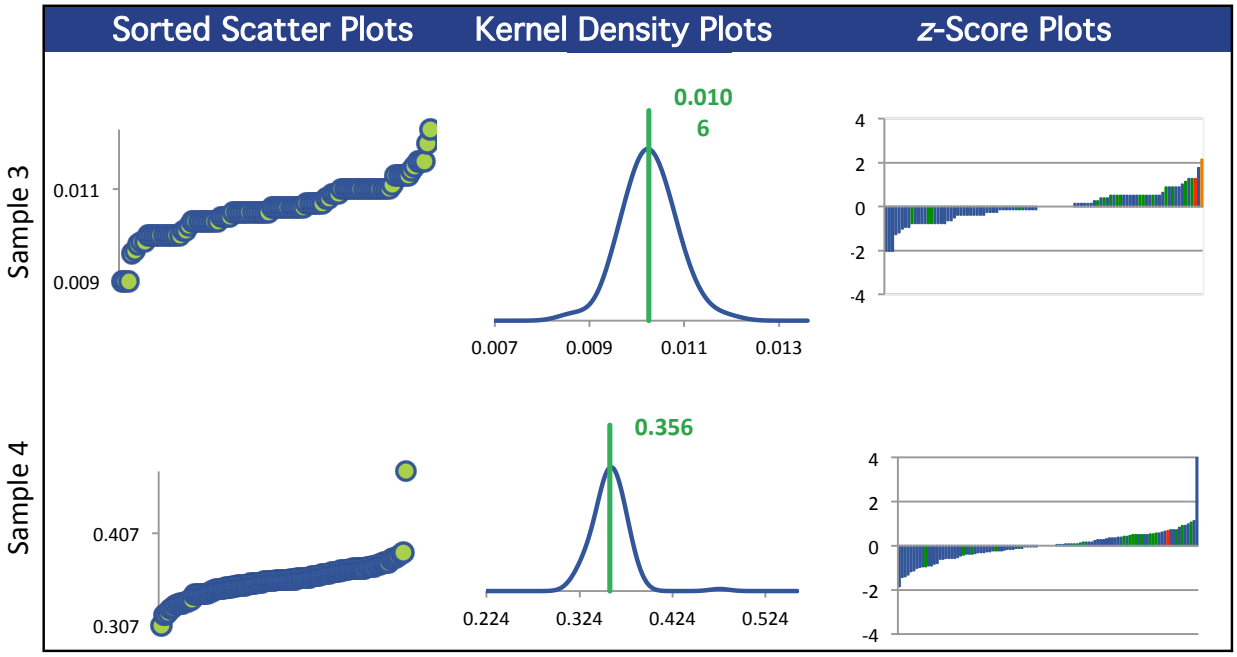
Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	80	80	77	80
AA GRAPHITE (Red)	1	1	1	1
ICP/OES (Green)	23	23	19	21
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



BARIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.011
0.009
0.010
6
0.007
0.009
0.011
0.013
4
2
0
-2
-4
Sample 4
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0.424
0.524
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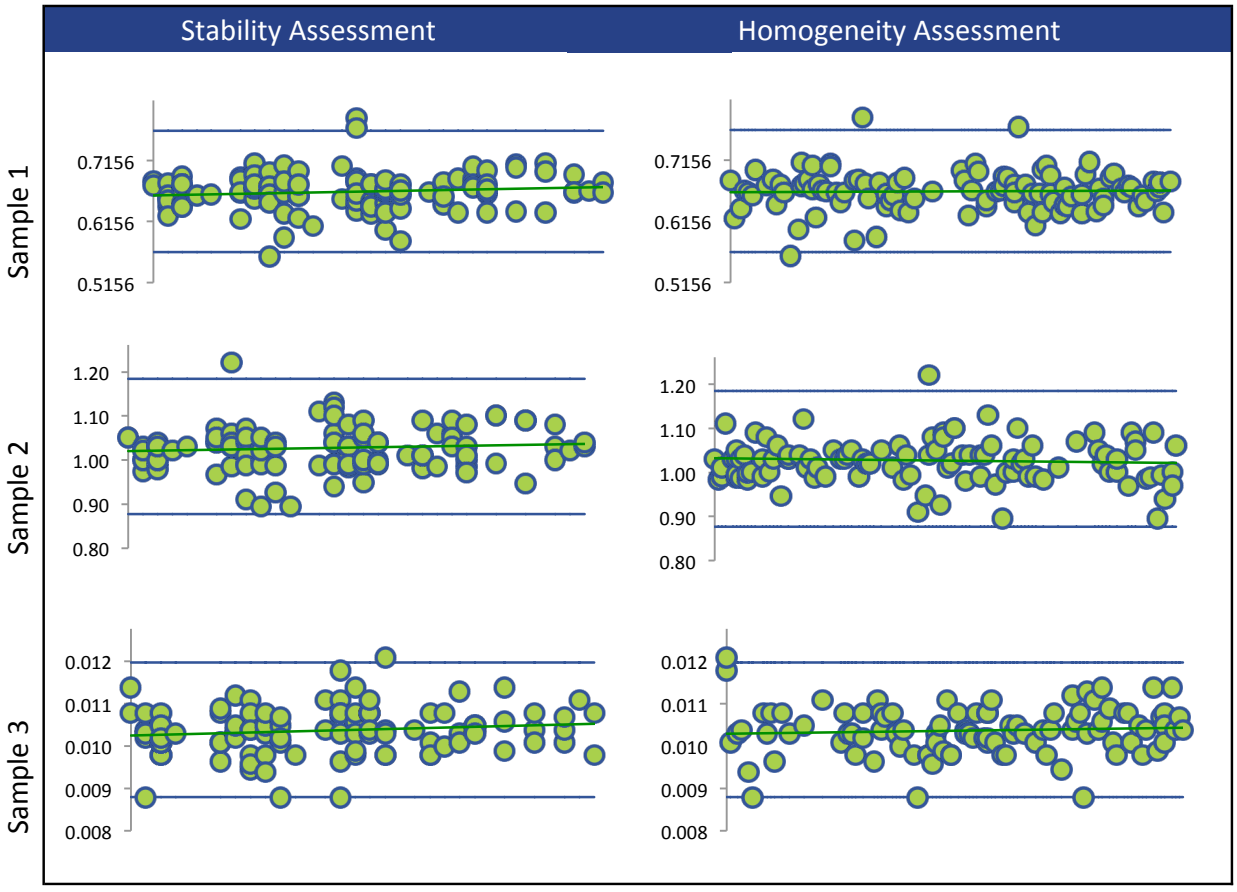
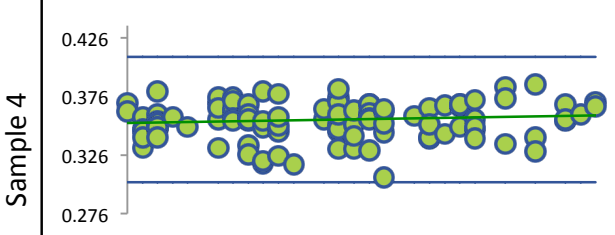
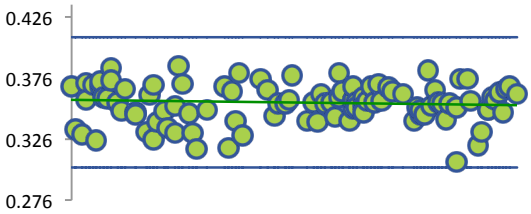

Stability Assessment
Homogeneity Assessment
Sample 1
0.7156
0.6156
0.5156
0.7156
0.6156
0.5156
Sample 2
1.20
1.10
1.00
0.90
0.80
1.20
1.10
1.00
0.90
0.80
Sample 3
0.012
0.011
0.010
0.009
0.008
0.012
0.011
0.010
0.009
0.008

BARIUM

Stability Assessment



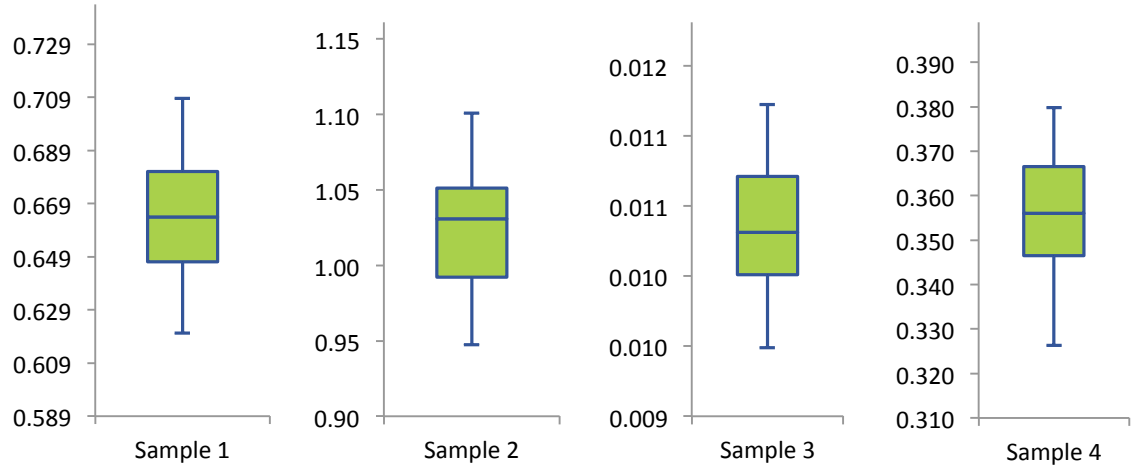
Homogeneity Assessment



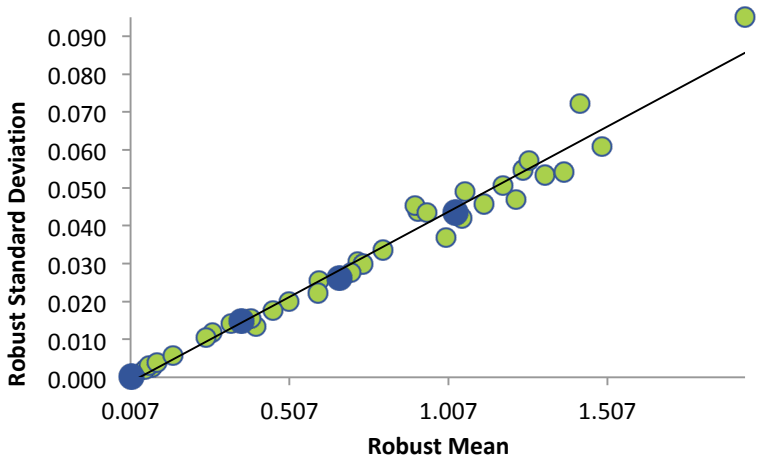
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BERYLLIUM

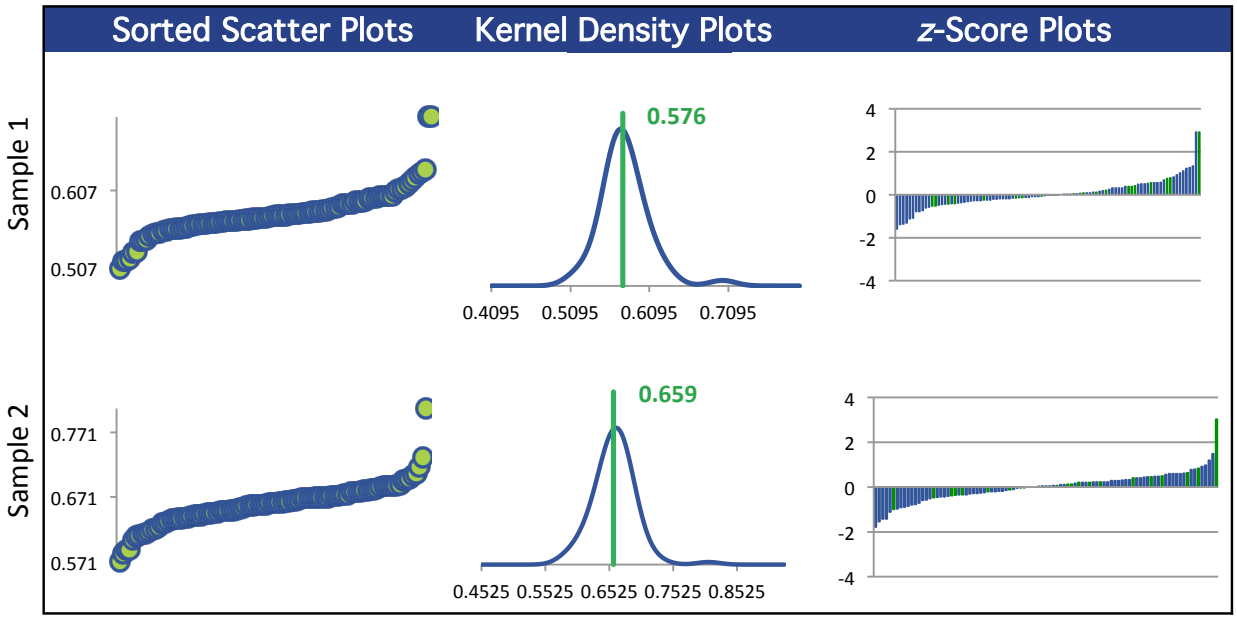
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	95	95	94	95
Median mg/L	0.575	0.661	0.0237	0.0715
Robust Mean mg/L	0.576	0.659	0.0236	0.0714
U mg/L	0.00292	0.00349	0.000153	0.000445
Robust Standard Deviation mg/L	0.0228	0.0272	0.00119	0.00347
Regression Standard Deviation mg/L	0.0432	0.0494	0.00177	0.00535
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0432	0.0494	0.00177	0.00535
Outliers	0	0	0	0
|z|>3.0	0	1	0	1
2<|z|<3	2	0	6	0

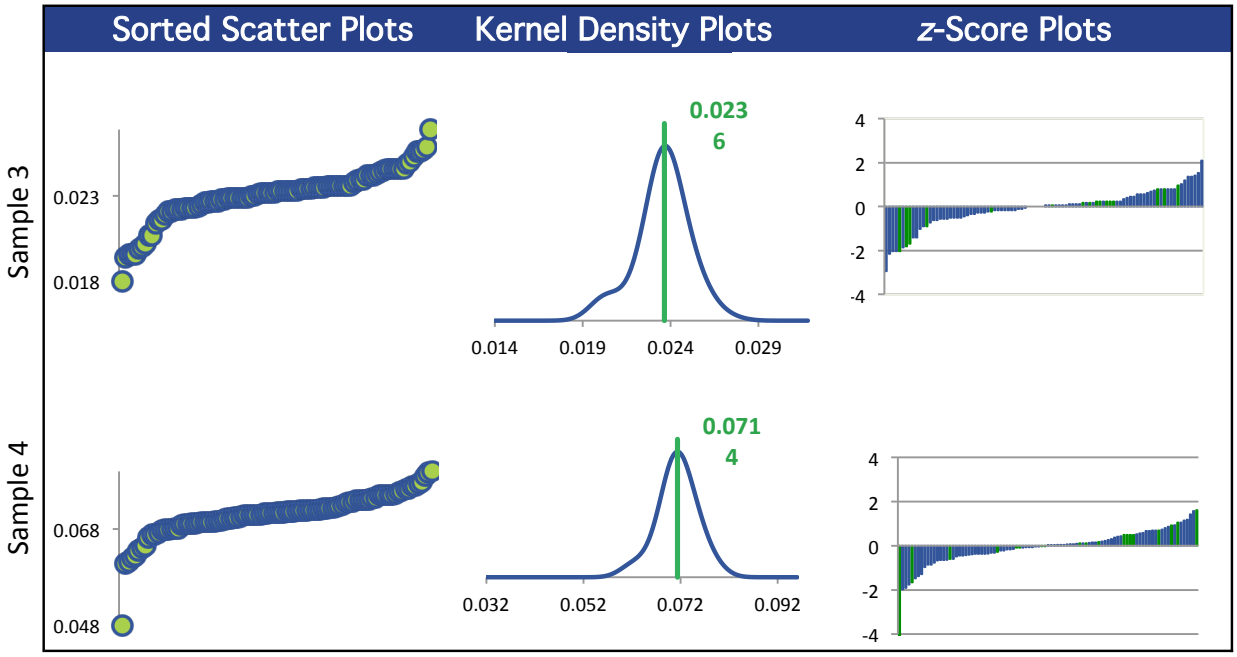
Methods Used

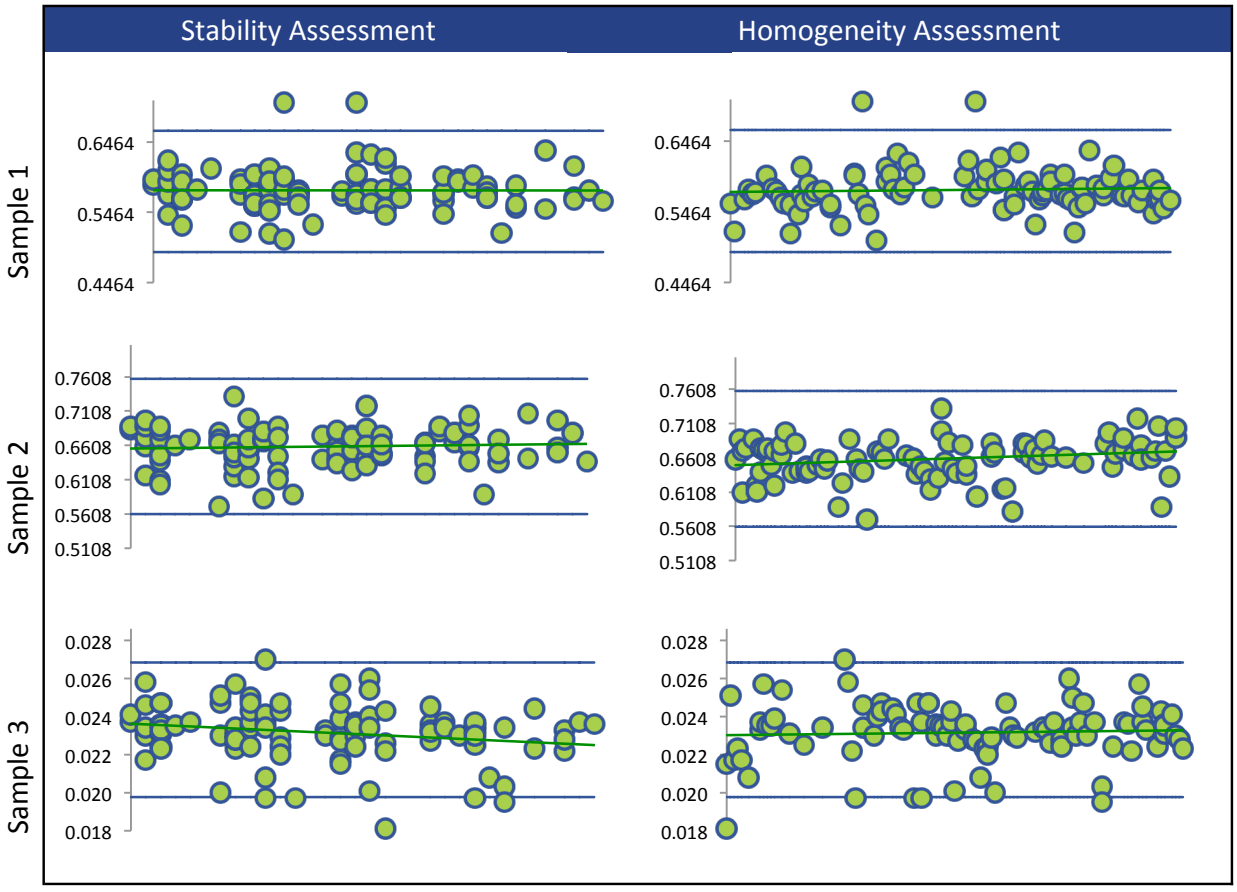
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	74	74	74	74
ICP/OES (Red)	19	19	18	19
AA FLAME (Green)	1	1	1	1
AA GRAPHITE (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



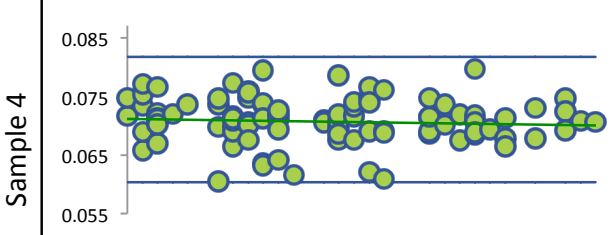
BERYLLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.023
0.018
0.0236
0.014
0.019
0.024
0.029
4
2
0
-2
-4
Sample 4
0.068
0.048
0.0714
0.032
0.052
0.072
0.092
4
2
0
-2
-4

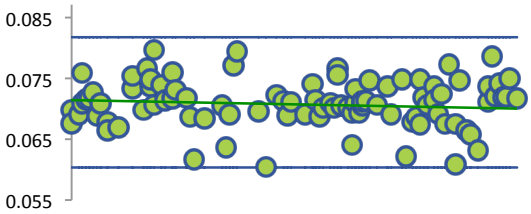

Stability Assessment
Homogeneity Assessment
Sample 1
0.6464
0.5464
0.4464
Sample 2
0.7608
0.7108
0.6608
0.6108
0.5608
0.5108
Sample 3
0.028
0.026
0.024
0.022
0.020
0.018

BERYLLIUM

Stability Assessment



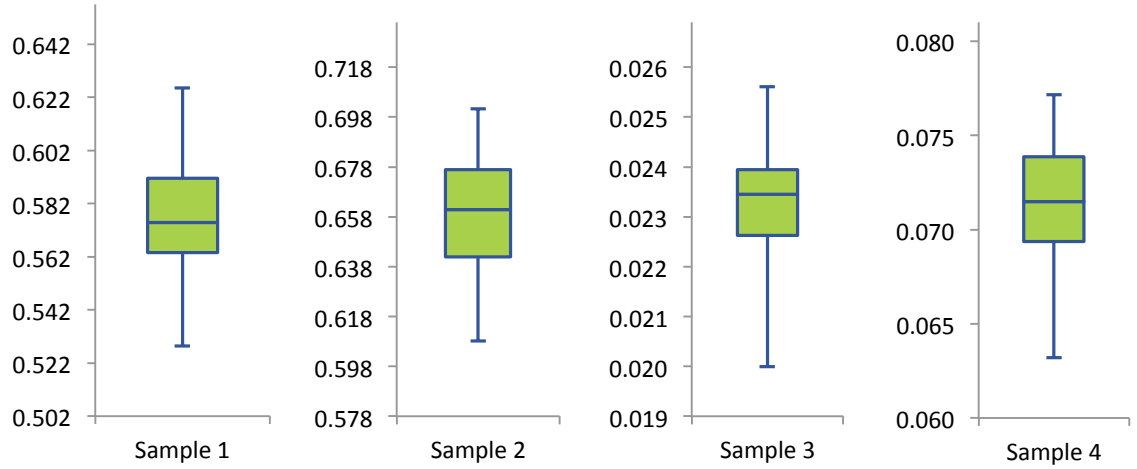
Homogeneity Assessment



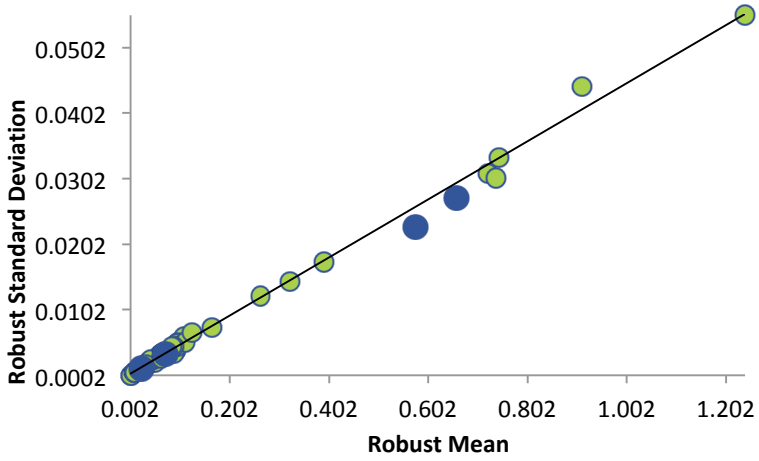
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



BORON

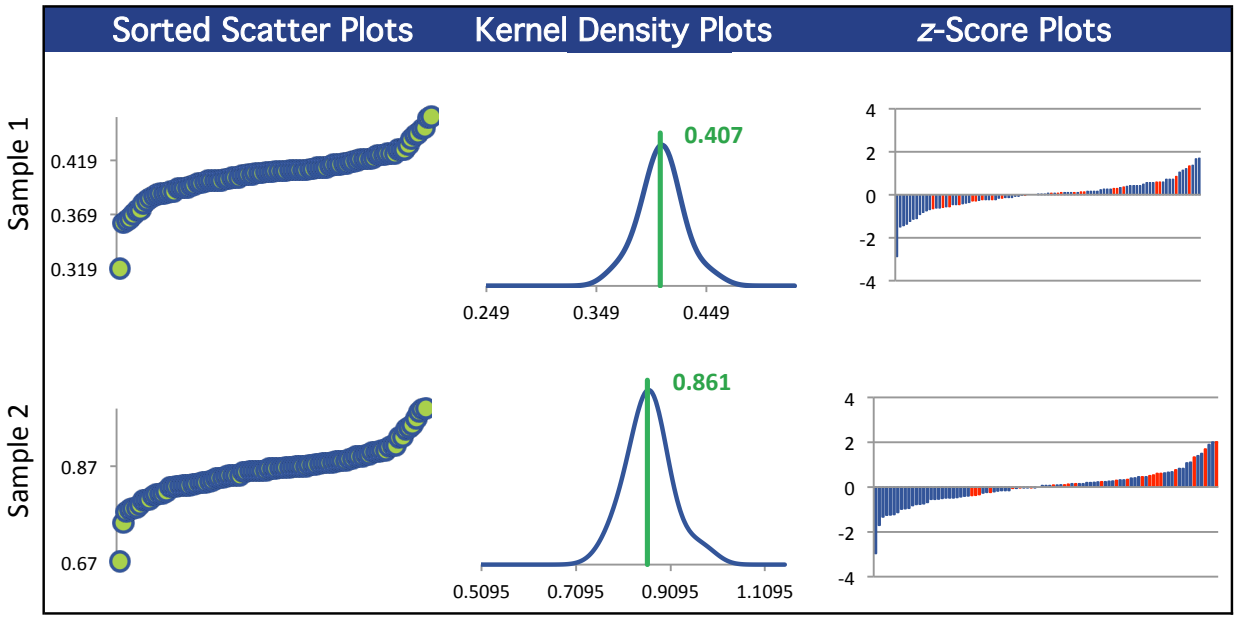
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	93	93	80	94
Median mg/L	0.409	0.865	0.0390	0.266
Robust Mean mg/L	0.407	0.861	0.0391	0.266
U mg/L	0.00222	0.00546	0.000644	0.00155
Robust Standard Deviation mg/L	0.0171	0.0421	0.00461	0.0120
Regression Standard Deviation mg/L	0.0306	0.0646	0.00293	0.0199
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0306	0.0646	0.00461	0.0199
Outliers	0	0	0	0
|z|>3.0	0	0	6	1
2<|z|<3	1	2	5	2

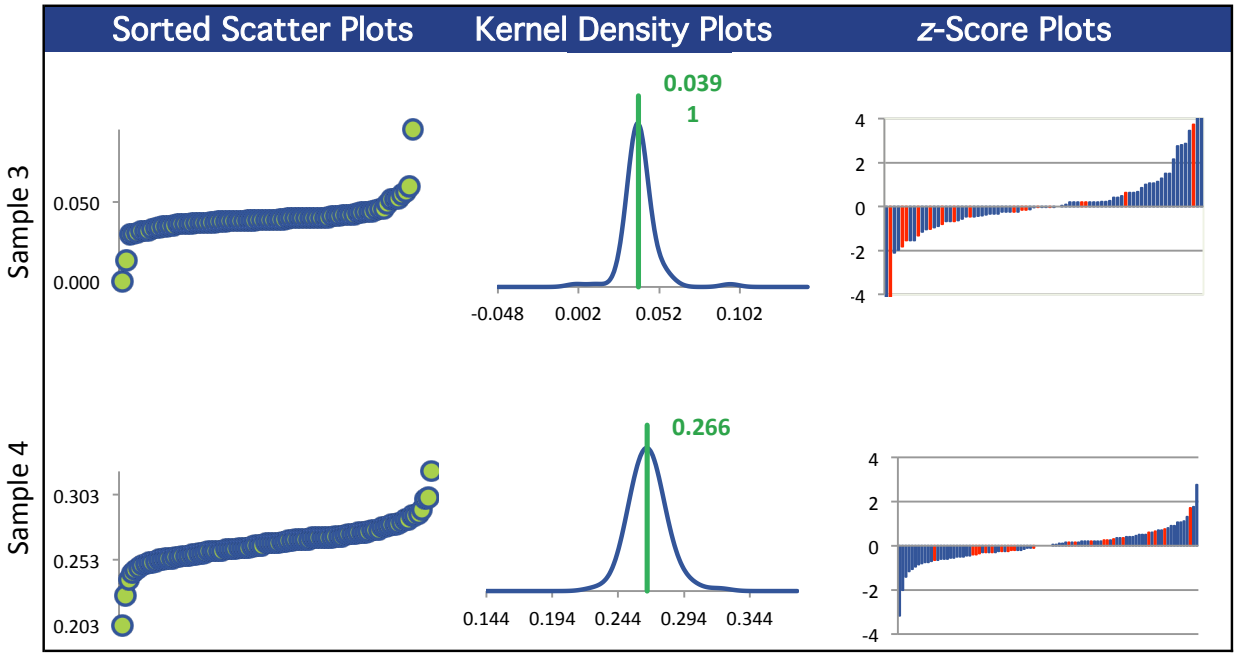
Methods Used

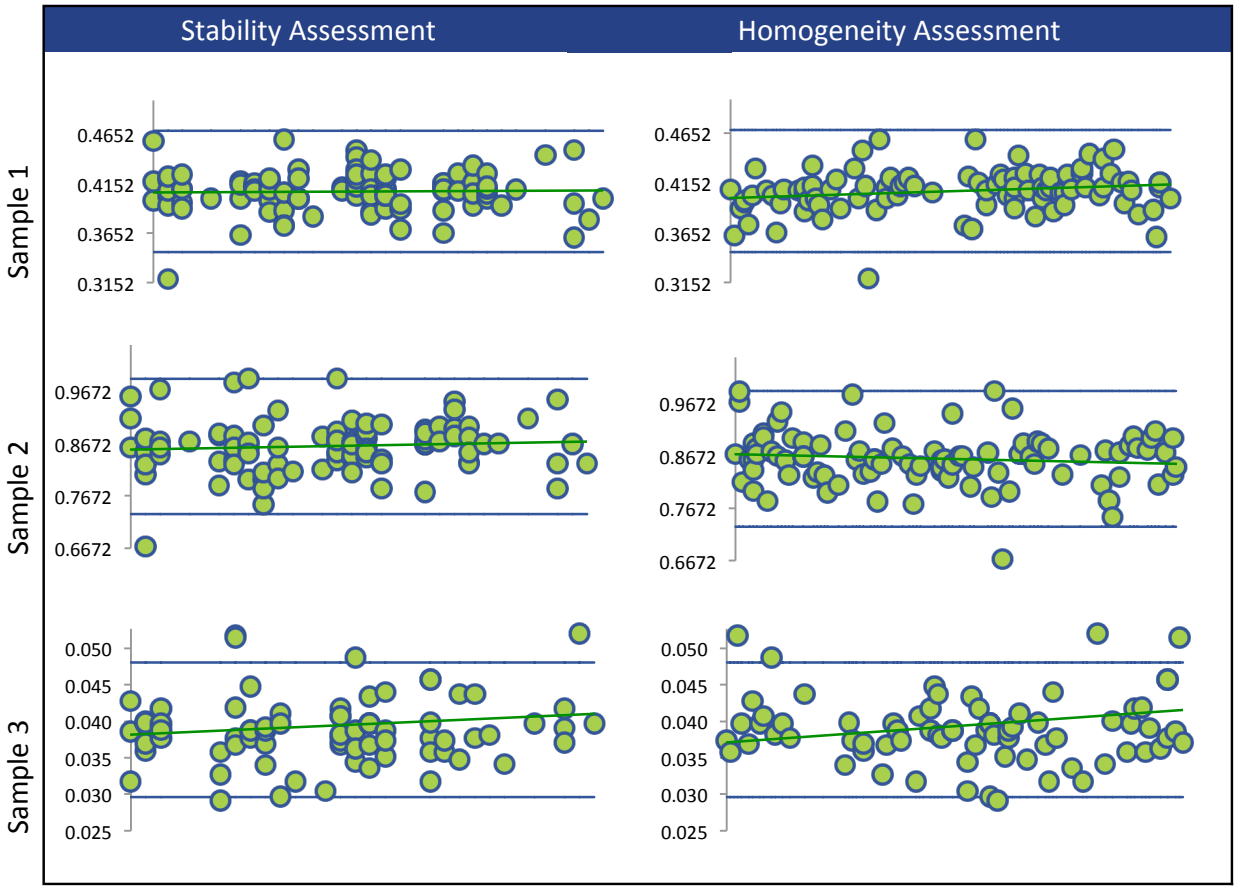
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	70	70	63	71
ICP/OES (Red)	23	23	17	23

All summary stats and the plots below are based on the data excluding any flagged outliers



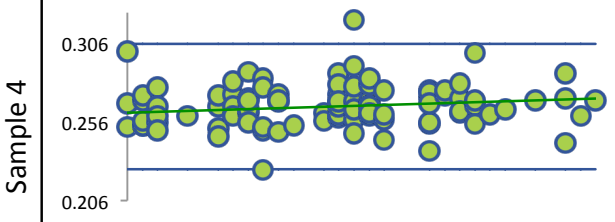
BORON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.050
0.000
0.039
1
-0.048
0.002
0.052
0.102
4
2
0
-2
-4
Sample 4
0.303
0.253
0.203
0.266
0.144
0.194
0.244
0.294
0.344
4
2
0
-2
-4

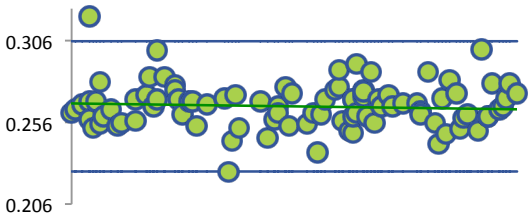

Stability Assessment
Homogeneity Assessment
Sample 1
0.4652
0.4152
0.3652
0.3152
0.4652
0.4152
0.3652
0.3152
Sample 2
0.9672
0.8672
0.7672
0.6672
0.9672
0.8672
0.7672
0.6672
Sample 3
0.050
0.045
0.040
0.035
0.030
0.025
0.050
0.045
0.040
0.035
0.030
0.025

BORON

Stability Assessment



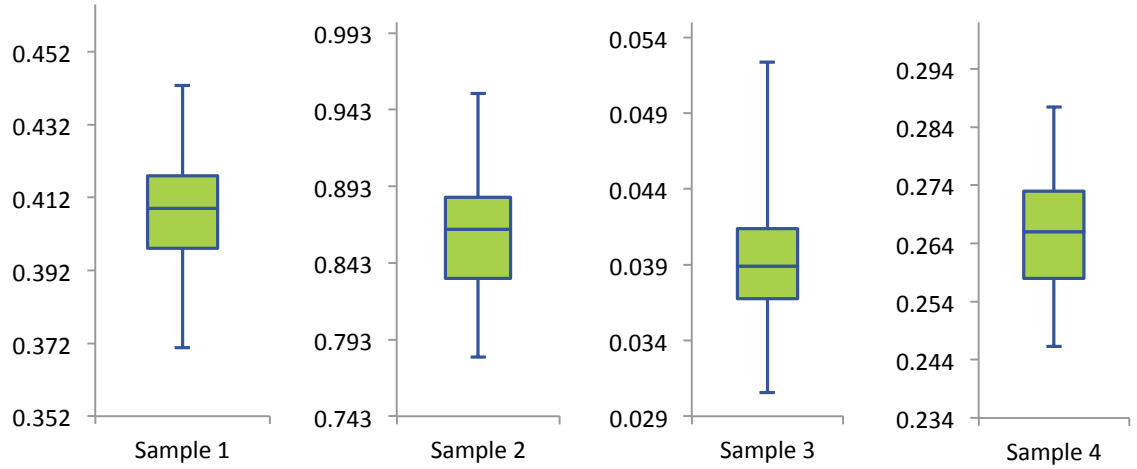
Homogeneity Assessment



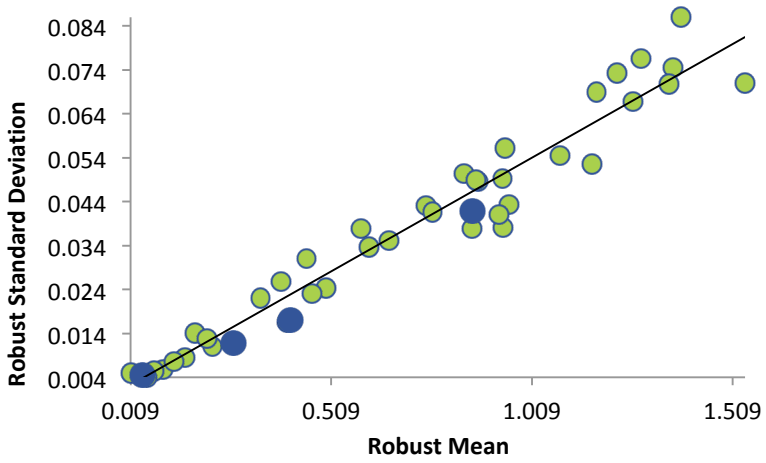
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



CADMIUM

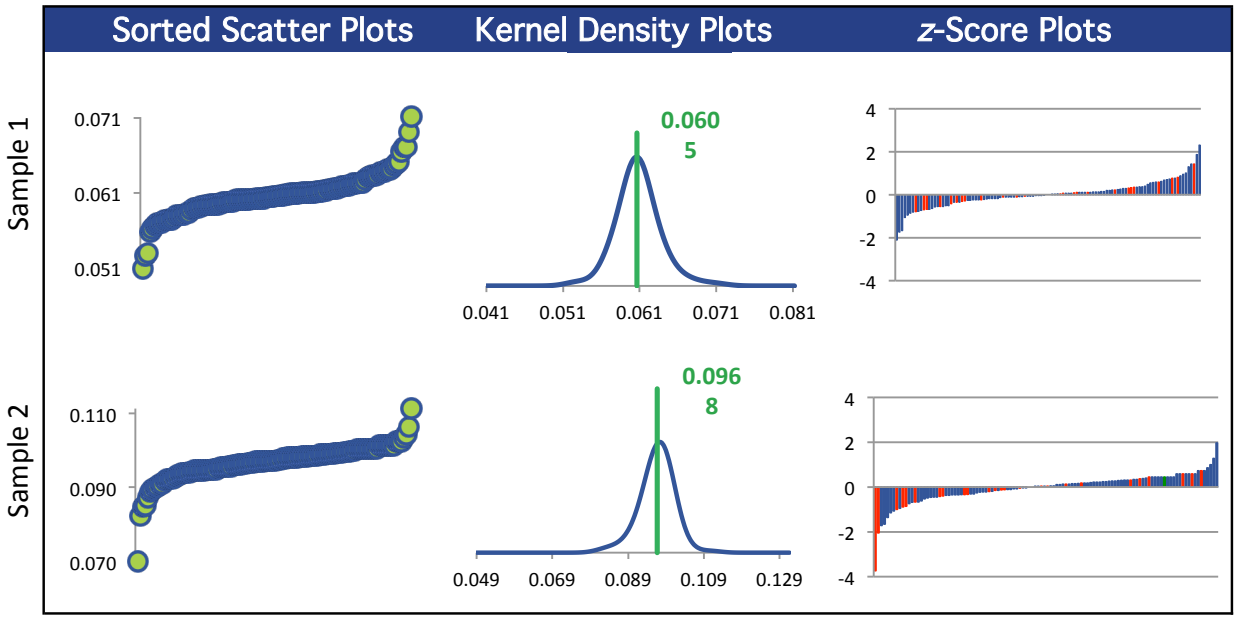
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	112	112	111	112
Median mg/L	0.0605	0.0970	0.0233	0.0520
Robust Mean mg/L	0.0605	0.0968	0.0233	0.0521
U mg/L	0.000272	0.000418	0.000102	0.000221
Robust Standard Deviation mg/L	0.00230	0.00354	0.000858	0.00187
Regression Standard Deviation mg/L	0.00454	0.00726	0.00175	0.00391
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00454	0.00726	0.00175	0.00391
Outliers	1	1	2	1
|z|>3.0	0	1	0	1
2<|z|<3	2	1	0	1

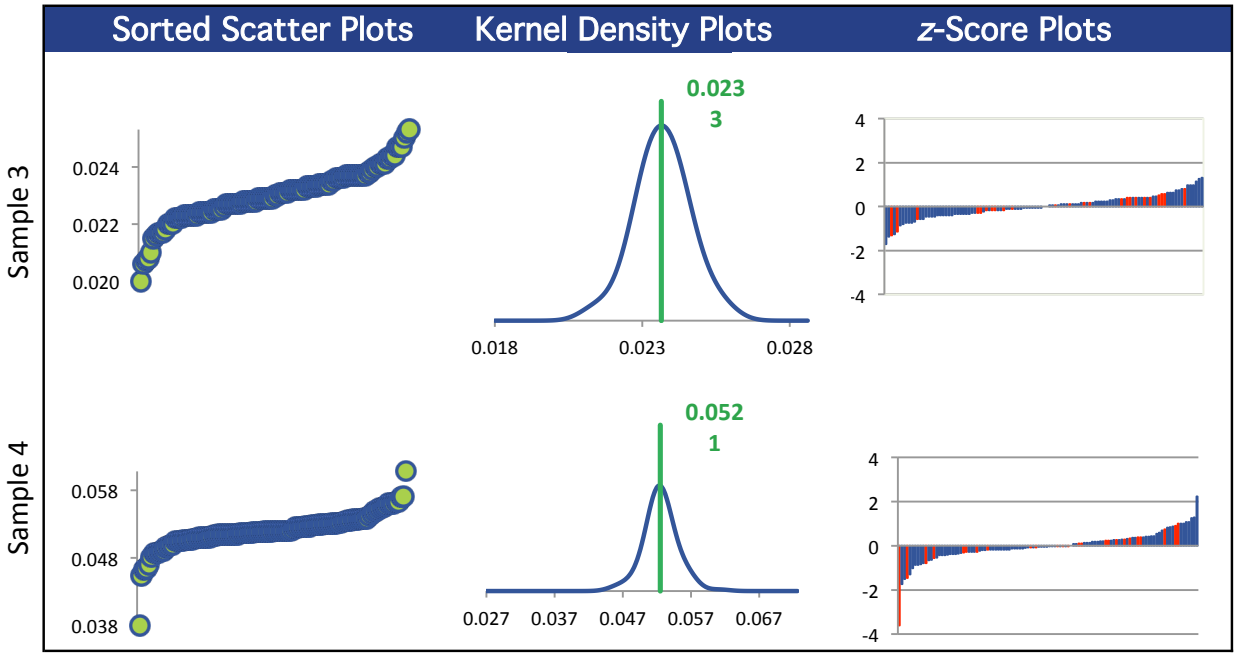
Methods Used

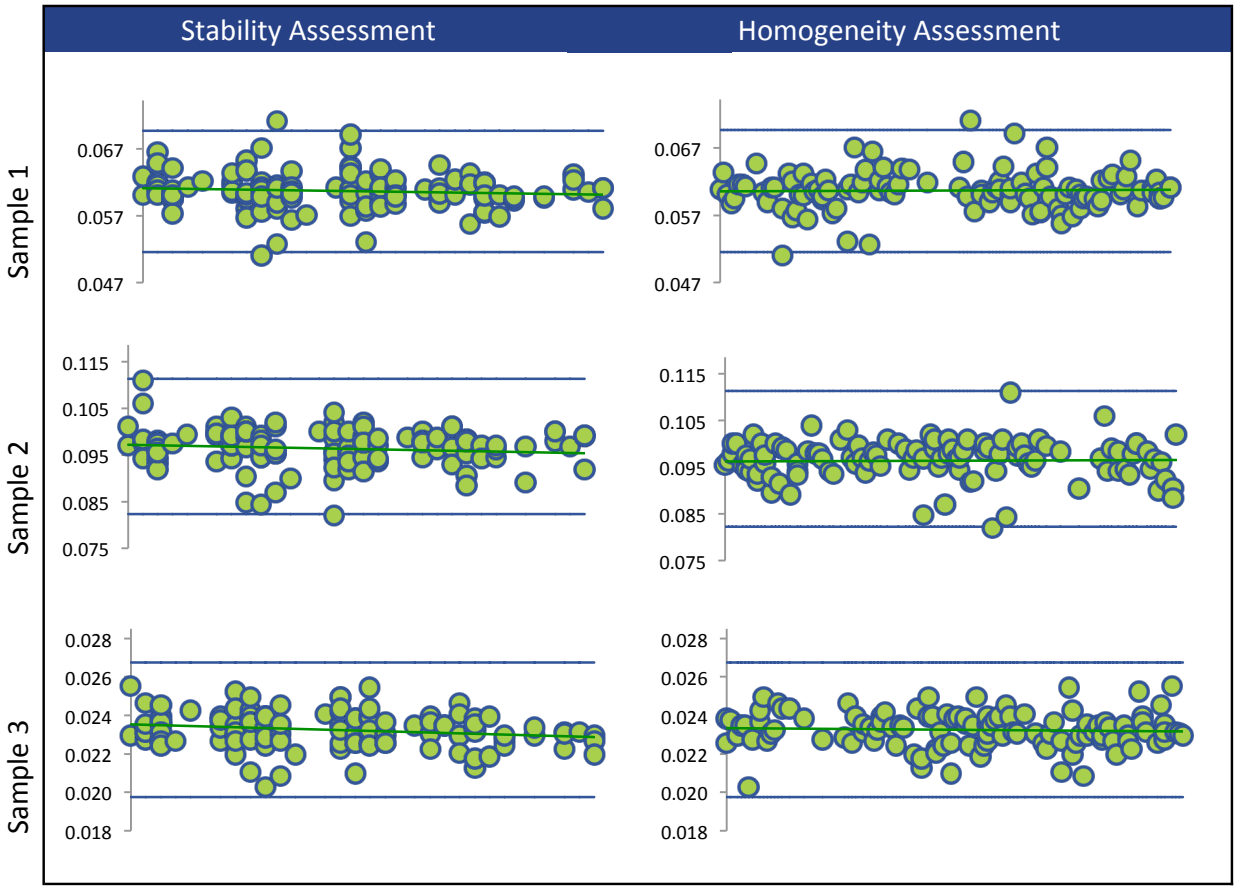
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	85	85	85	85
AA GRAPHITE (Red)	1	1	1	1
ICP/OES (Green)	25	25	24	25
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



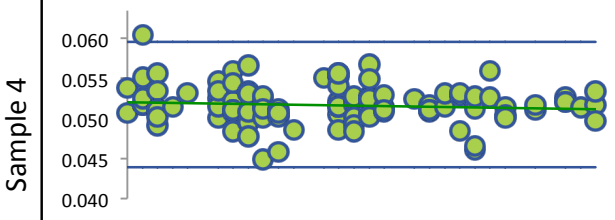
CADMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.024
0.022
0.020
0.0233
0.018
0.023
0.028
4
2
0
-2
-4
Sample 4
0.058
0.048
0.038
0.0521
0.027
0.037
0.047
0.057
0.067
4
2
0
-2
-4

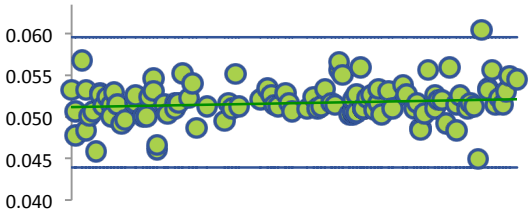

Stability Assessment
Homogeneity Assessment
Sample 1
0.067
0.057
0.047
0.067
0.057
0.047
Sample 2
0.115
0.105
0.095
0.085
0.075
0.115
0.105
0.095
0.085
0.075
Sample 3
0.028
0.026
0.024
0.022
0.020
0.018
0.028
0.026
0.024
0.022
0.020
0.018

CADMIUM

Stability Assessment



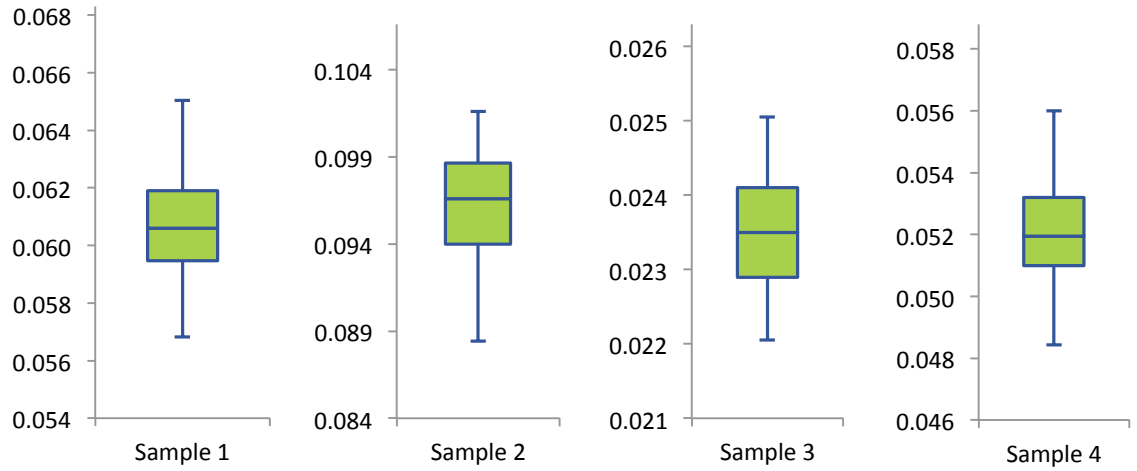
Homogeneity Assessment



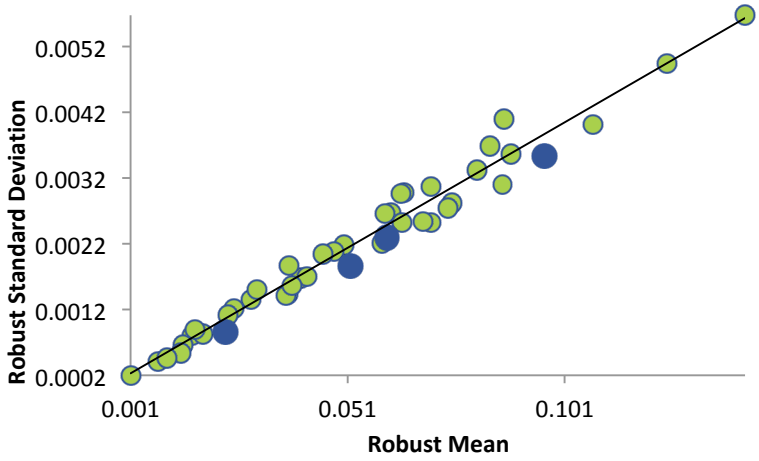
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



CHROMIUM

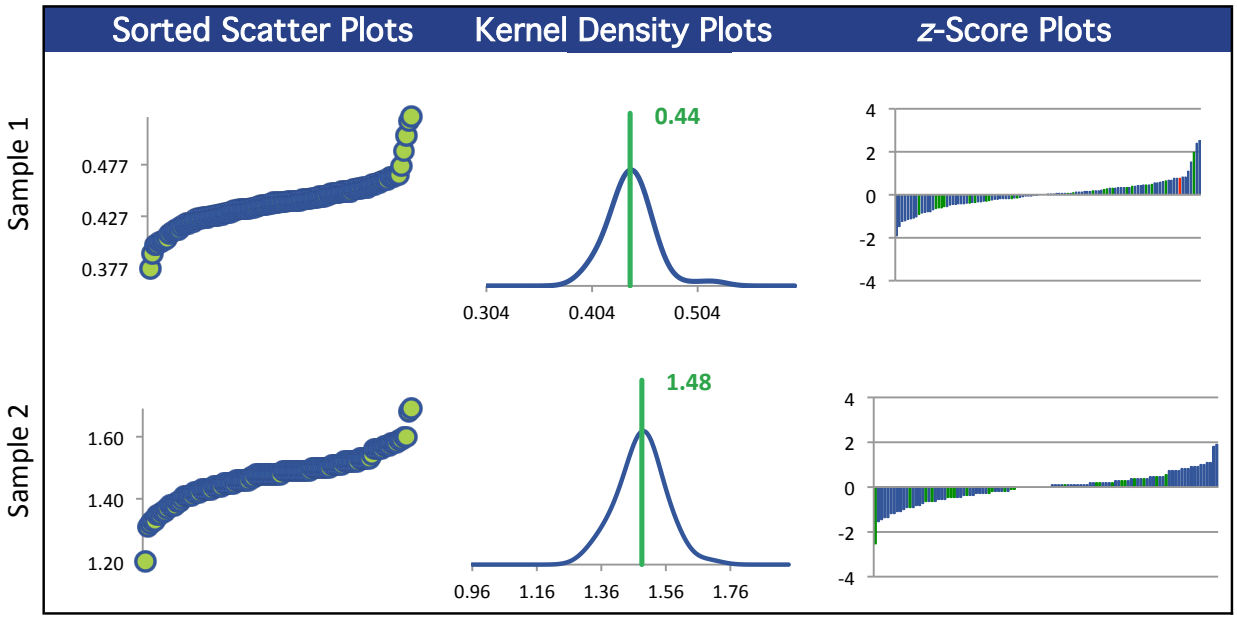
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	109	109	106	109
Median mg/L	0.441	1.48	0.0167	0.263
Robust Mean mg/L	0.440	1.48	0.0166	0.263
U mg/L	0.00218	0.00820	0.000102	0.00134
Robust Standard Deviation mg/L	0.0182	0.0685	0.000844	0.0112
Regression Standard Deviation mg/L	0.0330	0.111	0.00125	0.0197
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0330	0.111	0.00125	0.0197
Outliers	0	0	1	0
|z|>3.0	0	0	5	0
2<|z|<3	2	1	3	0

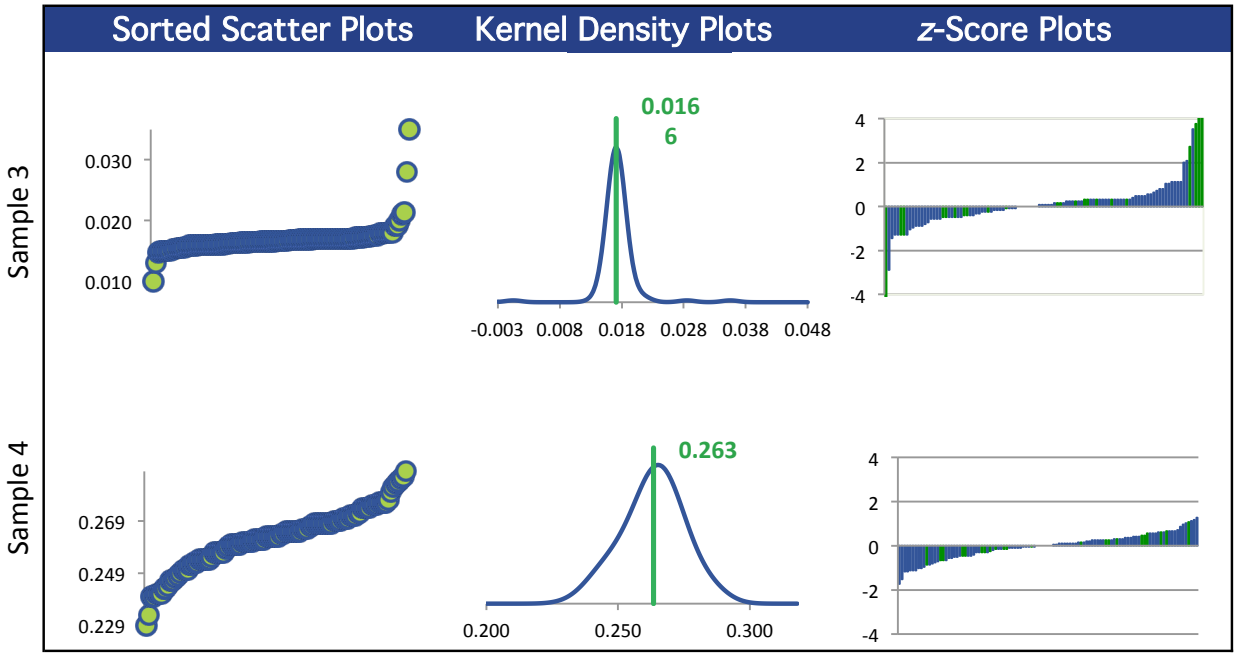
Methods Used

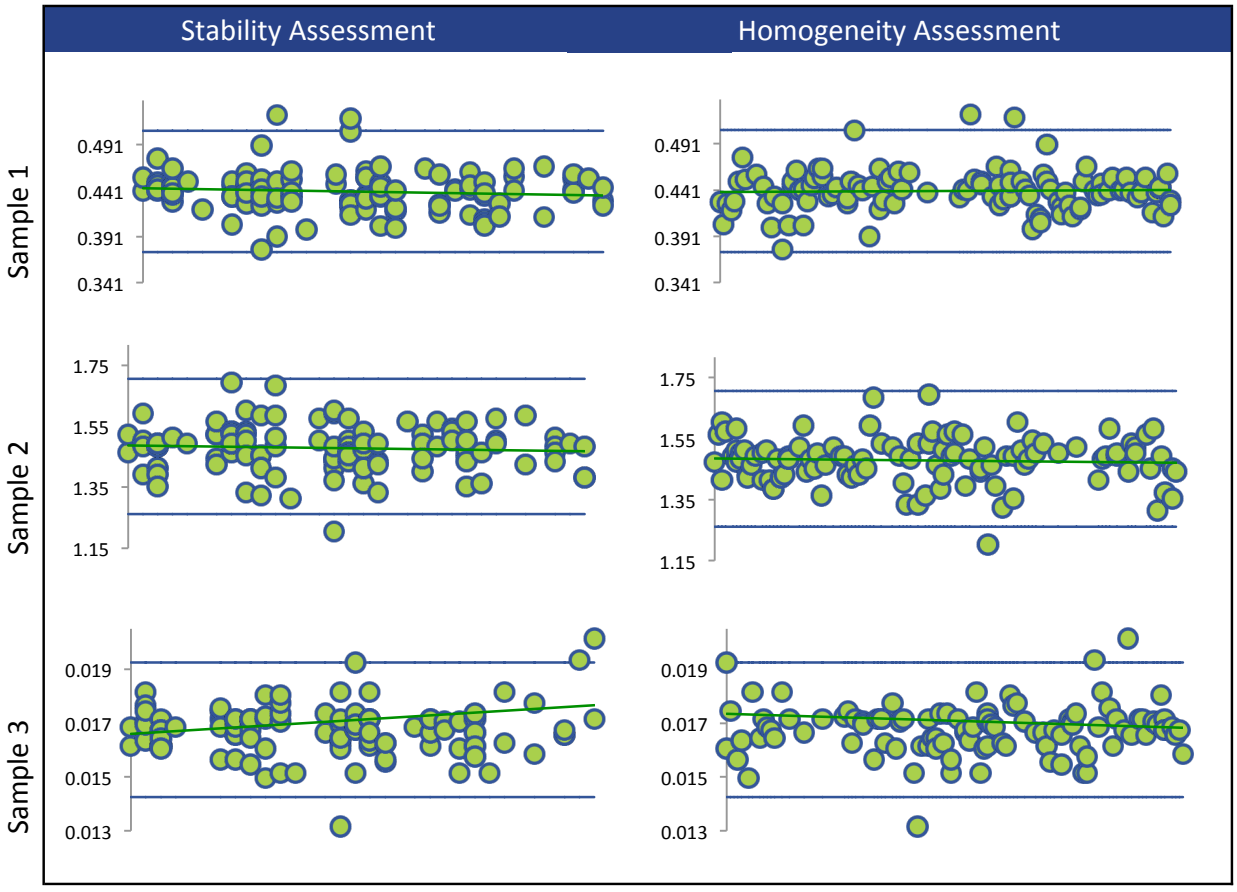
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	82	82	82	82
ICP/OES (Red)	24	24	22	24
AA GRAPHITE (Green)	1	1	1	1
AA FLAME (Orange)	2	2	1	2

All summary stats and the plots below are based on the data excluding any flagged outliers



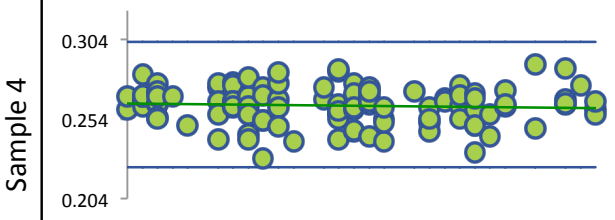
CHROMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.030
0.020
0.010
0.016
6
-0.003 0.008 0.018 0.028 0.038 0.048
4
2
0
-2
-4
Sample 4
0.269
0.249
0.229
0.263
0.200 0.250 0.300
4
2
0
-2
-4

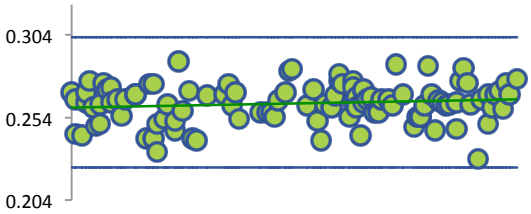

Stability Assessment
Homogeneity Assessment
Sample 1
0.491
0.441
0.391
0.341
Sample 2
1.75
1.55
1.35
1.15
Sample 3
0.019
0.017
0.015
0.013

CHROMIUM

Stability Assessment



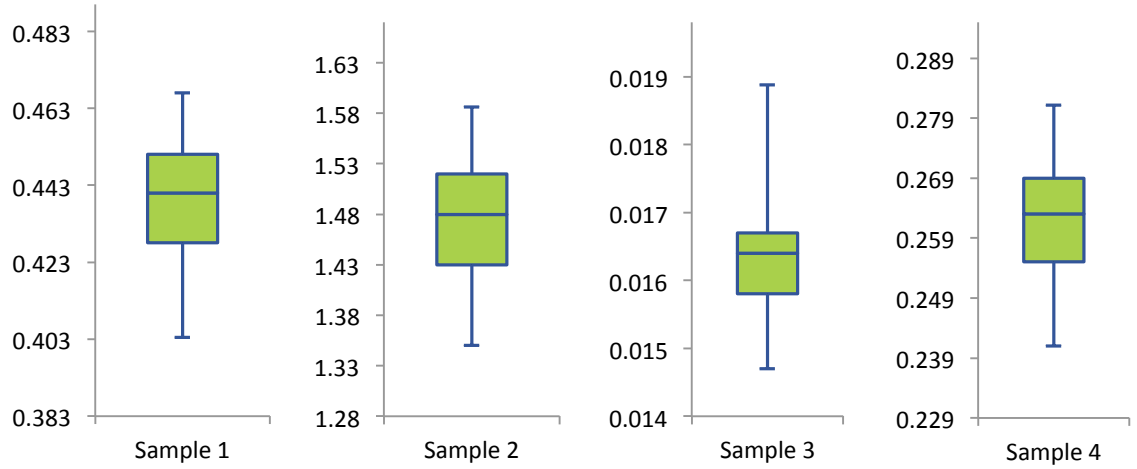
Homogeneity Assessment



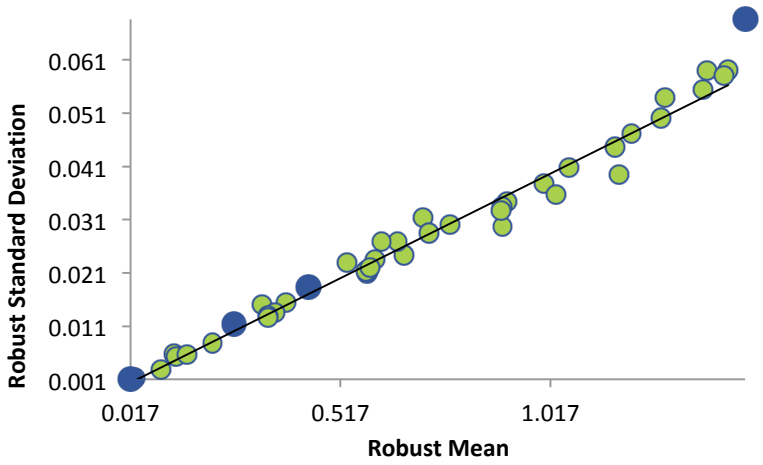
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



COBALT

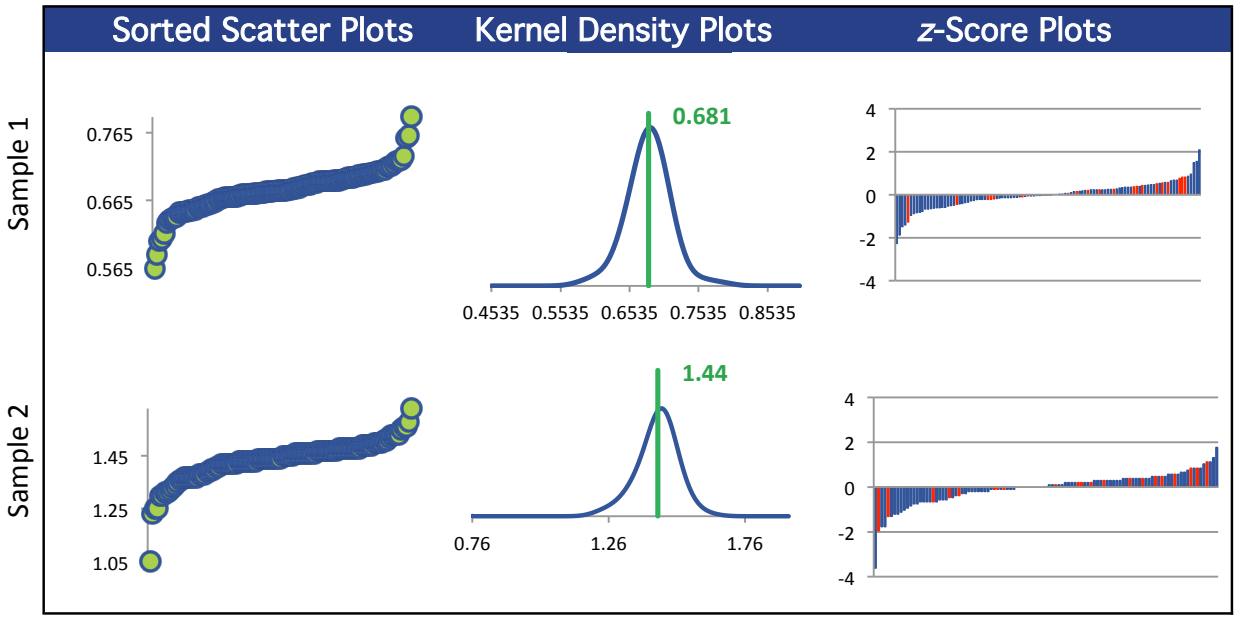
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	107	107	104	107
Median mg/L	0.680	1.44	0.0144	0.398
Robust Mean mg/L	0.681	1.44	0.0144	0.397
U mg/L	0.00318	0.00744	0.000	0.00198
Robust Standard Deviation mg/L	0.0263	0.0616	0.000589	0.0164
Regression Standard Deviation mg/L	0.0511	0.108	0.00108	0.0298
Stability Flag				
Homogeneity Flag			Homogeneity	
Standard Deviation Used (SDPA) mg/L	0.0511	0.108	0.00149	0.0298
Outliers	0	0	1	0
|z|>3.0	0	1	3	1
2<|z|<3	2	0	1	2

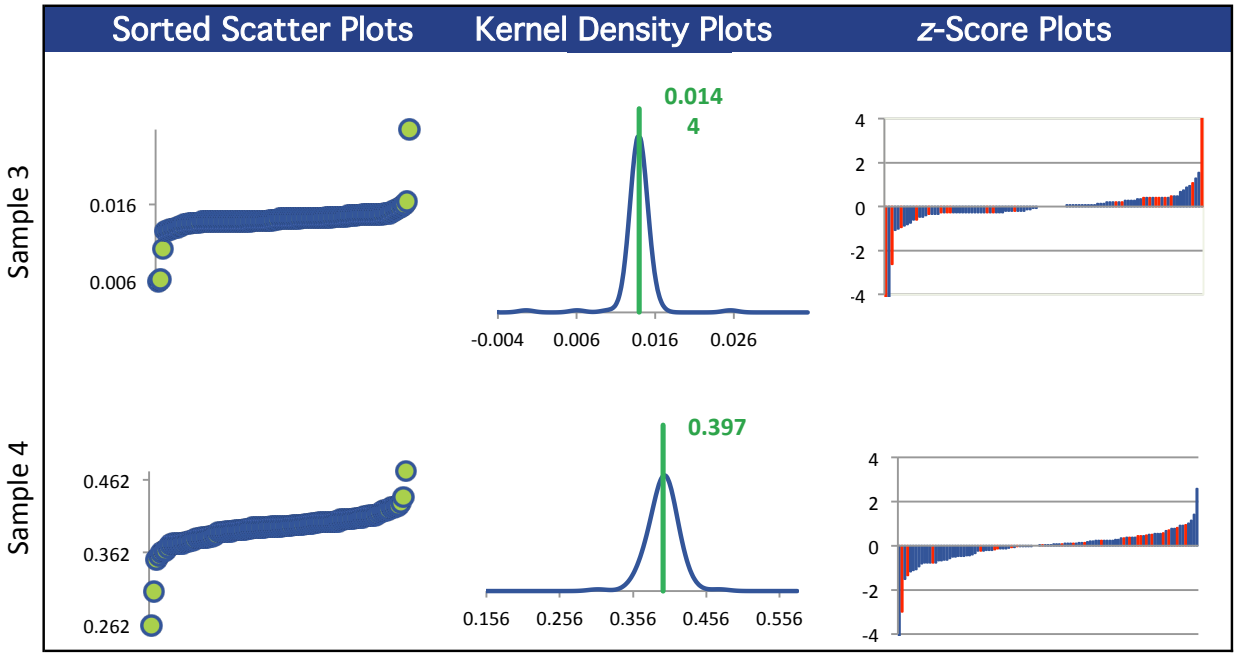
Methods Used

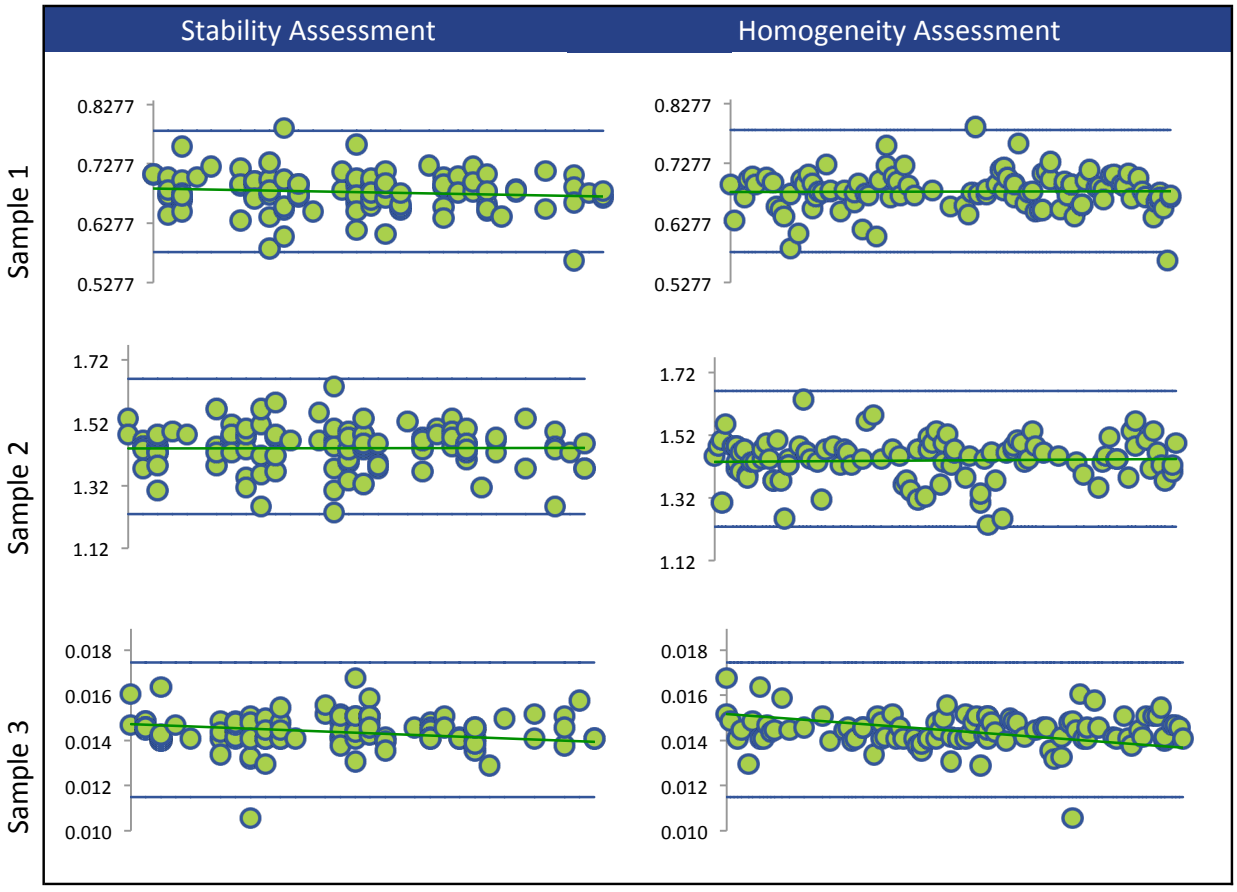
Method	C02A-1	C02A-2	C02A-3	C02A-4
AA FLAME (Blue)	2	2	1	2
ICP/MS (Red)	81	81	81	81
ICP/OES (Green)	23	23	21	23
AA GRAPHITE (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



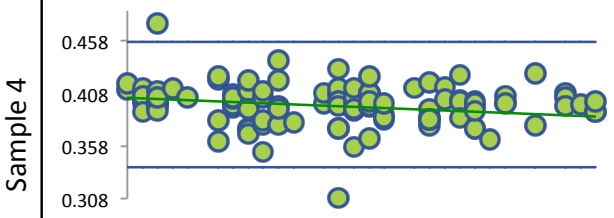
COBALT


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.016
0.006
0.014
4
-0.004
0.006
0.016
0.026
4
2
0
-2
-4
Sample 4
0.462
0.362
0.262
0.397
0.156
0.256
0.356
0.456
0.556
4
2
0
-2
-4

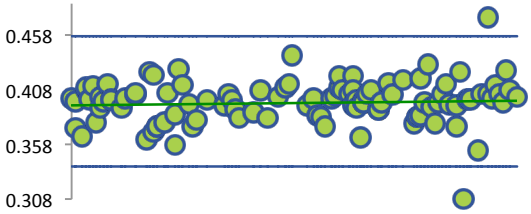

Stability Assessment
Homogeneity Assessment
Sample 1
0.8277
0.7277
0.6277
0.5277
Sample 2
1.72
1.52
1.32
1.12
Sample 3
0.018
0.016
0.014
0.012
0.010

COBALT

Stability Assessment



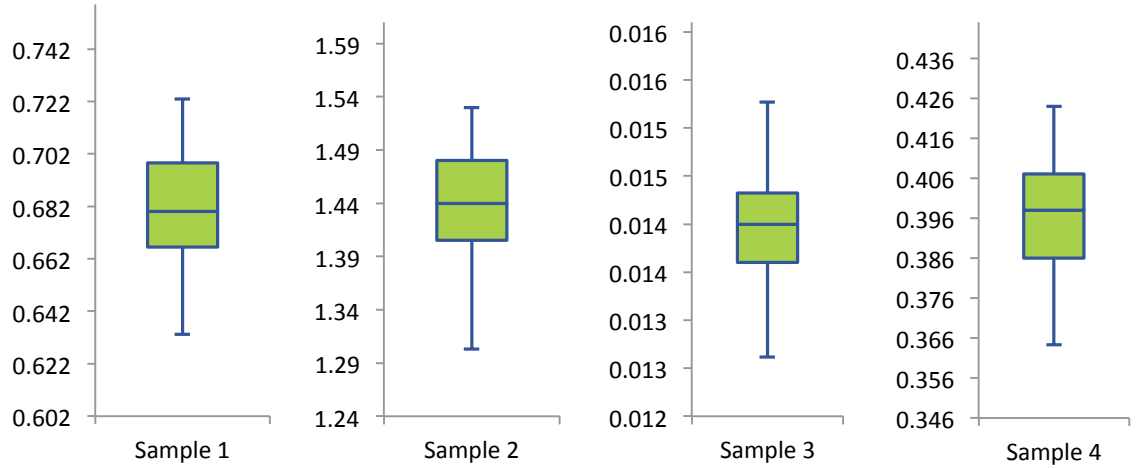
Homogeneity Assessment



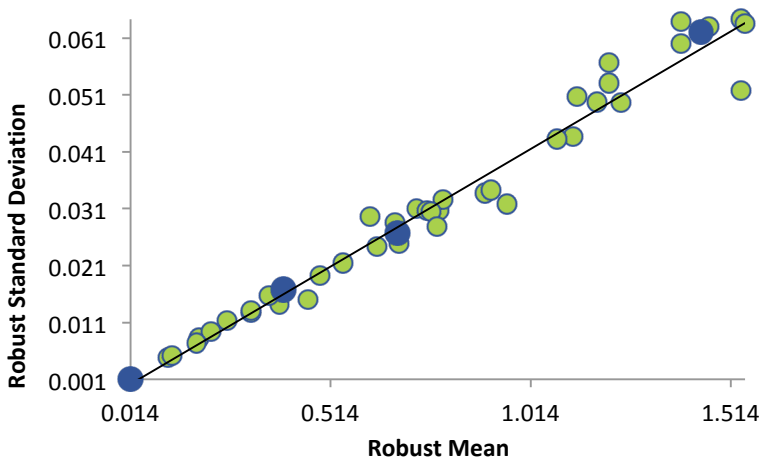
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



COPPER

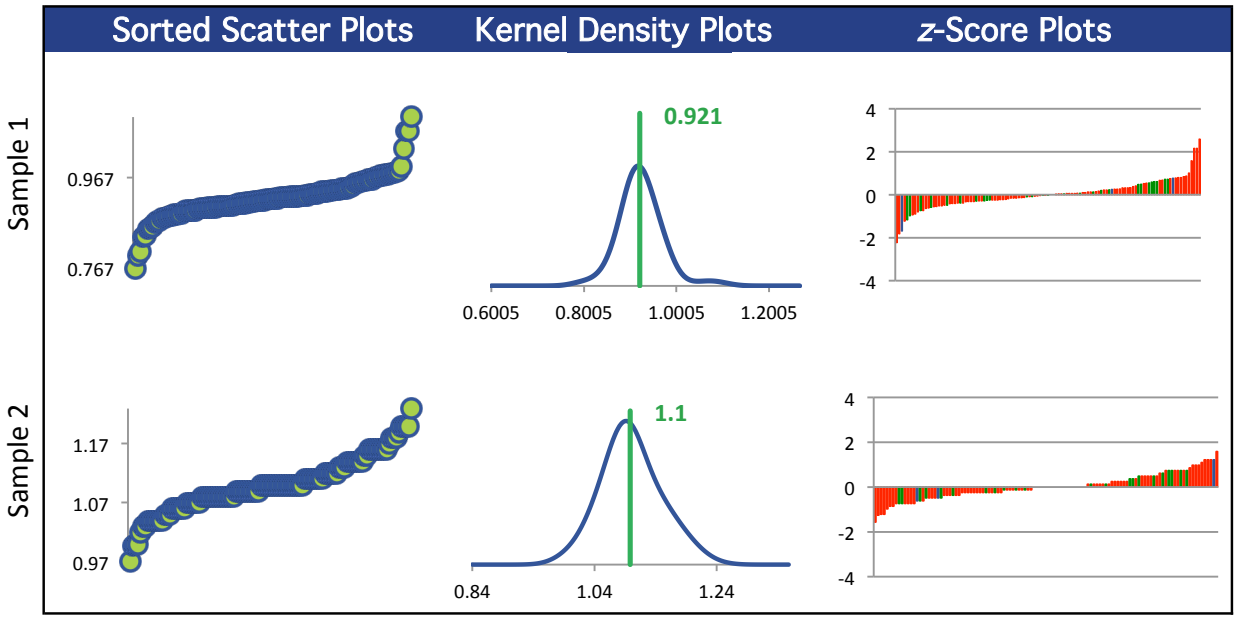
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	115	115	114	115
Median mg/L	0.920	1.10	0.0427	0.0524
Robust Mean mg/L	0.921	1.10	0.0426	0.0524
U mg/L	0.00430	0.00533	0.000228	0.000297
Robust Standard Deviation mg/L	0.0369	0.0457	0.00195	0.00255
Regression Standard Deviation mg/L	0.0691	0.0825	0.00319	0.00393
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0691	0.0825	0.00319	0.00393
Outliers	0	0	1	0
|z|>3.0	0	0	0	1
2<|z|<3	4	0	1	2

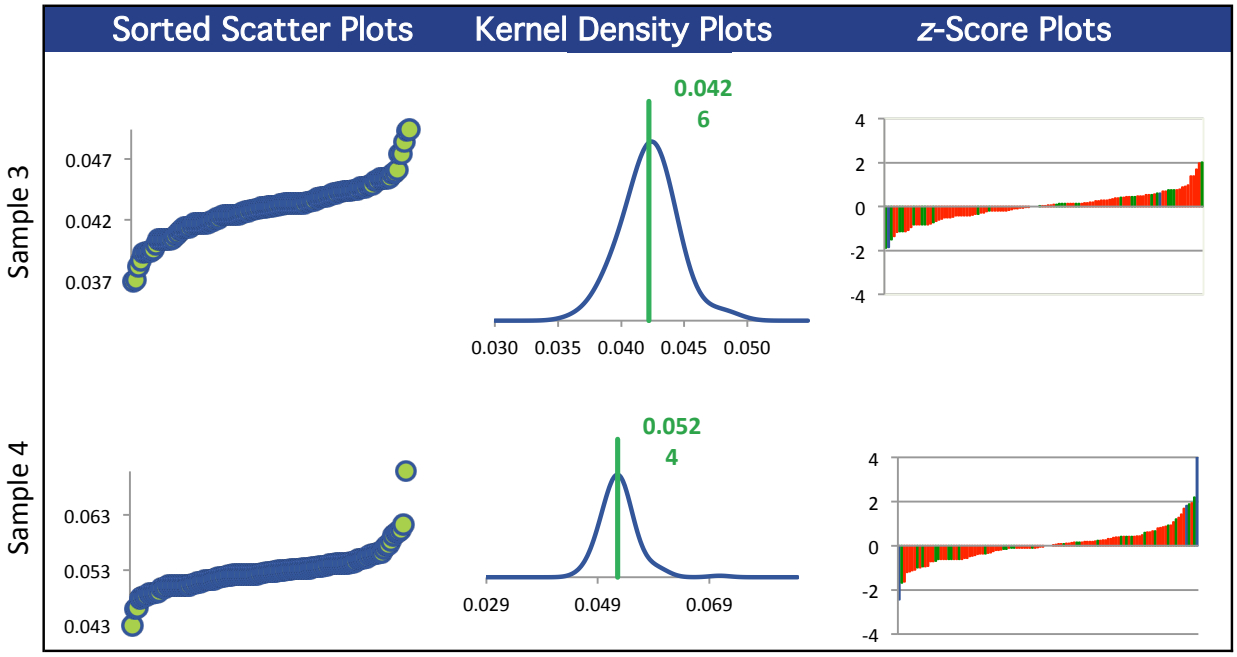
Methods Used

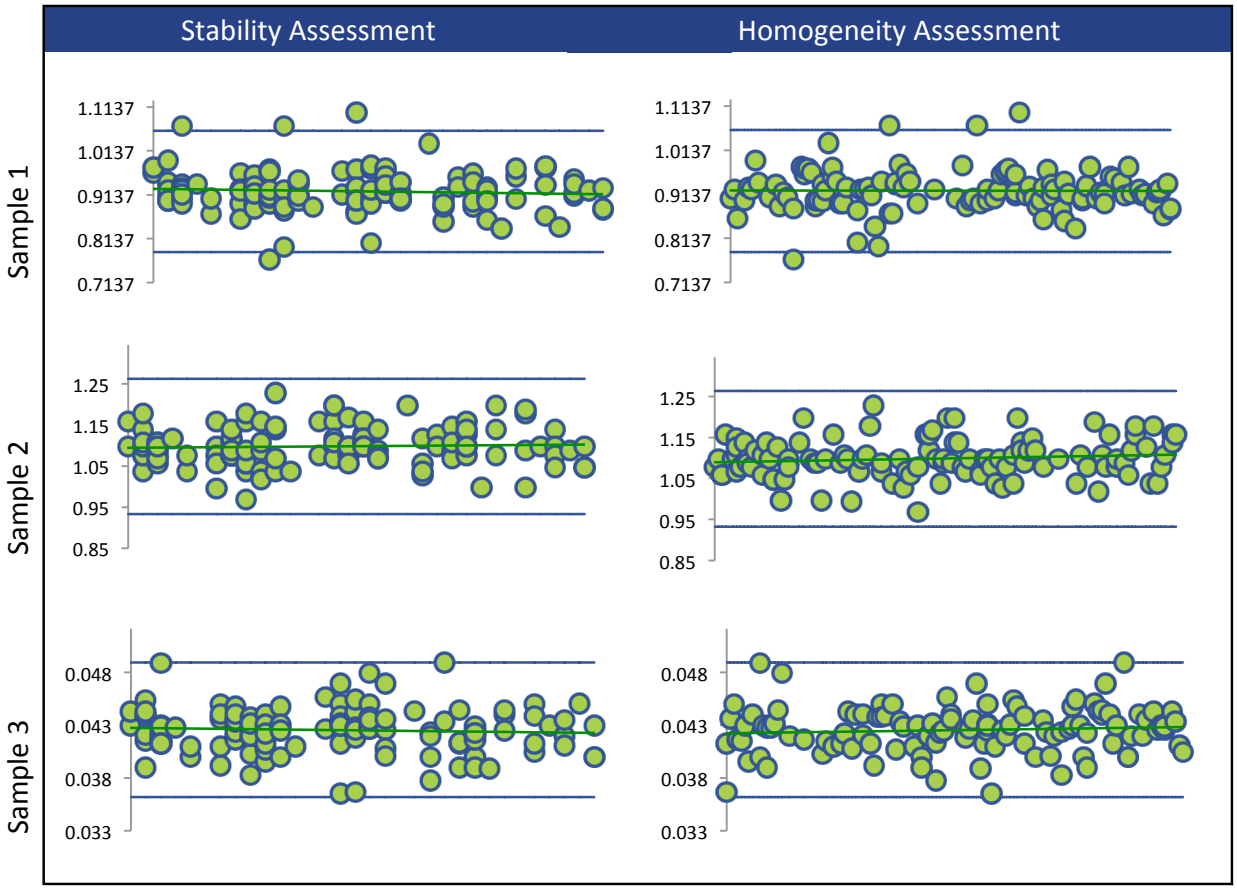
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	85	85	85	85
AA GRAPHITE (Red)	1	1	1	1
ICP/OES (Green)	27	27	27	27
AA FLAME (Orange)	2	2	1	2

All summary stats and the plots below are based on the data excluding any flagged outliers



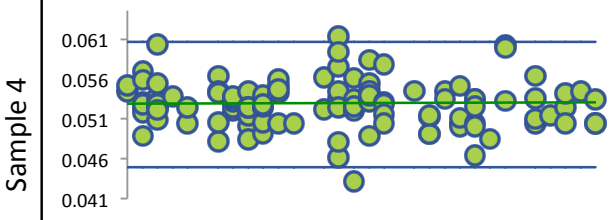
COPPER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.047
0.042
0.037
0.042
6
0.030 0.035 0.040 0.045 0.050
4
2
0
-2
-4
Sample 4
0.063
0.053
0.043
0.052
4
0.029 0.049 0.069
4
2
0
-2
-4

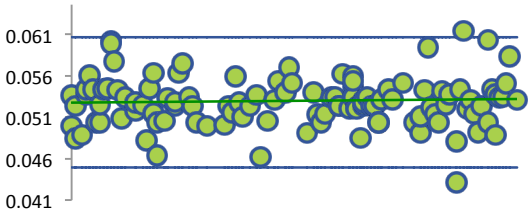

Stability Assessment
Homogeneity Assessment
Sample 1
1.1137
1.0137
0.9137
0.8137
0.7137
Sample 2
1.25
1.15
1.05
0.95
0.85
Sample 3
0.048
0.043
0.038
0.033

COPPER

Stability Assessment



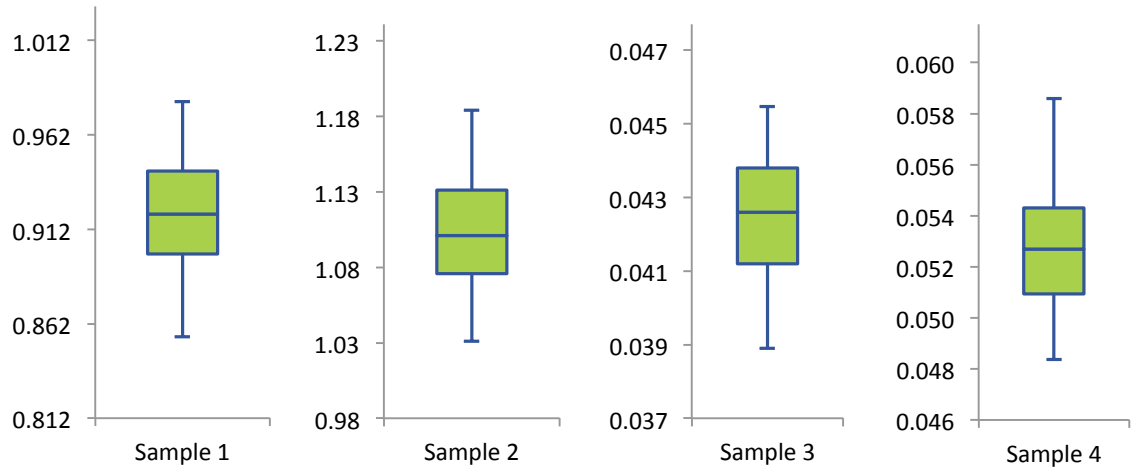
Homogeneity Assessment



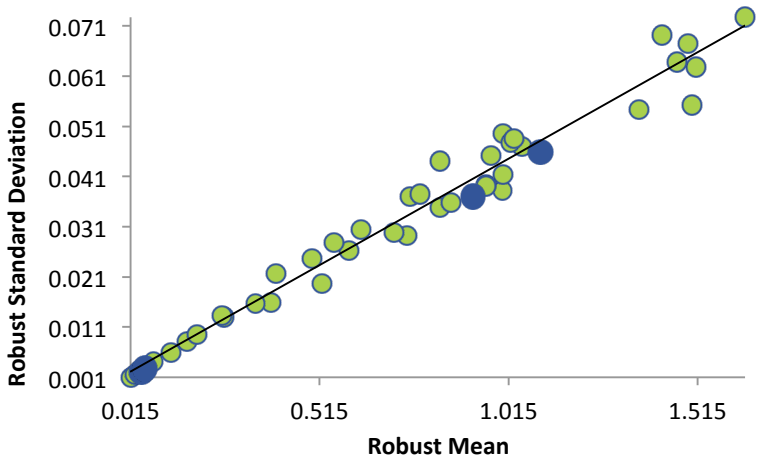
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



IRON

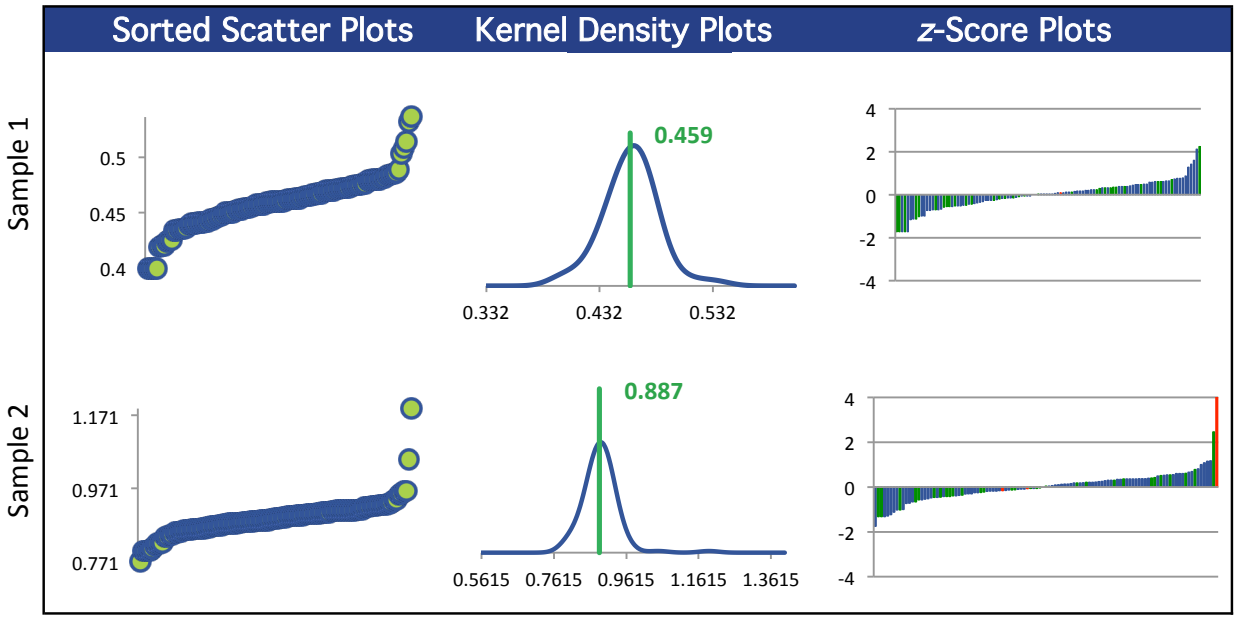
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	110	111	90	111
Median mg/L	0.460	0.888	0.0274	0.450
Robust Mean mg/L	0.459	0.887	0.0273	0.448
U mg/L	0.00241	0.00405	0.000323	0.00236
Robust Standard Deviation mg/L	0.0202	0.0341	0.00245	0.0199
Regression Standard Deviation mg/L	0.0344	0.0666	0.00205	0.0336
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0344	0.0666	0.00245	0.0336
Outliers	1	0	0	0
|z|>3.0	0	1	1	0
2<|z|<3	2	1	7	1

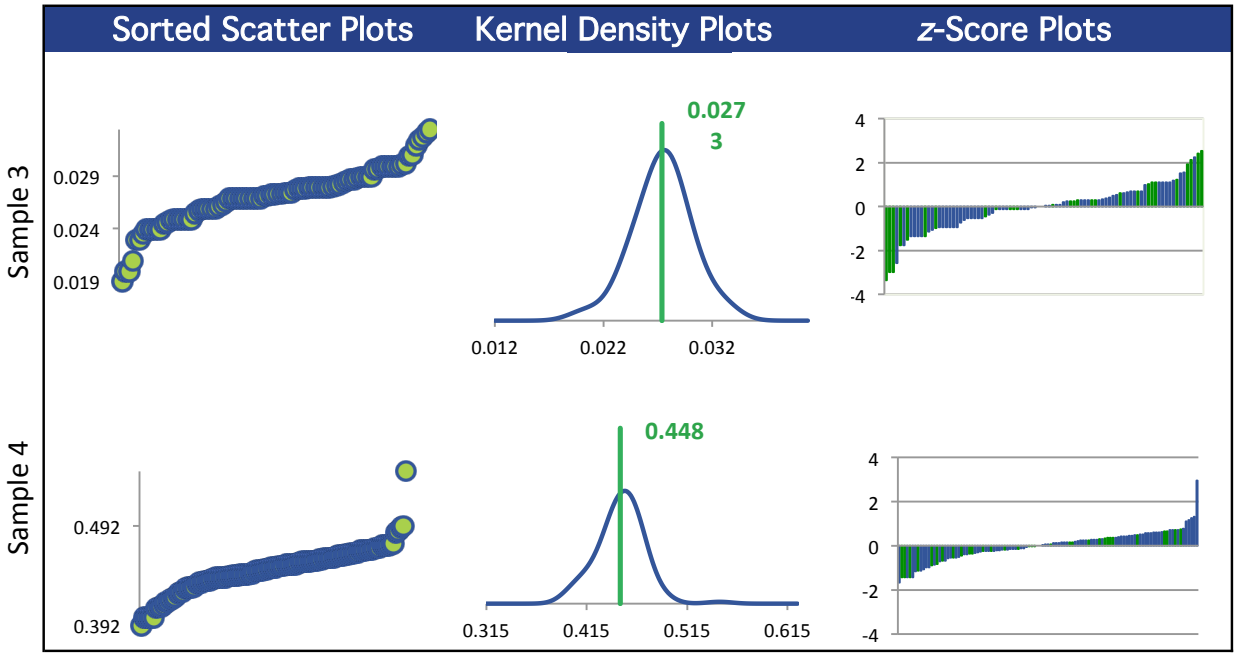
Methods Used

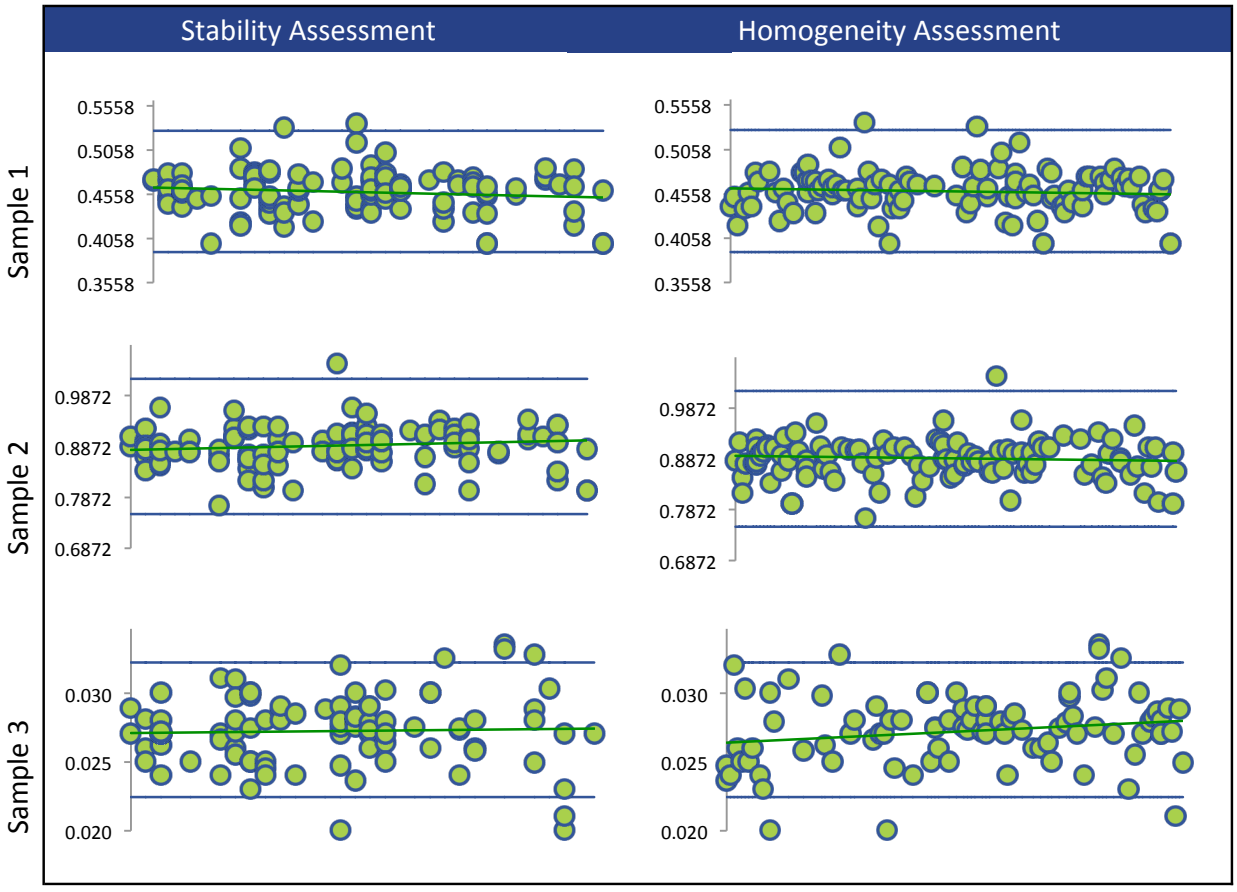
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	31	31	25	31
ICP/MS (Red)	77	77	62	77
AA GRAPHITE (Green)	1	1	1	1
AA FLAME (Orange)	1	2	2	2

All summary stats and the plots below are based on the data excluding any flagged outliers



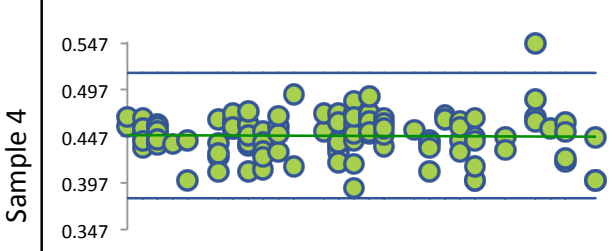
IRON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.029
0.024
0.019
0.027
3
0.012
0.022
0.032
4
2
0
-2
-4
Sample 4
0.492
0.392
0.448
0.315
0.415
0.515
0.615
4
2
0
-2
-4

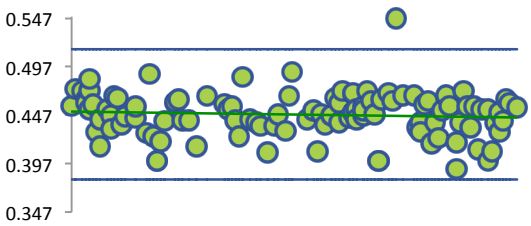

Stability Assessment
Homogeneity Assessment
Sample 1
0.5558
0.5058
0.4558
0.4058
0.3558
Sample 2
0.9872
0.8872
0.7872
0.6872
Sample 3
0.030
0.025
0.020

IRON

Stability Assessment



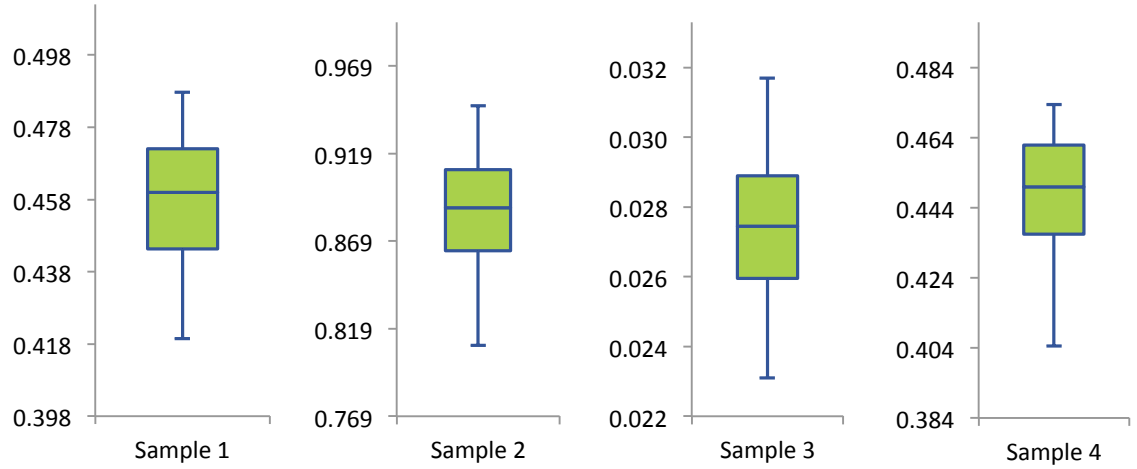
Homogeneity Assessment



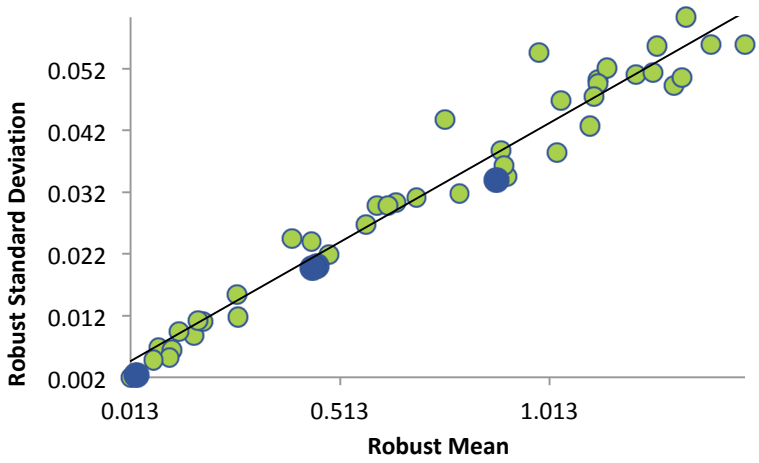
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



LEAD

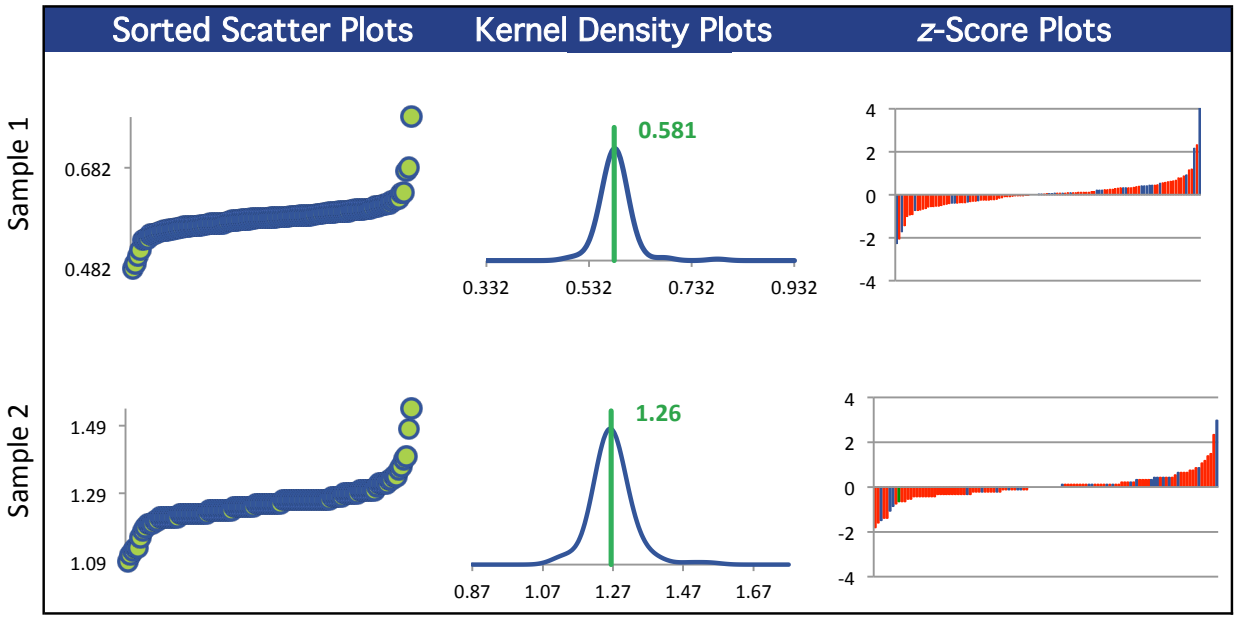
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	116	116	104	114
Median mg/L	0.583	1.26	0.00460	0.291
Robust Mean mg/L	0.581	1.26	0.00467	0.291
U mg/L	0.00239	0.00474	0.000	0.00139
Robust Standard Deviation mg/L	0.0206	0.0408	0.000355	0.0119
Regression Standard Deviation mg/L	0.0436	0.0944	0.000350	0.0218
Stability Flag			Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0436	0.0944	0.000886	0.0218
Outliers	0	0	2	2
|z|>3.0	1	0	2	0
2<|z|<3	4	2	2	1

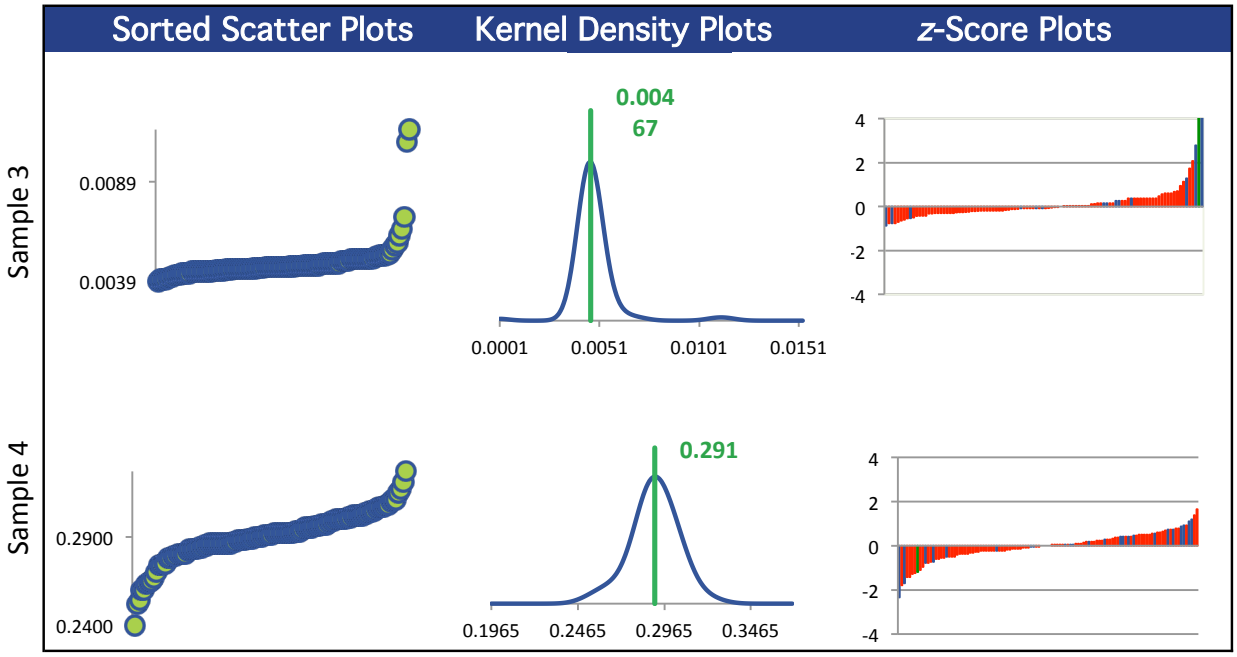
Methods Used

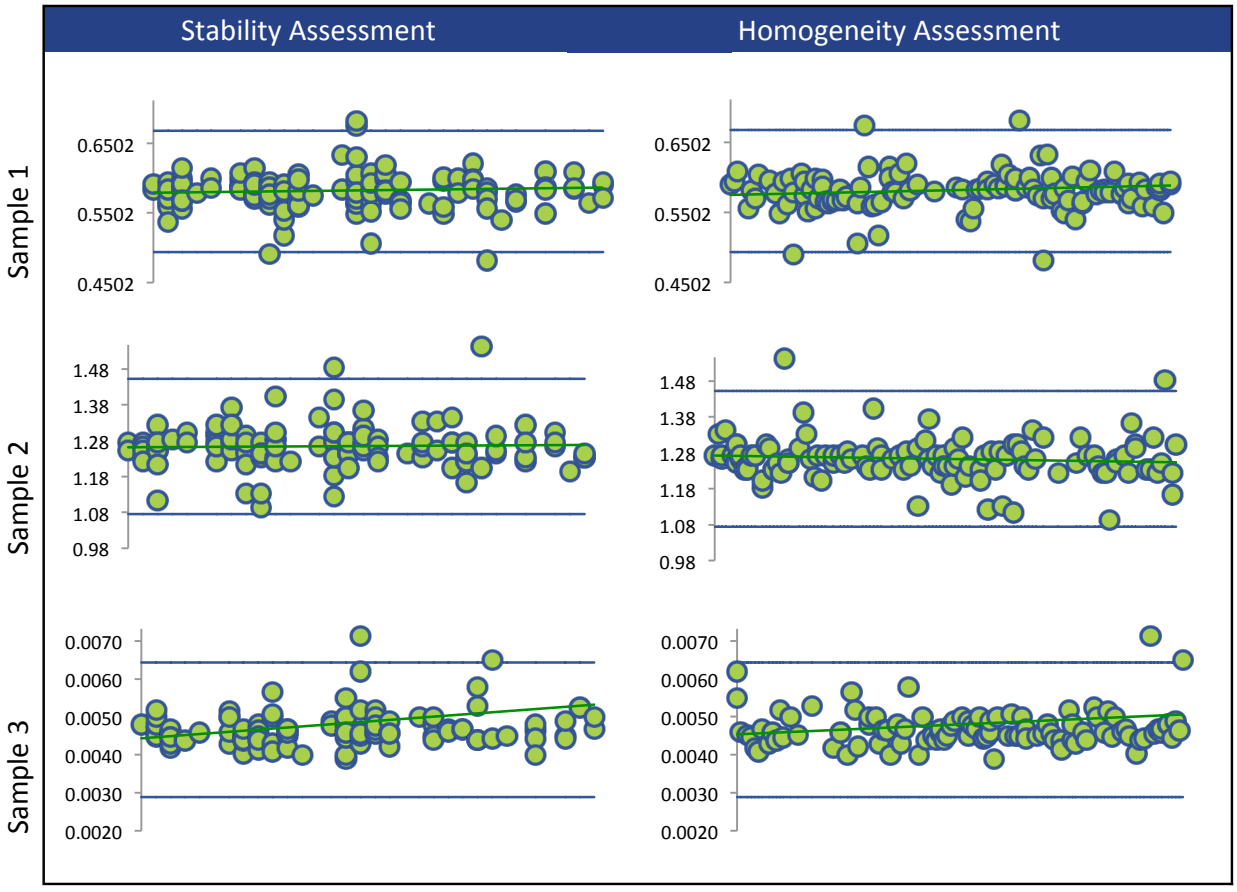
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	25	25	14	24
ICP/MS (Red)	88	88	87	88
AA GRAPHITE (Green)	2	2	2	1
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



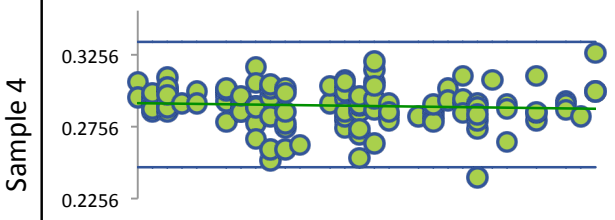
LEAD


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.0089
0.0039
0.004
67
0.0001
0.0051
0.0101
0.0151
4
2
0
-2
-4
Sample 4
0.2900
0.2400
0.291
0.1965
0.2465
0.2965
0.3465
4
2
0
-2
-4

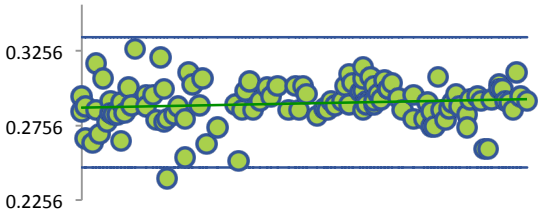

Stability Assessment
Homogeneity Assessment
Sample 1
0.6502
0.5502
0.4502
0.6502
0.5502
0.4502
Sample 2
1.48
1.38
1.28
1.18
1.08
0.98
1.48
1.38
1.28
1.18
1.08
0.98
Sample 3
0.0070
0.0060
0.0050
0.0040
0.0030
0.0020
0.0070
0.0060
0.0050
0.0040
0.0030
0.0020

LEAD

Stability Assessment



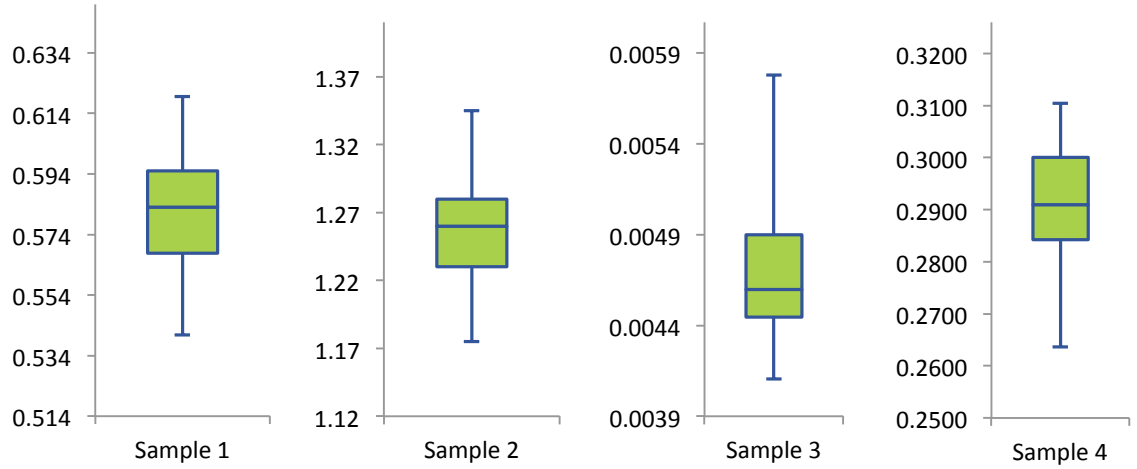
Homogeneity Assessment



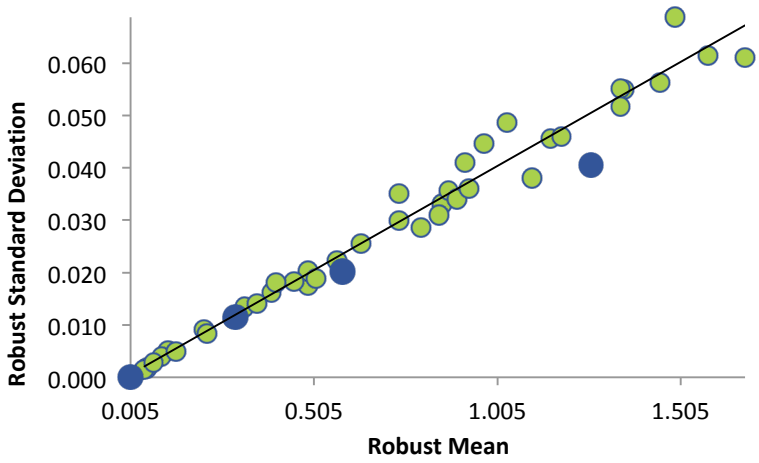
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



MANGANESE

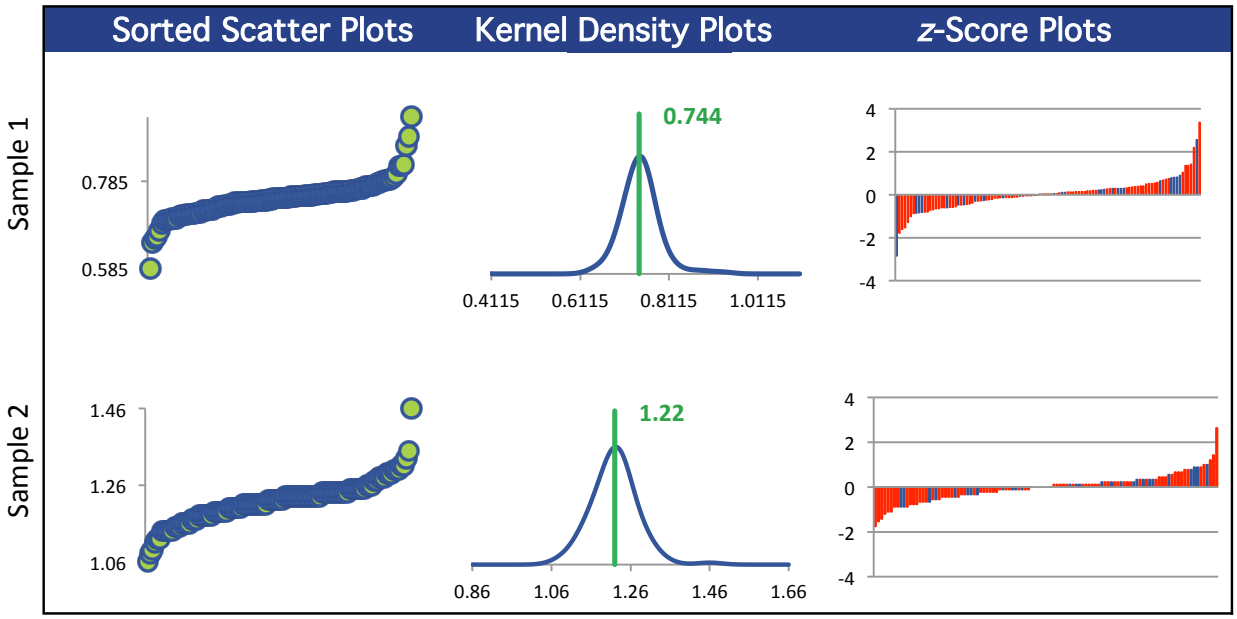
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	109	108	108	107
Median mg/L	0.746	1.22	0.0360	0.319
Robust Mean mg/L	0.744	1.22	0.0360	0.319
U mg/L	0.00384	0.00607	0.000192	0.00161
Robust Standard Deviation mg/L	0.0321	0.0505	0.00160	0.0133
Regression Standard Deviation mg/L	0.0558	0.0913	0.00270	0.0239
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0558	0.0913	0.00270	0.0239
Outliers	0	1	1	2
|z|>3.0	1	0	1	0
2<|z|<3	3	1	0	1

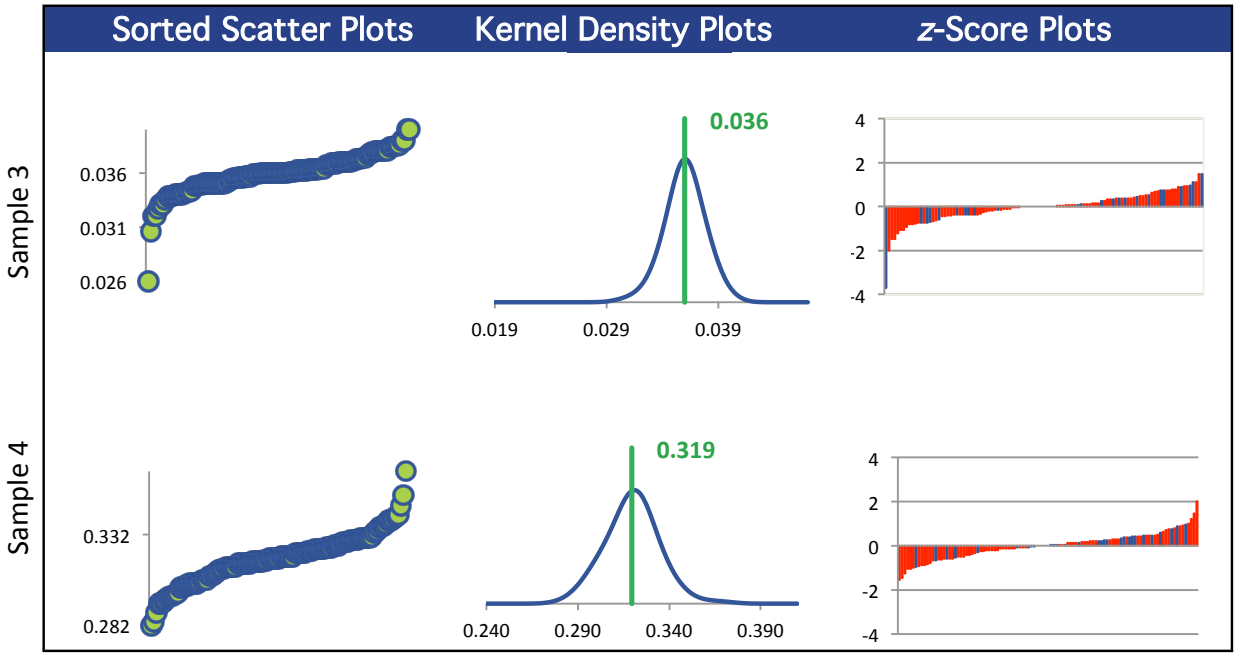
Methods Used

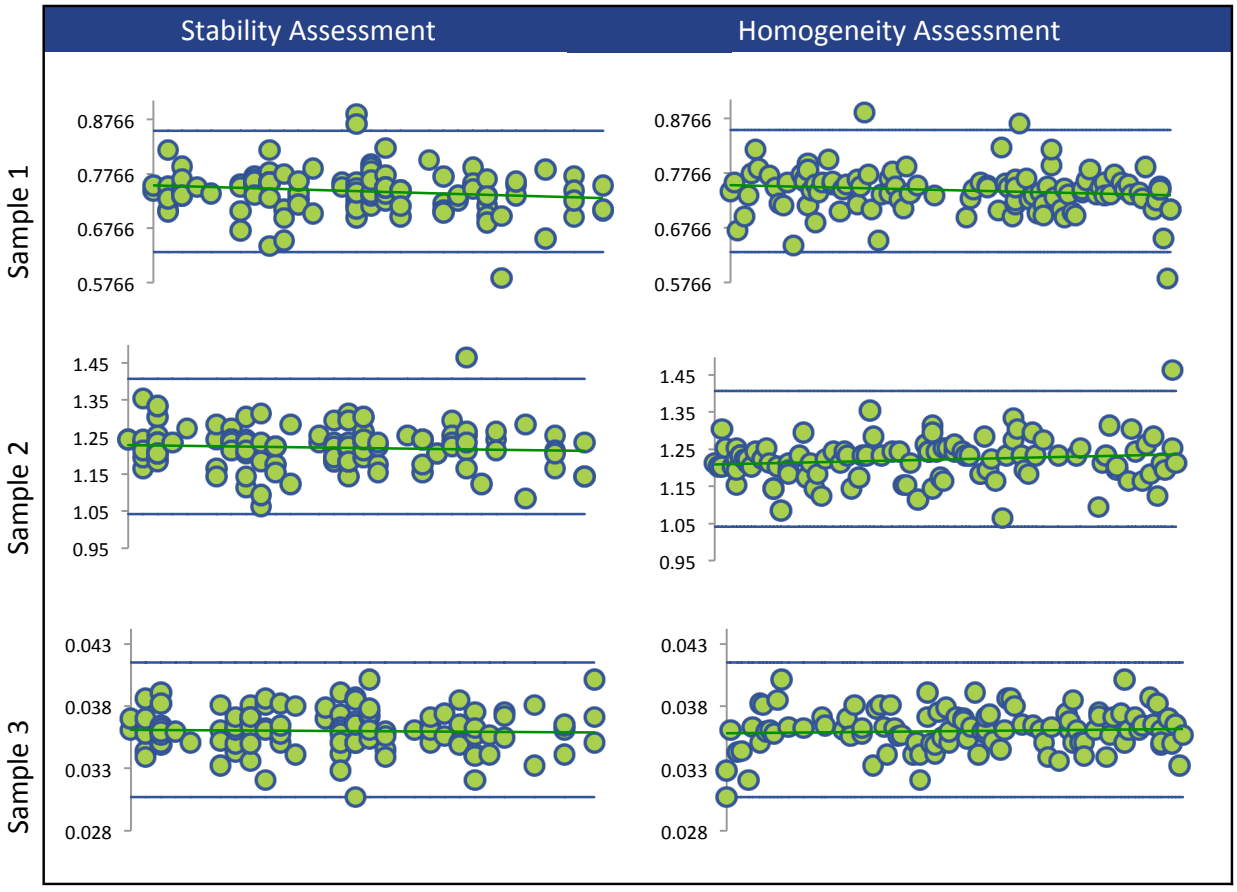
Method	C02A-1	C02A-2	C02A-3	C02A-4
AA GRAPHITE (Blue)	2	1	2	1
ICP/MS (Red)	77	77	77	76
ICP/OES (Green)	29	29	28	29
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



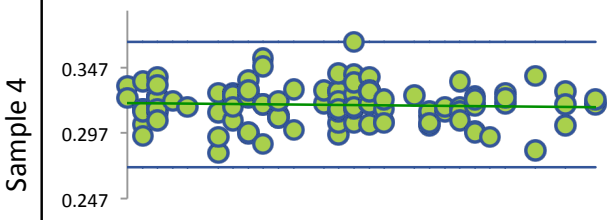
MANGANESE


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.036
0.031
0.026
0.036
0.019
0.029
0.039
4
2
0
-2
-4
Sample 4
0.332
0.282
0.319
0.240
0.290
0.340
0.390
4
2
0
-2
-4

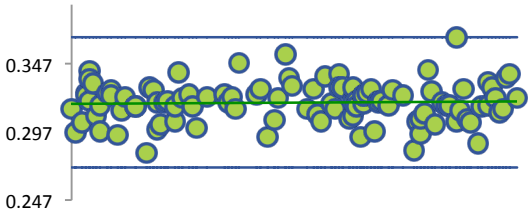

Stability Assessment
Homogeneity Assessment
Sample 1
0.8766
0.7766
0.6766
0.5766
0.8766
0.7766
0.6766
0.5766
Sample 2
1.45
1.35
1.25
1.15
1.05
0.95
1.45
1.35
1.25
1.15
1.05
0.95
Sample 3
0.043
0.038
0.033
0.028
0.043
0.038
0.033
0.028

MANGANESE

Stability Assessment



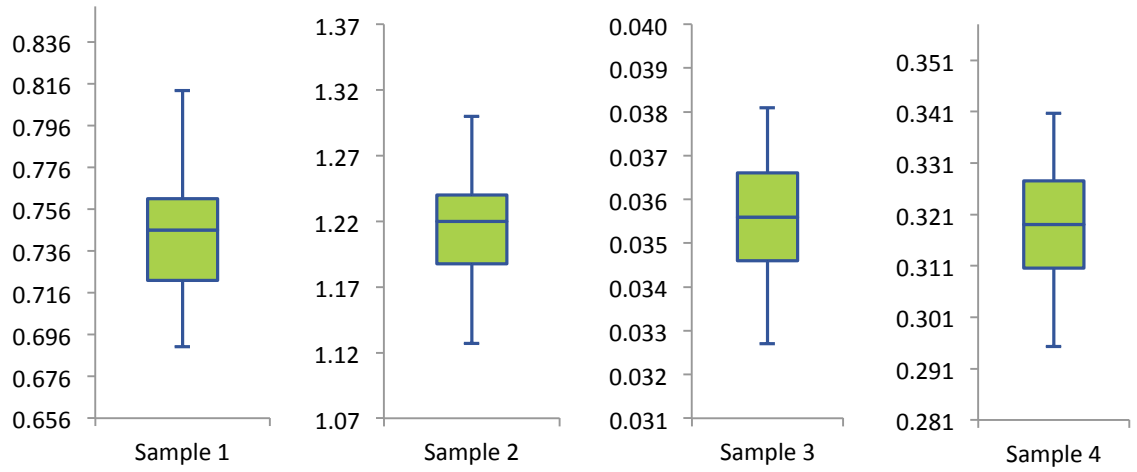
Homogeneity Assessment



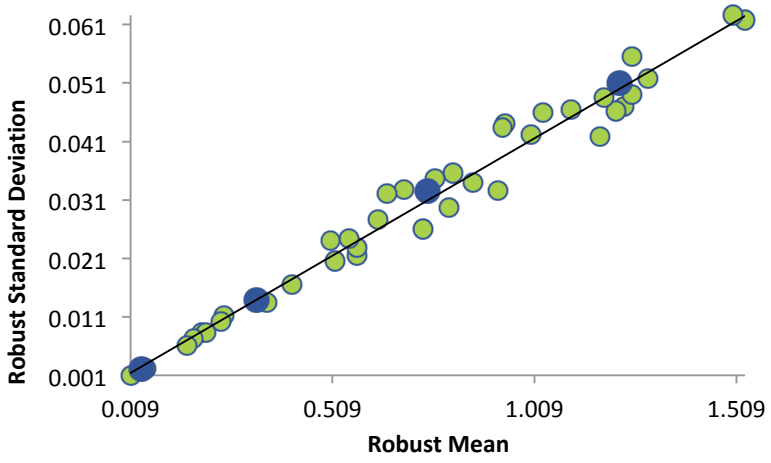
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



MOLYBDENUM

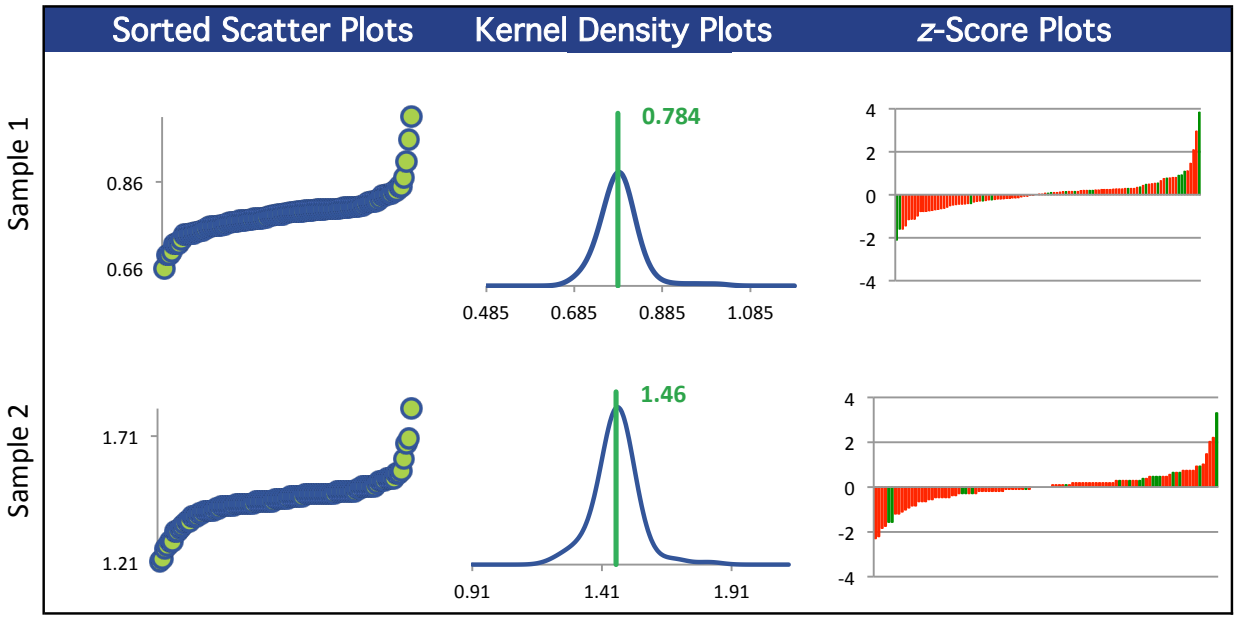
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	103	103	103	103
Median mg/L	0.788	1.46	0.0510	0.387
Robust Mean mg/L	0.784	1.46	0.0512	0.385
U mg/L	0.00410	0.00737	0.000432	0.00201
Robust Standard Deviation mg/L	0.0333	0.0598	0.00351	0.0163
Regression Standard Deviation mg/L	0.0588	0.109	0.00384	0.0289
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0588	0.109	0.00384	0.0289
Outliers	0	0	0	0
|z|>3.0	1	1	8	0
2<|z|<3	3	4	4	0

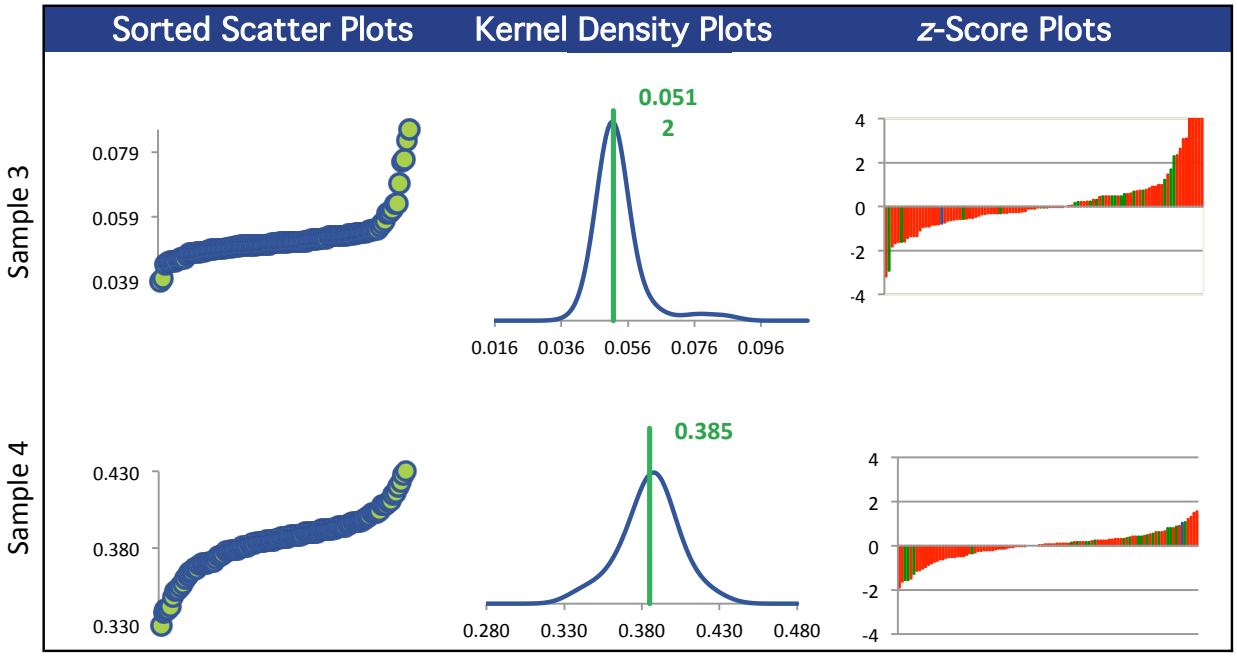
Methods Used

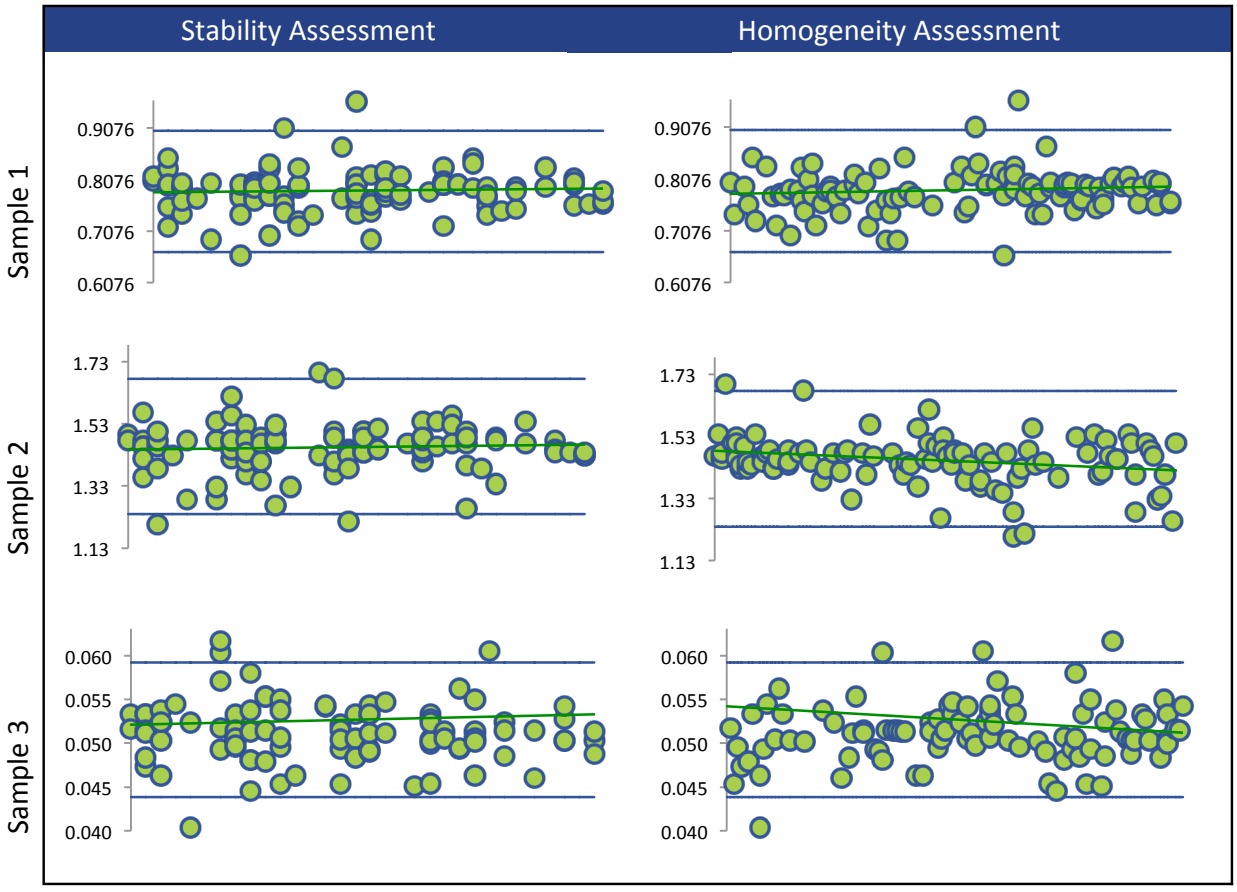
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	20	20	20	20
ICP/MS (Red)	81	81	81	81
AA FLAME (Green)	1	1	1	1
AA GRAPHITE (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



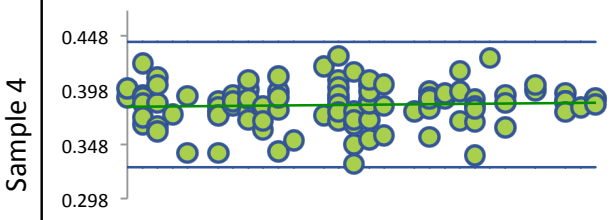
MOLYBDENUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.079
0.059
0.039
0.051
2
0.016
0.036
0.056
0.076
0.096
4
2
0
-2
-4
Sample 4
0.430
0.380
0.330
0.385
0.280
0.330
0.380
0.430
0.480
4
2
0
-2
-4

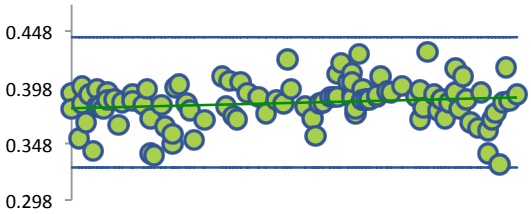

Stability Assessment
Homogeneity Assessment
Sample 1
0.9076
0.8076
0.7076
0.6076
Sample 2
1.73
1.53
1.33
1.13
Sample 3
0.060
0.055
0.050
0.045
0.040

MOLYBDENUM

Stability Assessment



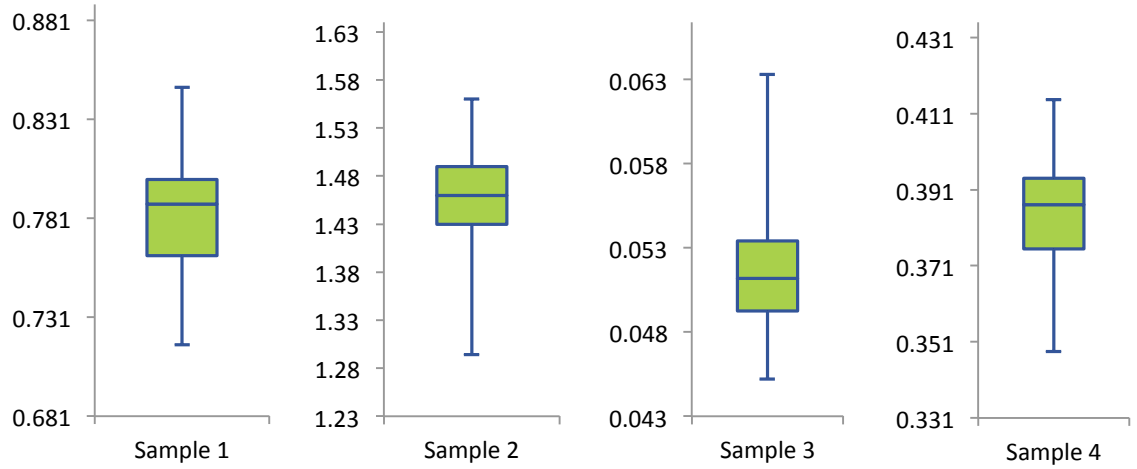
Homogeneity Assessment



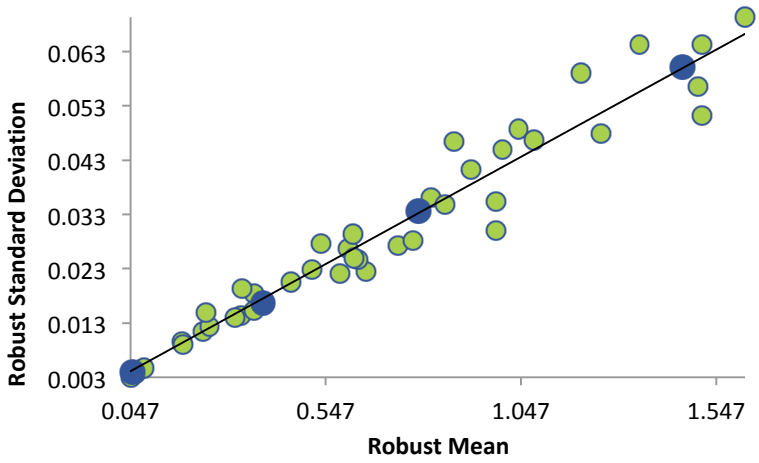
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



NICKEL

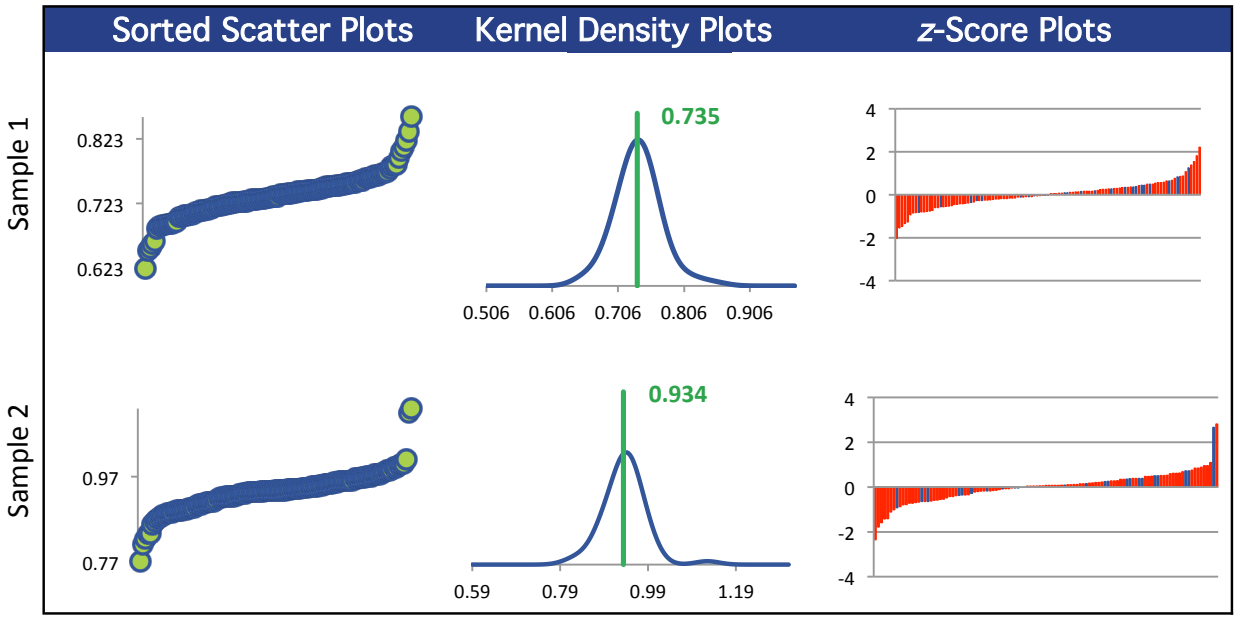
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	111	111	105	110
Median mg/L	0.734	0.938	0.0125	0.150
Robust Mean mg/L	0.735	0.934	0.0126	0.150
U mg/L	0.00355	0.00458	0.000	0.000747
Robust Standard Deviation mg/L	0.0299	0.0386	0.000644	0.00627
Regression Standard Deviation mg/L	0.0551	0.0701	0.000941	0.0113
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0551	0.0701	0.000941	0.0113
Outliers	0	0	2	1
|z|>3.0	0	0	3	0
2<|z|<3	2	3	1	3

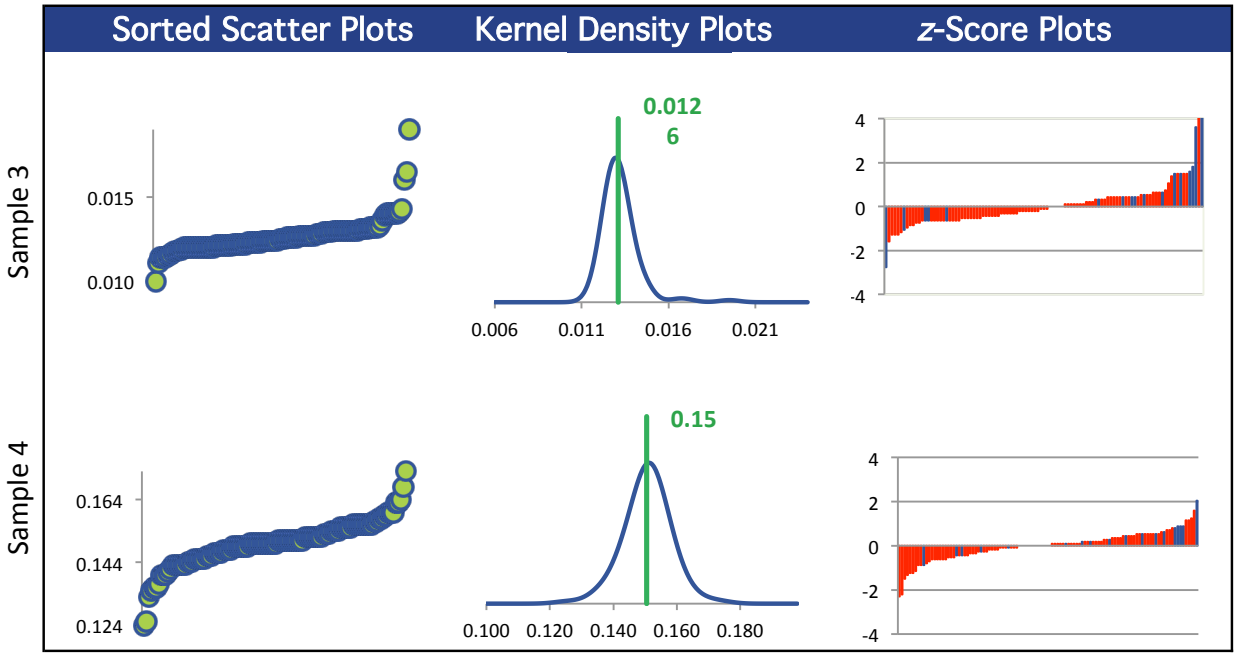
Methods Used

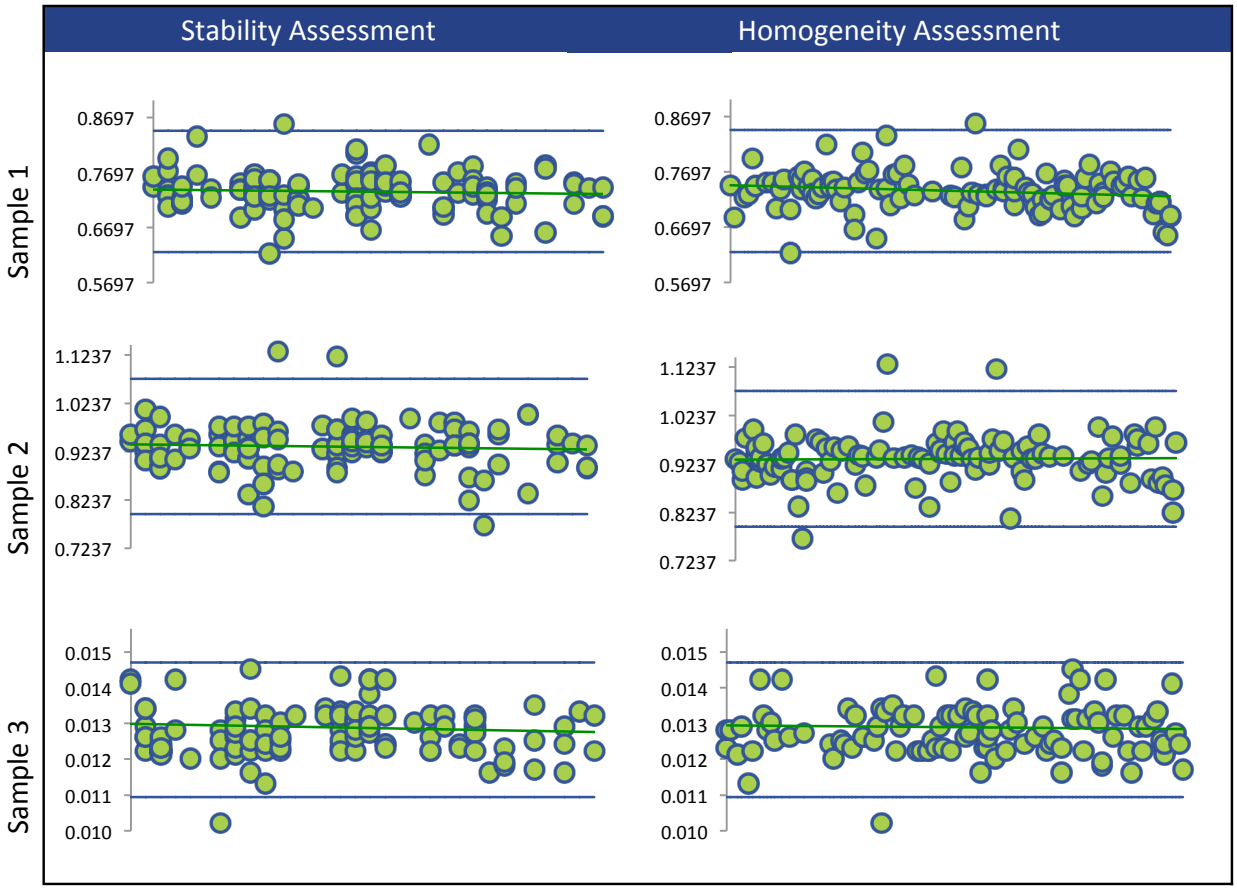
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	85	85	85	85
AA GRAPHITE (Red)	2	2	1	2
ICP/OES (Green)	23	23	18	22
AA FLAME (Orange)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



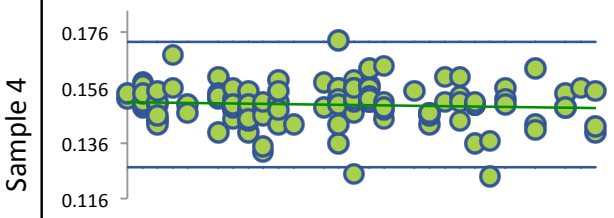
NICKEL


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.015
0.010
0.012
6
0.006
0.011
0.016
0.021
4
2
0
-2
-4
Sample 4
0.164
0.144
0.124
0.15
0.100
0.120
0.140
0.160
0.180

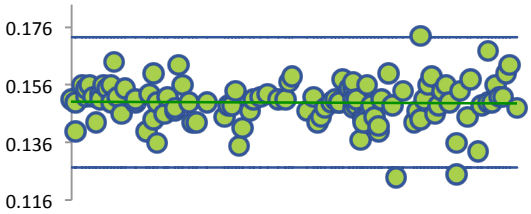

Stability Assessment
Homogeneity Assessment
Sample 1
0.8697
0.7697
0.6697
0.5697
Sample 2
1.1237
1.0237
0.9237
0.8237
0.7237
Sample 3
0.015
0.014
0.013
0.012
0.011
0.010

NICKEL

Stability Assessment



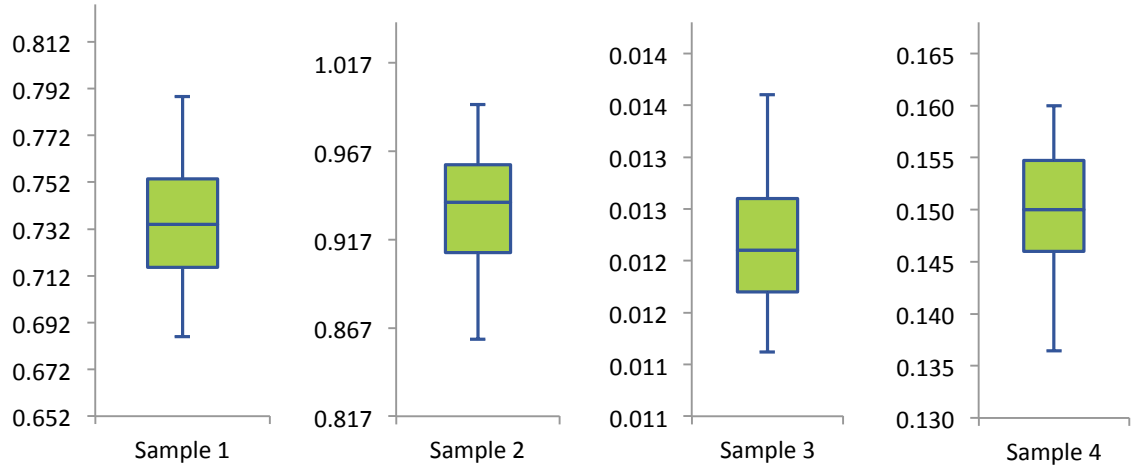
Homogeneity Assessment



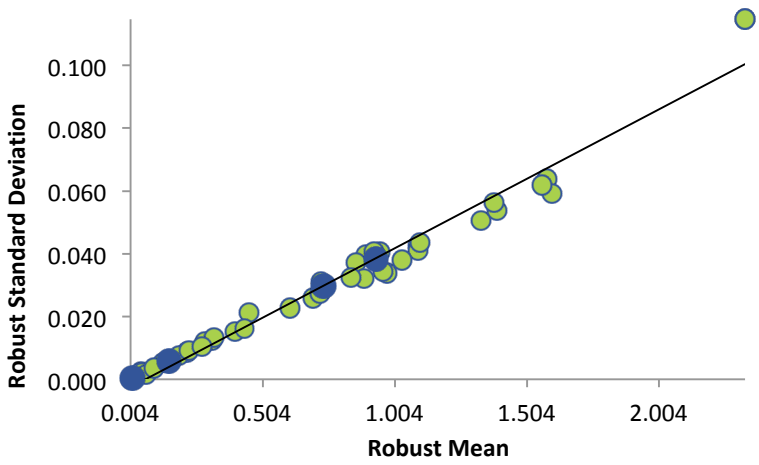
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



SELENIUM

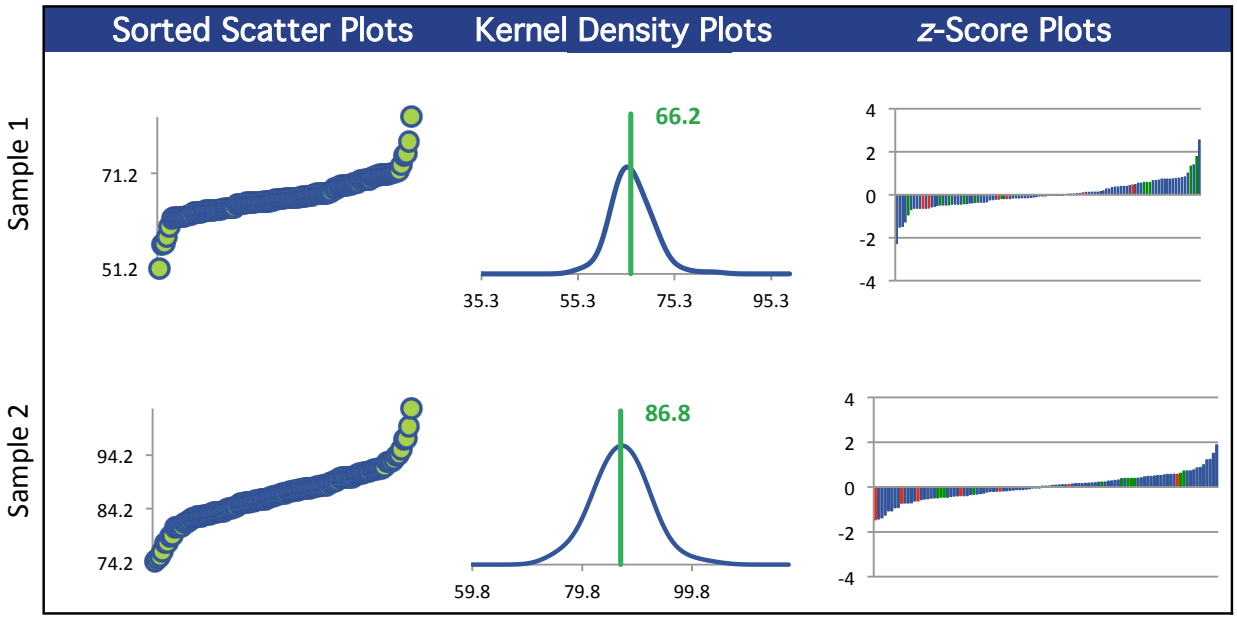
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	105	105	104	104
Median mg/L	66.0	87.0	19.9	49.5
Robust Mean mg/L	66.2	86.8	19.9	49.6
U mg/L	0.435	0.564	0.153	0.358
Robust Standard Deviation mg/L	3.57	4.62	1.25	2.92
Regression Standard Deviation mg/L	6.62	8.68	1.99	4.96
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	6.62	8.68	1.99	4.96
Outliers	3	3	3	4
|z|>3.0	0	0	2	0
2<|z|<3	2	0	3	1

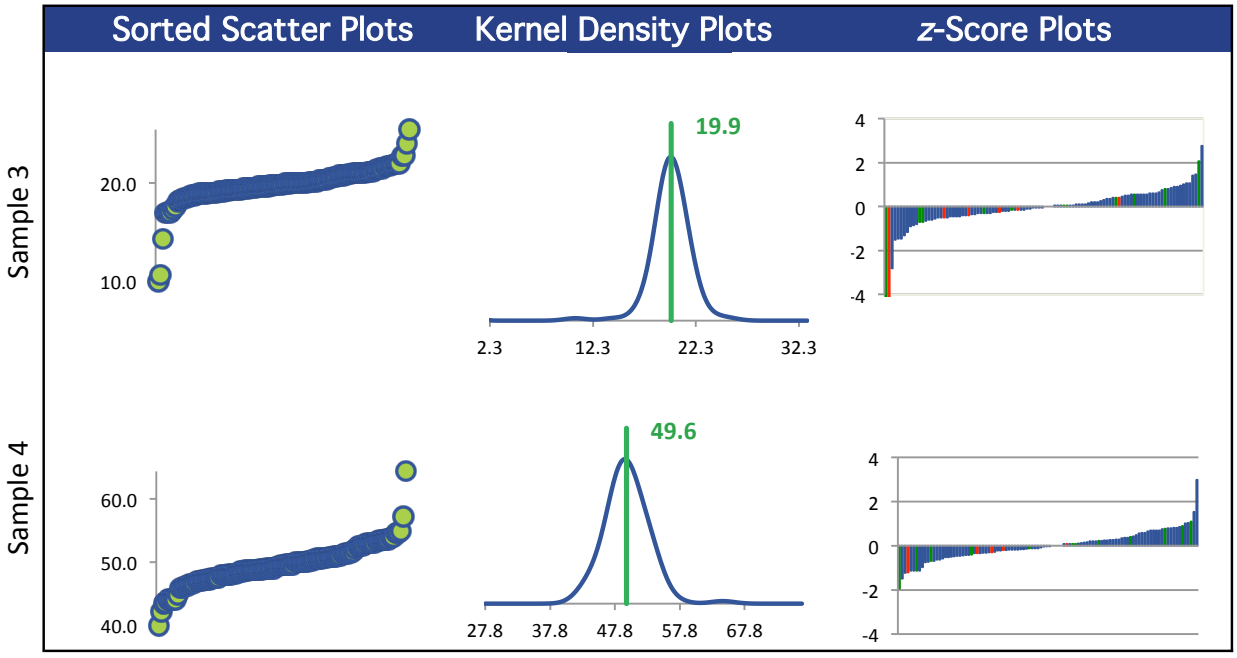
Methods Used

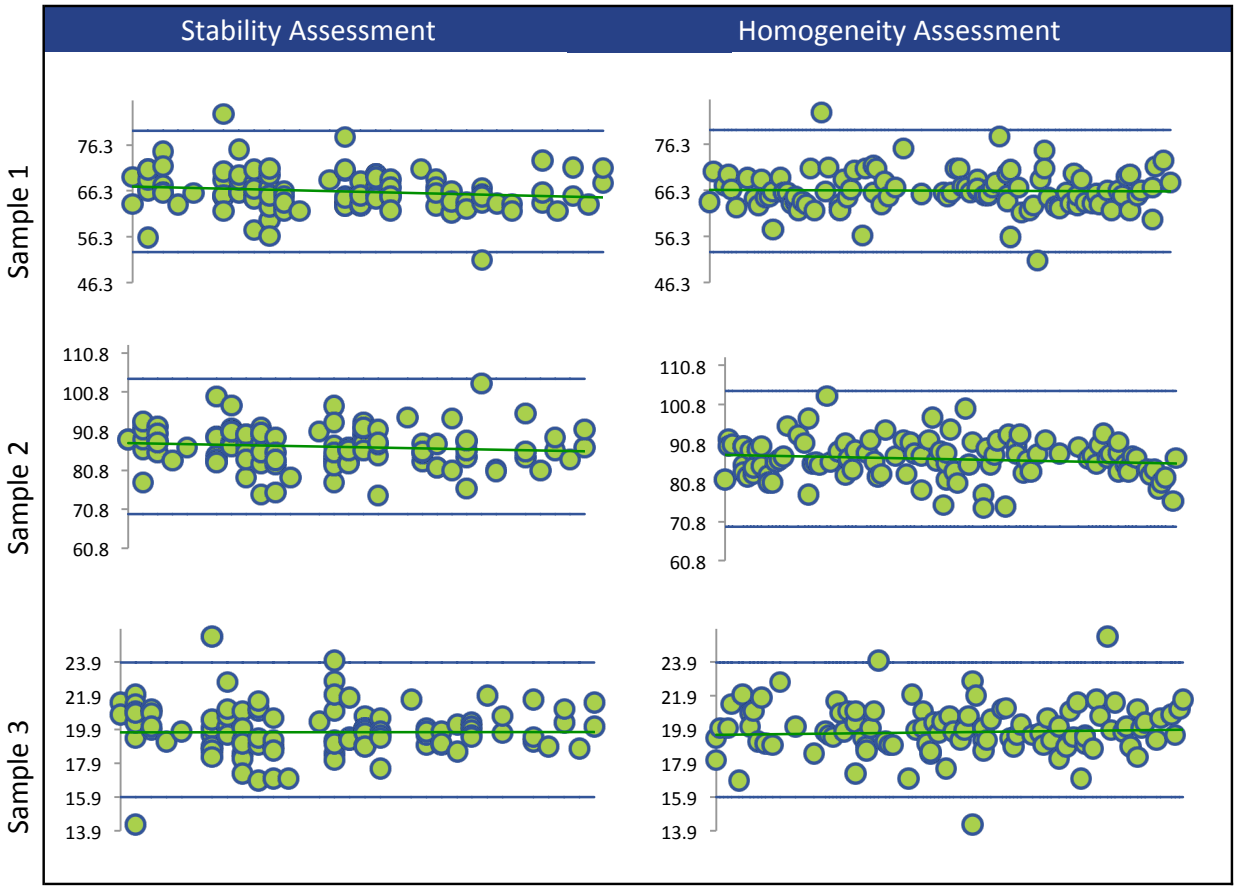
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	86	86	86	86
ICP/OES (Red)	12	12	11	12
HYDRIDE AA (Green)	3	3	3	3
AA GRAPHITE (Orange)	1	1	1	1
HYDRIDE ICP (Black)	1	1	1	0
ATOMIC FLUORESCENCE SPECTROMETER (Yellow)	1	1	1	1
IC FLUORESCENCE SPECTROPHOTOMETRY (Purple)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



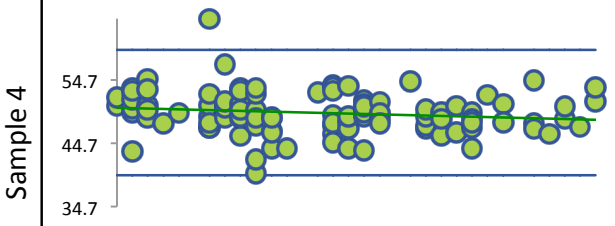
SELENIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
20.0
10.0
19.9
2.3
12.3
22.3
32.3
4
2
0
-2
-4
Sample 4
60.0
50.0
40.0
49.6
27.8
37.8
47.8
57.8
67.8
4
2
0
-2
-4

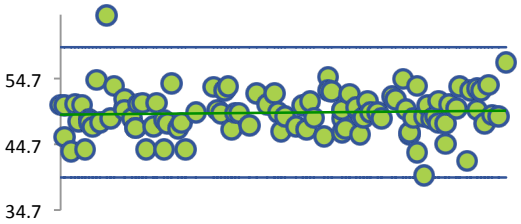

Stability Assessment
Homogeneity Assessment
Sample 1
76.3
66.3
56.3
46.3
76.3
66.3
56.3
46.3
Sample 2
110.8
100.8
90.8
80.8
70.8
60.8
110.8
100.8
90.8
80.8
70.8
60.8
Sample 3
23.9
21.9
19.9
17.9
15.9
13.9
23.9
21.9
19.9
17.9
15.9
13.9

SELENIUM

Stability Assessment



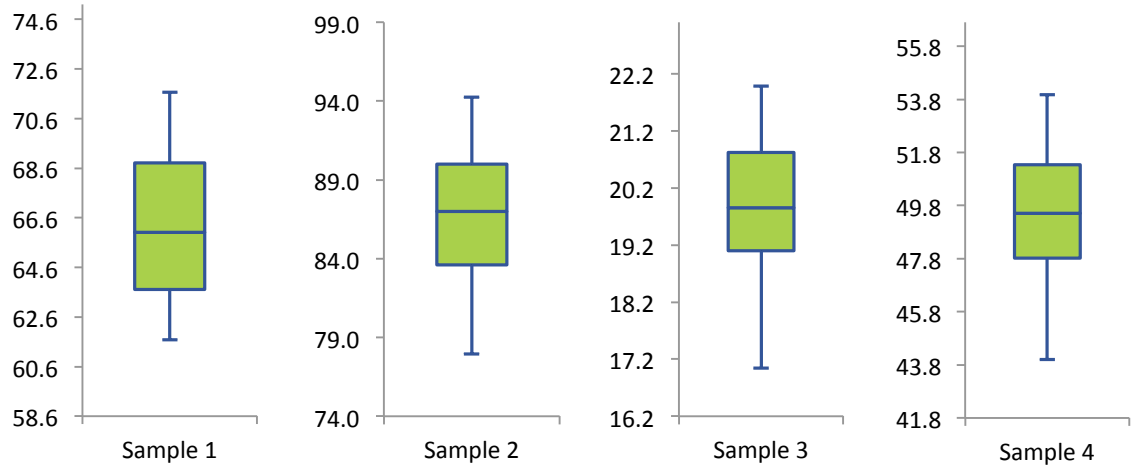
Homogeneity Assessment



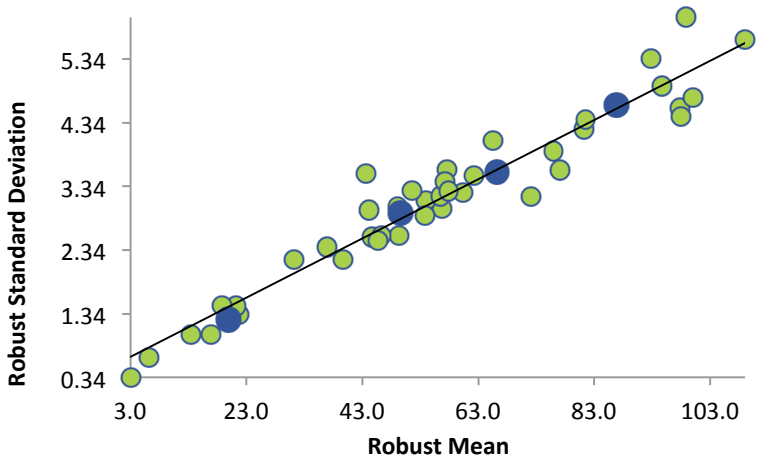
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



SILVER

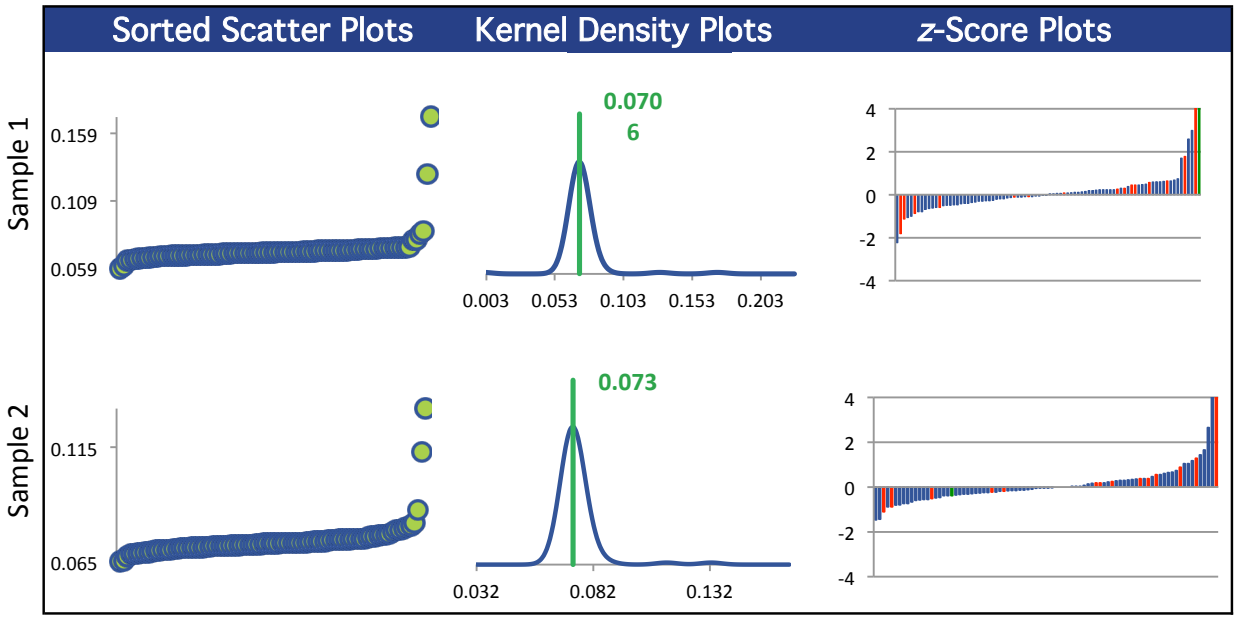
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	86	86	85	86
Median mg/L	0.0707	0.0728	0.0122	0.0451
Robust Mean mg/L	0.0706	0.0730	0.0122	0.0453
U mg/L	0.000384	0.000410	0.000	0.000228
Robust Standard Deviation mg/L	0.00285	0.00304	0.000565	0.00169
Regression Standard Deviation mg/L	0.00529	0.00547	0.000917	0.00339
Stability Flag			Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00529	0.00547	0.00394	0.00339
Outliers	1	1	1	1
|z|>3.0	2	2	1	3
2<|z|<3	3	1	1	2

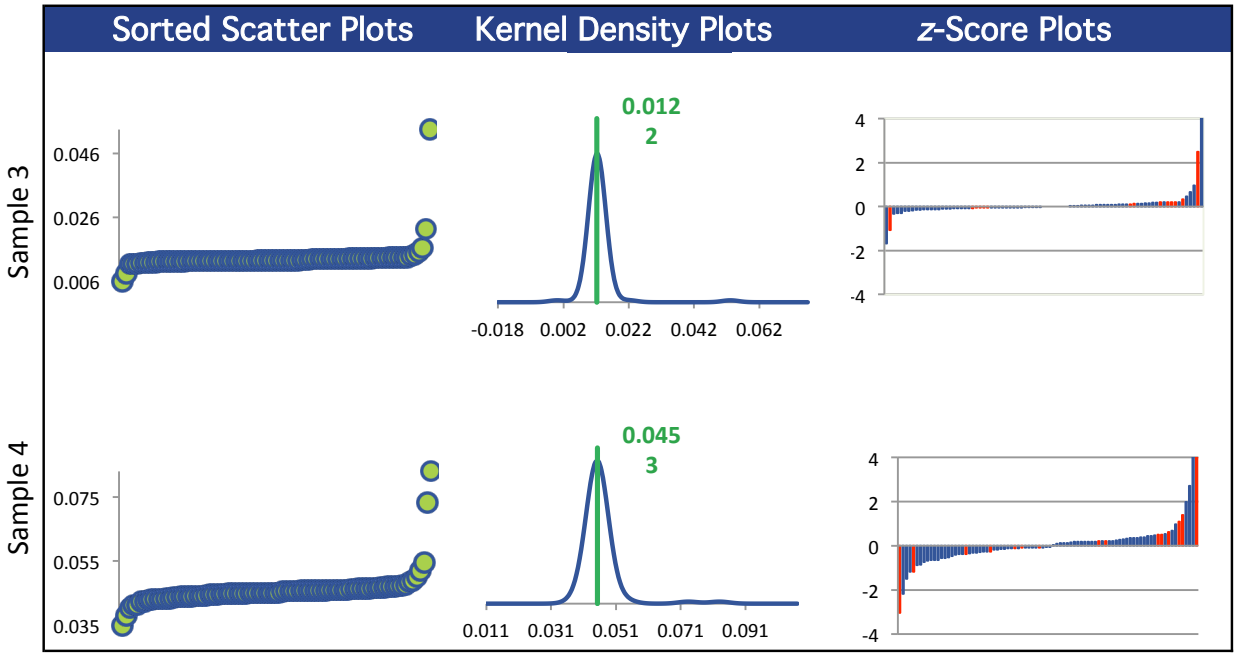
Methods Used

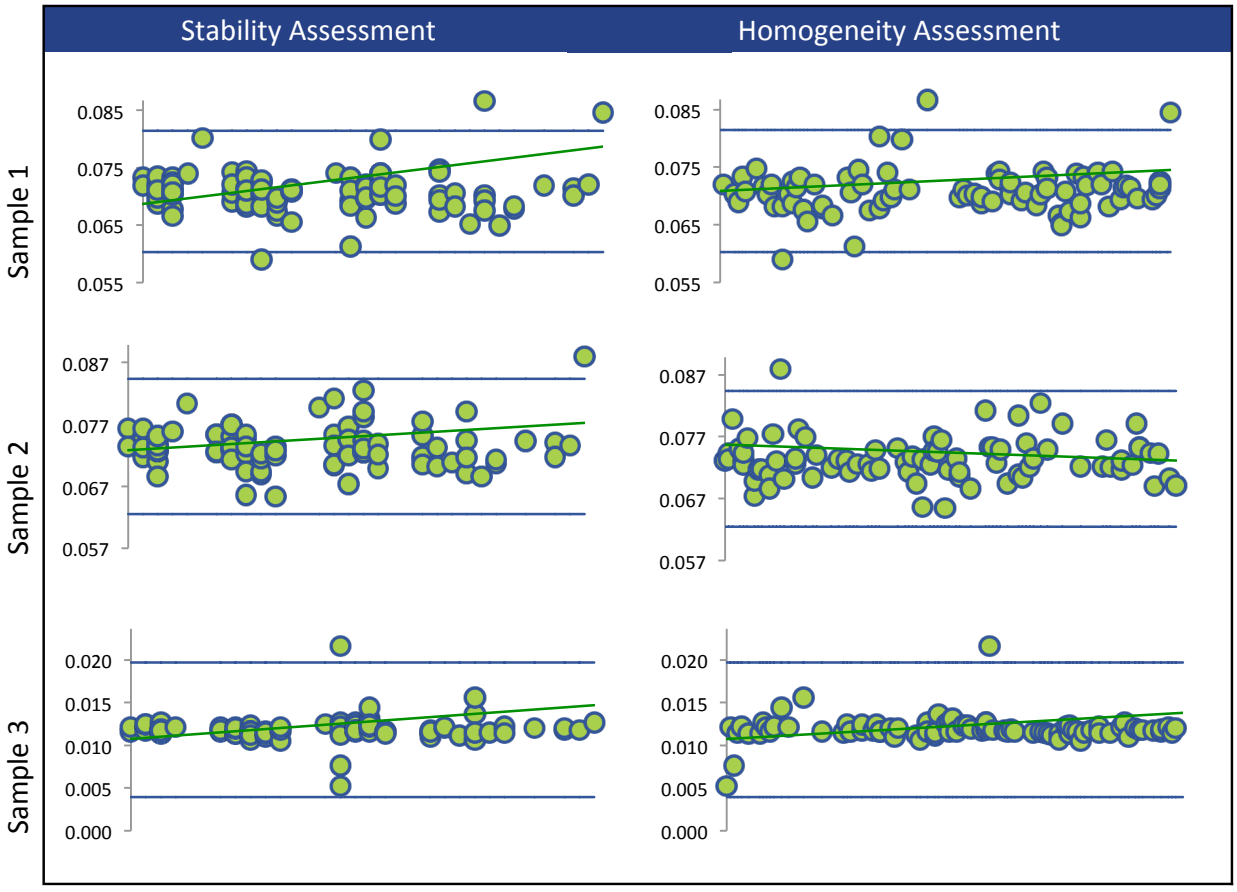
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	69	69	69	69
ICP/OES (Red)	15	15	14	15
AA FLAME (Green)	2	2	2	2

All summary stats and the plots below are based on the data excluding any flagged outliers



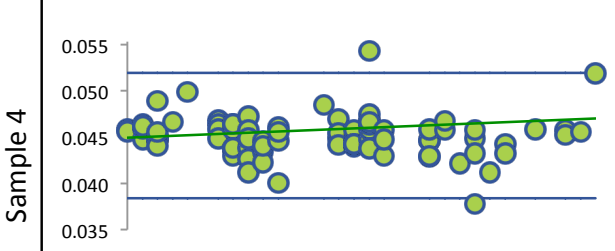
SILVER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.046
0.026
0.006
0.012
2
-0.018 0.002 0.022 0.042 0.062
4
2
0
-2
-4
Sample 4
0.075
0.055
0.035
0.045
3
0.011 0.031 0.051 0.071 0.091
4
2
0
-2
-4

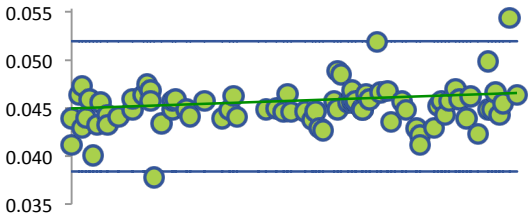

Stability Assessment
Homogeneity Assessment
Sample 1
0.085
0.075
0.065
0.055
Sample 2
0.087
0.077
0.067
0.057
Sample 3
0.020
0.015
0.010
0.005
0.000

SILVER

Stability Assessment



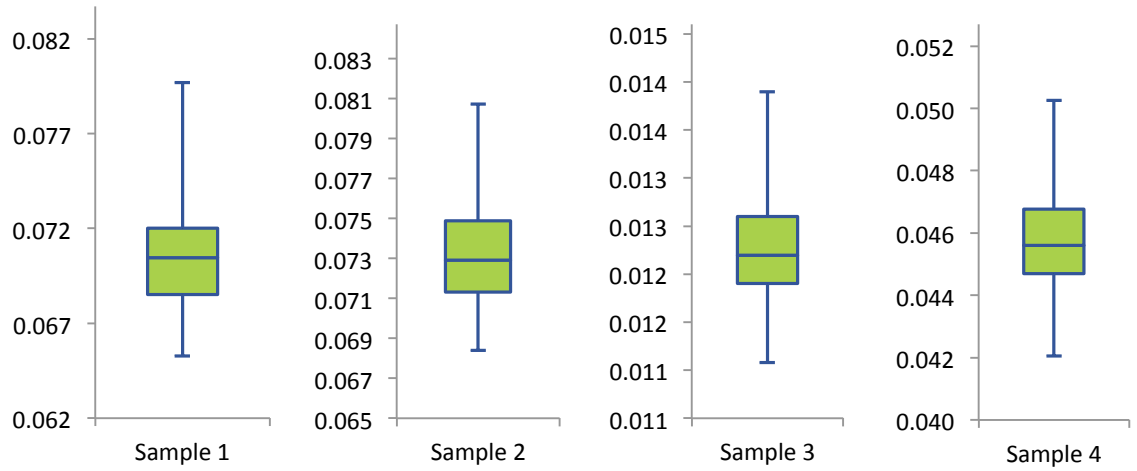
Homogeneity Assessment



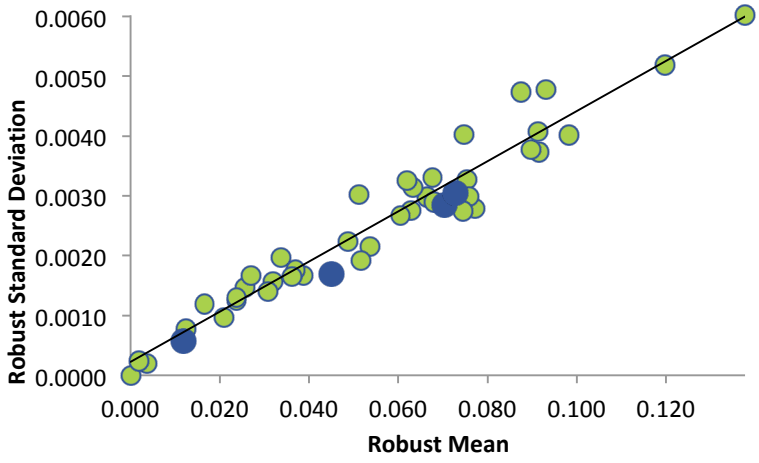
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



STRONTIUM

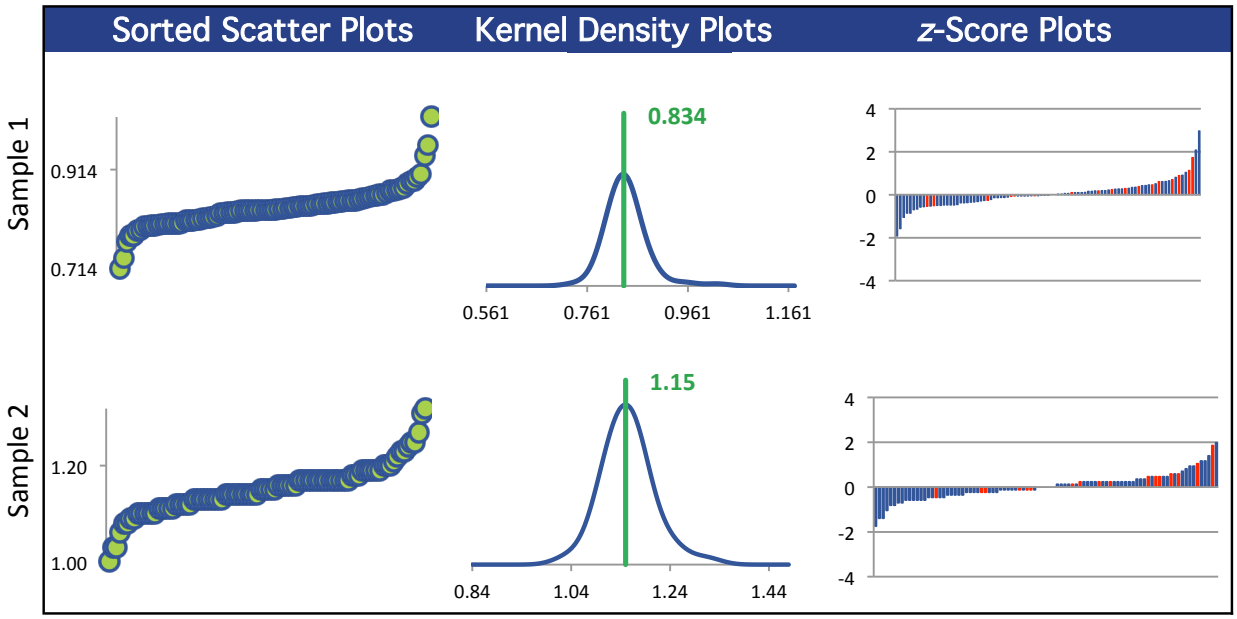
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	91	91	91	91
Median mg/L	0.833	1.15	0.0313	0.362
Robust Mean mg/L	0.834	1.15	0.0314	0.362
U mg/L	0.00394	0.00574	0.000176	0.00218
Robust Standard Deviation mg/L	0.0301	0.0438	0.00134	0.0166
Regression Standard Deviation mg/L	0.0626	0.0863	0.00235	0.0271
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0626	0.0863	0.00235	0.0271
Outliers	1	1	0	1
|z|>3.0	0	0	0	0
2<|z|<3	2	0	0	0

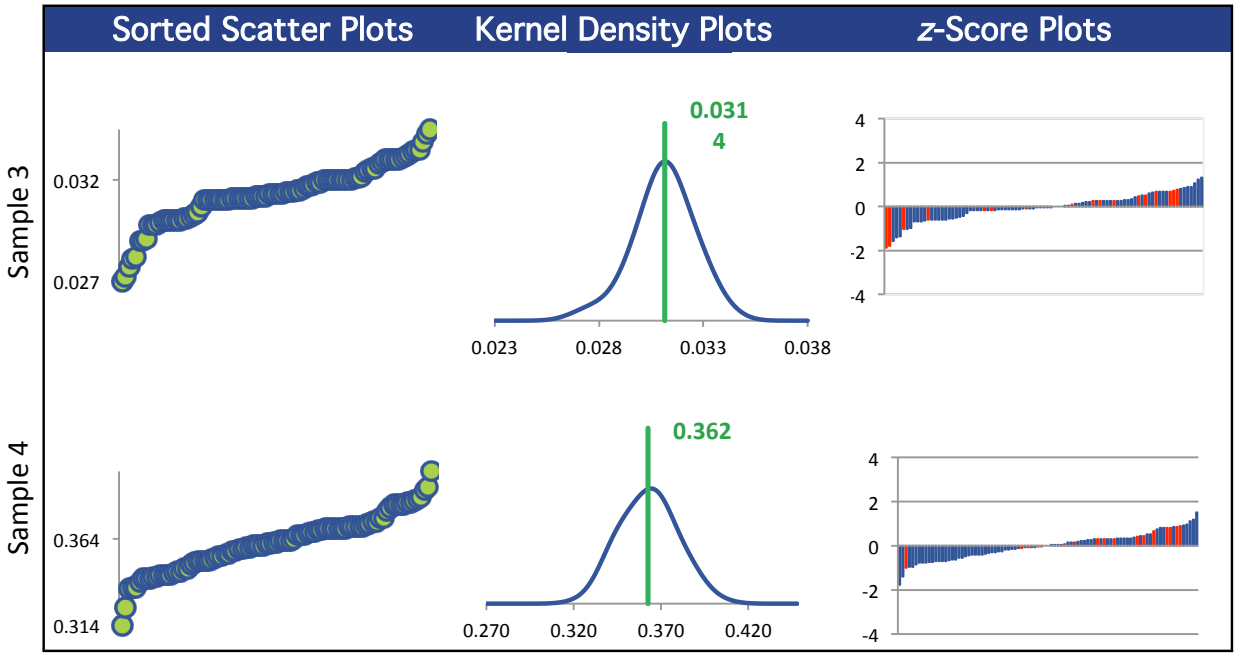
Methods Used

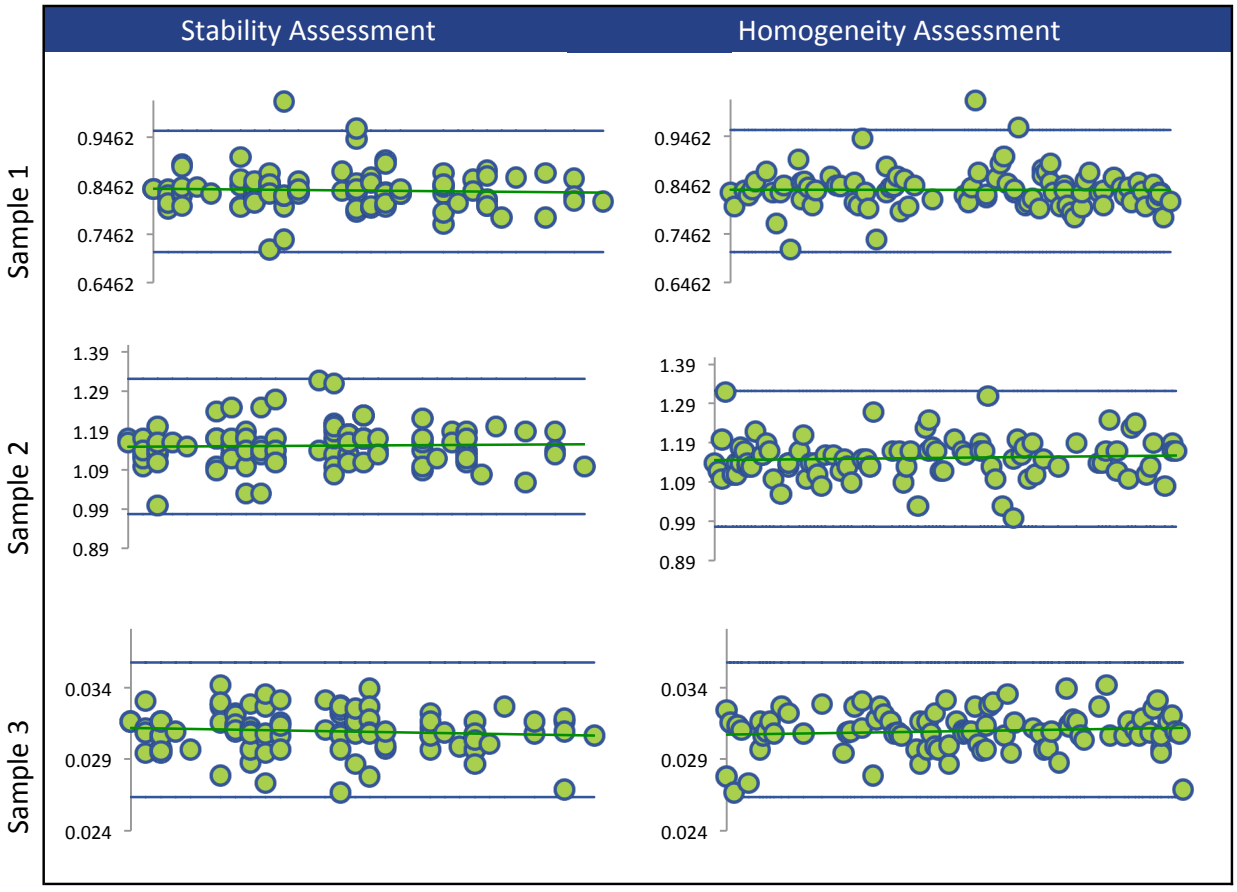
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	72	72	72	72
ICP/OES (Red)	18	18	17	18
AA GRAPHITE (Green)	1	1	1	1
AA FLAME (Orange)	0	0	1	0

All summary stats and the plots below are based on the data excluding any flagged outliers



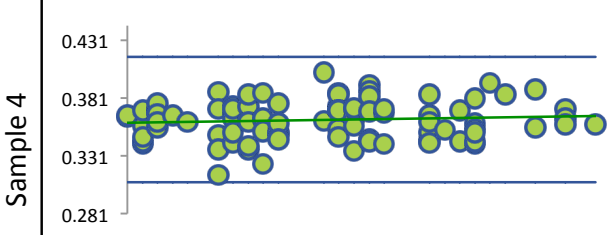
STRONTIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.032
0.027
0.031
4
0.023
0.028
0.033
0.038
4
2
0
-2
-4
Sample 4
0.364
0.314
0.362
0.270
0.320
0.370
0.420
4
2
0
-2
-4

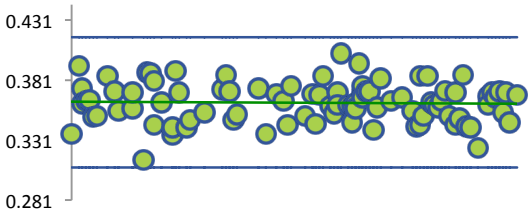

Stability Assessment
Homogeneity Assessment
Sample 1
0.9462
0.8462
0.7462
0.6462
Sample 2
1.39
1.29
1.19
1.09
0.99
0.89
Sample 3
0.034
0.029
0.024

STRONTIUM

Stability Assessment



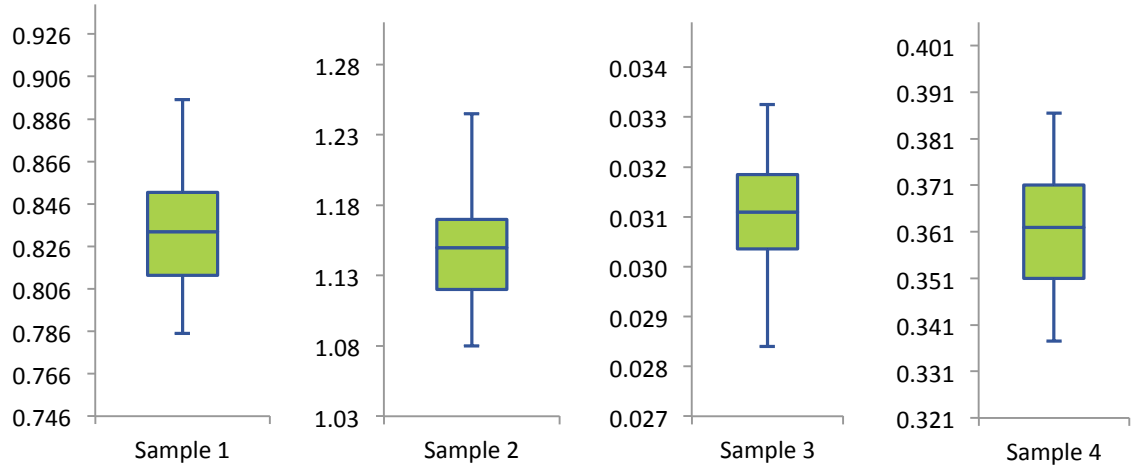
Homogeneity Assessment



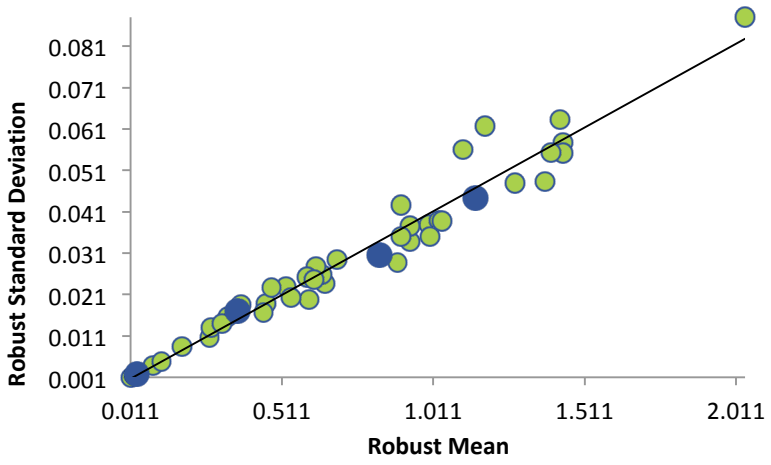
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



THALLIUM

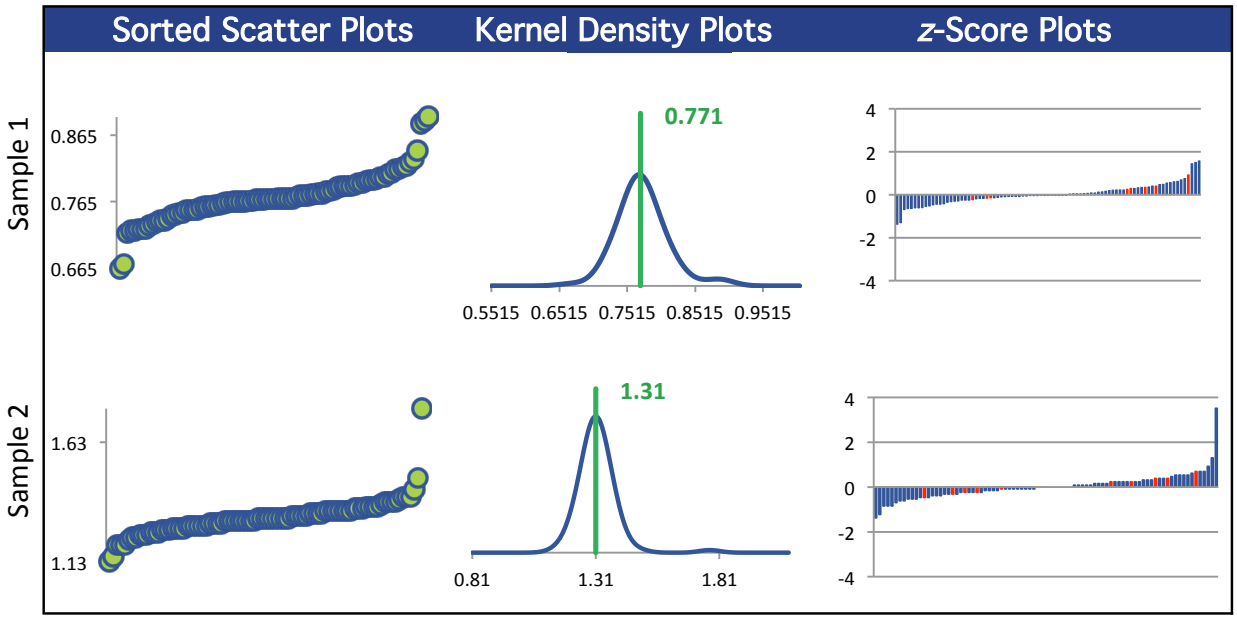
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	85	85	85	85
Median mg/L	0.769	1.31	0.0520	0.511
Robust Mean mg/L	0.771	1.31	0.0521	0.511
U mg/L	0.00412	0.00738	0.000297	0.00292
Robust Standard Deviation mg/L	0.0304	0.0544	0.00219	0.0215
Regression Standard Deviation mg/L	0.0771	0.131	0.00521	0.0511
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0771	0.131	0.00521	0.0511
Outliers	1	1	1	1
|z|>3.0	0	1	0	0
2<|z|<3	0	0	0	0

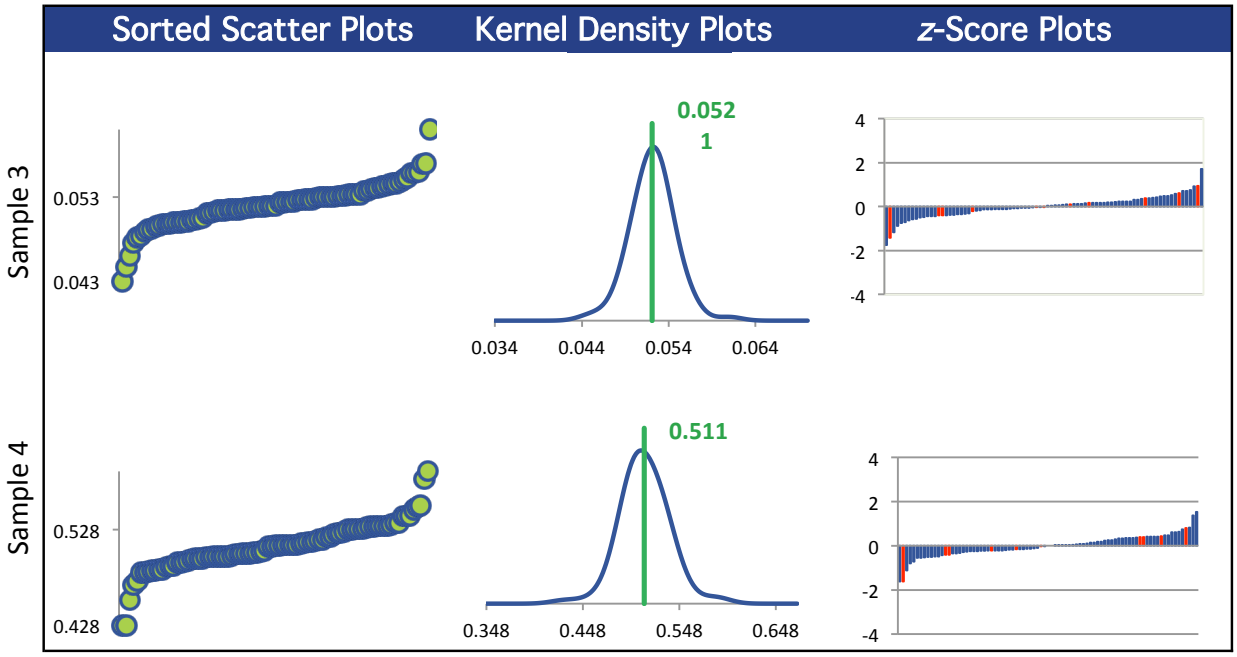
Methods Used

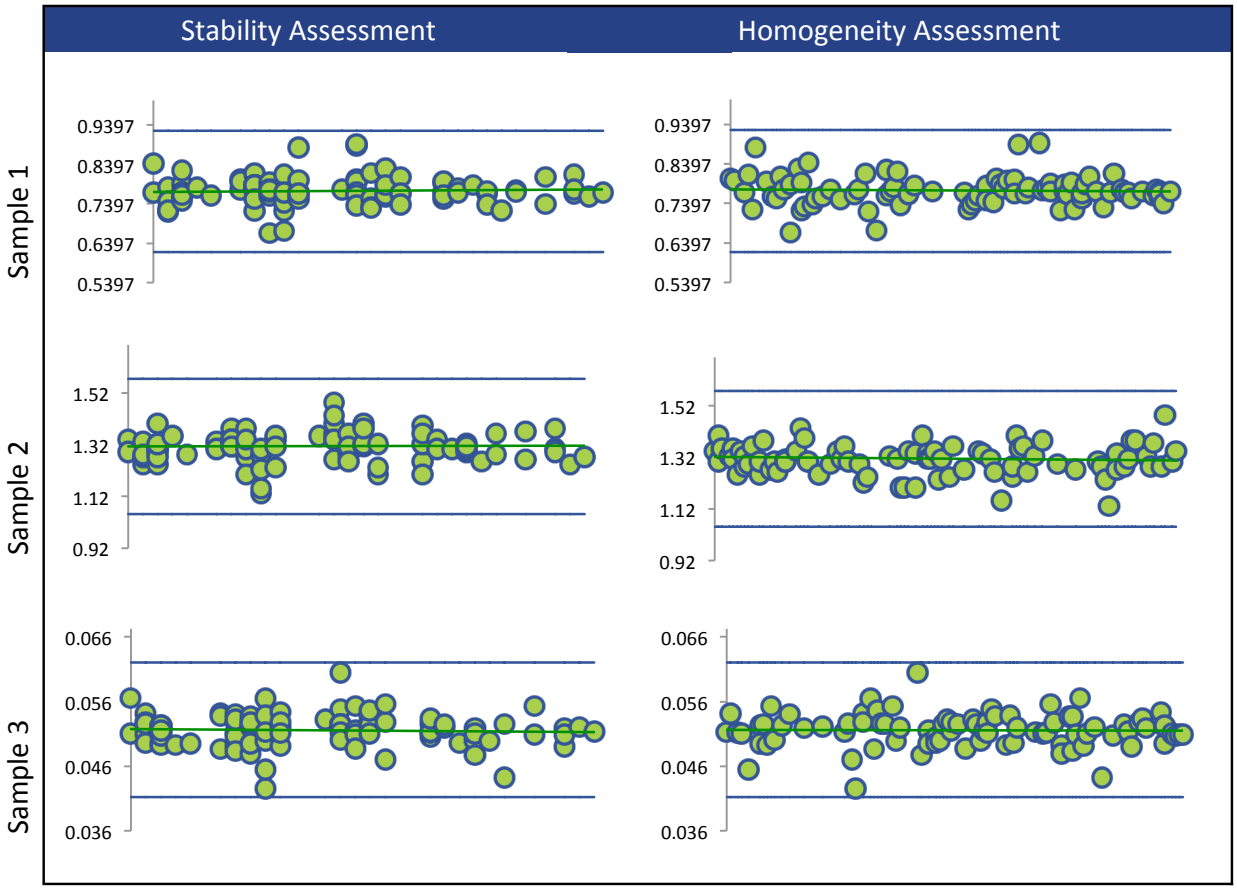
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	74	74	74	74
ICP/OES (Red)	11	11	11	11

All summary stats and the plots below are based on the data excluding any flagged outliers



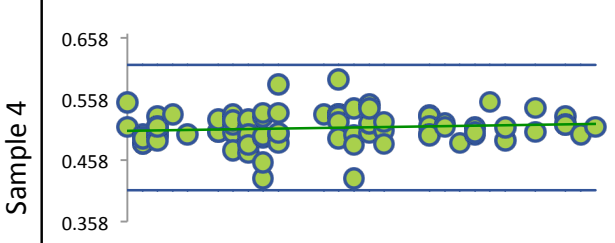
THALLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.053
0.043
0.052
1
0.034
0.044
0.054
0.064
4
2
0
-2
-4
Sample 4
0.528
0.428
0.511
0.348
0.448
0.548
0.648
4
2
0
-2
-4

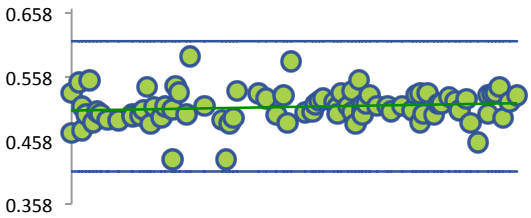

Stability Assessment
Homogeneity Assessment
Sample 1
0.9397
0.8397
0.7397
0.6397
0.5397
Sample 2
1.52
1.32
1.12
0.92
Sample 3
0.066
0.056
0.046
0.036

THALLIUM

Stability Assessment



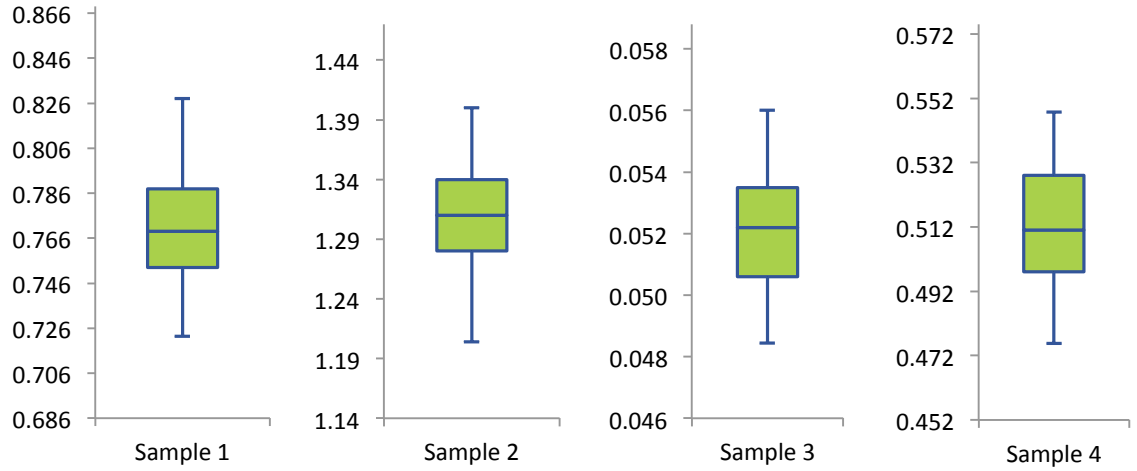
Homogeneity Assessment



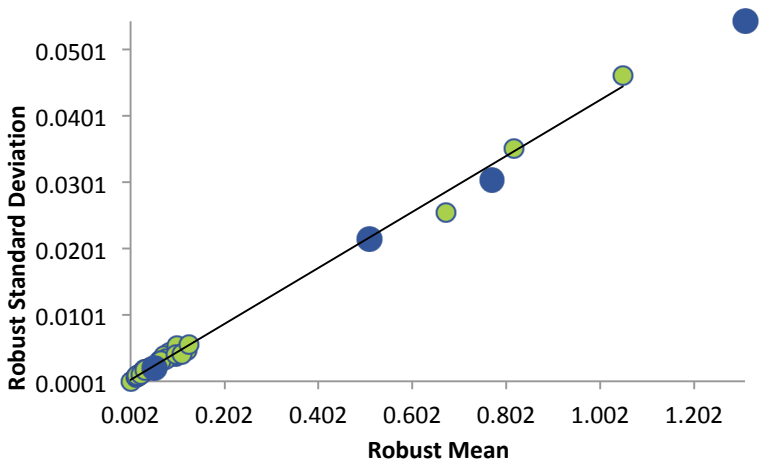
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



TIN

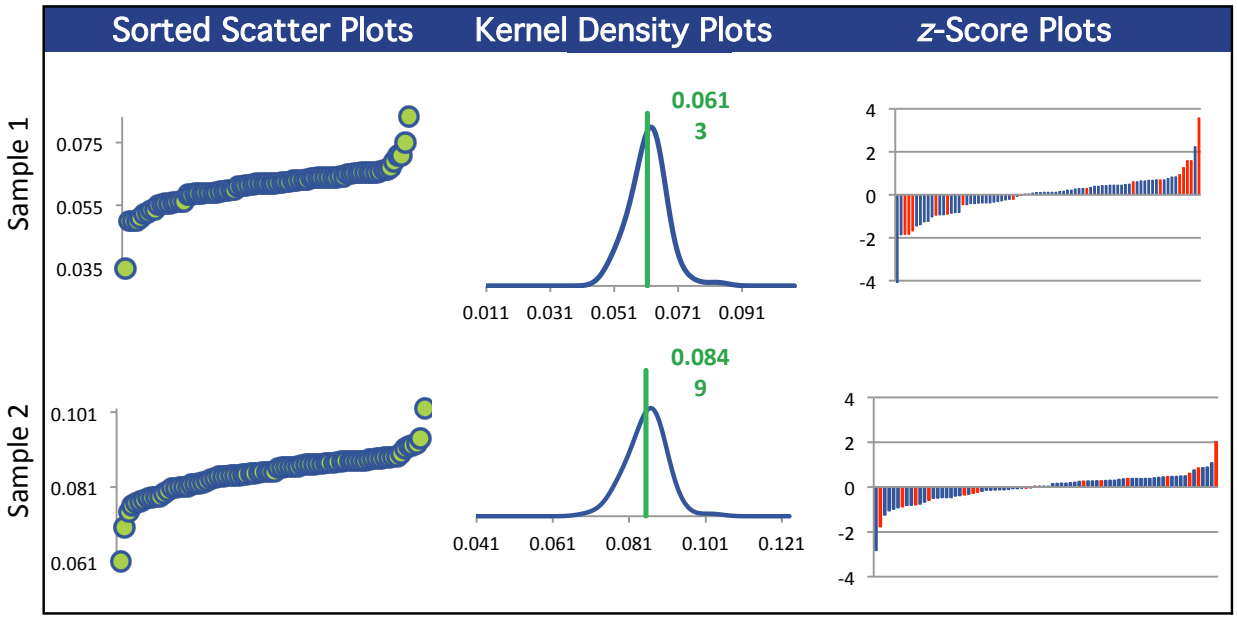
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	79	78	76	76
Median mg/L	0.0620	0.0850	0.0300	0.0369
Robust Mean mg/L	0.0613	0.0849	0.0300	0.0366
U mg/L	0.000669	0.000645	0.000304	0.000358
Robust Standard Deviation mg/L	0.00476	0.00456	0.00212	0.00250
Regression Standard Deviation mg/L	0.00613	0.00849	0.00300	0.00366
Stability Flag				
Homogeneity Flag			Homogeneity	
Standard Deviation Used (SDPA) mg/L	0.00613	0.00849	0.00557	0.00366
Outliers	0	0	0	0
|z|>3.0	2	0	4	2
2<|z|<3	1	2	0	0

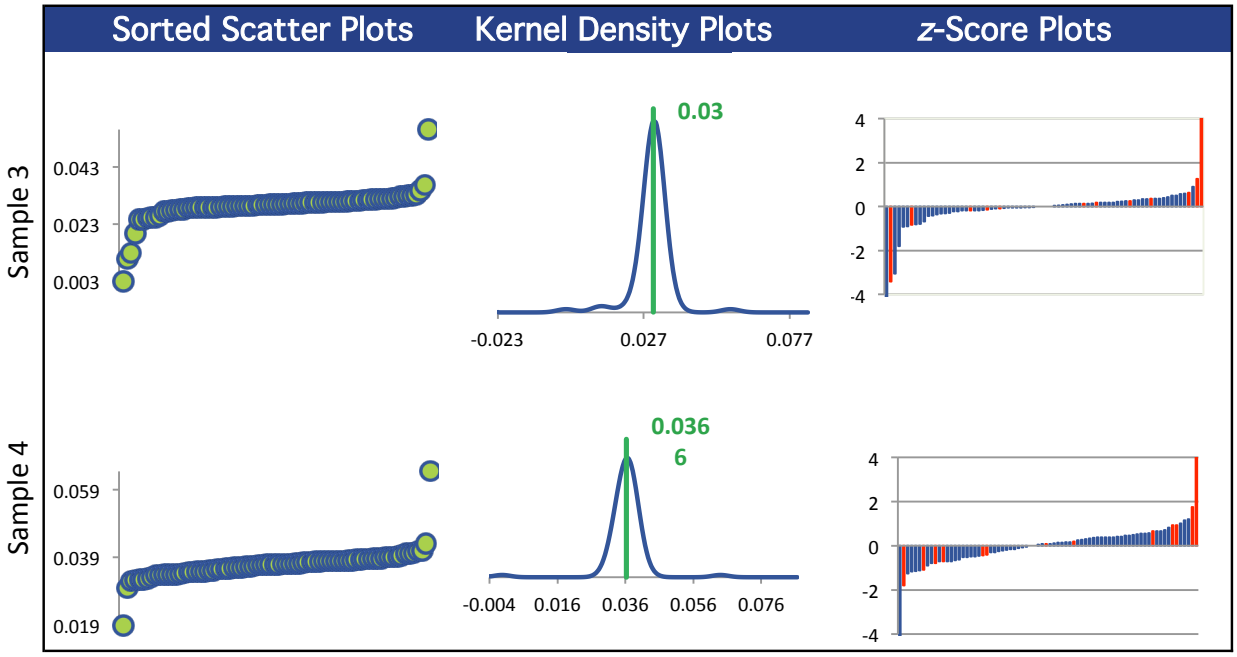
Methods Used

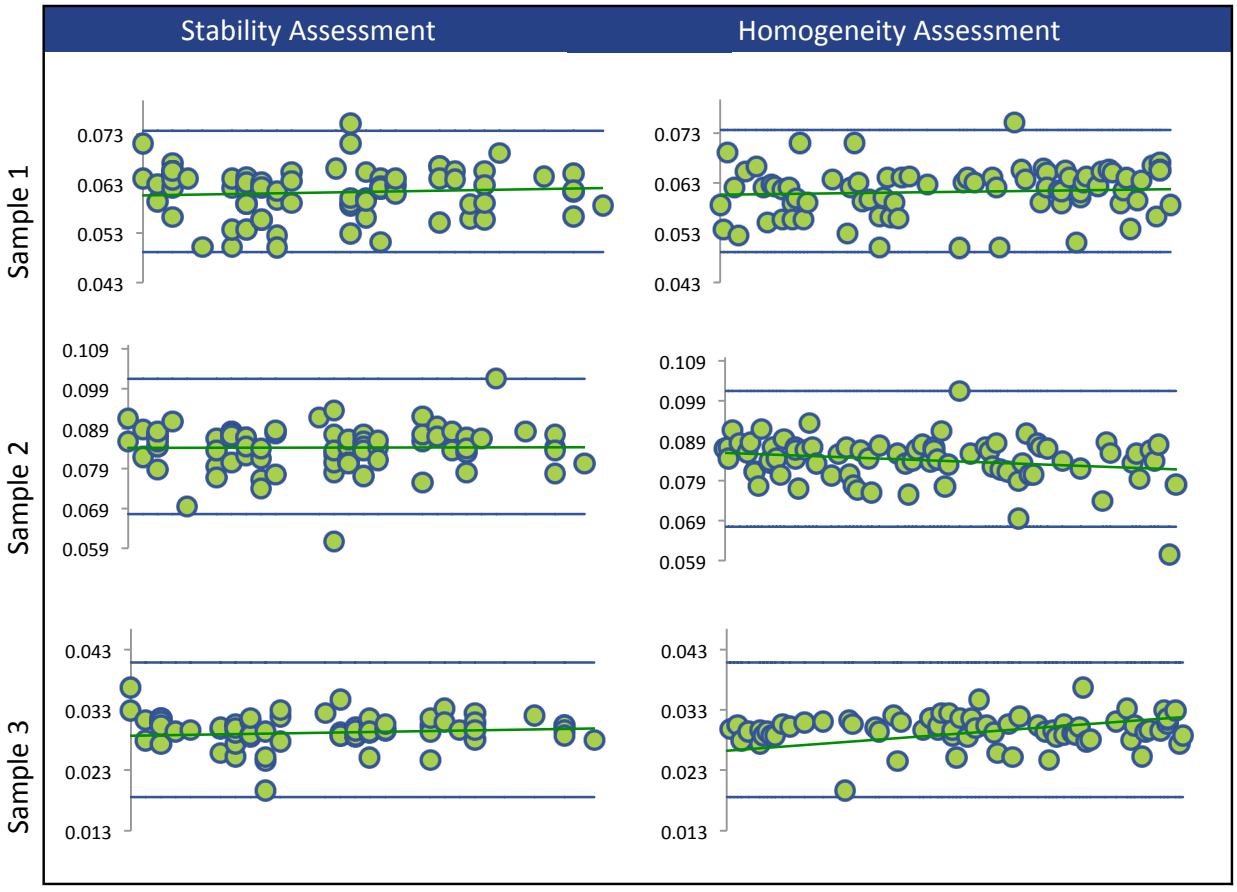
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	63	62	63	63
ICP/OES (Red)	16	16	13	13

All summary stats and the plots below are based on the data excluding any flagged outliers



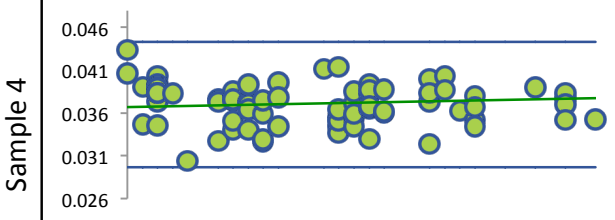
TIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.043
0.023
0.003
0.03
-0.023
0.027
0.077
4
2
0
-2
-4
Sample 4
0.059
0.039
0.019
0.036
6
-0.004
0.016
0.036
0.056
0.076
4
2
0
-2
-4

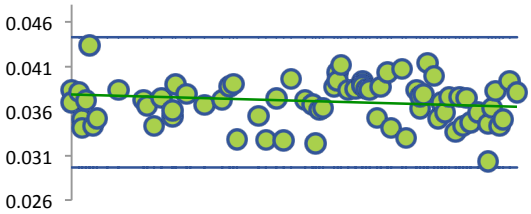

Stability Assessment
Homogeneity Assessment
Sample 1
0.073
0.063
0.053
0.043
0.073
0.063
0.053
0.043
Sample 2
0.109
0.099
0.089
0.079
0.069
0.059
0.109
0.099
0.089
0.079
0.069
0.059
Sample 3
0.043
0.033
0.023
0.013
0.043
0.033
0.023
0.013

TIN

Stability Assessment



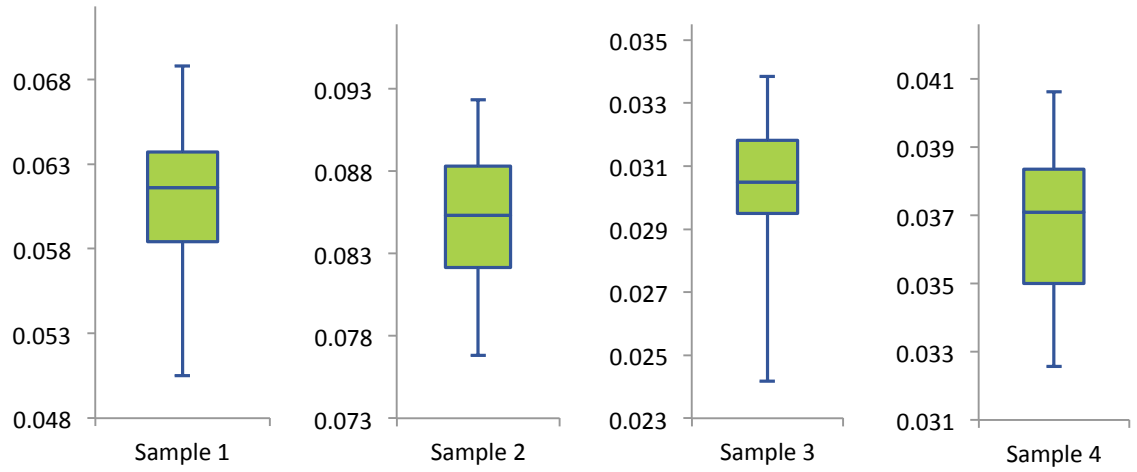
Homogeneity Assessment



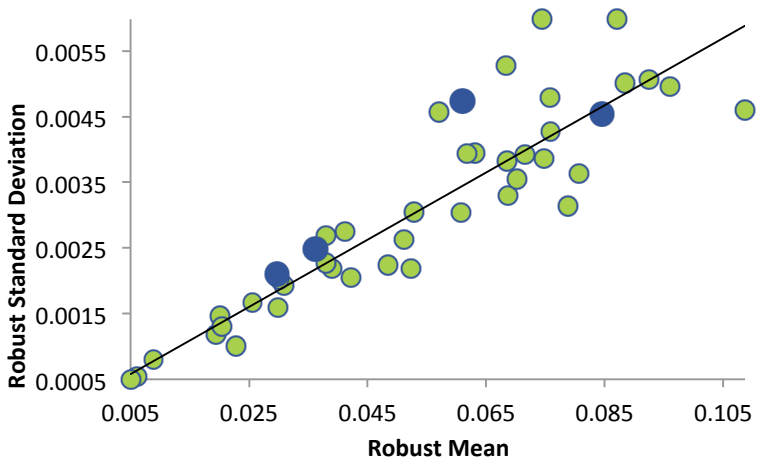
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



TITANIUM

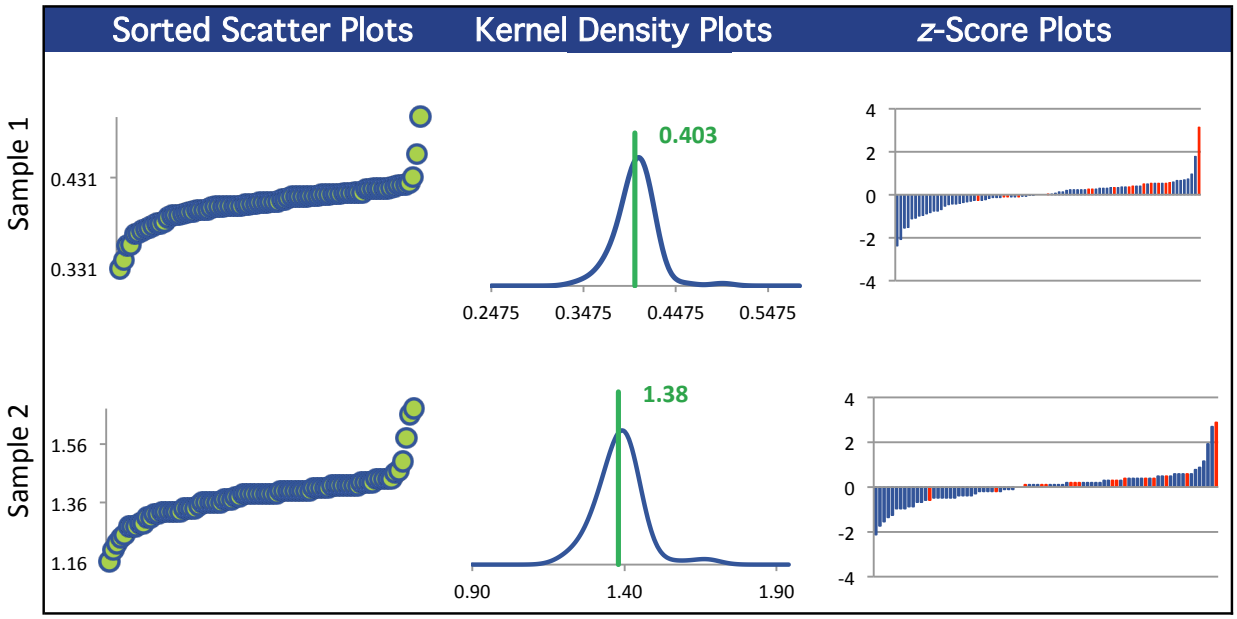
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	83	83	79	83
Median mg/L	0.404	1.39	0.0120	0.0667
Robust Mean mg/L	0.403	1.38	0.0120	0.0663
U mg/L	0.00220	0.00785	0.000	0.000377
Robust Standard Deviation mg/L	0.0160	0.0572	0.000552	0.00275
Regression Standard Deviation mg/L	0.0303	0.104	0.000902	0.00497
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0303	0.104	0.000902	0.00497
Outliers	0	0	1	0
|z|>3.0	1	0	2	0
2<|z|<3	2	3	2	1

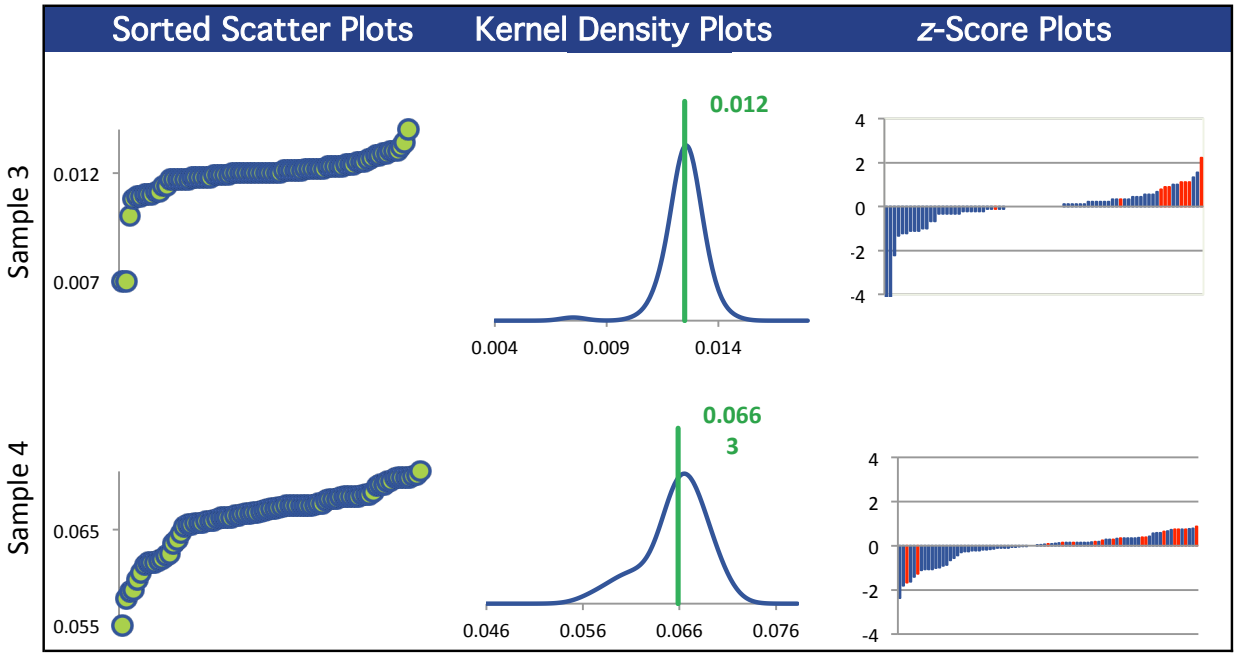
Methods Used

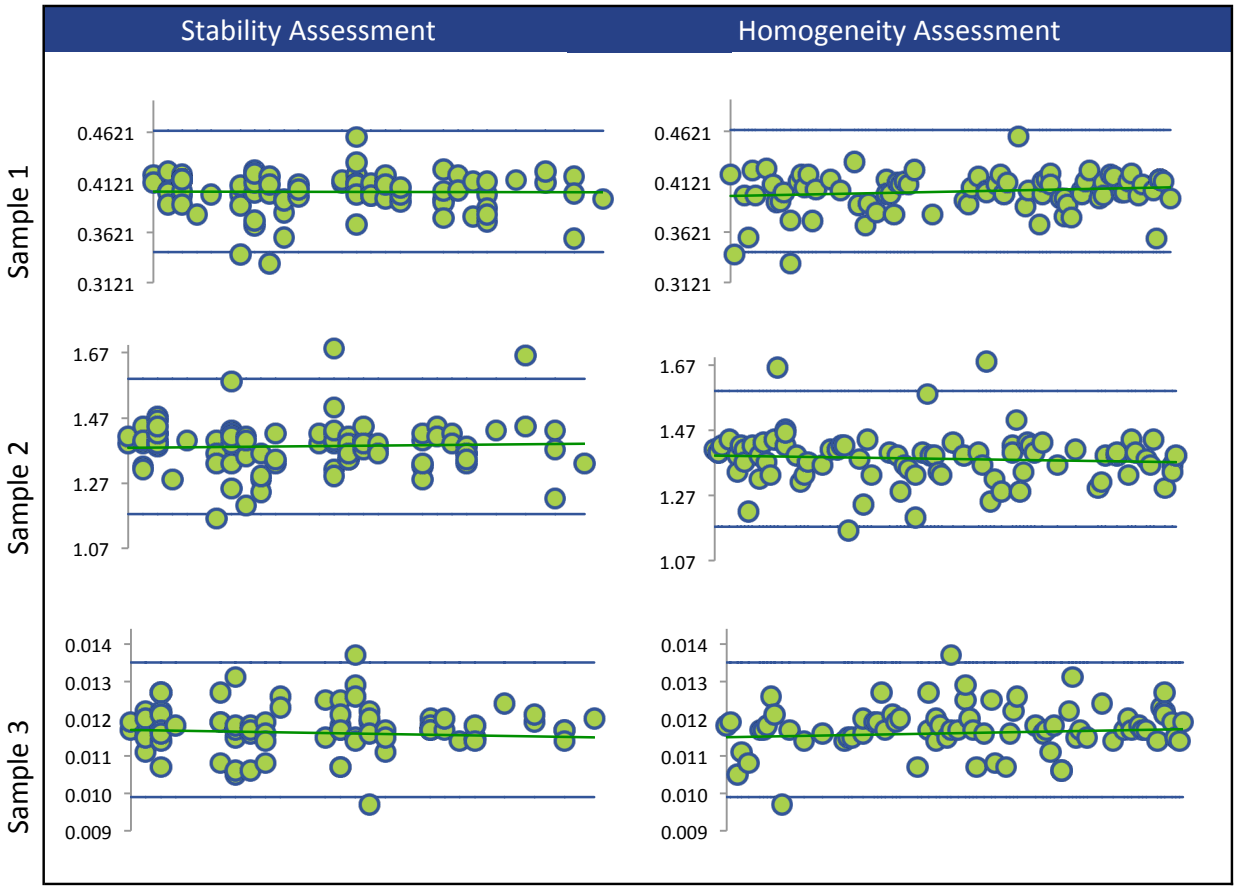
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	67	67	67	67
ICP/OES (Red)	16	16	12	16

All summary stats and the plots below are based on the data excluding any flagged outliers



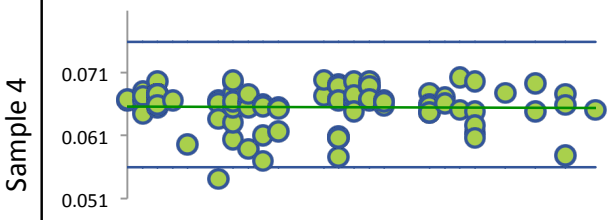
TITANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.012
0.007
0.012
0.004
0.009
0.014
4
2
0
-2
-4
Sample 4
0.065
0.055
0.066
3
0.046
0.056
0.066
0.076
4
2
0
-2
-4

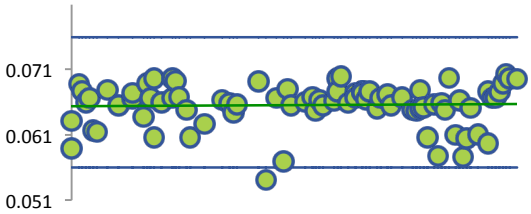

Stability Assessment
Homogeneity Assessment
Sample 1
0.4621
0.4121
0.3621
0.3121
0.4621
0.4121
0.3621
0.3121
Sample 2
1.67
1.47
1.27
1.07
1.67
1.47
1.27
1.07
Sample 3
0.014
0.013
0.012
0.011
0.010
0.009
0.014
0.013
0.012
0.011
0.010
0.009

TITANIUM

Stability Assessment



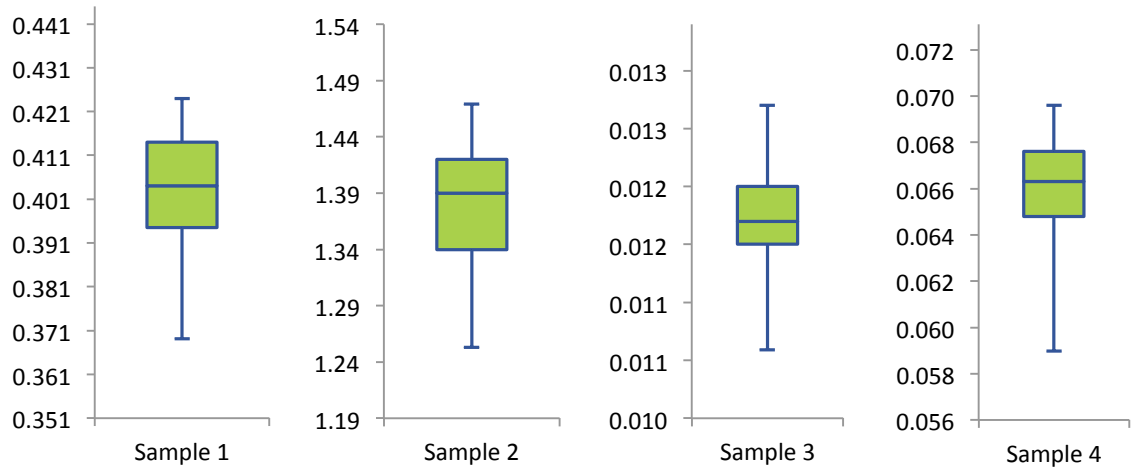
Homogeneity Assessment



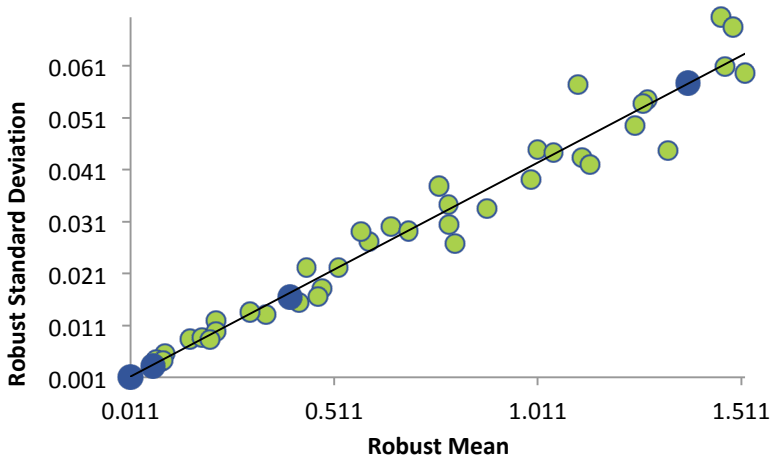
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



URANIUM

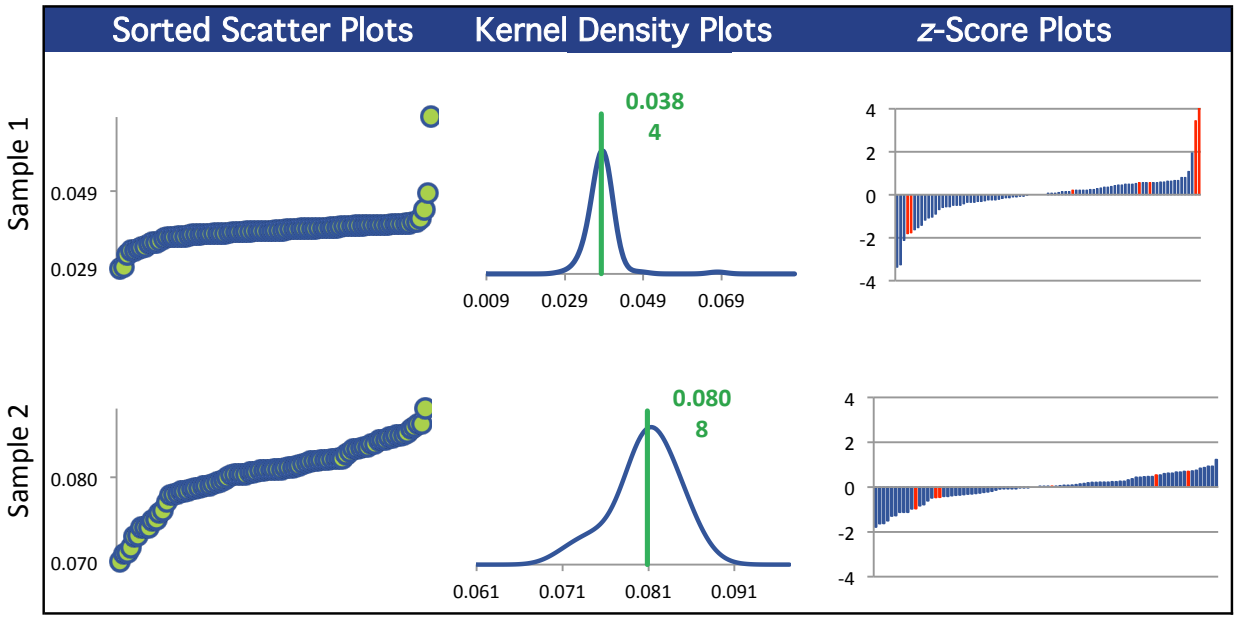
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	87	86	84	87
Median mg/L	0.0386	0.0810	0.0123	0.0428
Robust Mean mg/L	0.0384	0.0808	0.0122	0.0426
U mg/L	0.000232	0.000470	0.000	0.000264
Robust Standard Deviation mg/L	0.00173	0.00349	0.000563	0.00197
Regression Standard Deviation mg/L	0.00288	0.00606	0.000915	0.00319
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00288	0.00606	0.000915	0.00319
Outliers	0	1	1	0
|z|>3.0	4	0	2	3
2<|z|<3	1	0	0	2

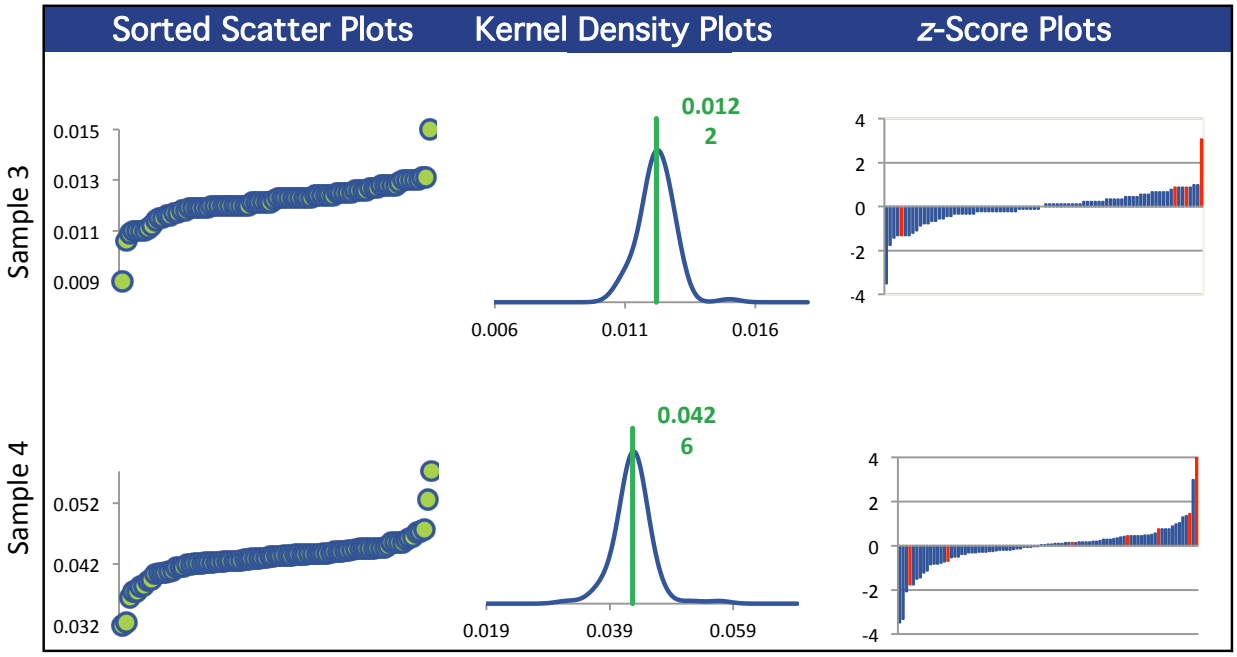
Methods Used

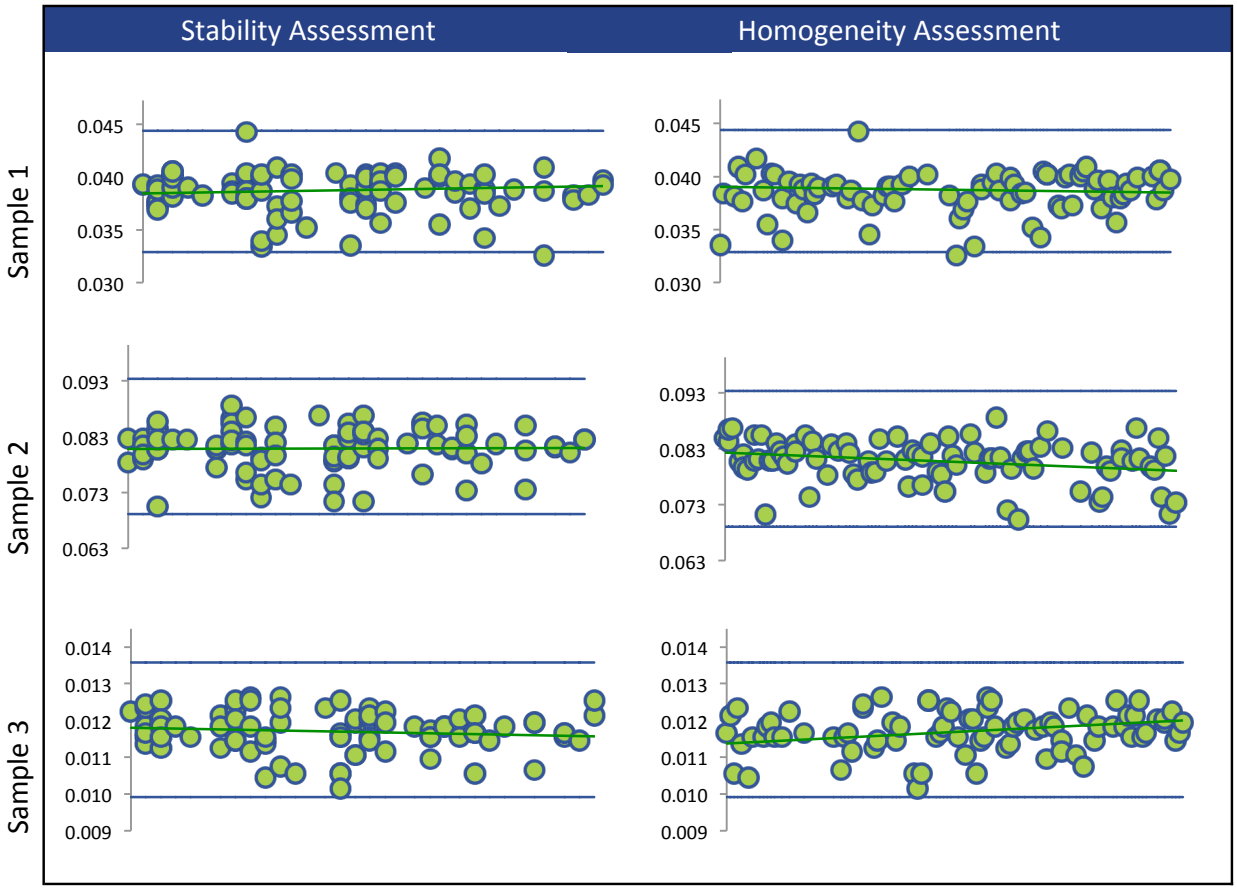
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	80	80	80	80
ICP/OES (Red)	7	6	4	7

All summary stats and the plots below are based on the data excluding any flagged outliers



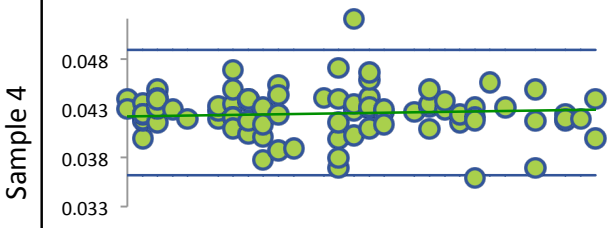
URANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.015
0.013
0.011
0.009
0.012
2
0.006
0.011
0.016
4
2
0
-2
-4
Sample 4
0.052
0.042
0.032
0.042
6
0.019
0.039
0.059
4
2
0
-2
-4

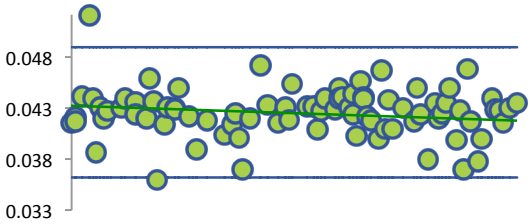

Stability Assessment
Homogeneity Assessment
Sample 1
0.045
0.040
0.035
0.030
Sample 2
0.093
0.083
0.073
0.063
Sample 3
0.014
0.013
0.012
0.011
0.010
0.009

URANIUM

Stability Assessment



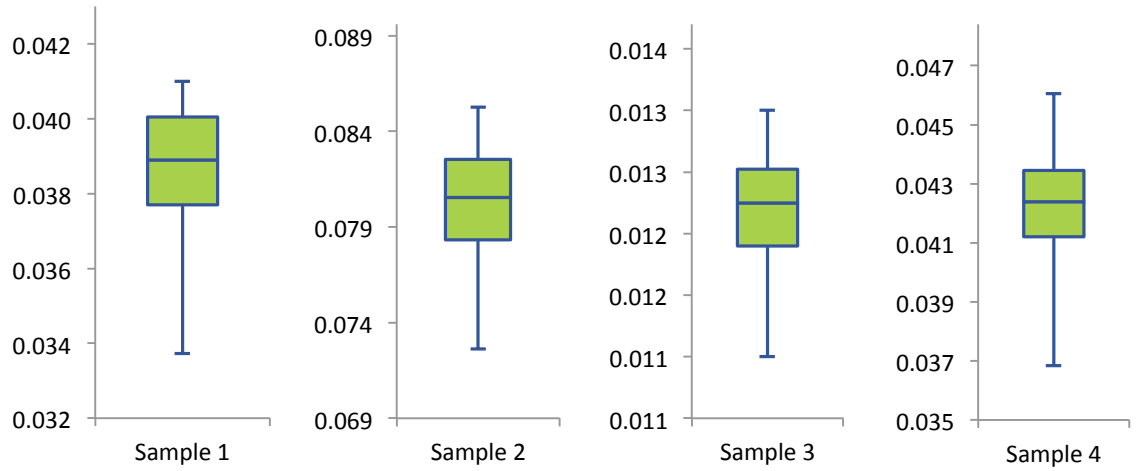
Homogeneity Assessment



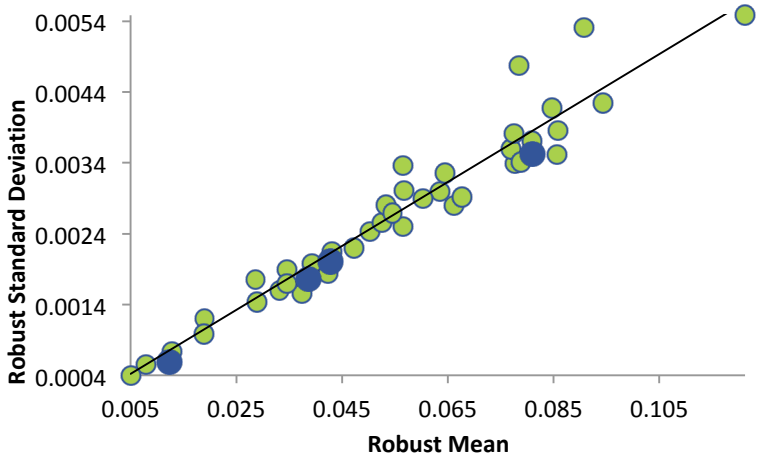
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



VANADIUM

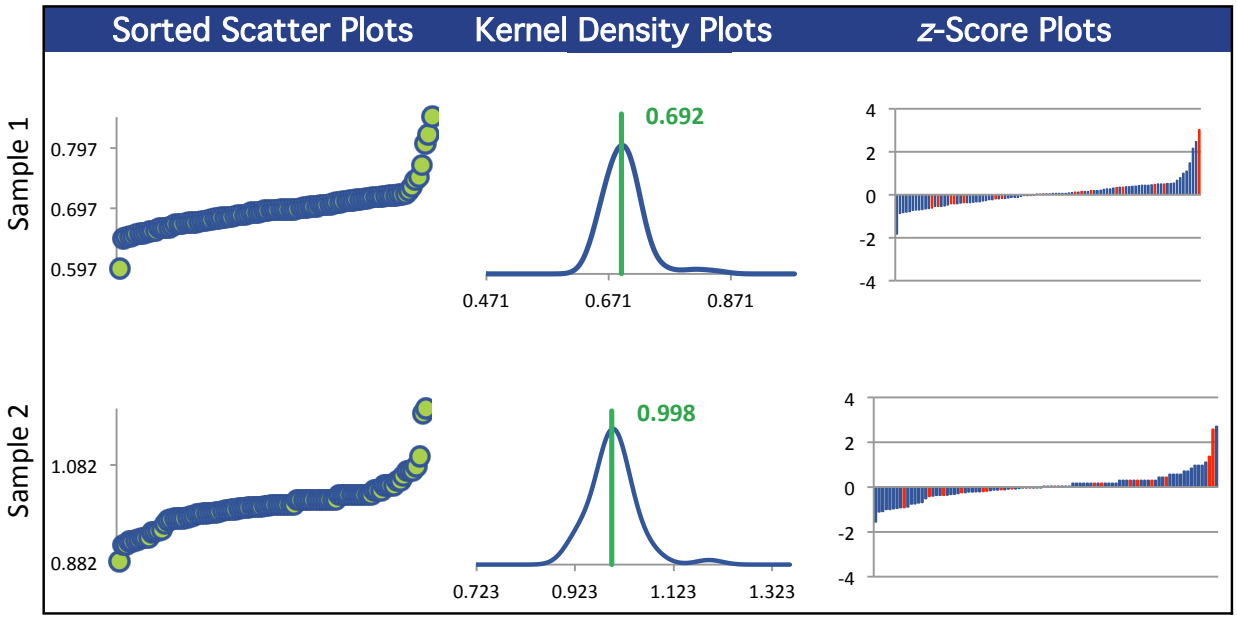
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	96	96	90	96
Median mg/L	0.694	0.999	0.00490	0.439
Robust Mean mg/L	0.692	0.998	0.00487	0.437
U mg/L	0.00325	0.00464	0.0000	0.00203
Robust Standard Deviation mg/L	0.0255	0.0364	0.000304	0.0159
Regression Standard Deviation mg/L	0.0519	0.0748	0.000365	0.0328
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0519	0.0748	0.000365	0.0328
Outliers	0	0	0	0
|z|>3.0	1	0	7	0
2<|z|<3	2	2	6	0

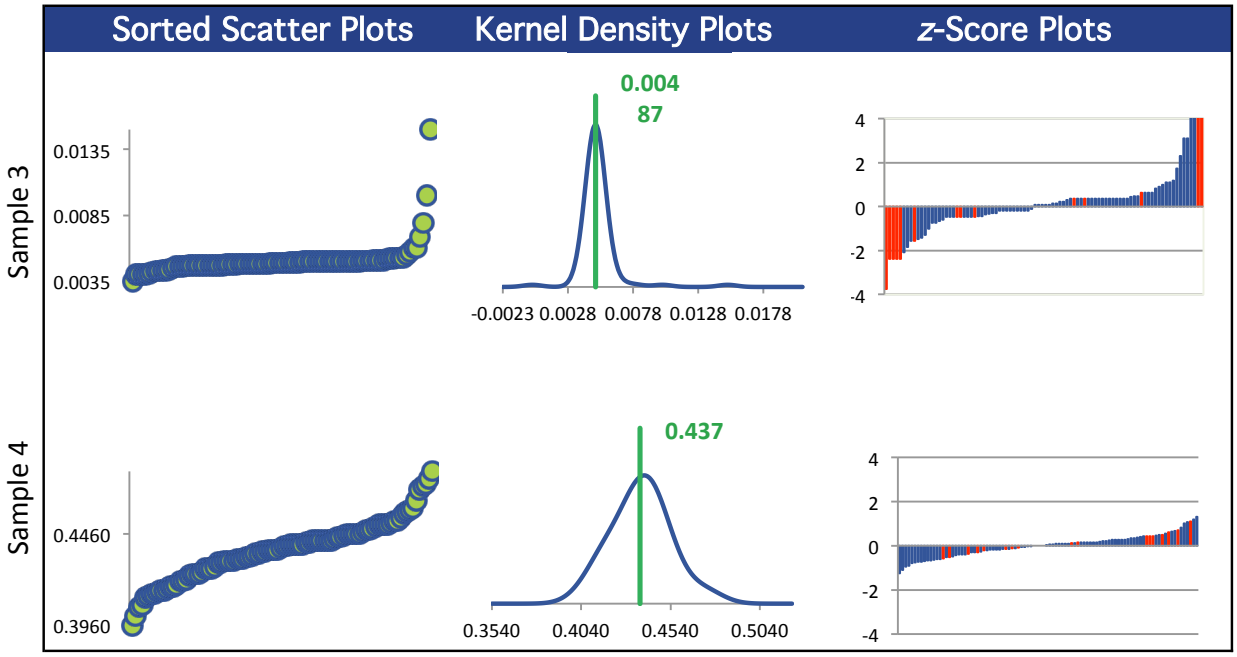
Methods Used

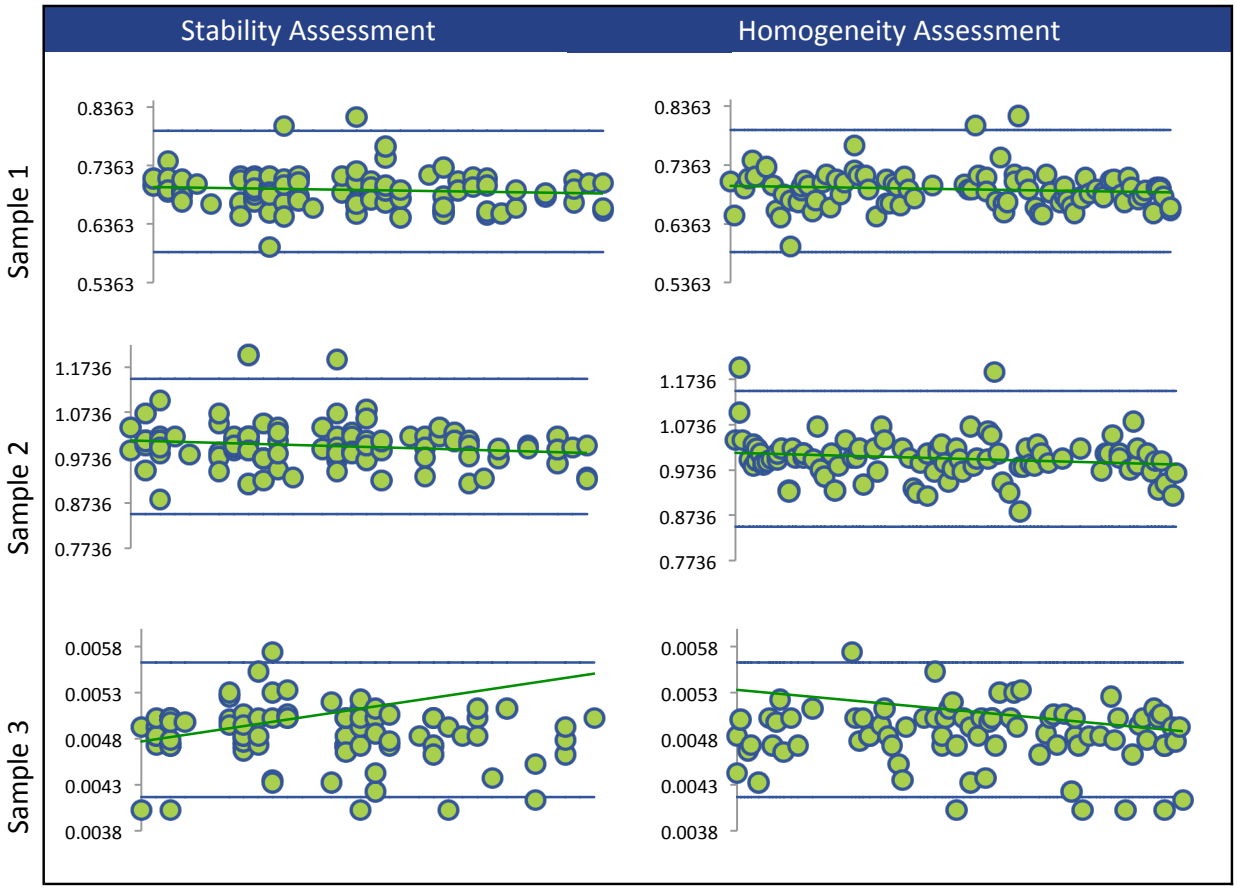
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	77	77	75	77
ICP/OES (Red)	18	18	14	18
AA GRAPHITE (Green)	1	1	1	1

All summary stats and the plots below are based on the data excluding any flagged outliers



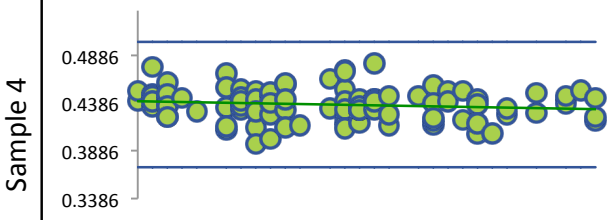
VANADIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.0135
0.0085
0.0035
0.004
87
-0.0023 0.0028 0.0078 0.0128 0.0178
4
2
0
-2
-4
Sample 4
0.4460
0.3960
0.437
0.3540 0.4040 0.4540 0.5040
4
2
0
-2
-4

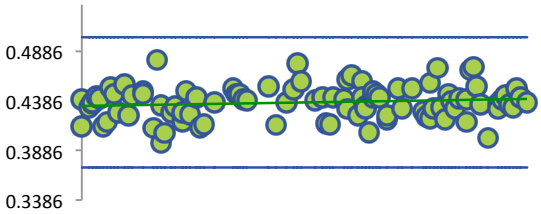

Stability Assessment
Homogeneity Assessment
Sample 1
0.8363
0.7363
0.6363
0.5363
Sample 2
1.1736
1.0736
0.9736
0.8736
0.7736
Sample 3
0.0058
0.0053
0.0048
0.0043
0.0038

VANADIUM

Stability Assessment



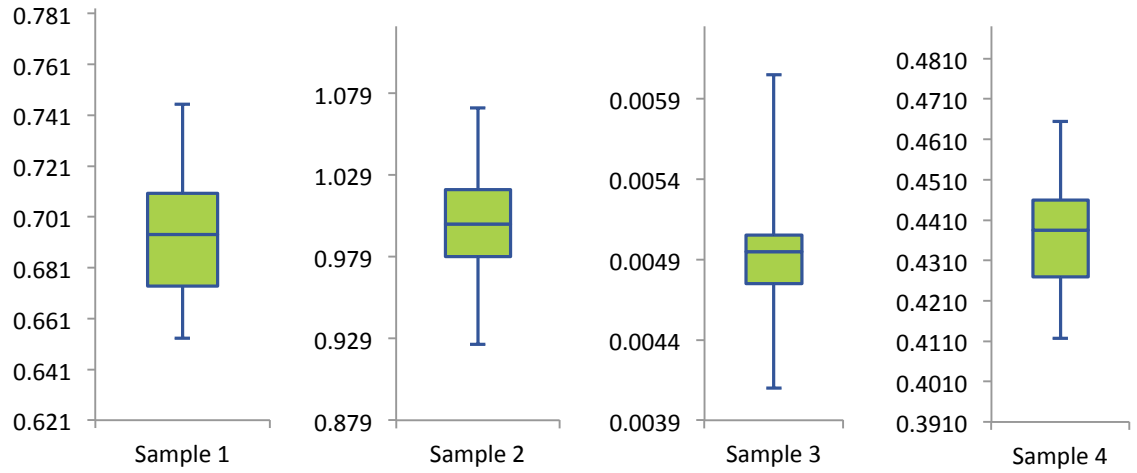
Homogeneity Assessment



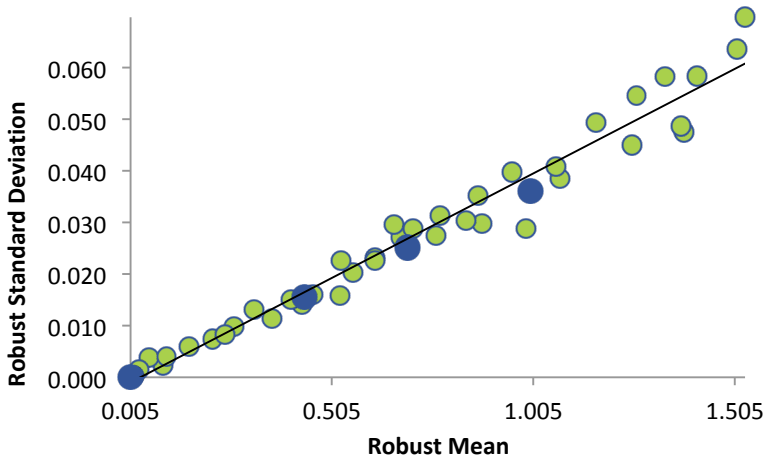
Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)



ZINC

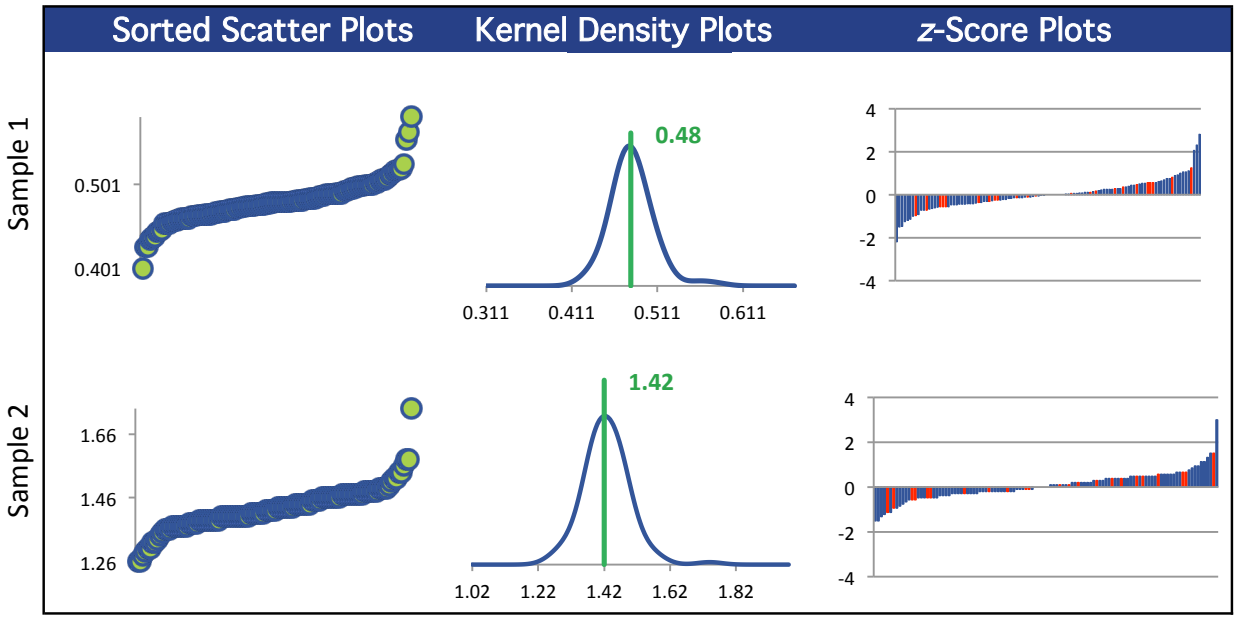
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	112	112	111	111
Median mg/L	0.480	1.42	0.0248	0.0830
Robust Mean mg/L	0.480	1.42	0.0248	0.0834
U mg/L	0.00242	0.00671	0.000217	0.000469
Robust Standard Deviation mg/L	0.0205	0.0568	0.00183	0.00395
Regression Standard Deviation mg/L	0.0360	0.107	0.00186	0.00626
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0360	0.107	0.00186	0.00626
Outliers	0	0	0	0
|z|>3.0	0	0	6	1
2<|z|<3	4	1	7	2

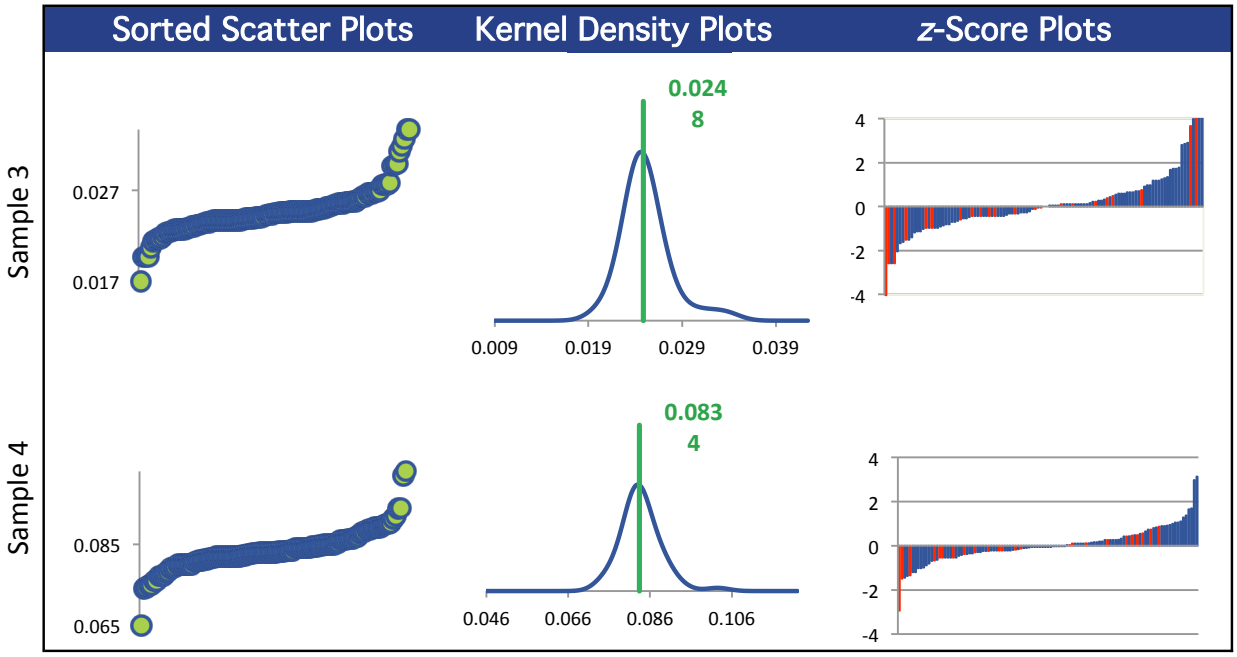
Methods Used

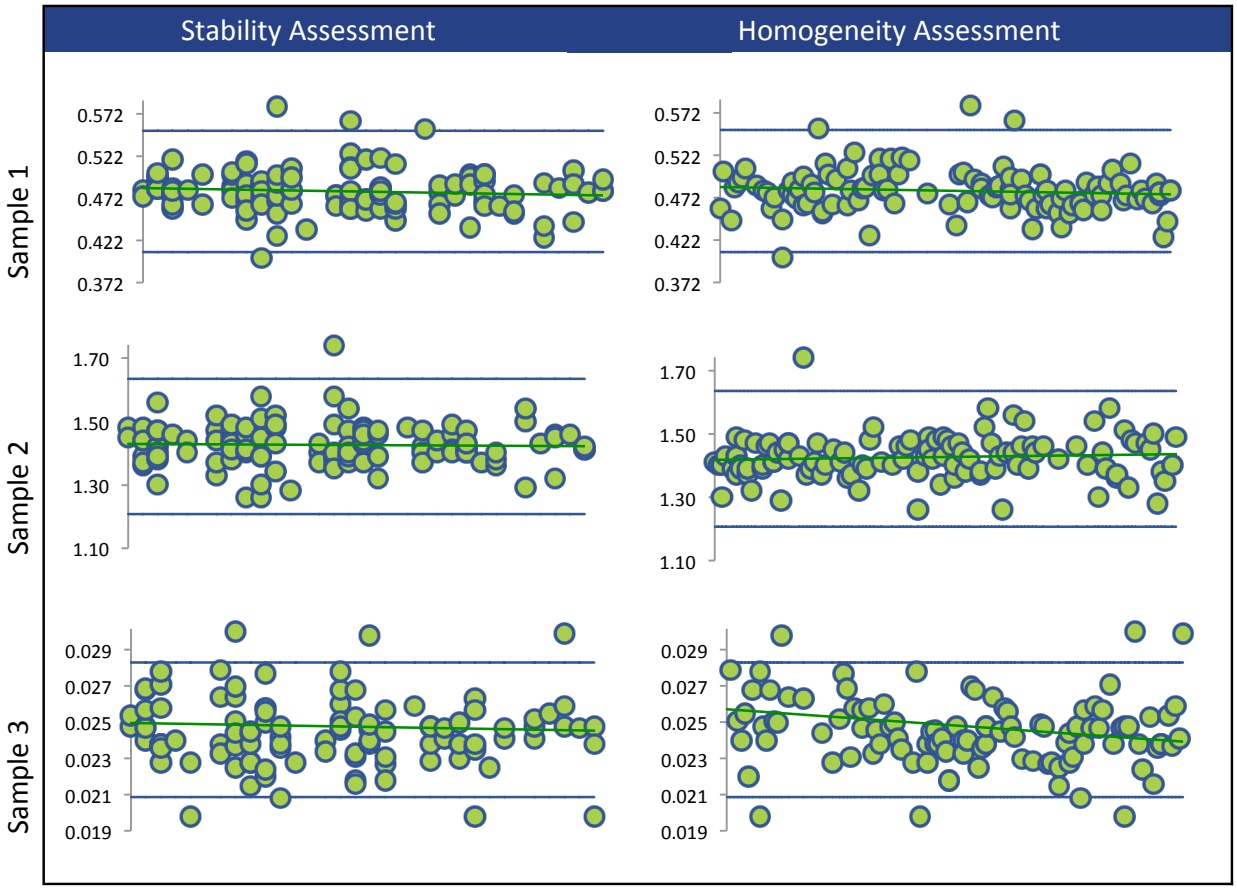
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	85	85	85	85
AA FLAME (Red)	3	3	3	3
ICP/OES (Green)	24	24	23	23

All summary stats and the plots below are based on the data excluding any flagged outliers



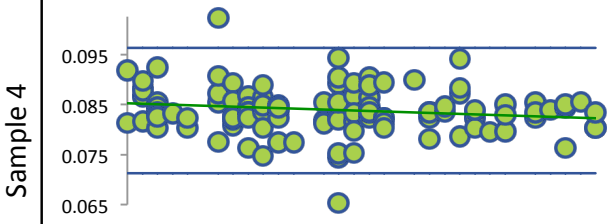
ZINC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.027
0.017
0.0248
0.009
0.019
0.029
0.039
4
2
0
-2
-4
Sample 4
0.085
0.065
0.0834
0.046
0.066
0.086
0.106
4
2
0
-2
-4

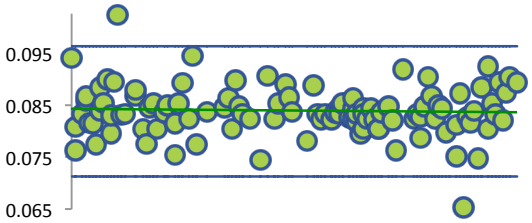

Stability Assessment
Homogeneity Assessment
Sample 1
0.572
0.522
0.472
0.422
0.372
Sample 2
1.70
1.50
1.30
1.10
Sample 3
0.029
0.027
0.025
0.023
0.021
0.019

ZINC

Stability Assessment



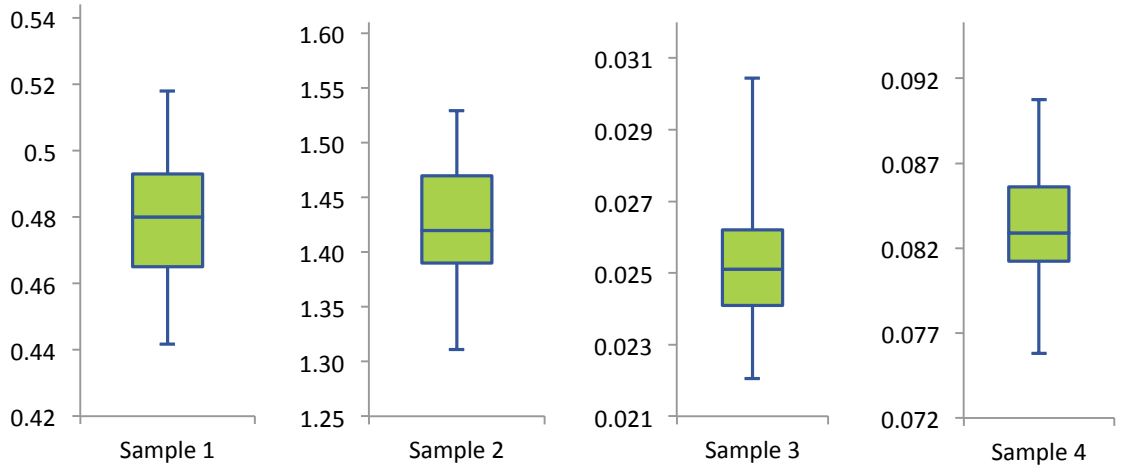
Homogeneity Assessment



Stability assessments are regression analysis of reported result against date of analysis.

Homogeneity assessments are regression analysis of reported result against bottling order.

Box and Whisker Plots



Current Round (blue) Compared to Historic Rounds (green)