Test Group Summary Report

C02A Metals in Water – Full Range

March 2025 PT Round

Issued: May 9, 2025

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.
± 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 5th 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

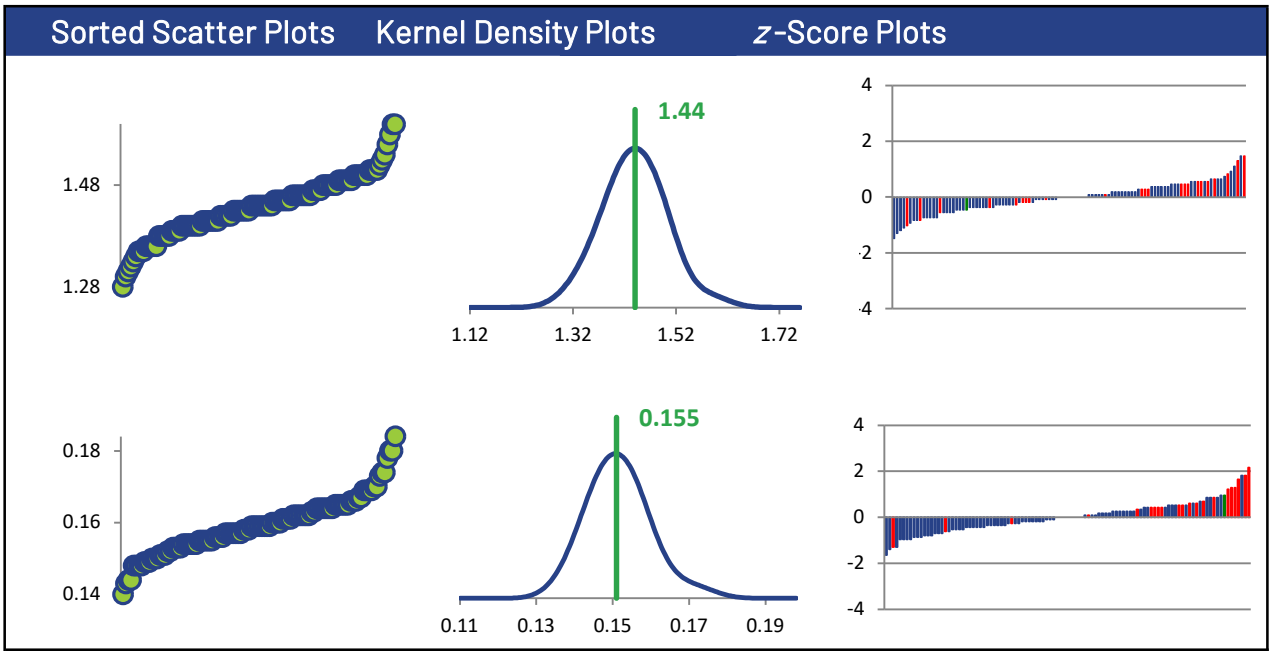
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	107	105	107	103
Median mg/L	1.44	0.155	0.834	0.0410
Robust Mean mg/L	1.44	0.155	0.836	0.0409
U mg/L	0.00698	0.000921	0.00425	0.000292
Robust Standard Deviation mg/L	0.0578	0.00755	0.0352	0.00237
Regression Standard Deviation mg/L	0.108	0.0116	0.0627	0.00307
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.108	0.0116	0.0627	0.00307
Outliers	0	1	0	1
|z|>3.0	0	0	1	3
2<|z|<3	0	1	1	5

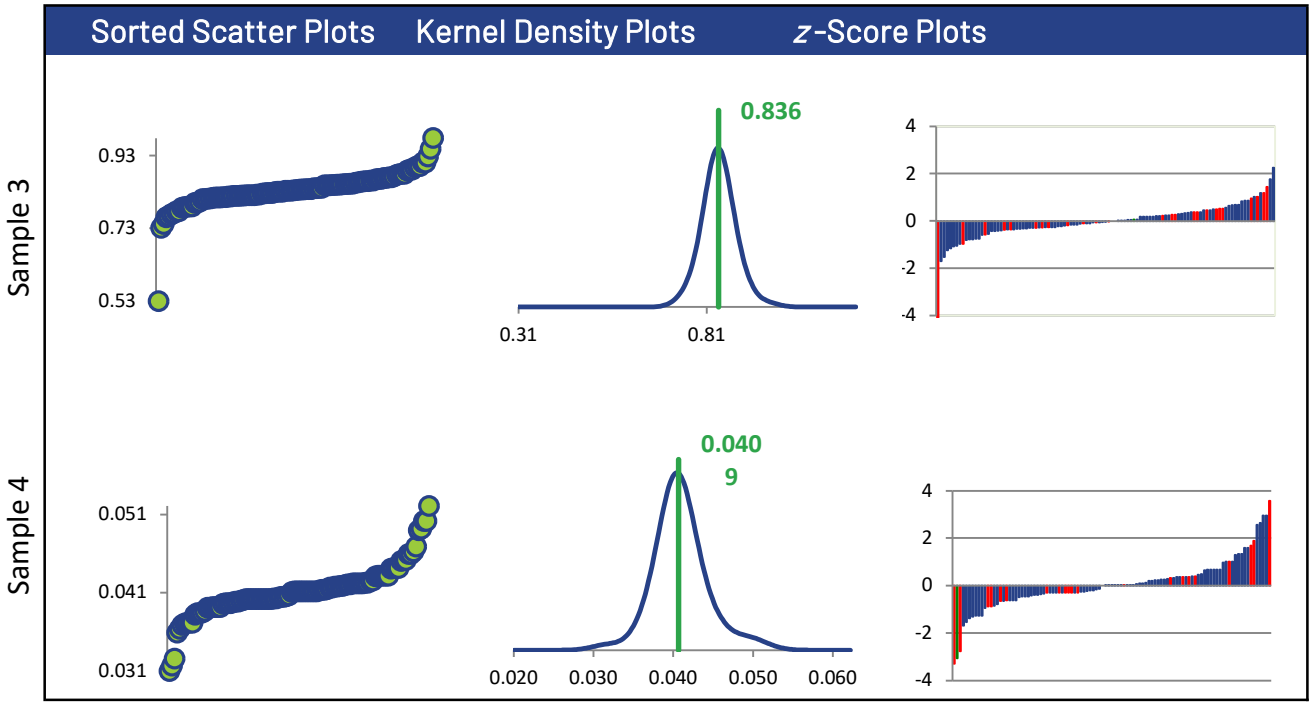
Methods Used

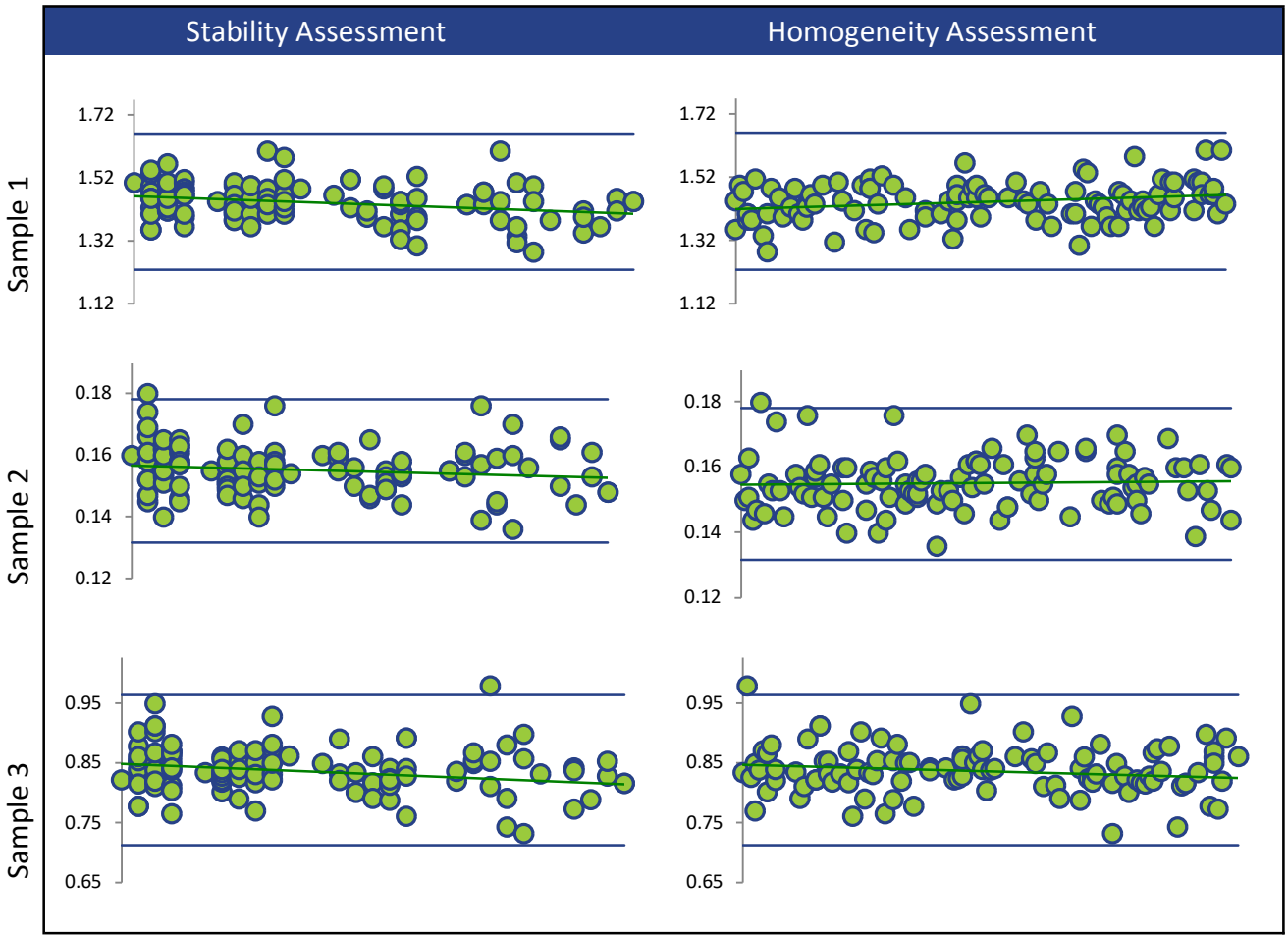
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	81	81	81	81
ICP/OES (Red)	25	23	25	21
AA FLAME (Green)	1	1	1	1

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



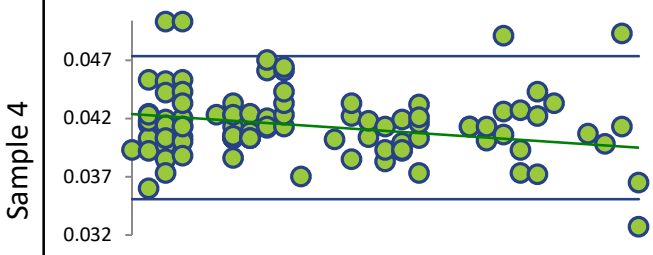
ALUMINUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.93
0.73
0.53
0.836
0.31
0.81
4
2
0
-2
-4
Sample 4
0.051
0.041
0.031
0.040
9
0.020
0.030
0.040
0.050
0.060
4
2
0
-2
-4

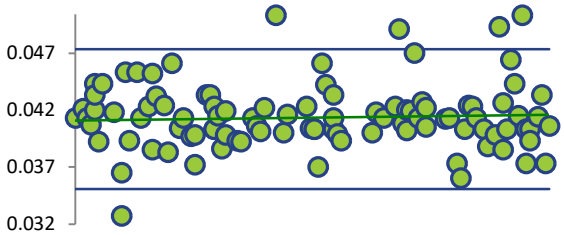

Stability Assessment
Homogeneity Assessment
Sample 1
1.72
1.52
1.32
1.12
Sample 2
0.18
0.16
0.14
0.12
Sample 3
0.95
0.85
0.75
0.65

ALUMINUM

Stability Assessment



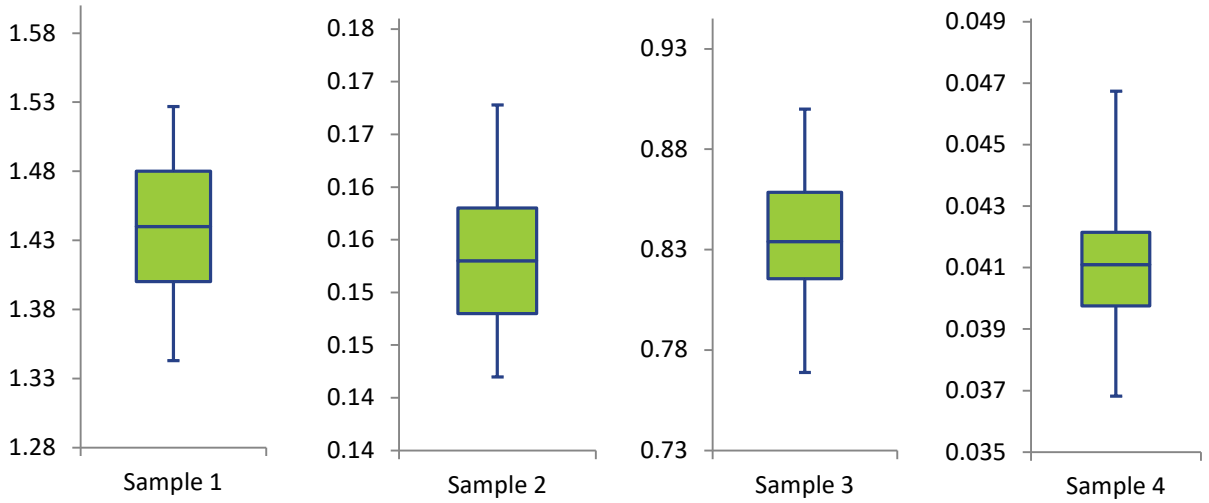
Homogeneity Assessment



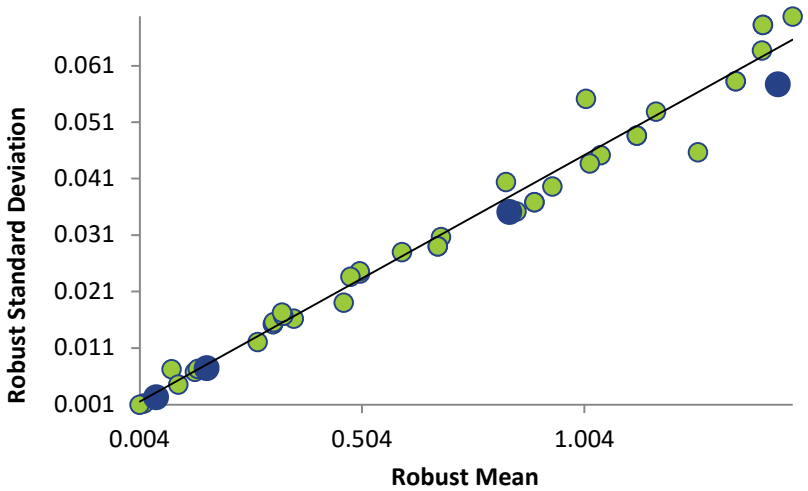
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



ANTIMONY

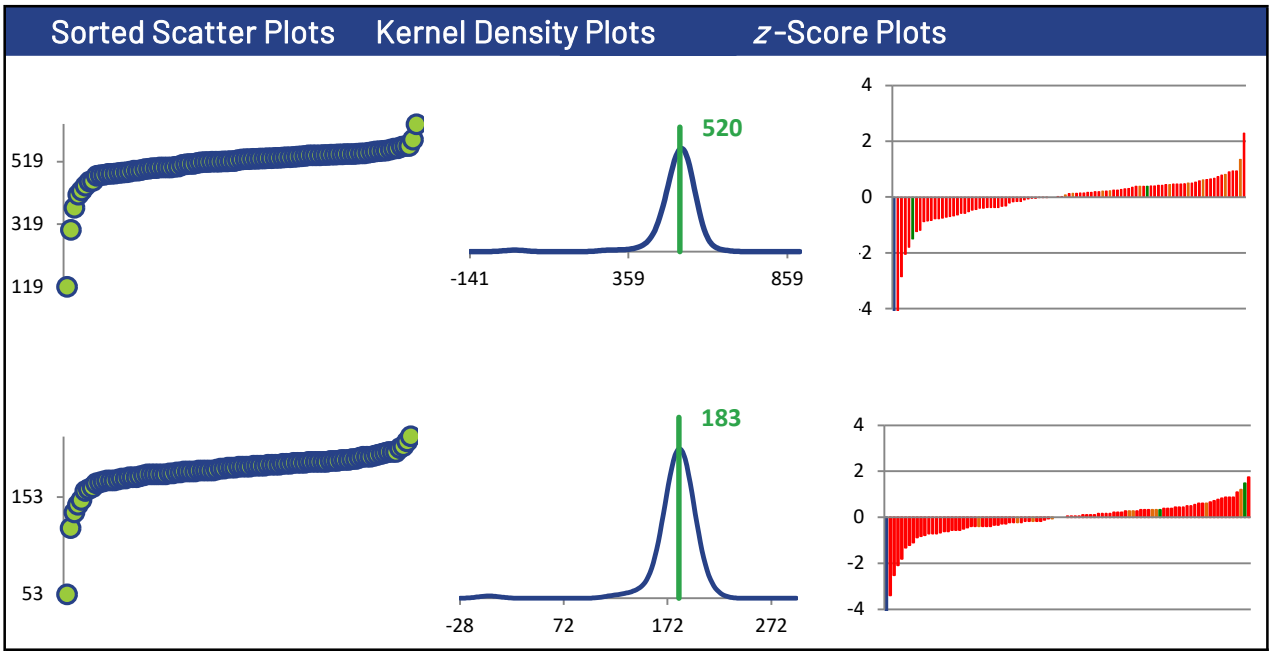
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	95	95	95	95
Median mg/L	526	184	364	93.2
Robust Mean mg/L	520	183	363	92.8
U mg/L	4.07	1.40	2.51	0.811
Robust Standard Deviation mg/L	31.7	10.9	19.6	6.32
Regression Standard Deviation mg/L	52.0	18.3	36.3	9.28
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	52.0	18.3	36.3	9.28
Outliers	3	3	3	3
|z|>3.0	2	2	2	4
2<|z|<3	3	2	2	2

Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
HYDRIDE ICP (Blue)	1	1	1	1
ICP/MS (Red)	82	82	82	82
HYDRIDE AA (Green)	2	2	2	2
ICP/OES (Orange)	10	10	10	10

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



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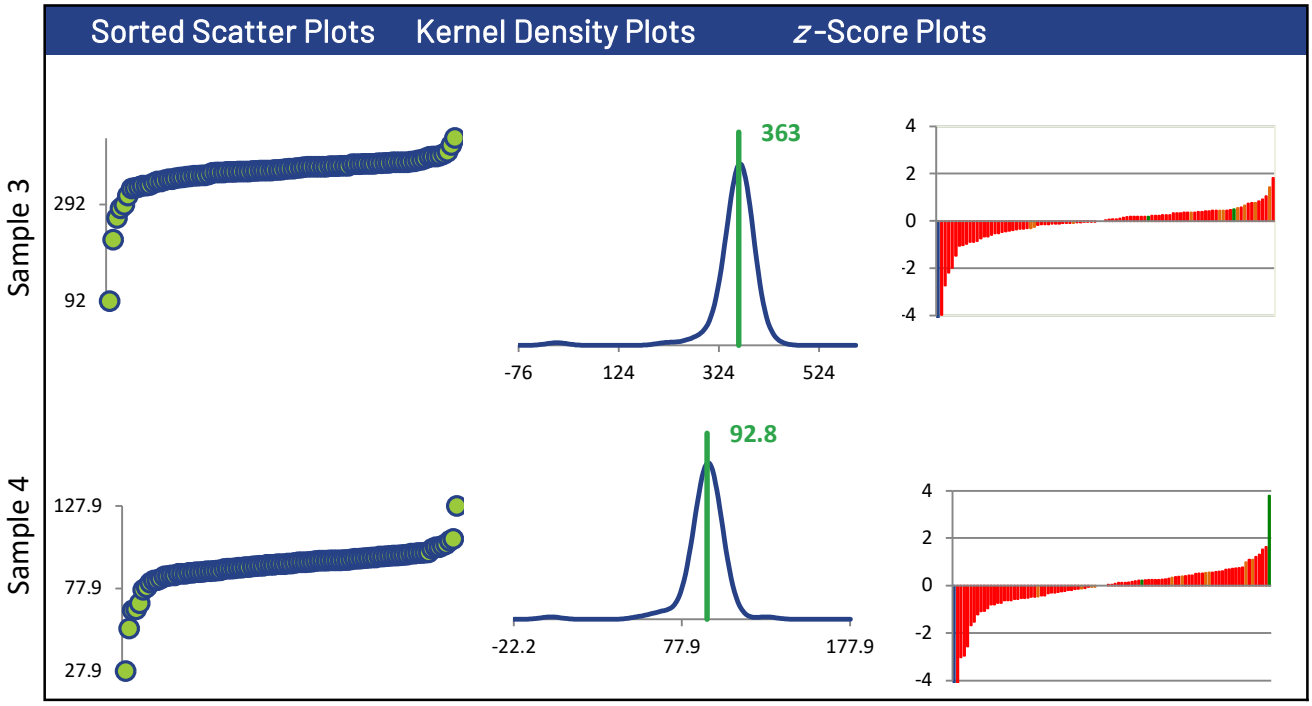
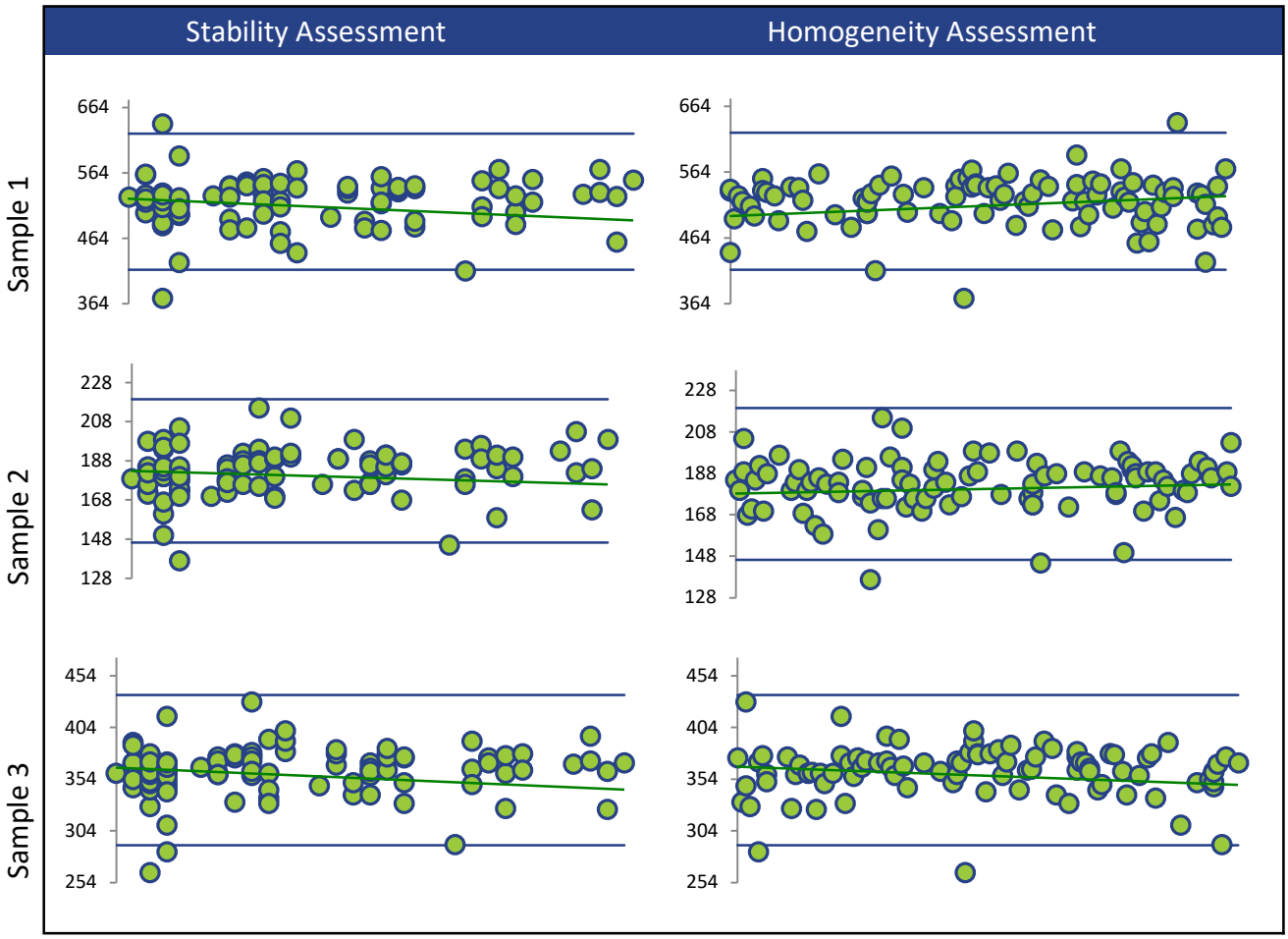
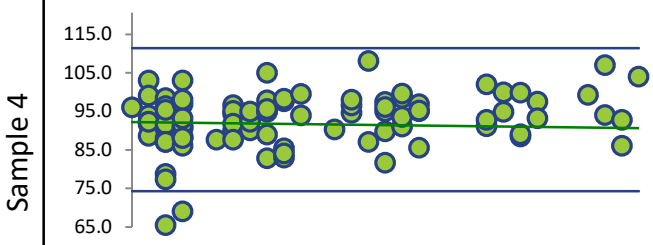

Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
292
92
363
-76
124
324
524
4
2
0
-2
-4
Sample 4
127.9
77.9
27.9
92.8
-22.2
77.9
177.9
4
2
0
-2
-4

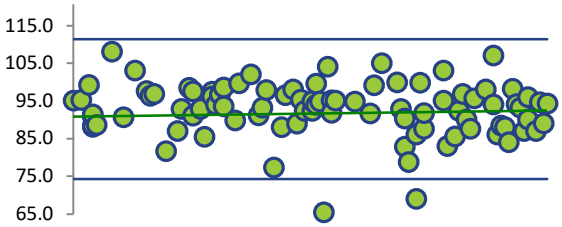

Stability Assessment
Homogeneity Assessment
Sample 1
664
564
464
364
664
564
464
364
Sample 2
228
208
188
168
148
128
228
208
188
168
148
128
Sample 3
454
404
354
304
254
454
404
354
304
254

ANTIMONY

Stability Assessment



Homogeneity Assessment



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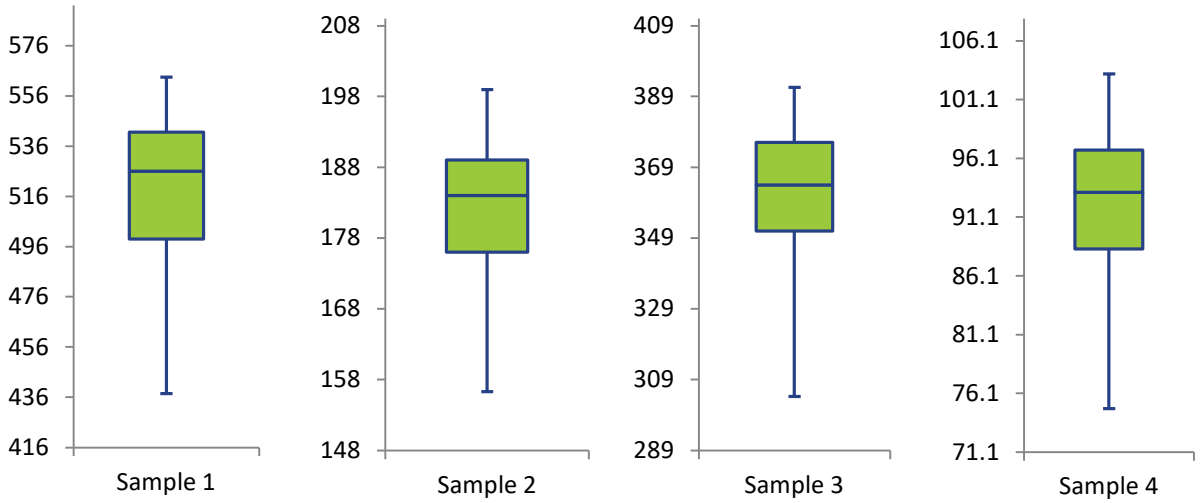
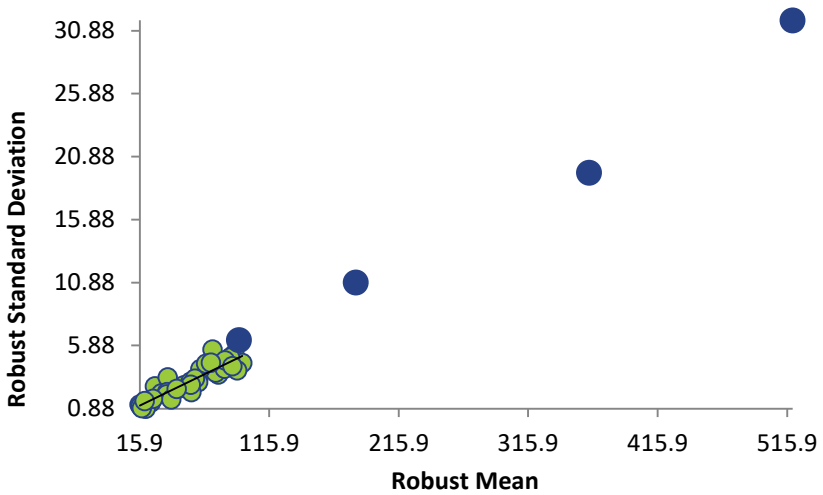
Box and Whisker Plots



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



ARSENIC

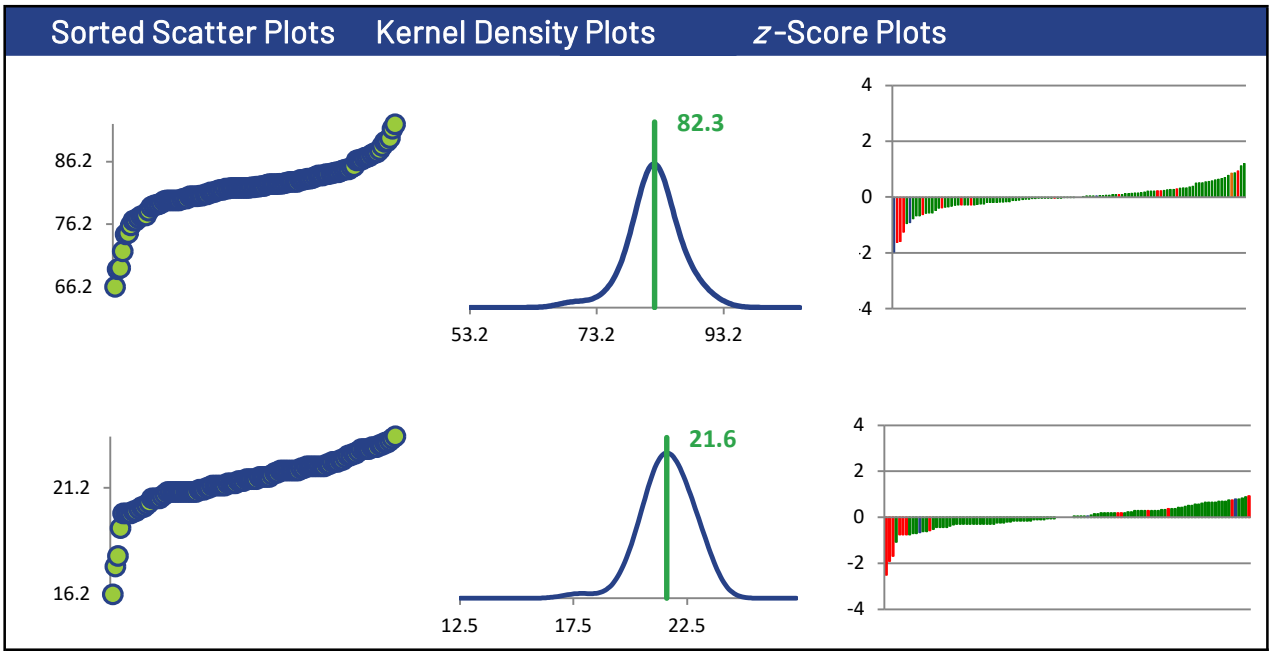
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	110	109	110	101
Median mg/L	82.2	21.6	61.3	2.90
Robust Mean mg/L	82.3	21.6	61.4	2.91
U mg/L	0.381	0.125	0.292	0.0205
Robust Standard Deviation mg/L	3.20	1.04	2.45	0.165
Regression Standard Deviation mg/L	8.23	2.16	6.14	0.291
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	8.23	2.16	6.14	0.291
Outliers	3	4	3	4
|z|>3.0	0	0	0	7
2<|z|<3	0	1	0	3

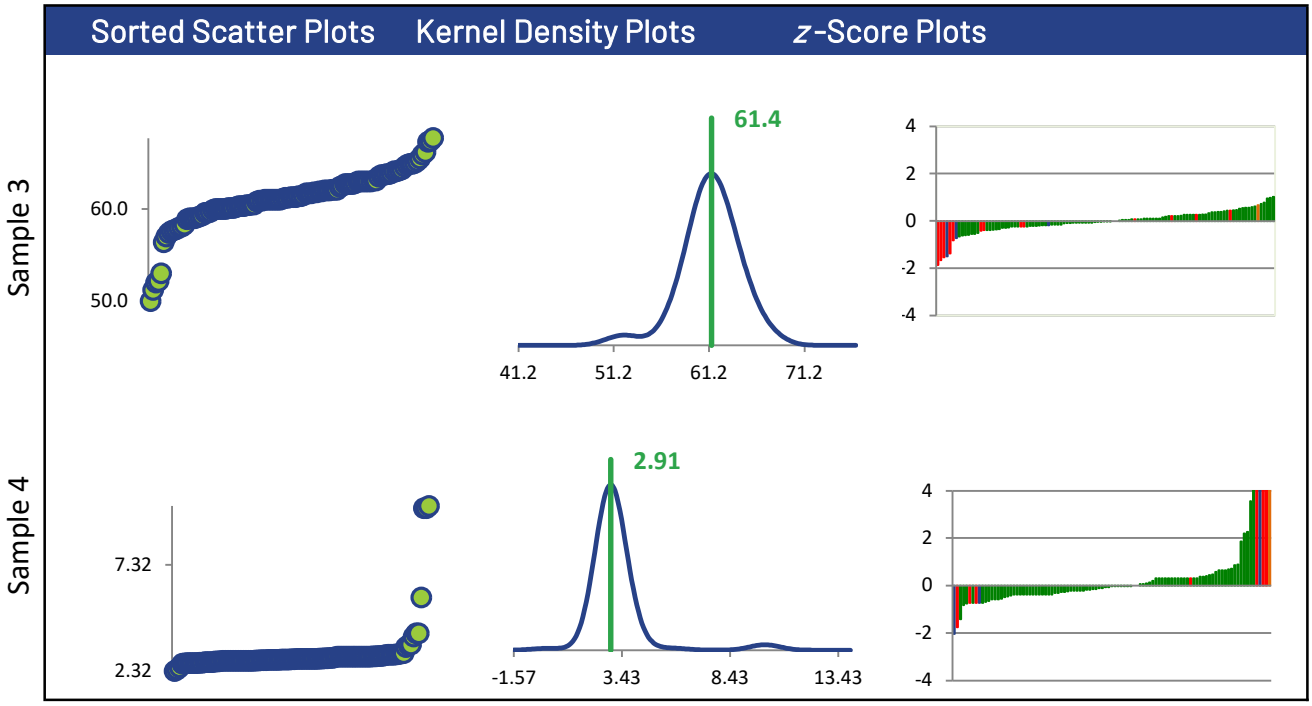
Methods Used

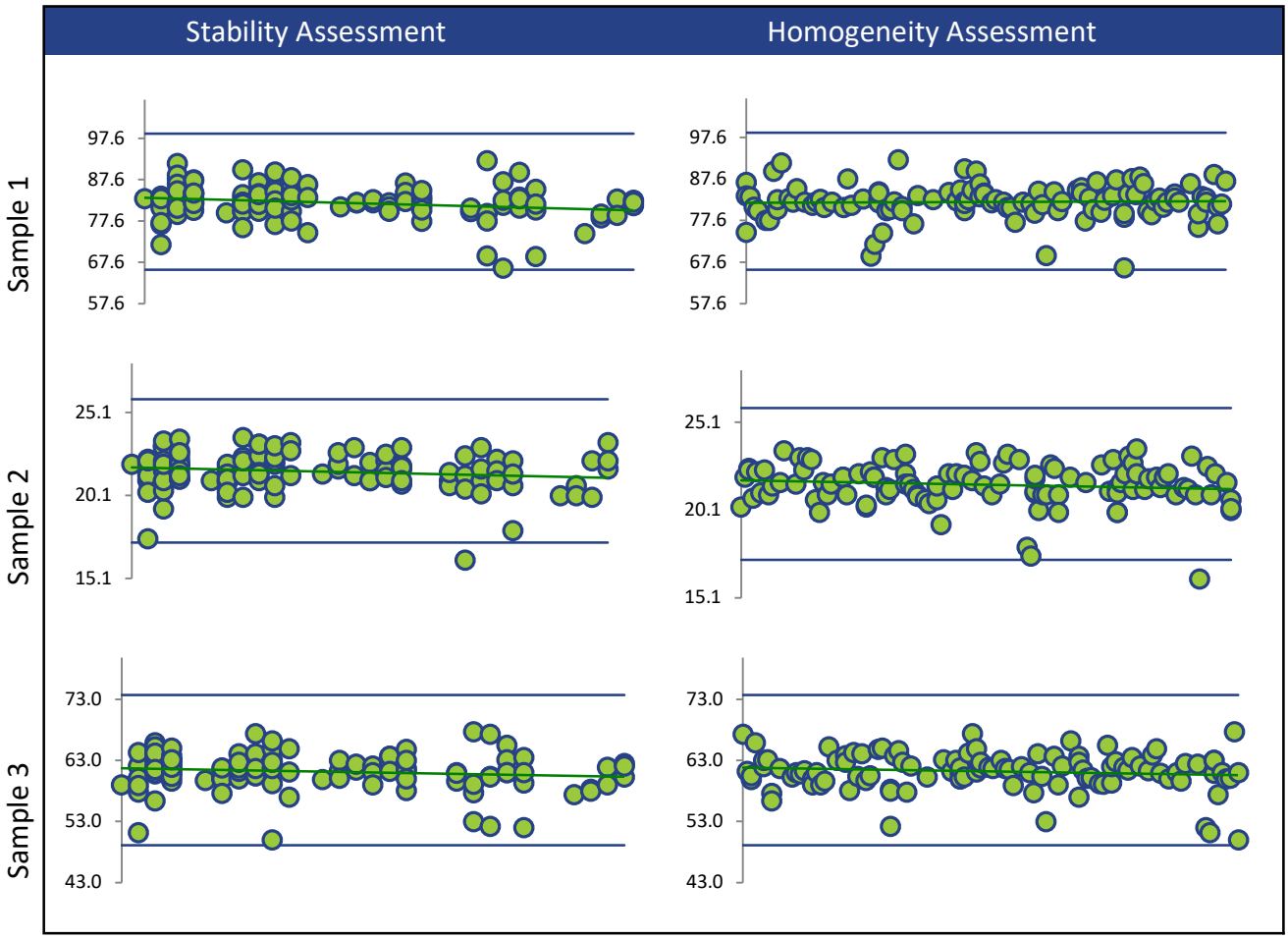
Method	C02A-1	C02A-2	C02A-3	C02A-4
HYDRIDE AA (Blue)	3	3	3	3
ICP/OES (Red)	13	13	13	7
ICP/MS (Green)	93	93	93	90
HYDRIDE ICP (Orange)	1	0	1	1

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



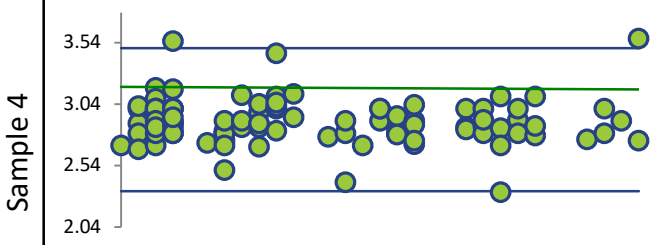
ARSENIC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
60.0
50.0
61.4
41.2
51.2
61.2
71.2
4
2
0
-2
-4
Sample 4
7.32
2.32
2.91
-1.57
3.43
8.43
13.43
4
2
0
-2
-4

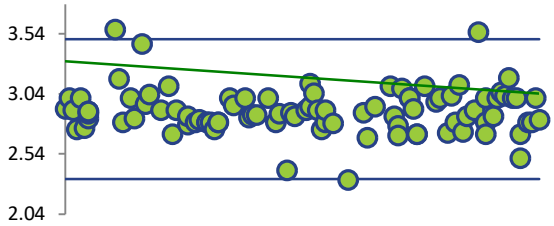

Stability Assessment
Homogeneity Assessment
Sample 1
97.6
87.6
77.6
67.6
57.6
97.6
87.6
77.6
67.6
57.6
Sample 2
25.1
20.1
15.1
25.1
20.1
15.1
Sample 3
73.0
63.0
53.0
43.0
73.0
63.0
53.0
43.0

ARSENIC

Stability Assessment



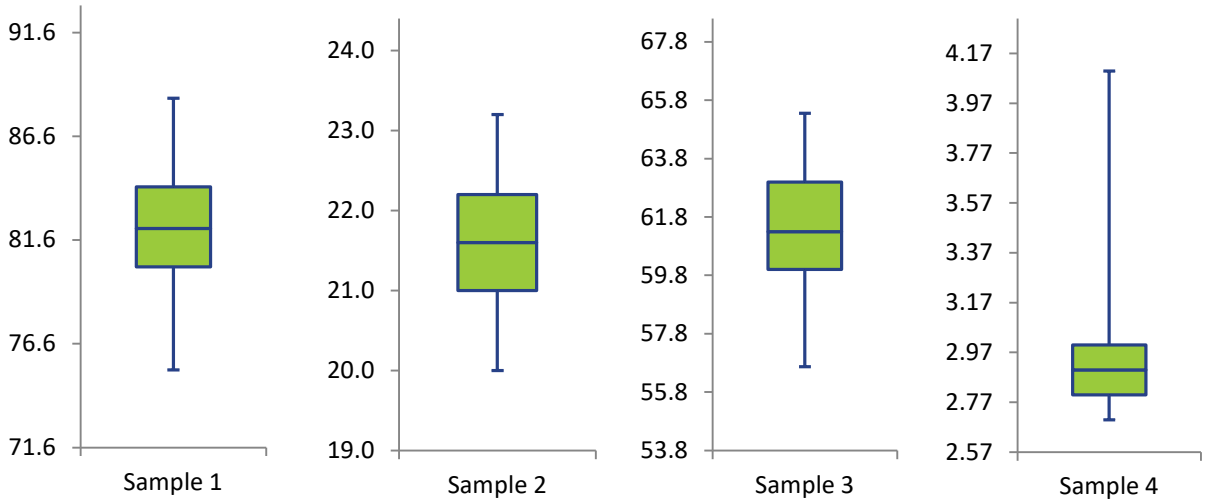
Homogeneity Assessment



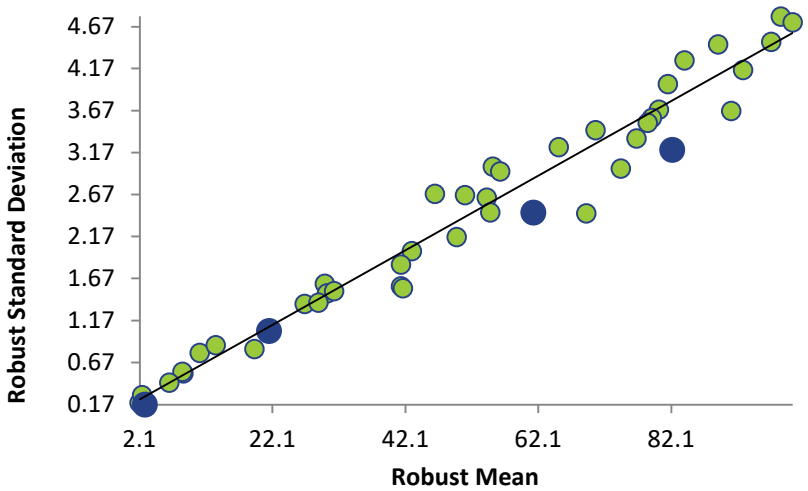
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



BARIUM

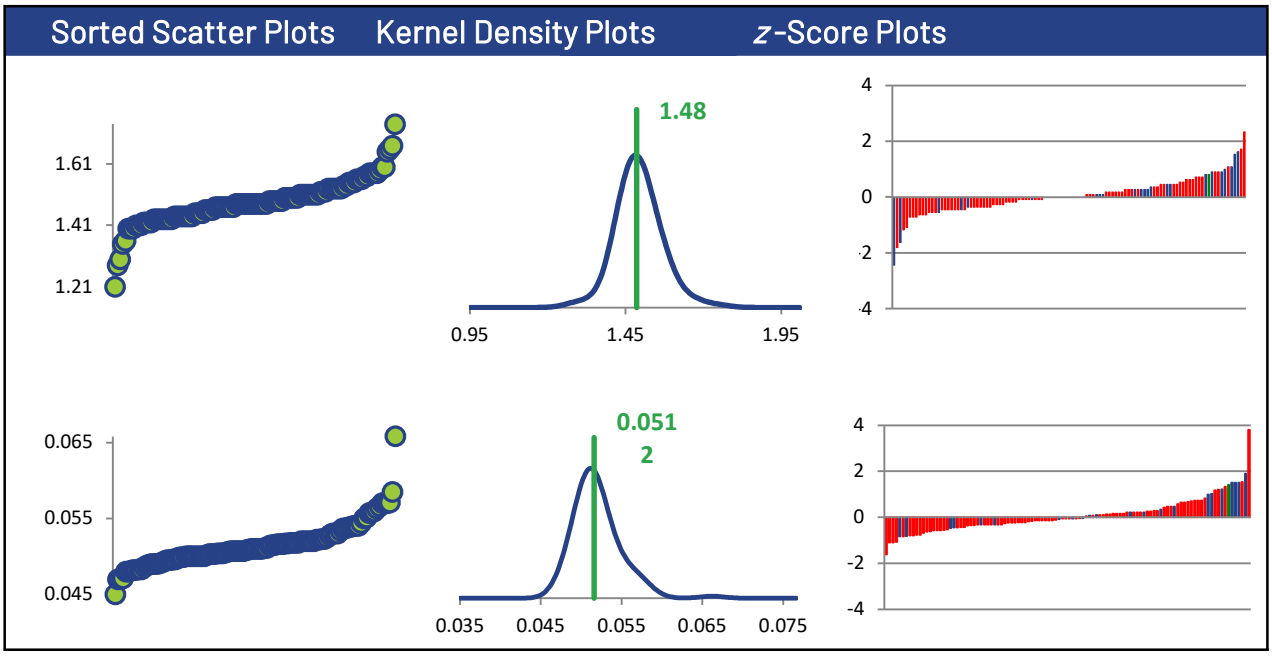
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	110	108	110	104
Median mg/L	1.48	0.0510	0.819	0.0160
Robust Mean mg/L	1.48	0.0512	0.823	0.0161
U mg/L	0.00719	0.000277	0.00423	0.0000737
Robust Standard Deviation mg/L	0.0603	0.00230	0.0355	0.000601
Regression Standard Deviation mg/L	0.111	0.00384	0.0617	0.00121
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.111	0.00384	0.0617	0.00121
Outliers	0	1	0	0
|z|>3.0	0	1	0	0
2<|z|<3	2	0	1	2

Methods Used

Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	24	22	24	21
ICP/MS (Red)	85	85	85	82
AA FLAME (Green)	1	1	1	1

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



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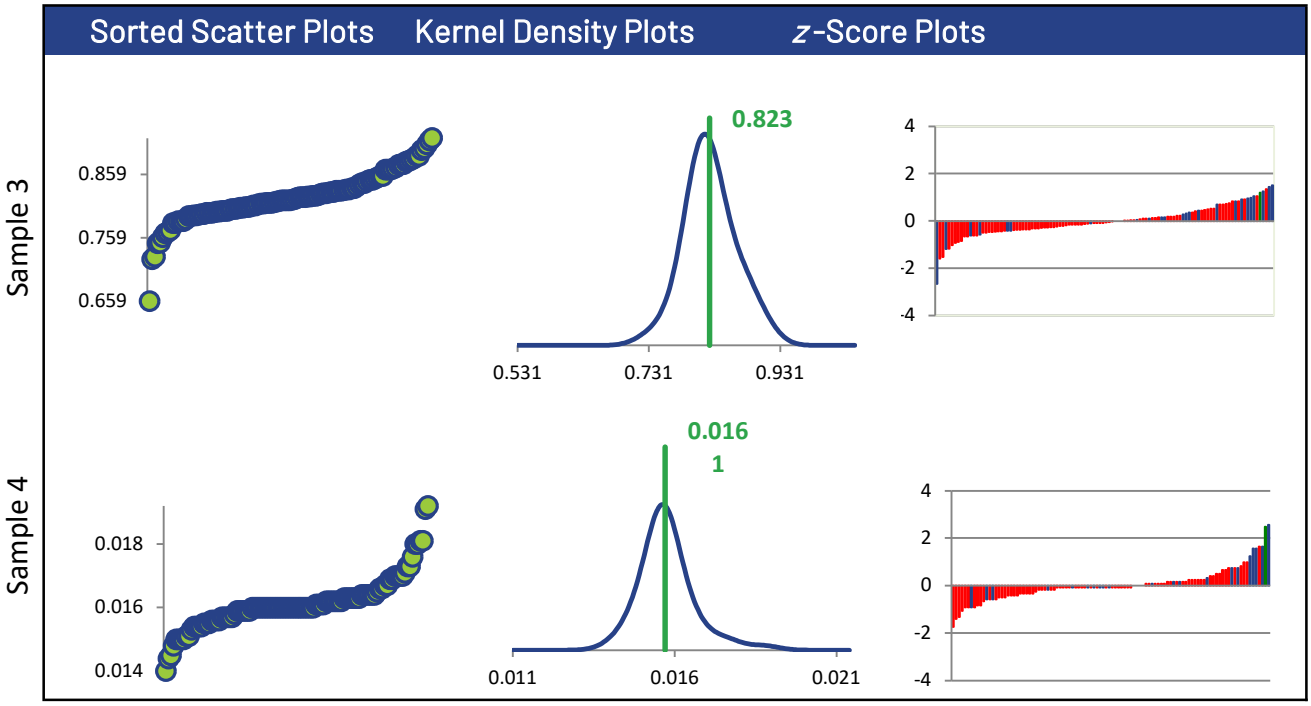
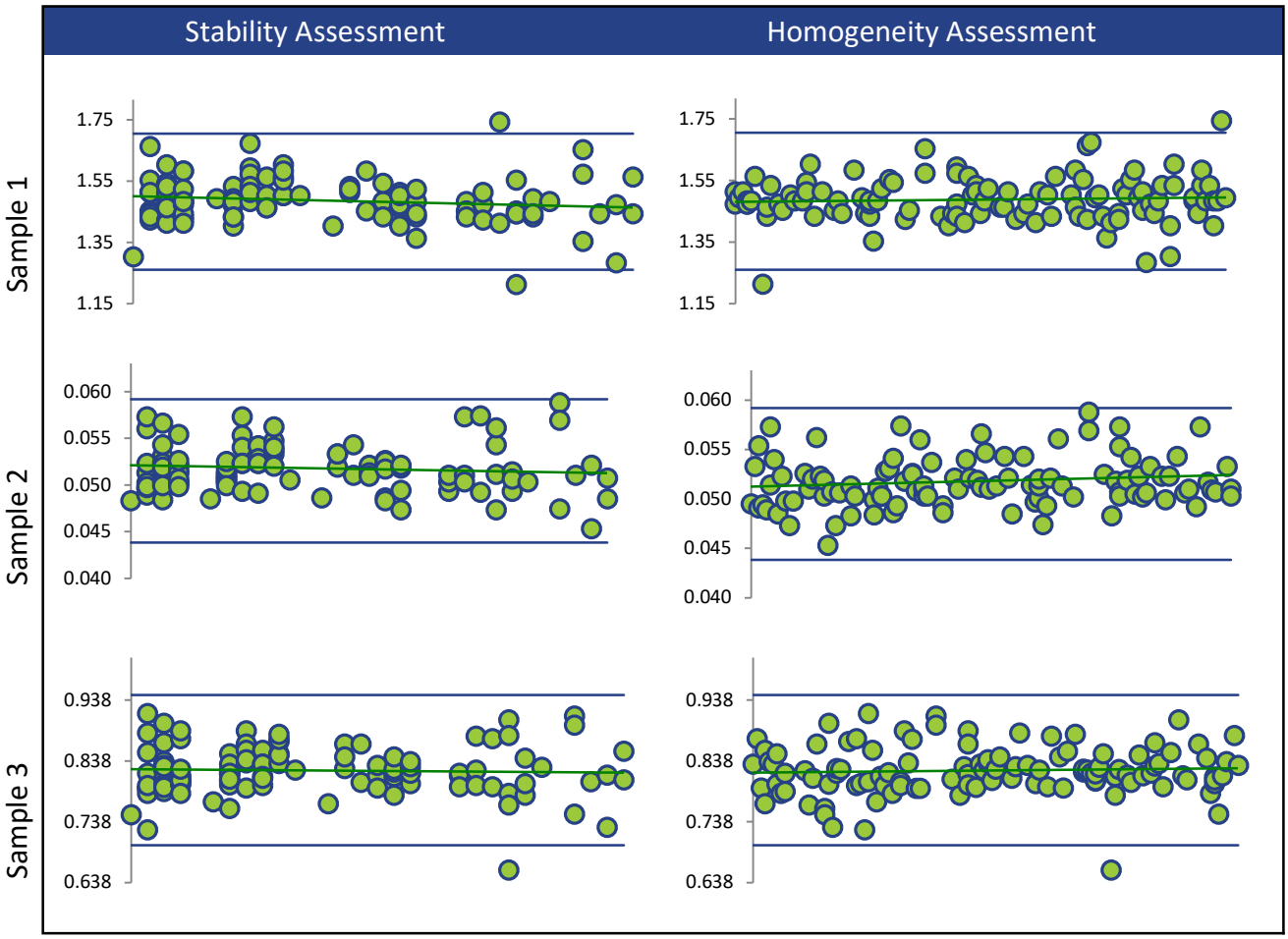
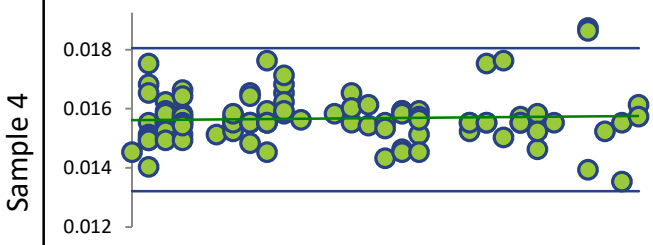

Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.859
0.759
0.659
0.823
0.531
0.731
0.931
4
2
0
-2
-4
Sample 4
0.018
0.016
0.014
0.016
1
0.011
0.016
0.021
4
2
0
-2
-4

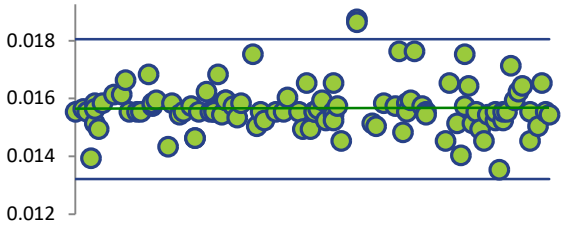

Stability Assessment
Homogeneity Assessment
Sample 1
1.75
1.55
1.35
1.15
Sample 2
0.060
0.055
0.050
0.045
0.040
Sample 3
0.938
0.838
0.738
0.638

BARIUM

Stability Assessment



Homogeneity Assessment



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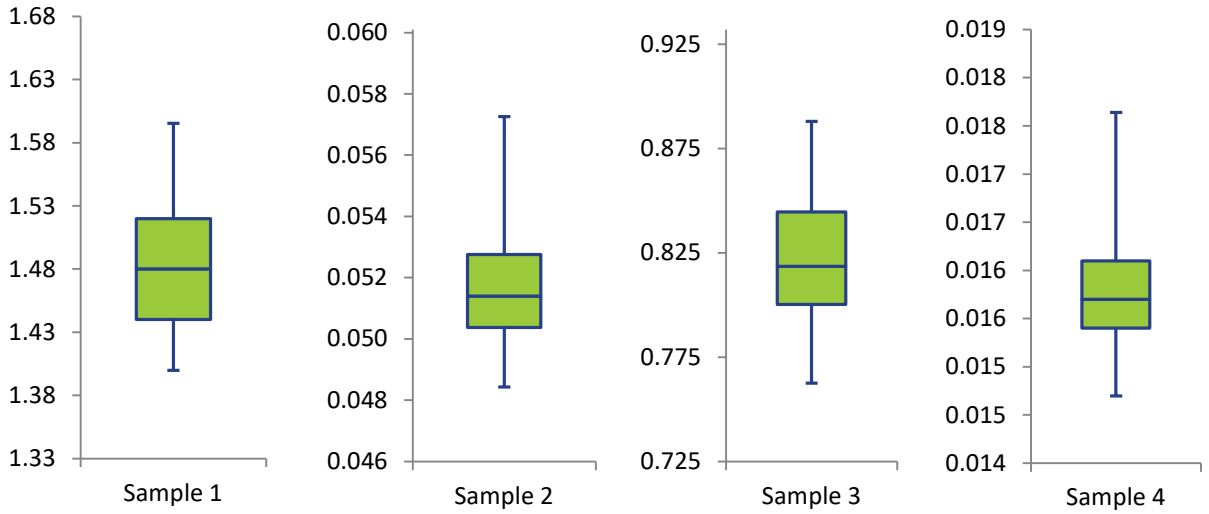
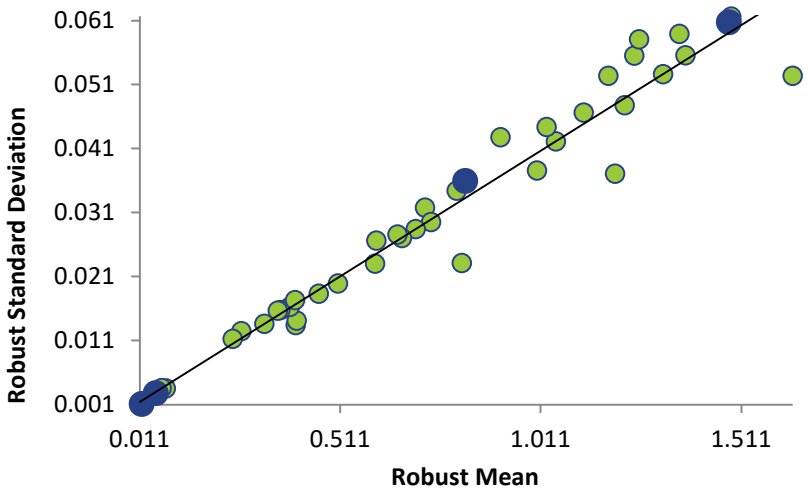
Box and Whisker Plots



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



BERYLLIUM

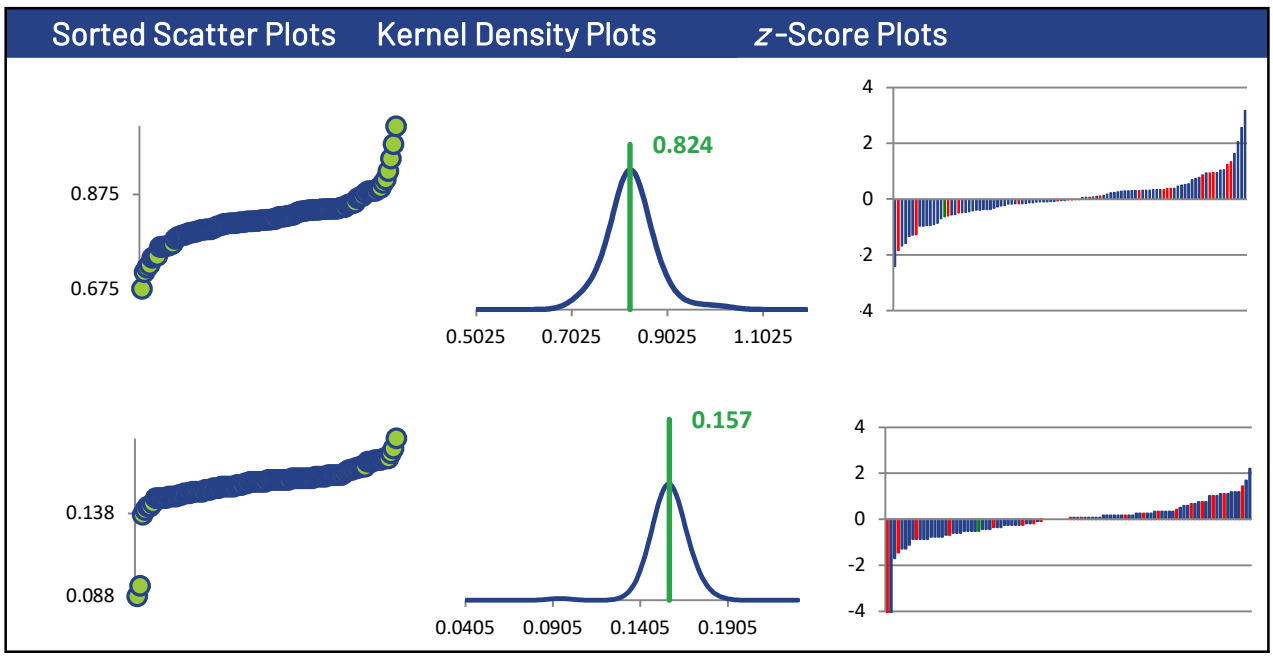
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	100	100	100	99
Median mg/L	0.822	0.158	0.528	0.0381
Robust Mean mg/L	0.824	0.157	0.528	0.0383
U mg/L	0.00505	0.000994	0.00328	0.000254
Robust Standard Deviation mg/L	0.0404	0.00795	0.0262	0.00202
Regression Standard Deviation mg/L	0.0618	0.0118	0.0396	0.00287
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0618	0.0118	0.0396	0.00287
Outliers	0	0	0	0
|z|>3.0	1	2	2	1
2<|z|<3	3	1	0	1

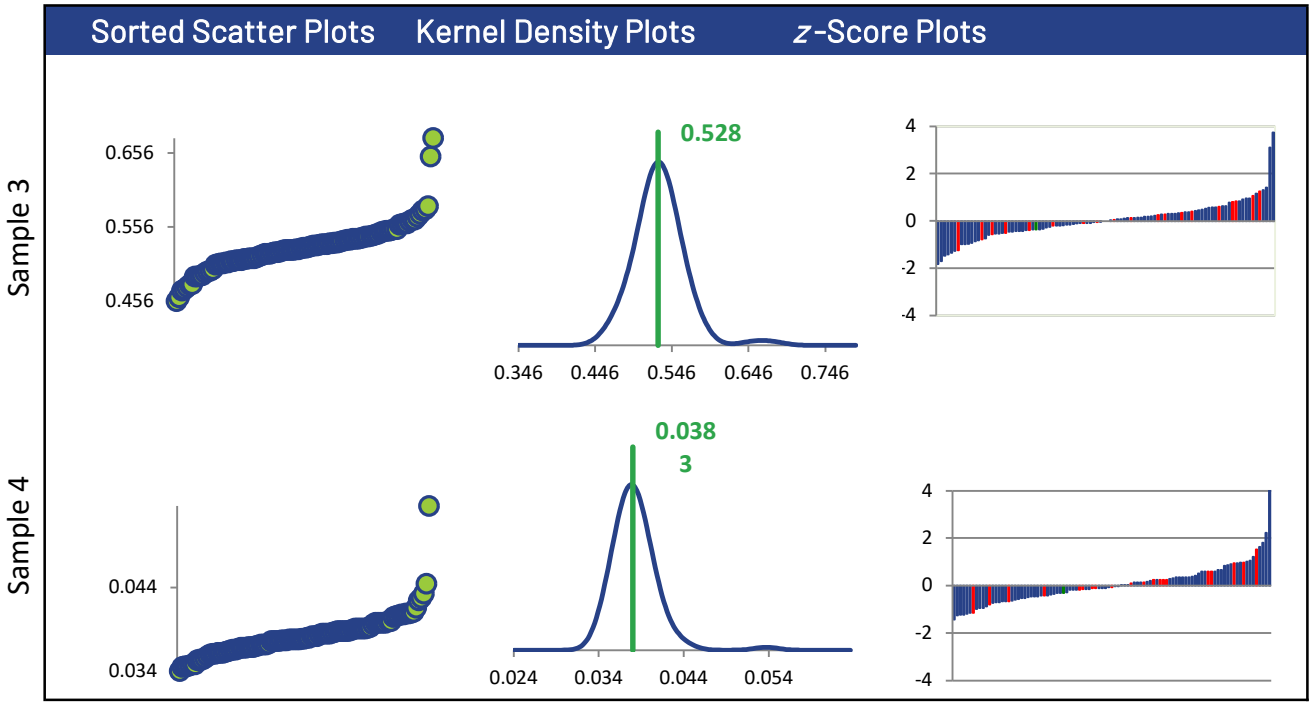
Methods Used

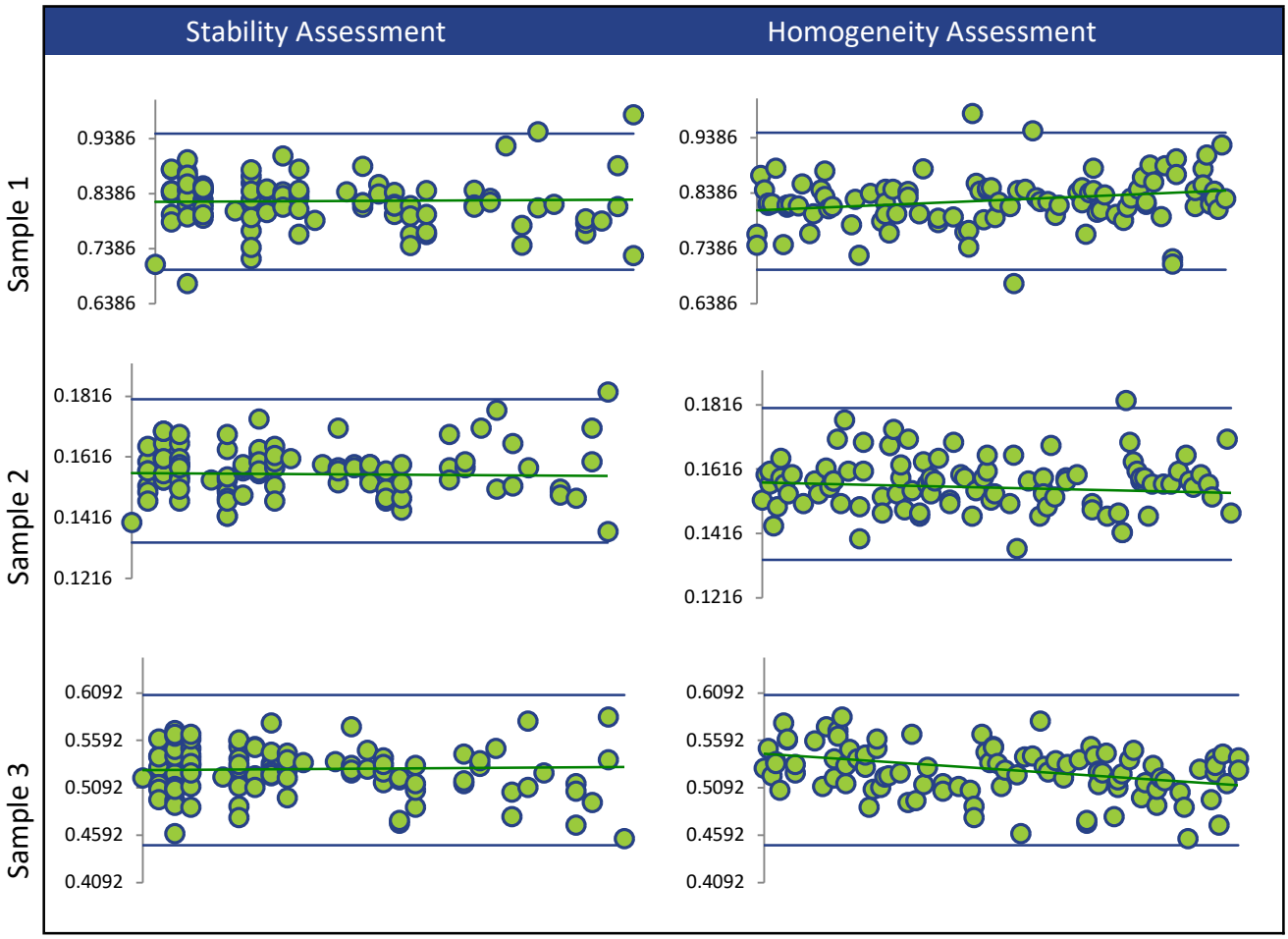
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	78	78	78	78
ICP/OES (Red)	21	21	21	20
AA FLAME (Green)	1	1	1	1

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



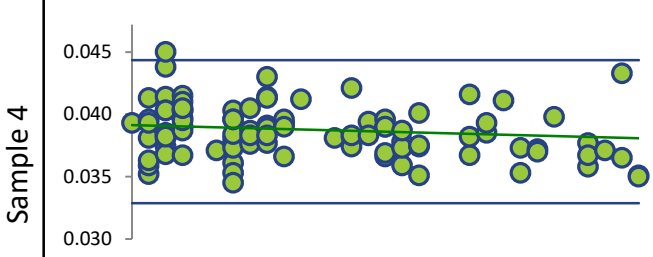
BERYLLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.656
0.556
0.456
0.528
0.346
0.446
0.546
0.646
0.746
4
2
0
-2
-4
Sample 4
0.044
0.034
0.0383
0.024
0.034
0.044
0.054
4
2
0
-2
-4

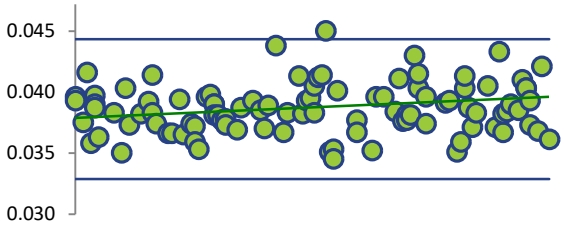

Stability Assessment
Homogeneity Assessment
Sample 1
0.9386
0.8386
0.7386
0.6386
Sample 2
0.1816
0.1616
0.1416
0.1216
Sample 3
0.6092
0.5592
0.5092
0.4592
0.4092

BERYLLIUM

Stability Assessment



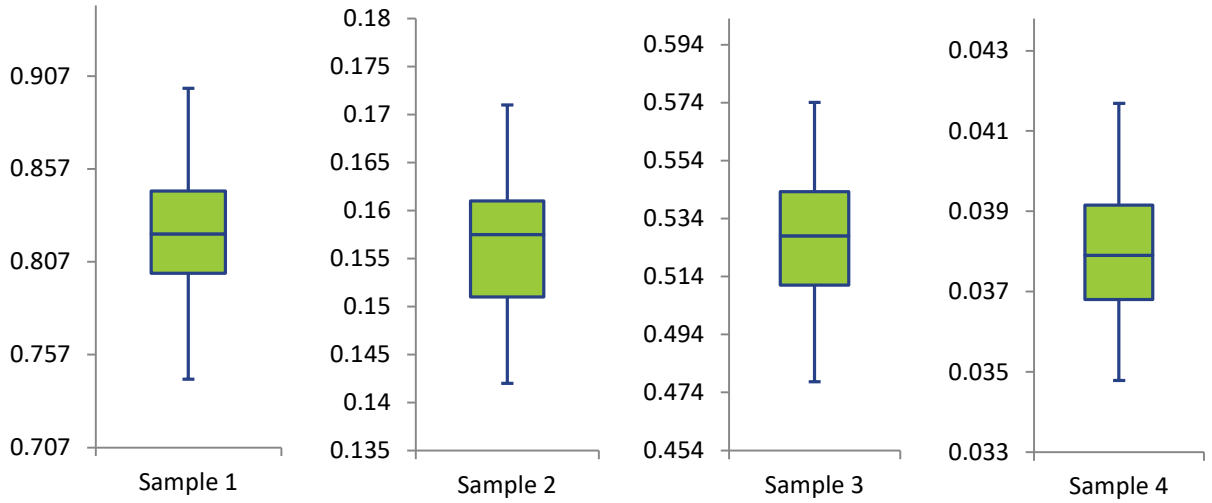
Homogeneity Assessment



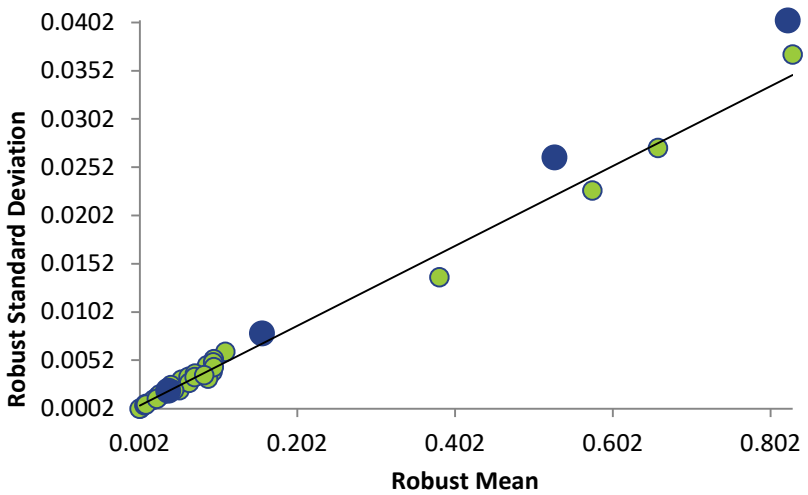
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



BISMUTH

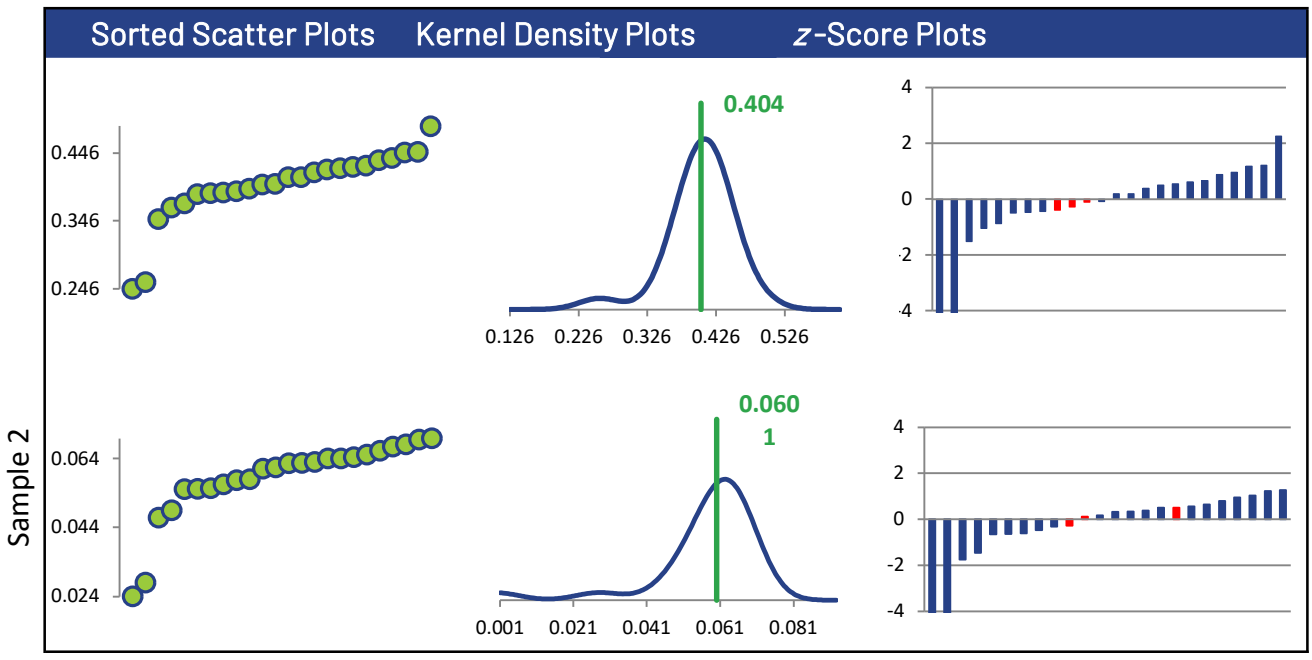
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	24	24	24	22
Median mg/L	0.406	0.0620	0.317	0.00424
Robust Mean mg/L	0.404	0.0601	0.316	0.00387
U mg/L	0.00926	0.00195	0.00707	0.000290
Robust Standard Deviation mg/L	0.0363	0.00766	0.0277	0.00109
Regression Standard Deviation mg/L				
Stability Flag				
Homogeneity Flag				Homogeneity
Standard Deviation Used (SDPA) mg/L	0.0363	0.00766	0.0277	0.00163
Outliers	0	0	0	0
|z|>3.0	2	2	2	0
2<|z|<3	1	0	0	0

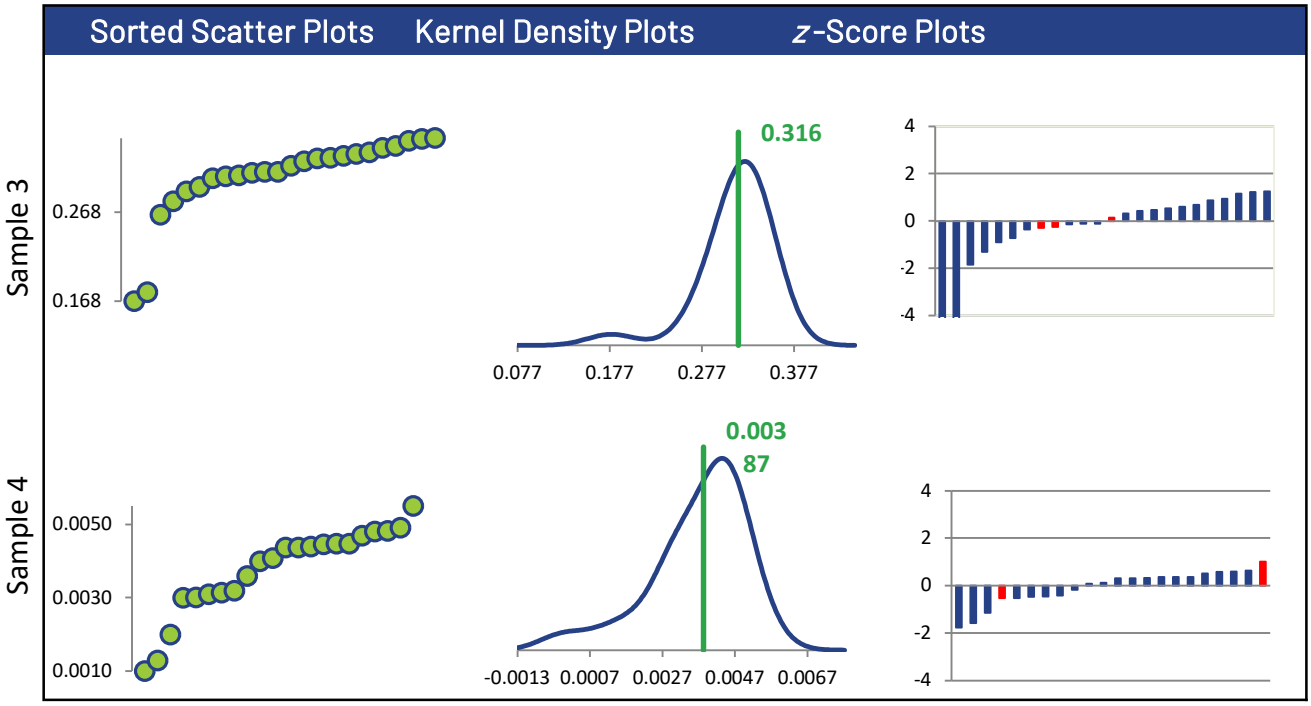
Methods Used

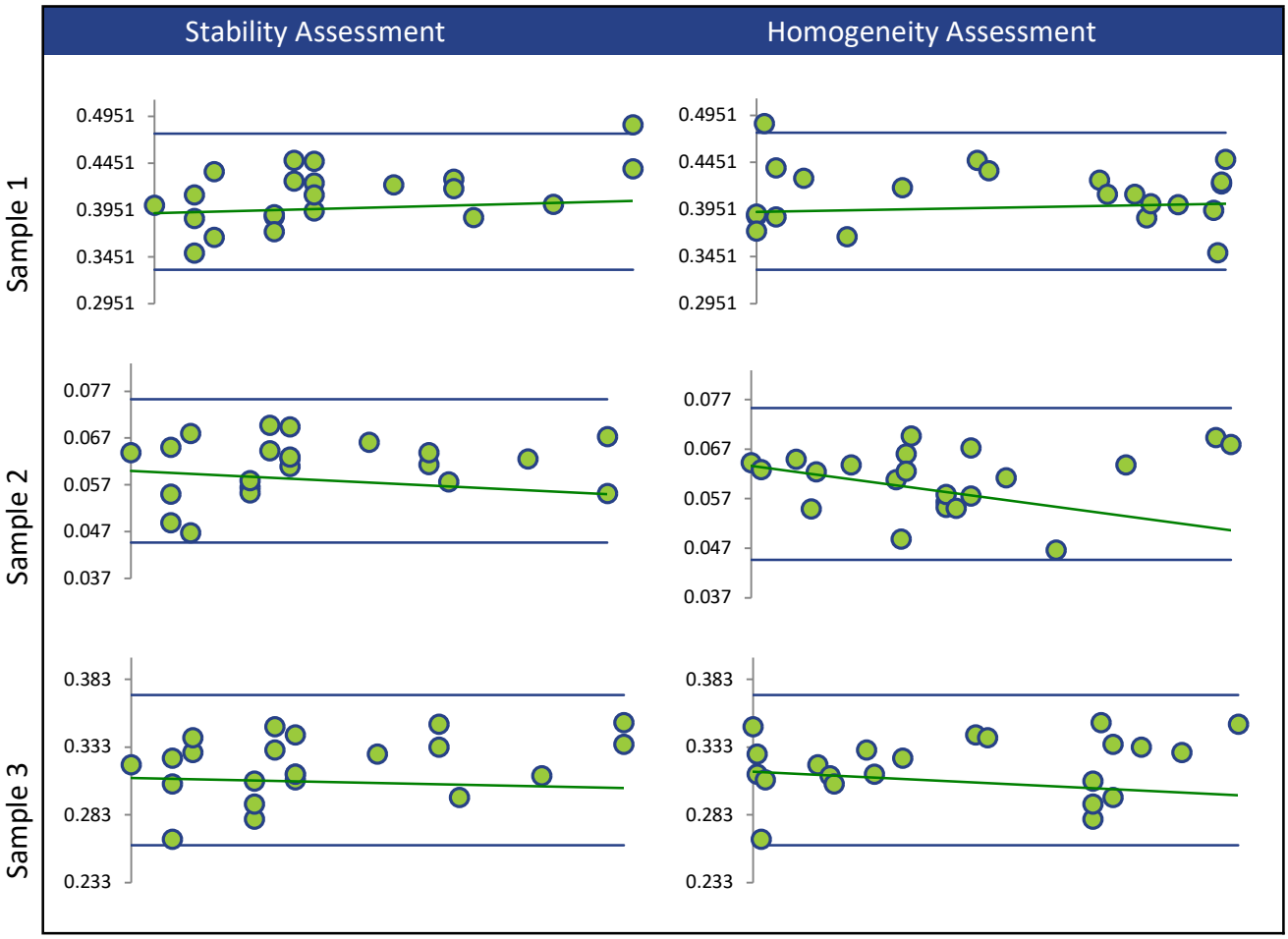
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	21	21	21	20
ICP/OES (Red)	3	3	3	2

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



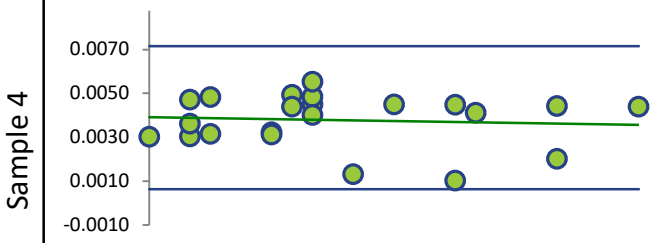
BISMUTH


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.268
0.168
0.316
0.077
0.177
0.277
0.377
4
2
0
-2
-4
Sample 4
0.0050
0.0030
0.0010
0.003
87
-0.0013
0.0007
0.0027
0.0047
0.0067

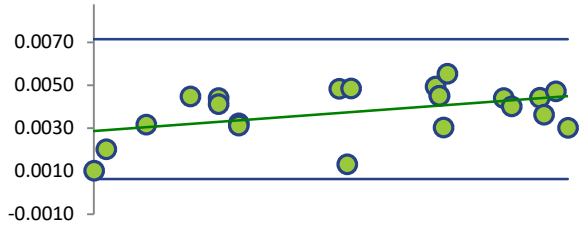

Stability Assessment
Homogeneity Assessment
Sample 1
0.4951
0.4451
0.3951
0.3451
0.2951
Sample 2
0.077
0.067
0.057
0.047
0.037
Sample 3
0.383
0.333
0.283
0.233

BISMUTH

Stability Assessment



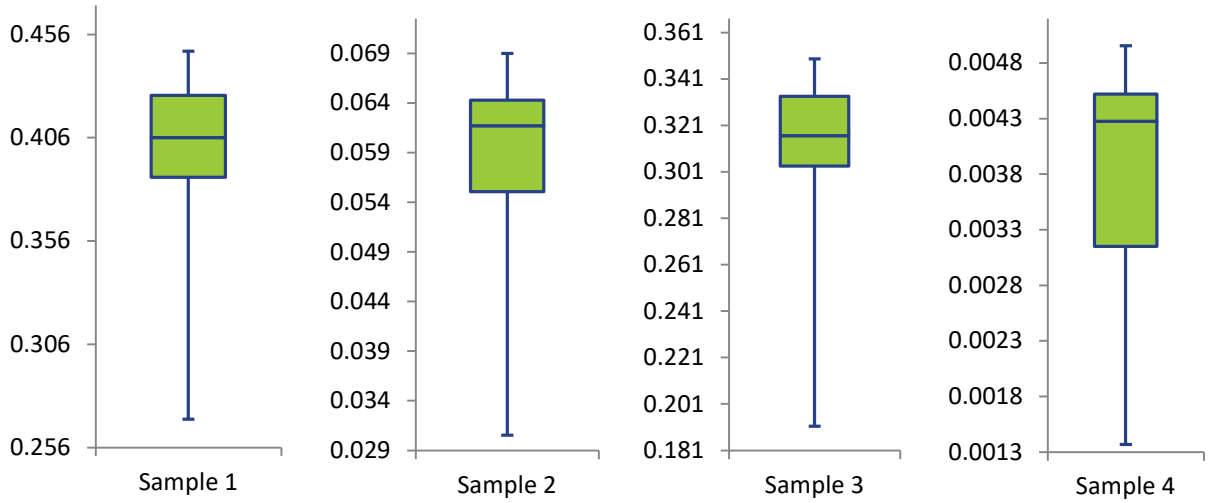
Homogeneity Assessment



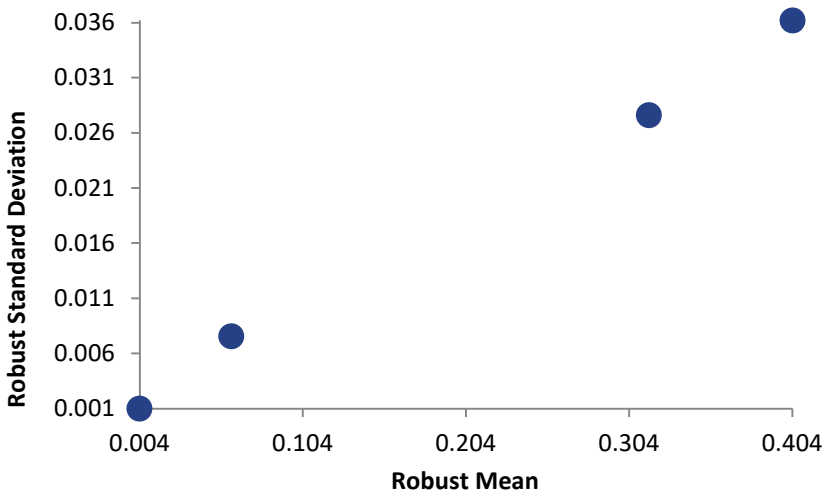
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



BORON

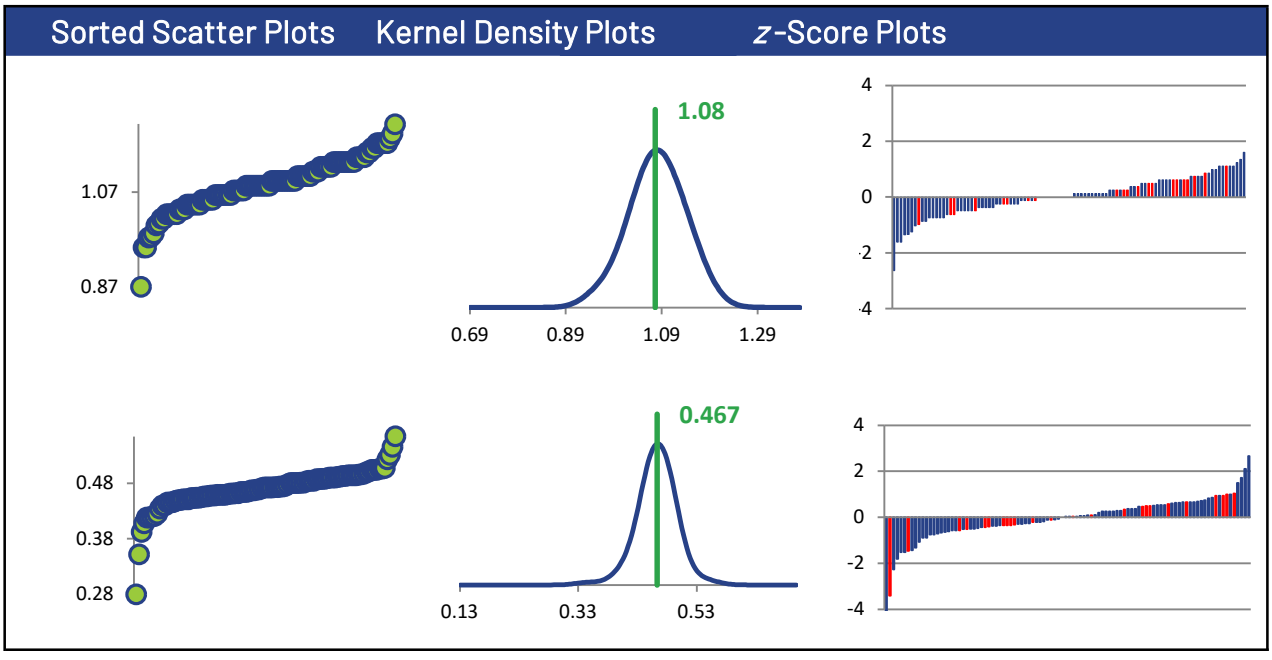
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	100	100	99	85
Median mg/L	1.08	0.468	0.847	0.0390
Robust Mean mg/L	1.08	0.467	0.846	0.0387
U mg/L	0.00691	0.00314	0.00597	0.000560
Robust Standard Deviation mg/L	0.0553	0.0251	0.0475	0.00413
Regression Standard Deviation mg/L	0.0813	0.0350	0.0634	0.00290
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0813	0.0350	0.0634	0.00413
Outliers	0	0	0	1
|z|>3.0	0	2	1	2
2<|z|<3	1	3	2	5

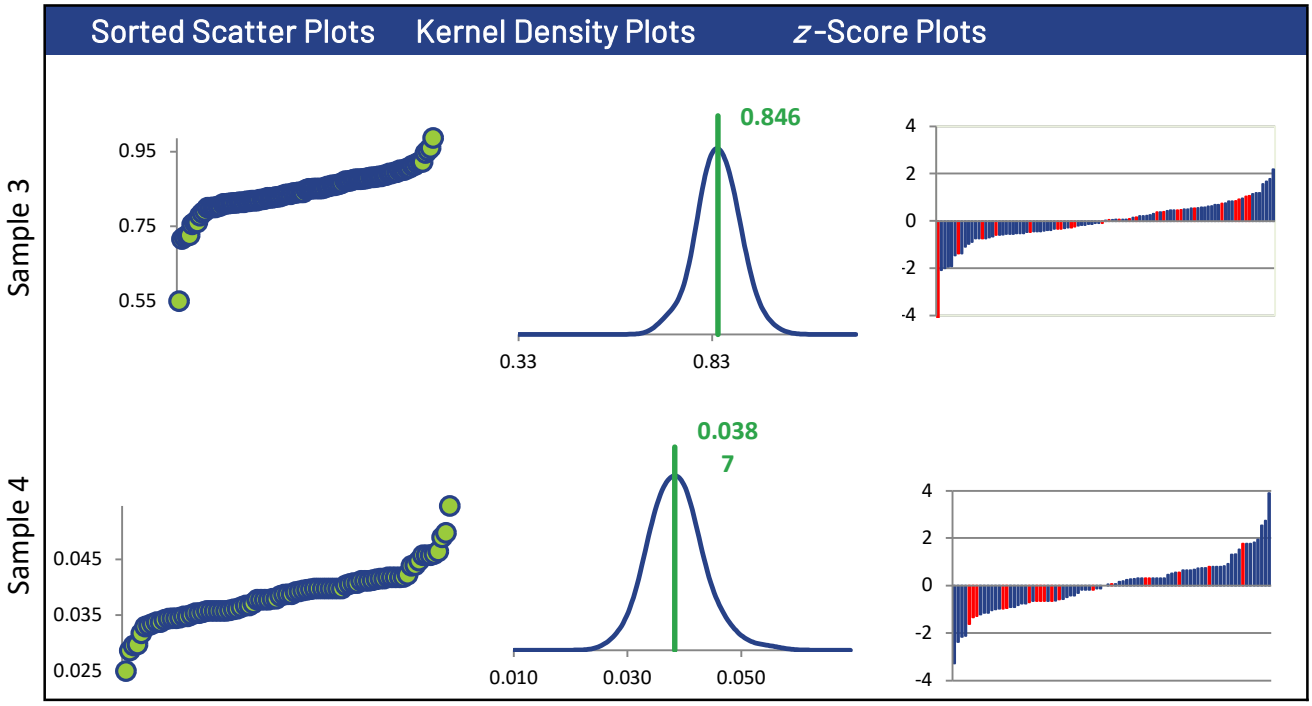
Methods Used

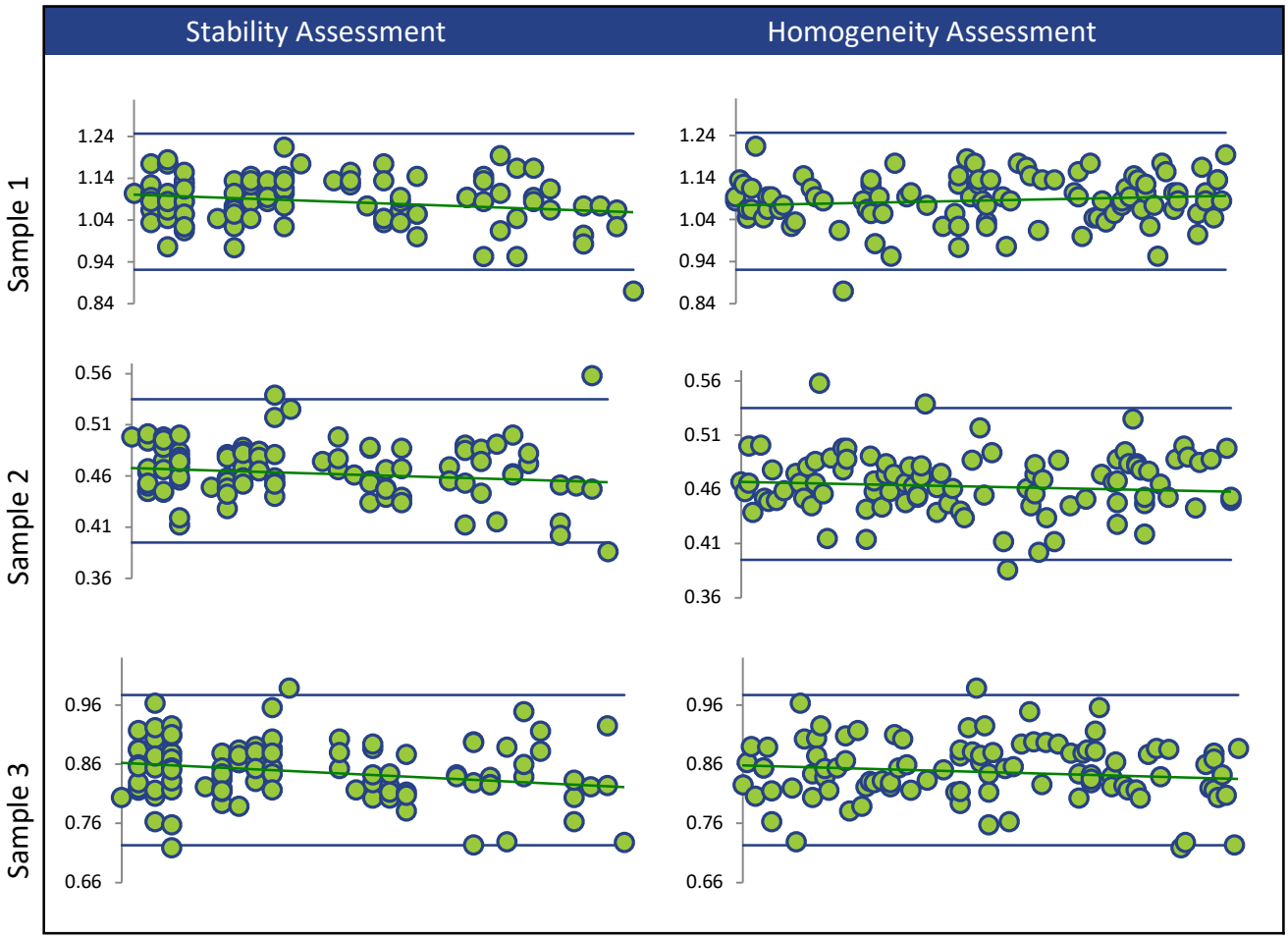
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	76	76	75	67
ICP/OES (Red)	24	24	24	18

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



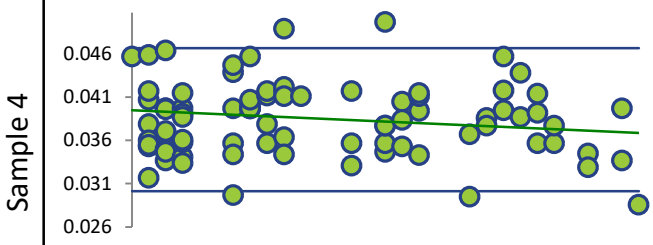
BORON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.95
0.75
0.55
0.846
0.33
0.83
4
2
0
-2
-4
Sample 4
0.045
0.035
0.025
0.038
7
0.010
0.030
0.050
4
2
0
-2
-4

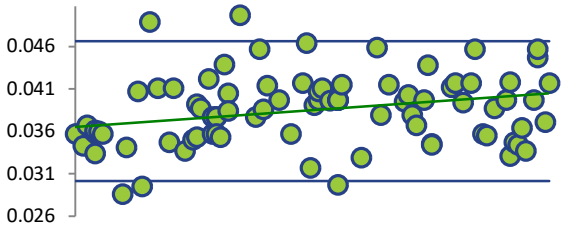

Stability Assessment
Homogeneity Assessment
Sample 1
1.24
1.14
1.04
0.94
0.84
Sample 2
0.56
0.51
0.46
0.41
0.36
Sample 3
0.96
0.86
0.76
0.66

BORON

Stability Assessment



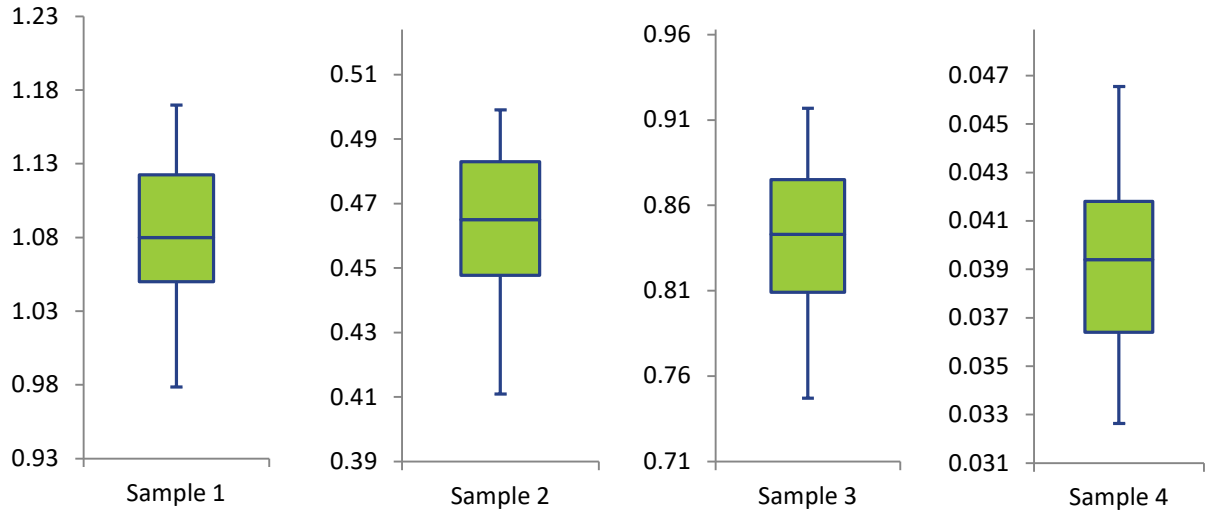
Homogeneity Assessment



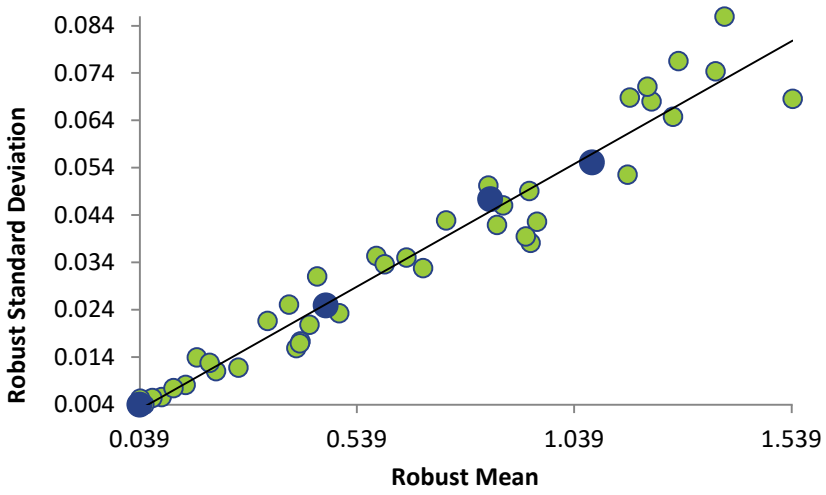
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



CADMIUM

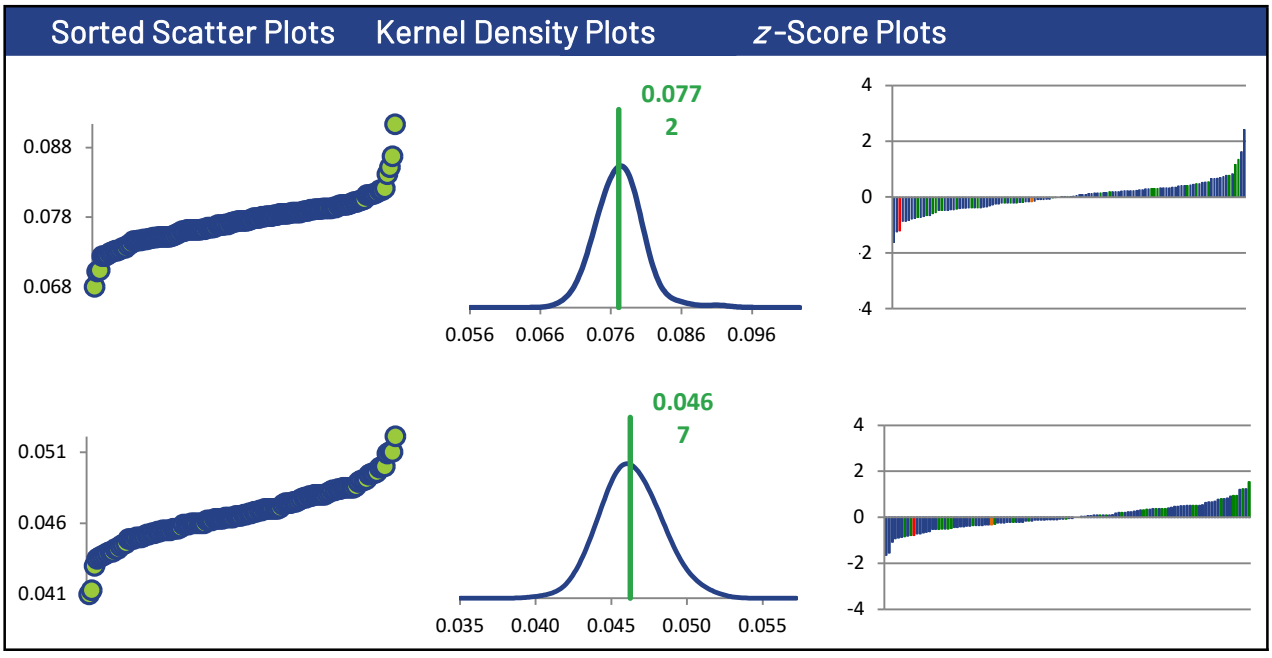
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	118	118	118	118
Median mg/L	0.0773	0.0466	0.0784	0.00973
Robust Mean mg/L	0.0772	0.0467	0.0782	0.00971
U mg/L	0.000321	0.000214	0.000368	0.0000537
Robust Standard Deviation mg/L	0.00279	0.00186	0.00320	0.000467
Regression Standard Deviation mg/L	0.00579	0.00350	0.00587	0.000728
Stability Flag				
Homogeneity Flag				Homogeneity
Standard Deviation Used (SDPA) mg/L	0.00579	0.00350	0.00587	0.000819
Outliers	0	0	0	0
|z|>3.0	0	0	0	3
2<|z|<3	1	0	1	0

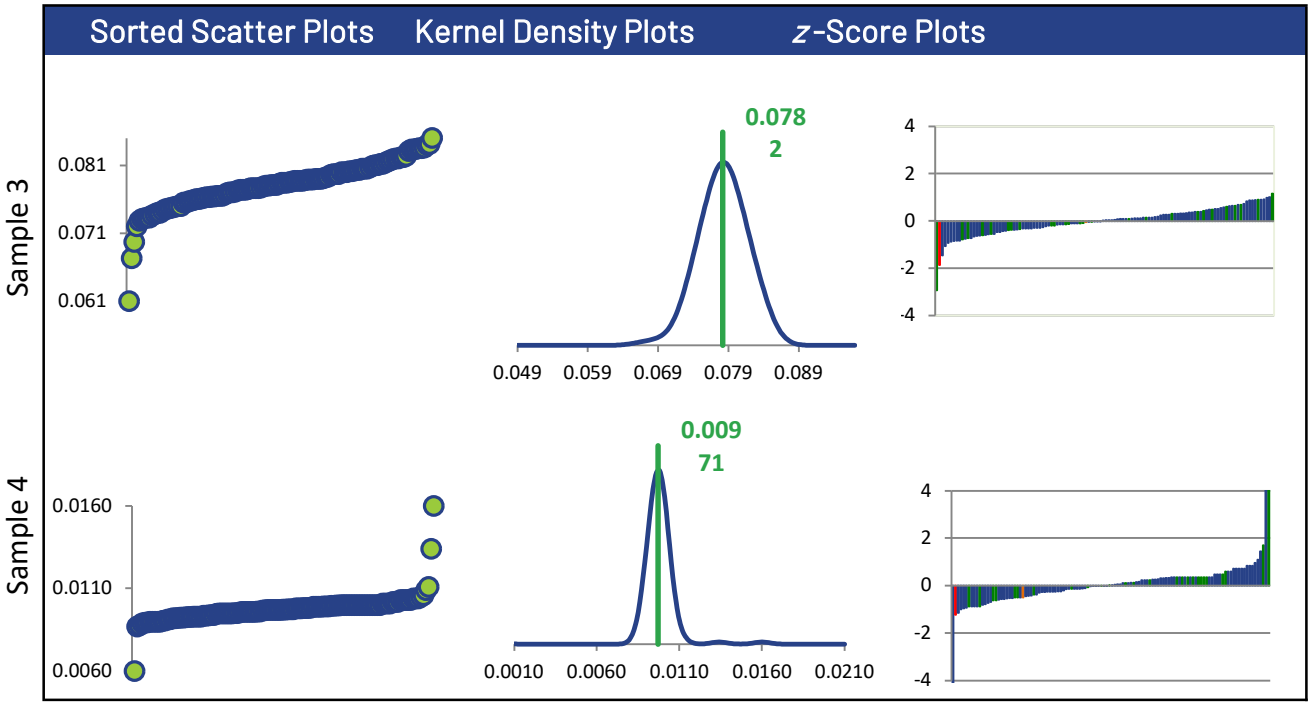
Methods Used

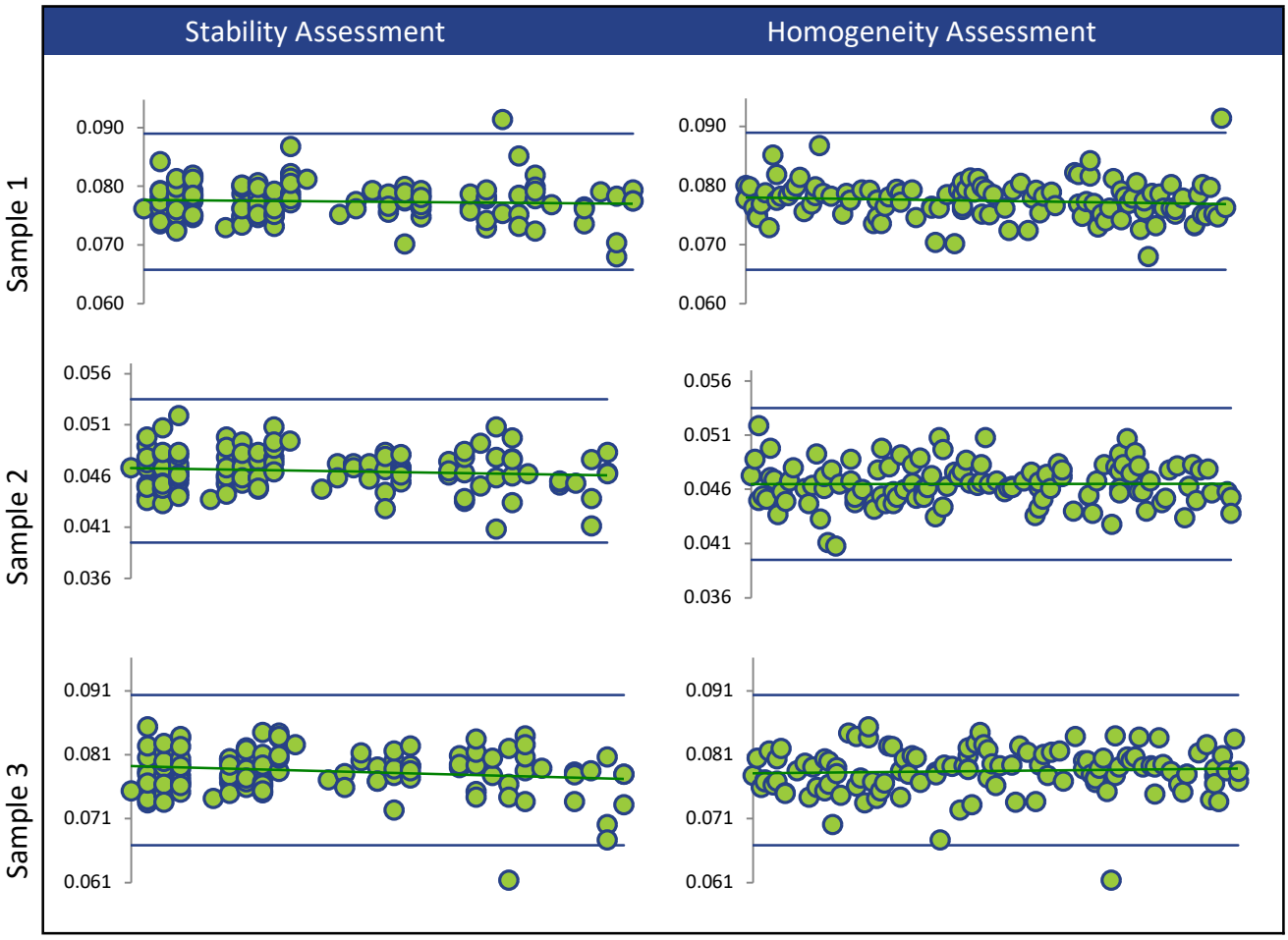
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	90	90	90	90
AA GRAPHITE (Red)	1	1	1	1
ICP/OES (Green)	26	26	26	26
AA FLAME (Orange)	1	1	1	1

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



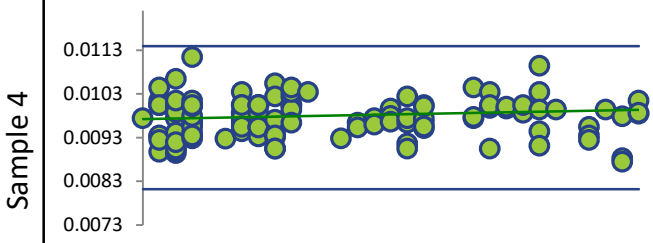
CADMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.081
0.071
0.061
0.078
2
0.049
0.059
0.069
0.079
0.089
4
2
0
-2
-4
Sample 4
0.0160
0.0110
0.0060
0.009
71
0.0010
0.0060
0.0110
0.0160
0.0210
4
2
0
-2
-4

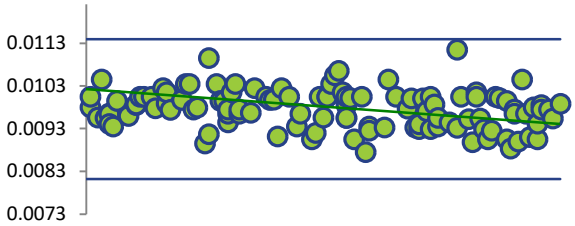

Stability Assessment
Homogeneity Assessment
Sample 1
0.090
0.080
0.070
0.060
Sample 2
0.056
0.051
0.046
0.041
0.036
Sample 3
0.091
0.081
0.071
0.061

CADMIUM

Stability Assessment



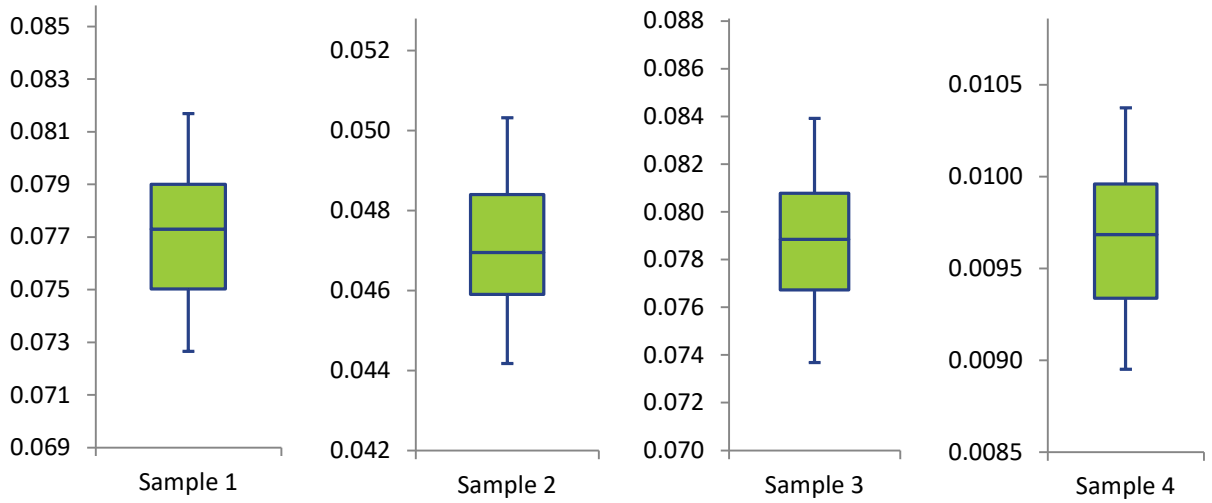
Homogeneity Assessment



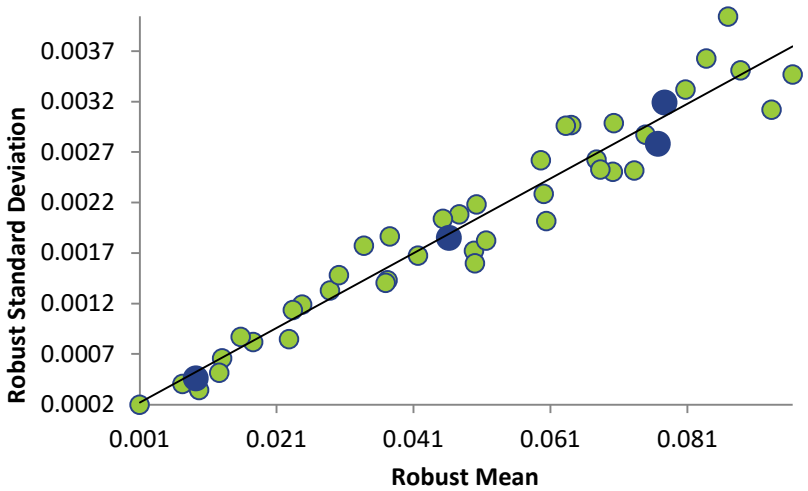
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



CHROMIUM

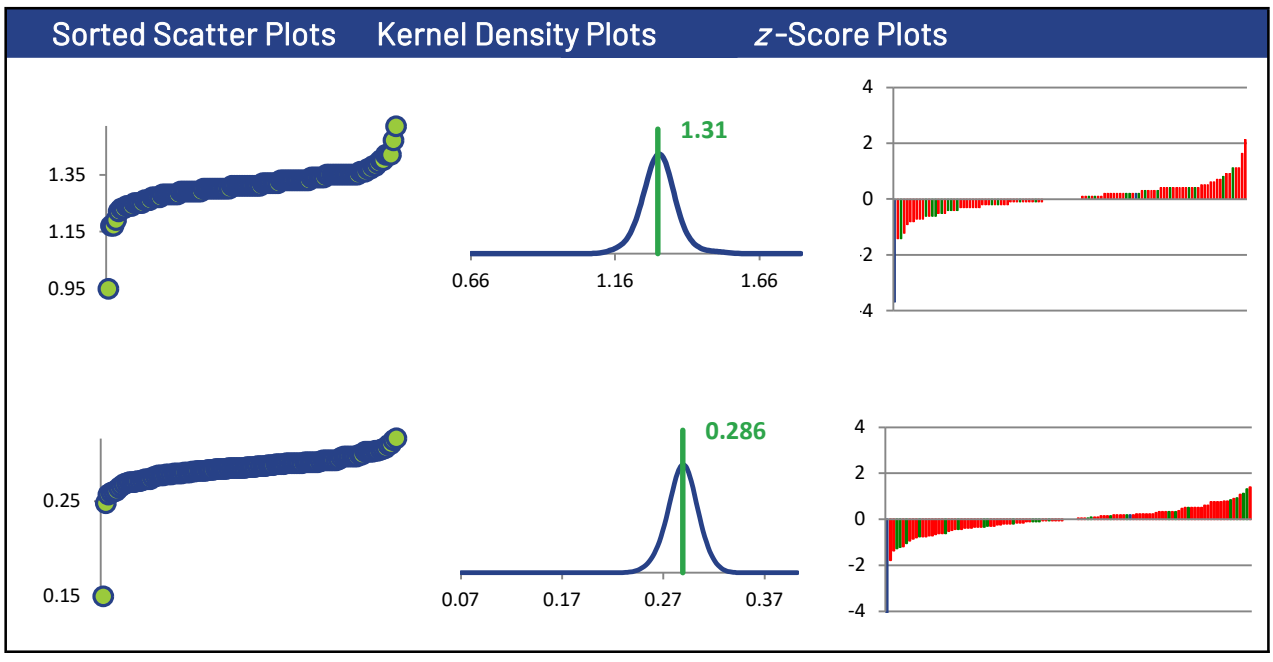
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	113	113	113	109
Median mg/L	1.31	0.286	0.972	0.0125
Robust Mean mg/L	1.31	0.286	0.973	0.0125
U mg/L	0.00529	0.00136	0.00362	0.0000838
Robust Standard Deviation mg/L	0.0450	0.0116	0.0308	0.000700
Regression Standard Deviation mg/L	0.0984	0.0214	0.0730	0.000936
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0984	0.0214	0.0730	0.000936
Outliers	0	0	0	1
|z|>3.0	1	1	1	4
2<|z|<3	1	0	1	5

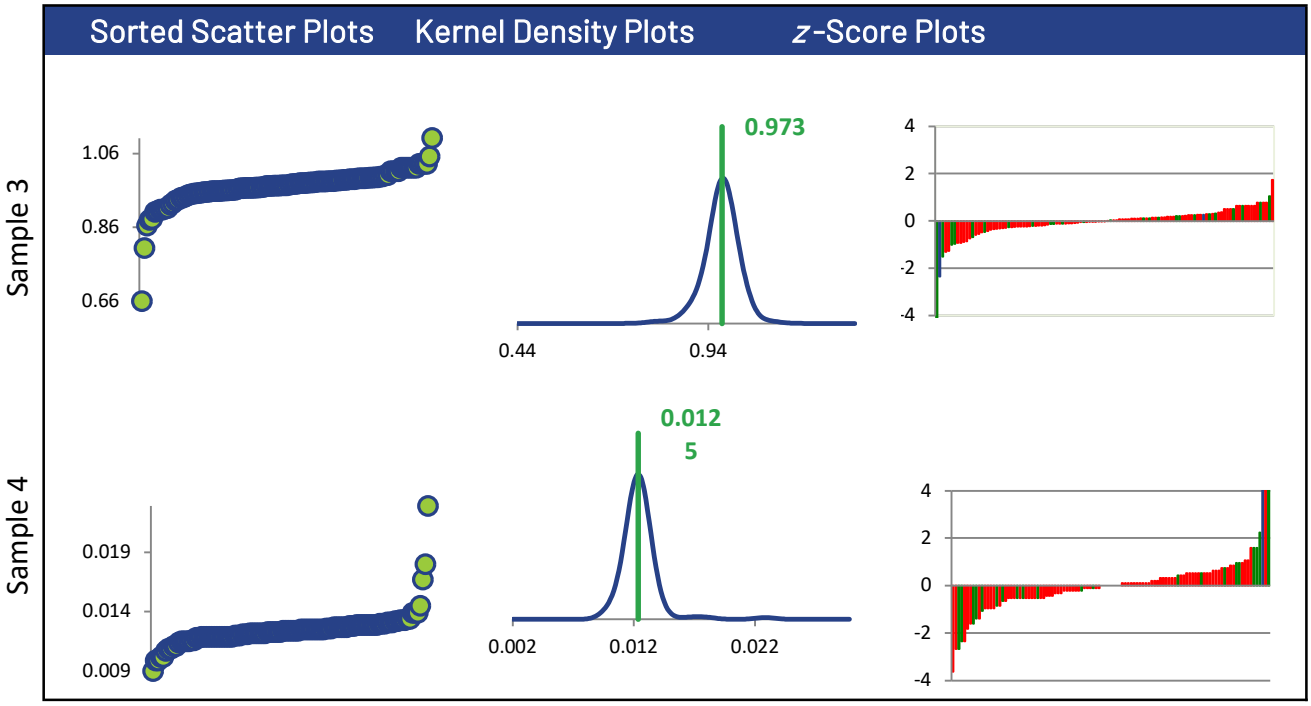
Methods Used

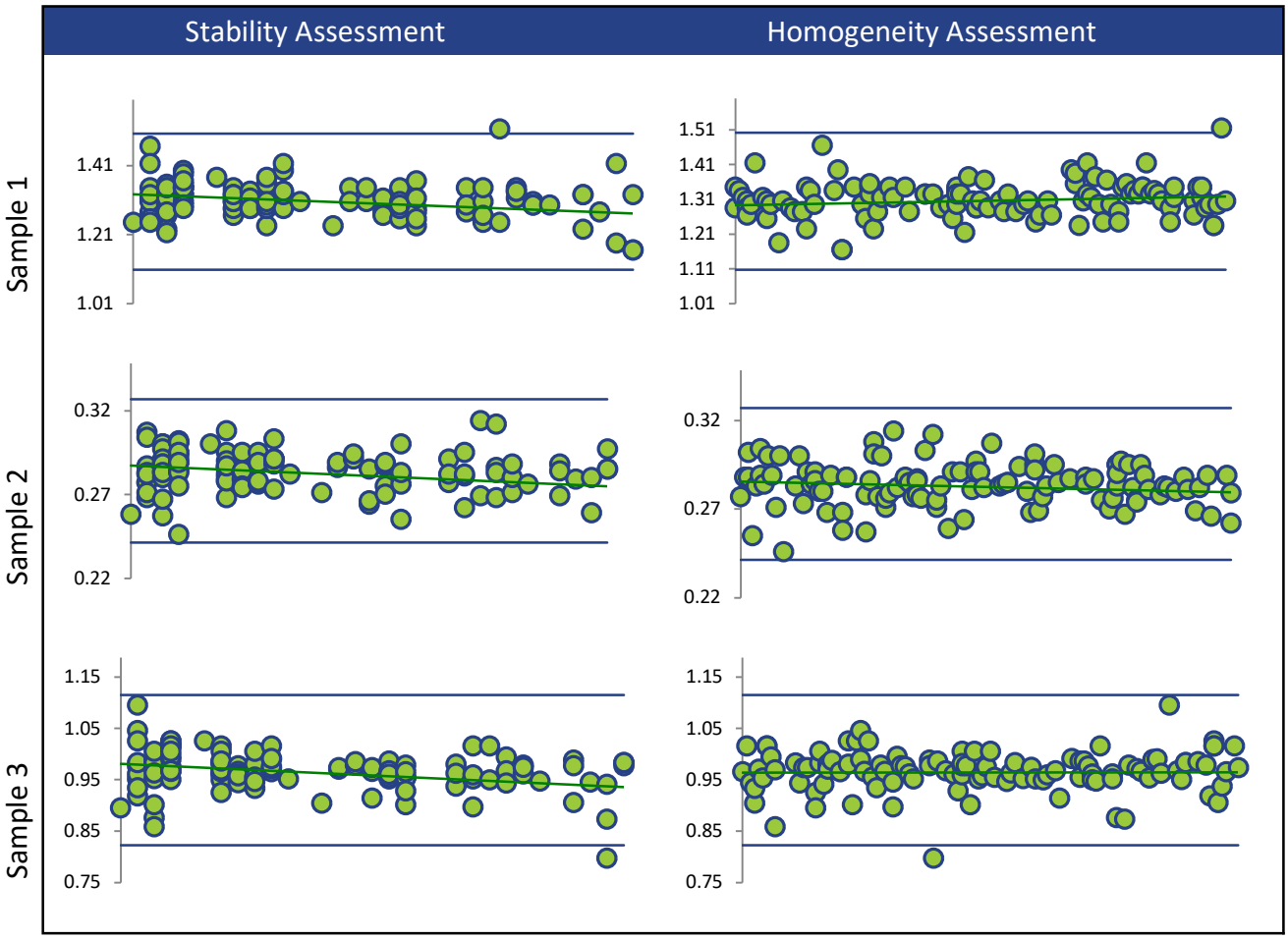
Method	C02A-1	C02A-2	C02A-3	C02A-4
AA FLAME (Blue)	2	2	2	1
ICP/MS (Red)	86	86	86	86
ICP/OES (Green)	25	25	25	22

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



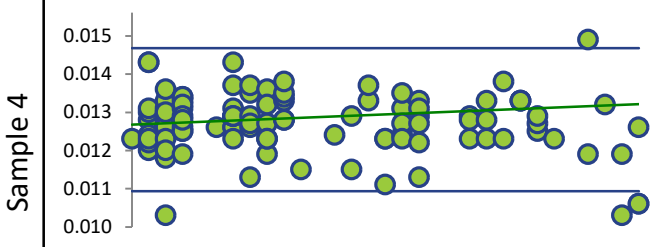
CHROMIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
1.06
0.86
0.66
0.973
0.44
0.94
4
2
0
-2
-4
Sample 4
0.019
0.014
0.009
0.012
5
0.002
0.012
0.022
4
2
0
-2
-4

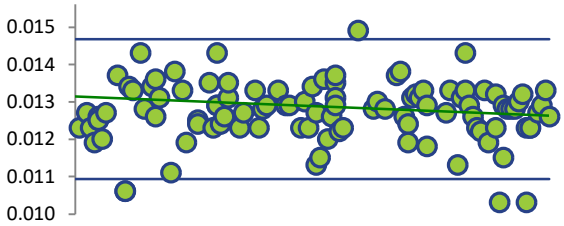

Stability Assessment
Homogeneity Assessment
Sample 1
1.41
1.21
1.01
1.51
1.41
1.31
1.21
1.11
1.01
Sample 2
0.32
0.27
0.22
0.32
0.27
0.22
Sample 3
1.15
1.05
0.95
0.85
0.75
1.15
1.05
0.95
0.85
0.75

CHROMIUM

Stability Assessment



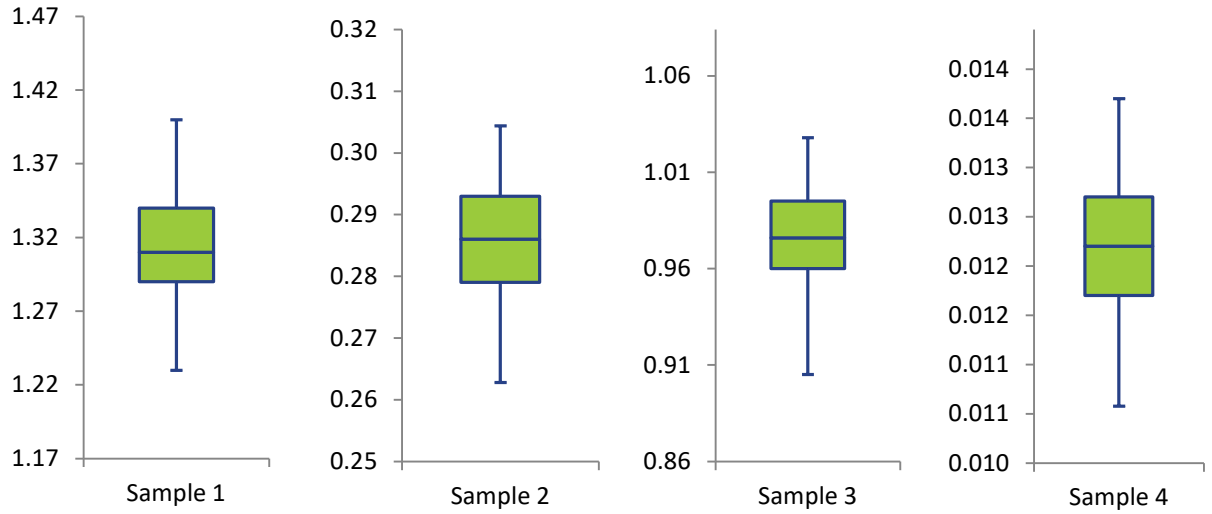
Homogeneity Assessment



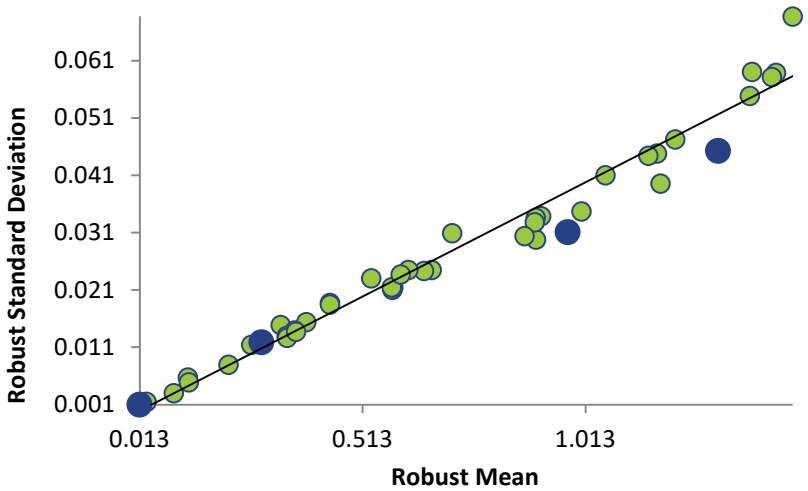
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



COBALT

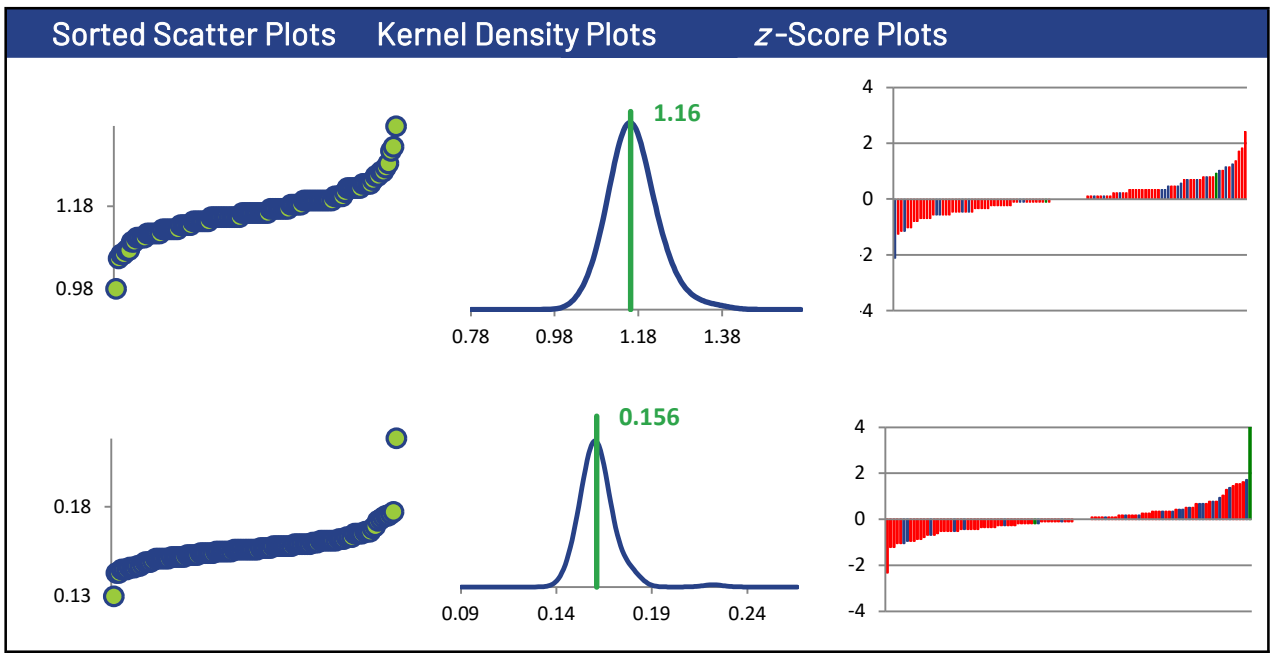
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	110	109	110	108
Median mg/L	1.16	0.155	0.983	0.0226
Robust Mean mg/L	1.16	0.156	0.984	0.0225
U mg/L	0.00599	0.000813	0.00491	0.000131
Robust Standard Deviation mg/L	0.0503	0.00679	0.0412	0.00109
Regression Standard Deviation mg/L	0.0873	0.0117	0.0738	0.00169
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0873	0.0117	0.0738	0.00169
Outliers	0	1	0	1
|z|>3.0	0	1	1	0
2<|z|<3	2	1	0	2

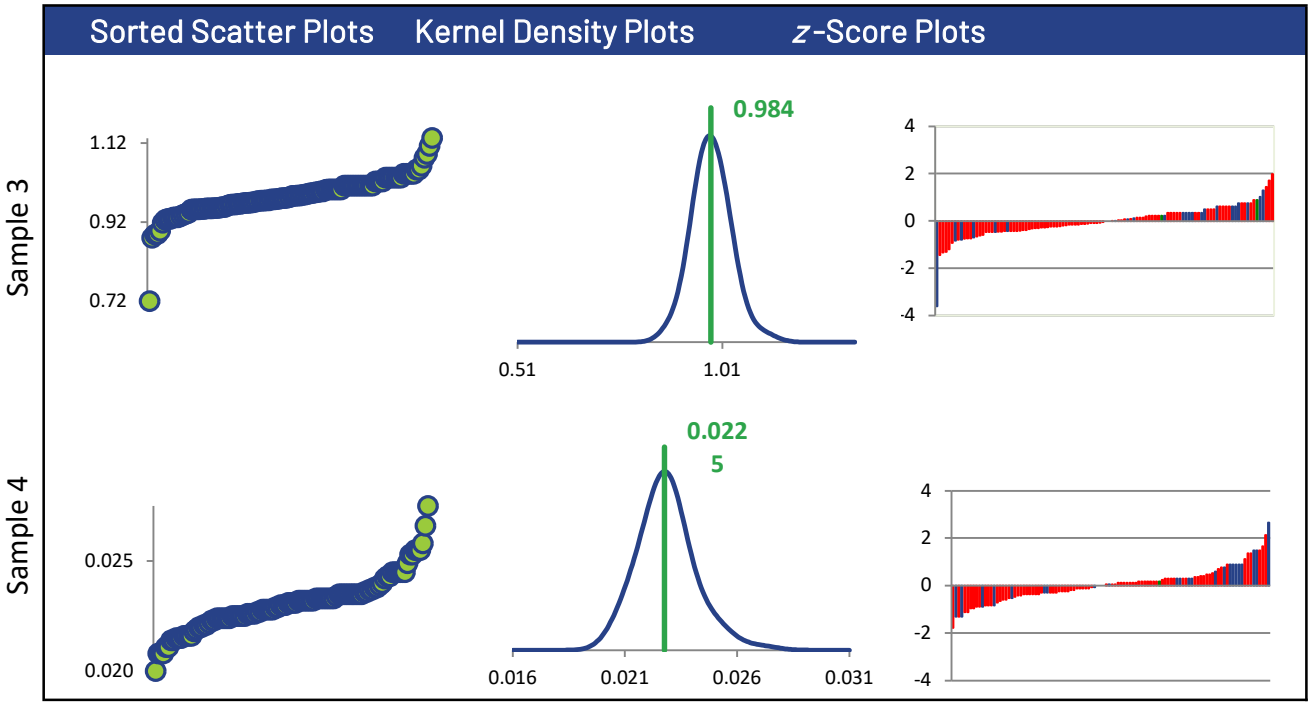
Methods Used

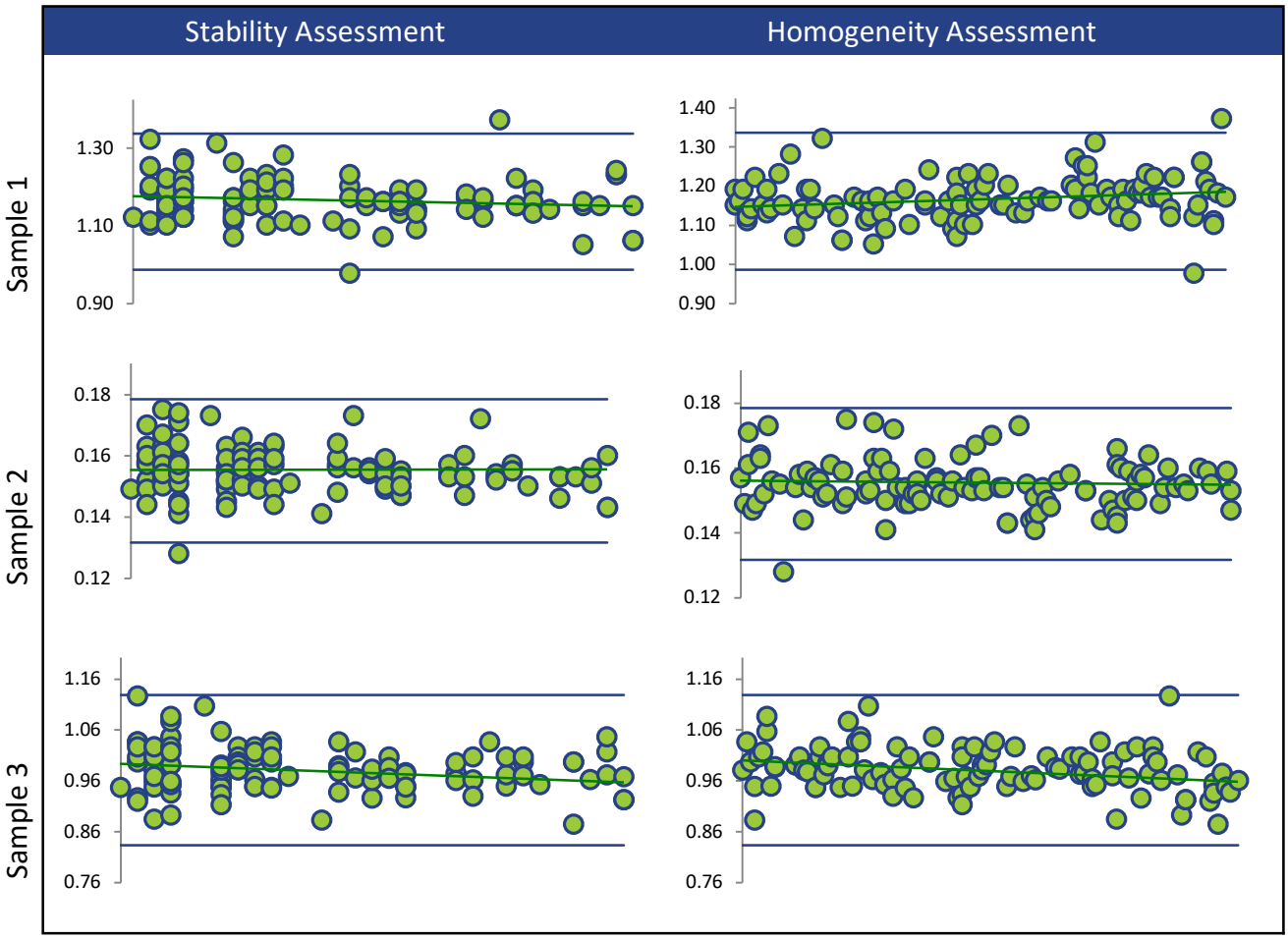
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	24	23	24	23
ICP/MS (Red)	84	84	84	84
AA FLAME (Green)	2	2	2	1

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



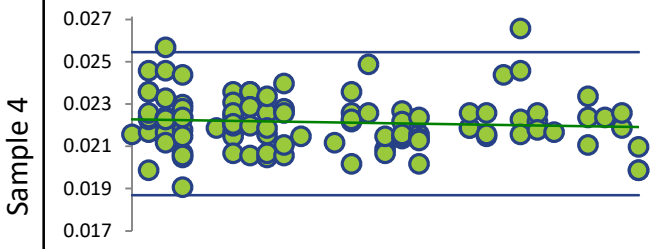
COBALT


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
1.12
0.92
0.72
0.984
0.51
1.01
4
2
0
-2
-4
Sample 4
0.025
0.020
0.022
5
0.016
0.021
0.026
0.031
4
2
0
-2
-4

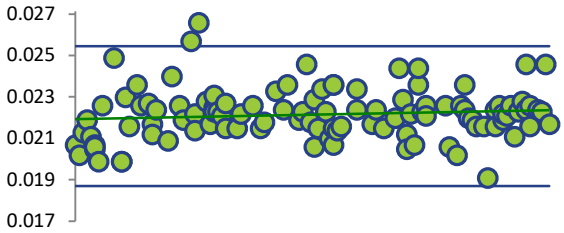

Stability Assessment
Homogeneity Assessment
Sample 1
1.30
1.10
0.90
1.40
1.30
1.20
1.10
1.00
0.90
Sample 2
0.18
0.16
0.14
0.12
0.18
0.16
0.14
0.12
Sample 3
1.16
1.06
0.96
0.86
0.76
1.16
1.06
0.96
0.86
0.76

COBALT

Stability Assessment



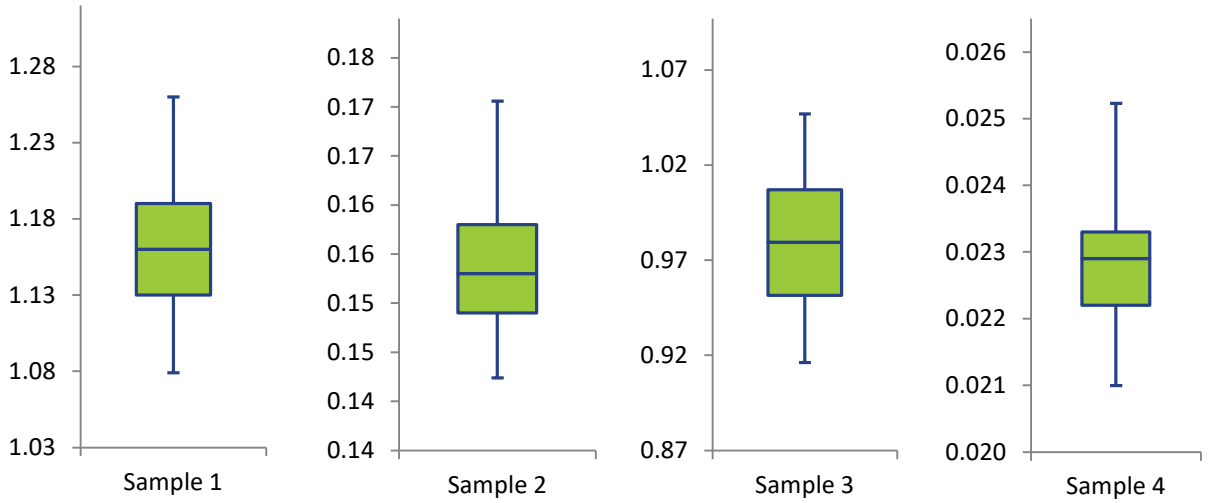
Homogeneity Assessment



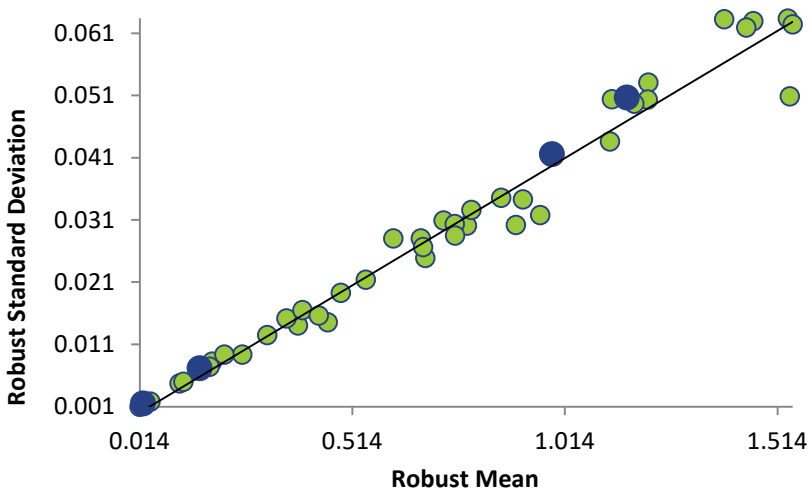
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



COPPER

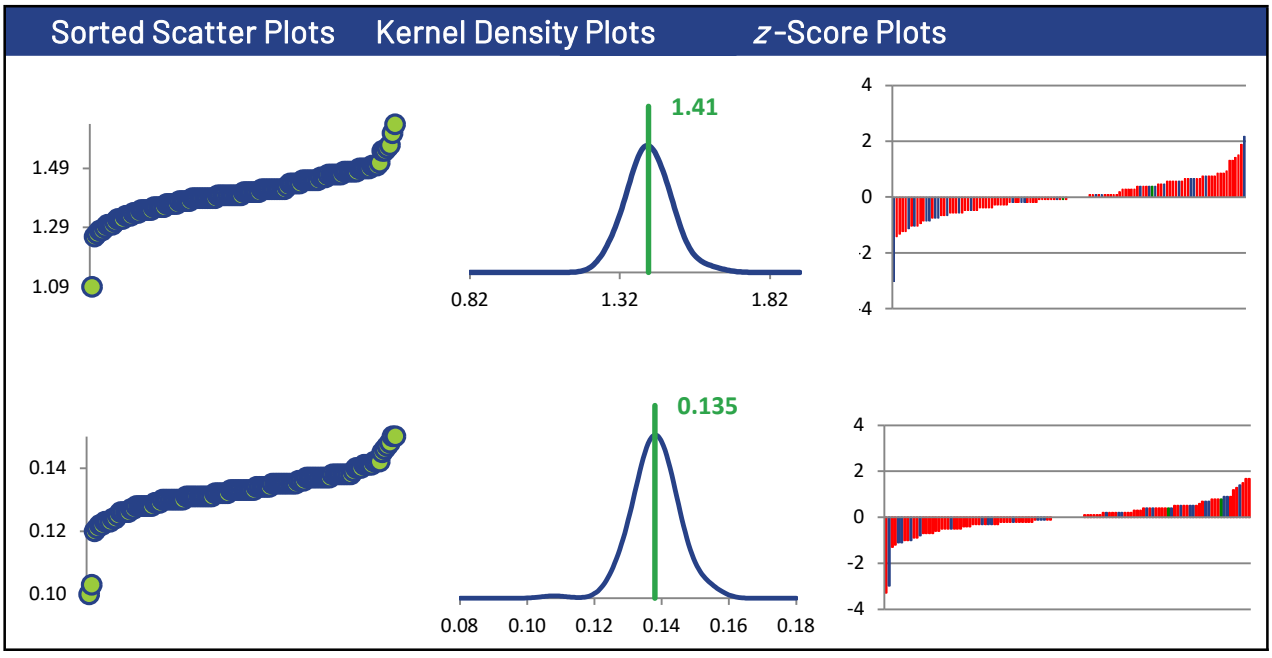
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	119	118	119	118
Median mg/L	1.41	0.135	0.606	0.0322
Robust Mean mg/L	1.41	0.135	0.607	0.0324
U mg/L	0.00764	0.000670	0.00308	0.000204
Robust Standard Deviation mg/L	0.0667	0.00582	0.0269	0.00177
Regression Standard Deviation mg/L	0.106	0.0101	0.0455	0.00243
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.106	0.0101	0.0455	0.00243
Outliers	0	1	0	1
|z|>3.0	1	1	0	3
2<|z|<3	1	1	2	1

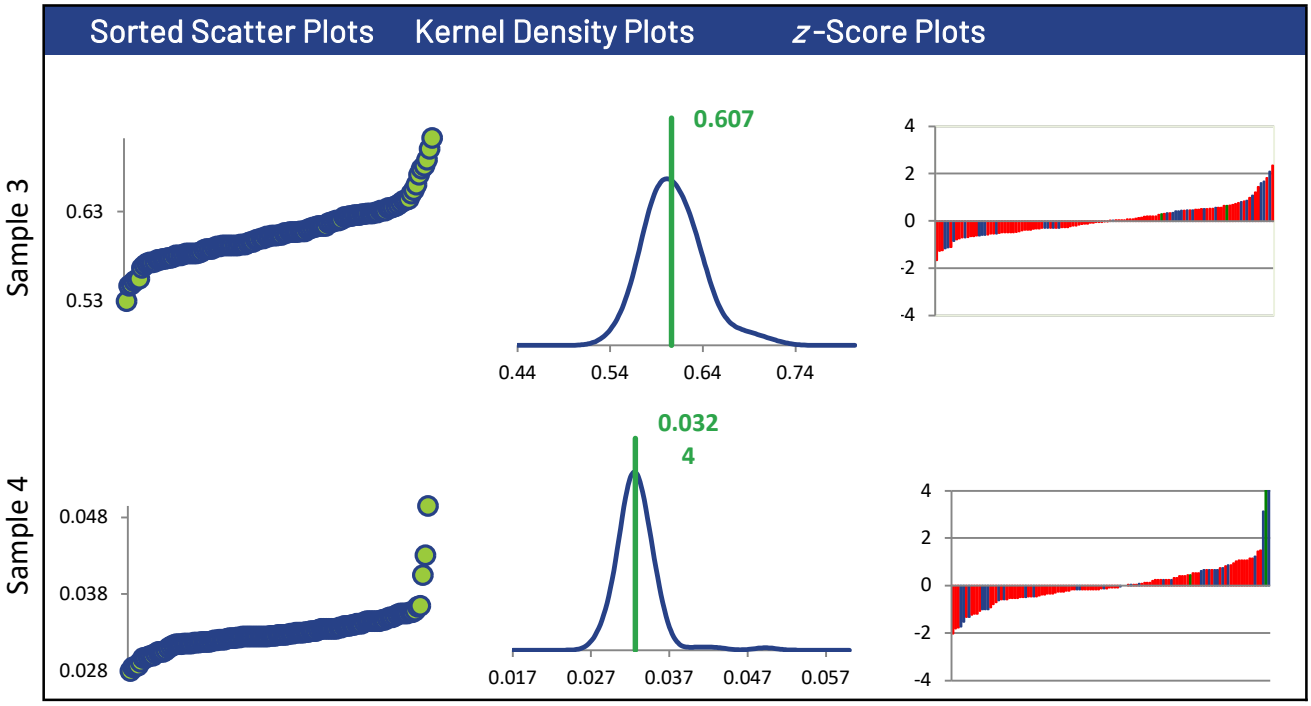
Methods Used

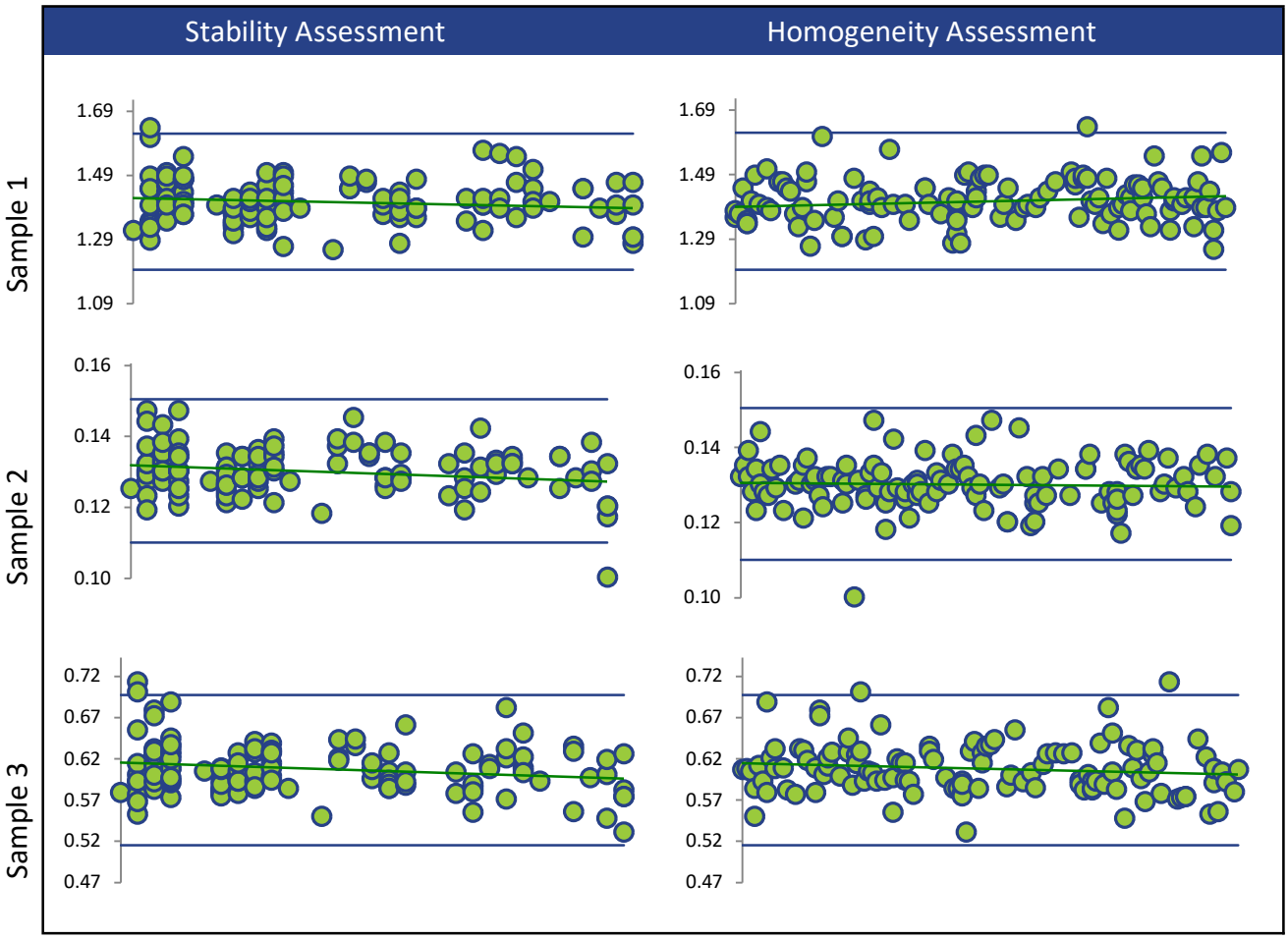
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	28	27	28	28
ICP/MS (Red)	89	89	89	88
AA FLAME (Green)	2	2	2	2

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



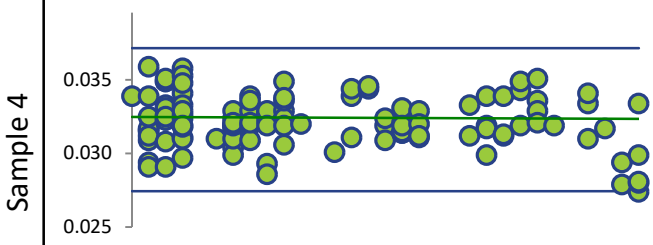
COPPER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.63
0.53
0.607
0.44
0.54
0.64
0.74
4
2
0
-2
-4
Sample 4
0.048
0.038
0.028
0.032
4
0.017
0.027
0.037
0.047
0.057
4
2
0
-2
-4

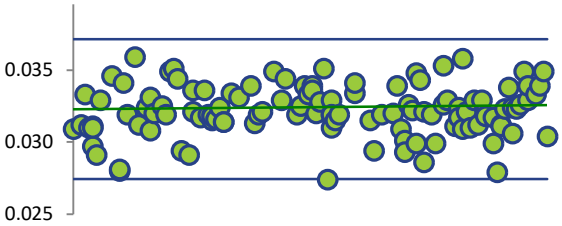

Stability Assessment
Homogeneity Assessment
Sample 1
1.69
1.49
1.29
1.09
Sample 2
0.16
0.14
0.12
0.10
Sample 3
0.72
0.67
0.62
0.57
0.52
0.47

COPPER

Stability Assessment



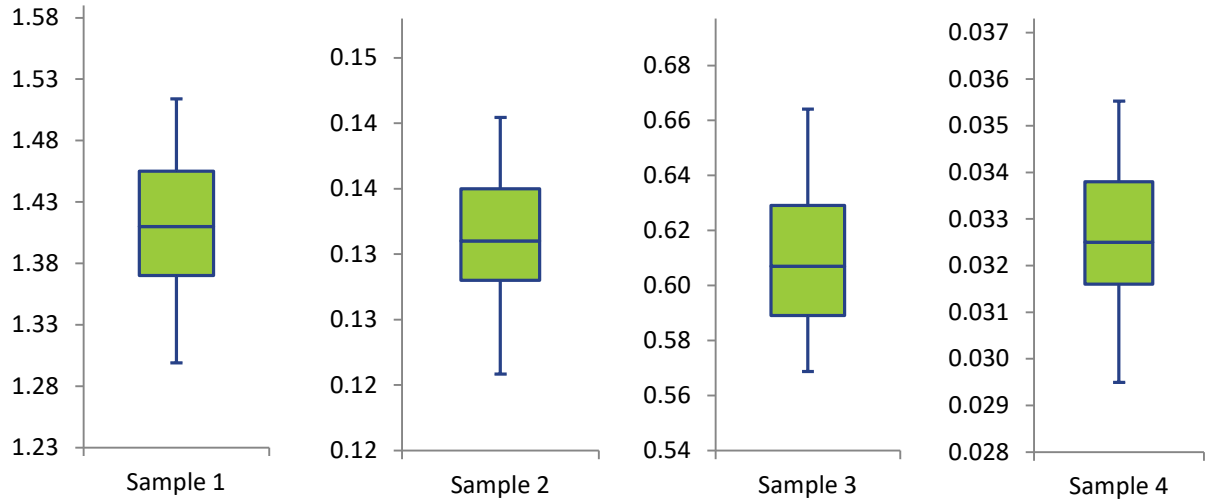
Homogeneity Assessment



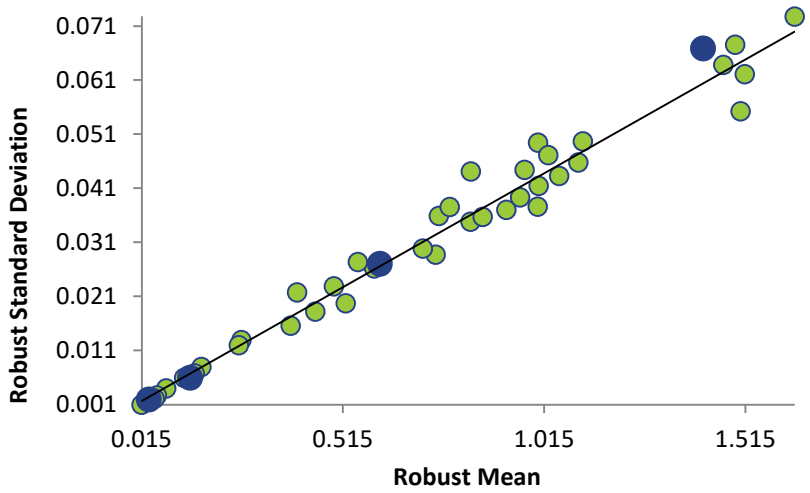
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



IRON

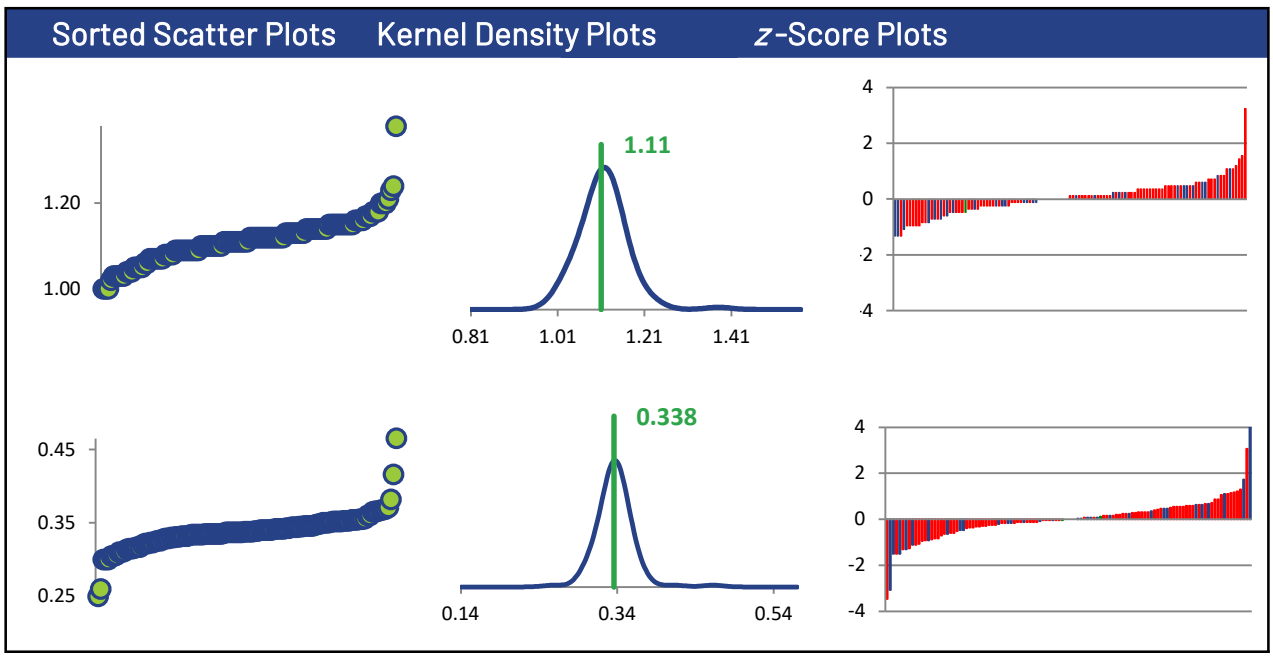
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	115	115	115	69
Median mg/L	1.12	0.338	0.624	0.00600
Robust Mean mg/L	1.11	0.338	0.623	0.00601
U mg/L	0.00543	0.00191	0.00303	0.000166
Robust Standard Deviation mg/L	0.0466	0.0164	0.0260	0.00110
Regression Standard Deviation mg/L	0.0834	0.0254	0.0468	0.000451
Stability Flag				Stability
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0834	0.0254	0.0468	0.00687
Outliers	1	1	1	3
|z|>3.0	1	4	0	4
2<|z|<3	0	0	4	0

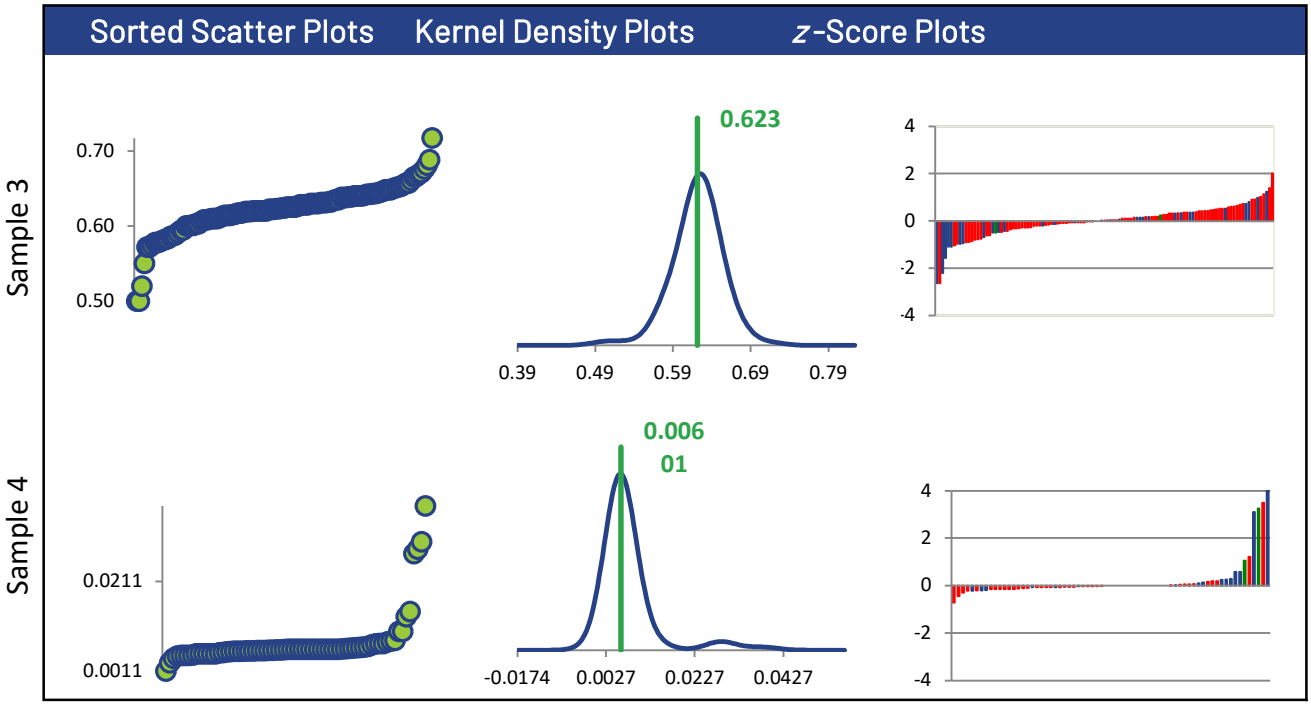
Methods Used

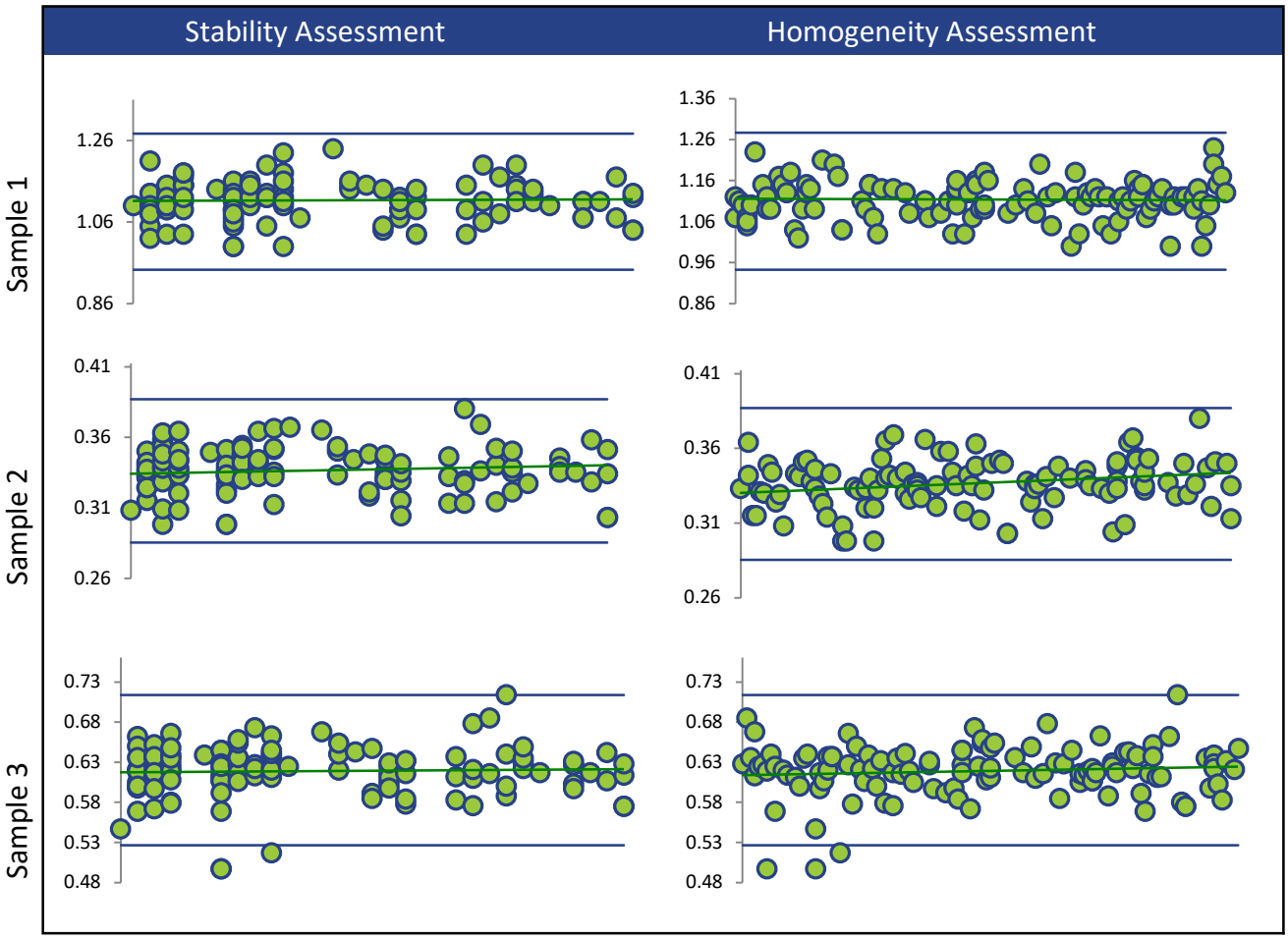
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	31	31	31	19
ICP/MS (Red)	82	82	82	48
AA FLAME (Green)	2	2	2	2

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



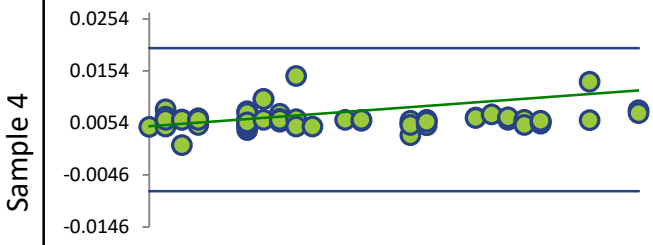
IRON


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.70
0.60
0.50
0.623
0.39
0.49
0.59
0.69
0.79
4
2
0
-2
-4
Sample 4
0.0211
0.0011
0.006
01
-0.0174
0.0027
0.0227
0.0427
4
2
0
-2
-4

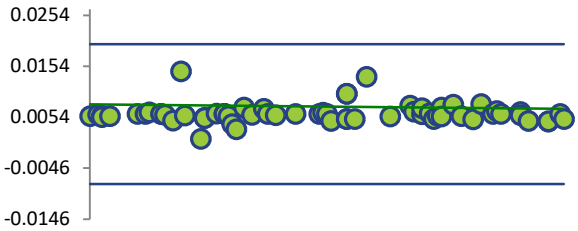

Stability Assessment
Homogeneity Assessment
Sample 1
1.26
1.06
0.86
1.36
1.26
1.16
1.06
0.96
0.86
Sample 2
0.41
0.36
0.31
0.26
0.41
0.36
0.31
0.26
Sample 3
0.73
0.68
0.63
0.58
0.53
0.48
0.73
0.68
0.63
0.58
0.53
0.48

IRON

Stability Assessment



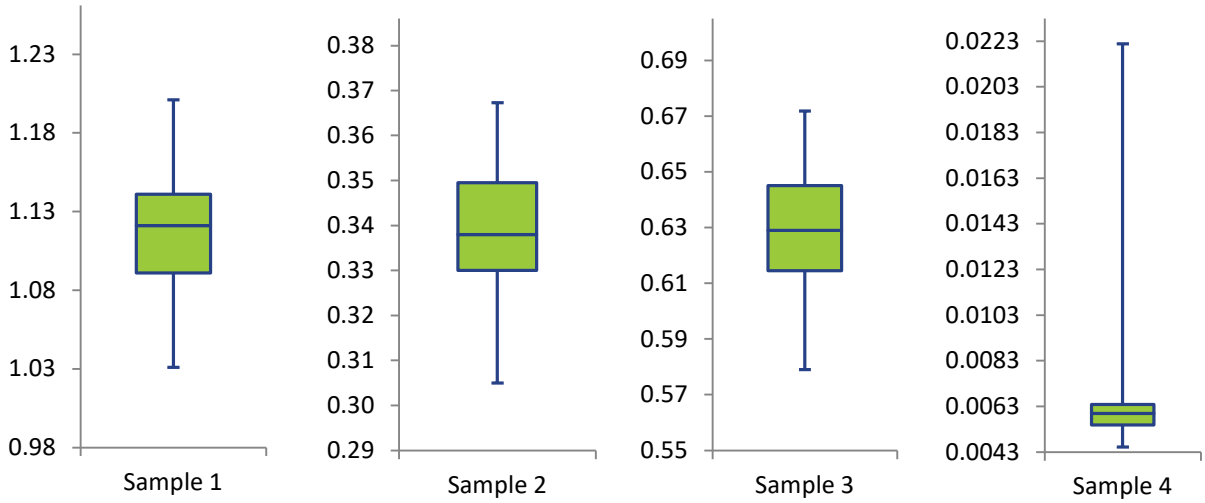
Homogeneity Assessment



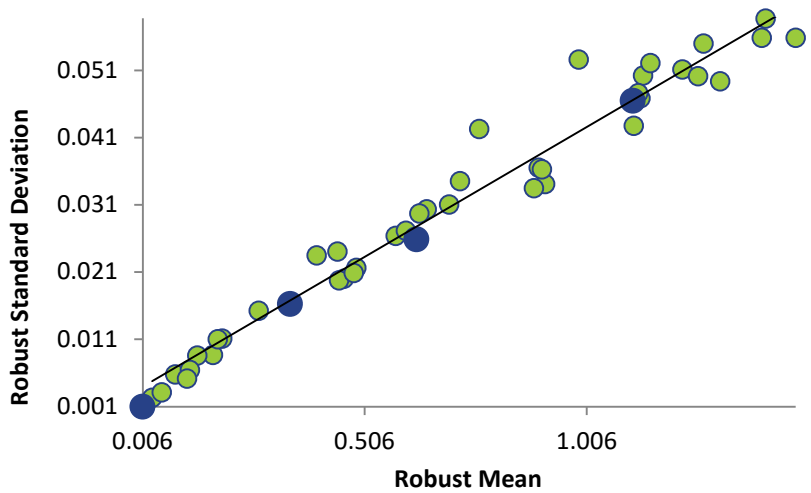
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



LEAD

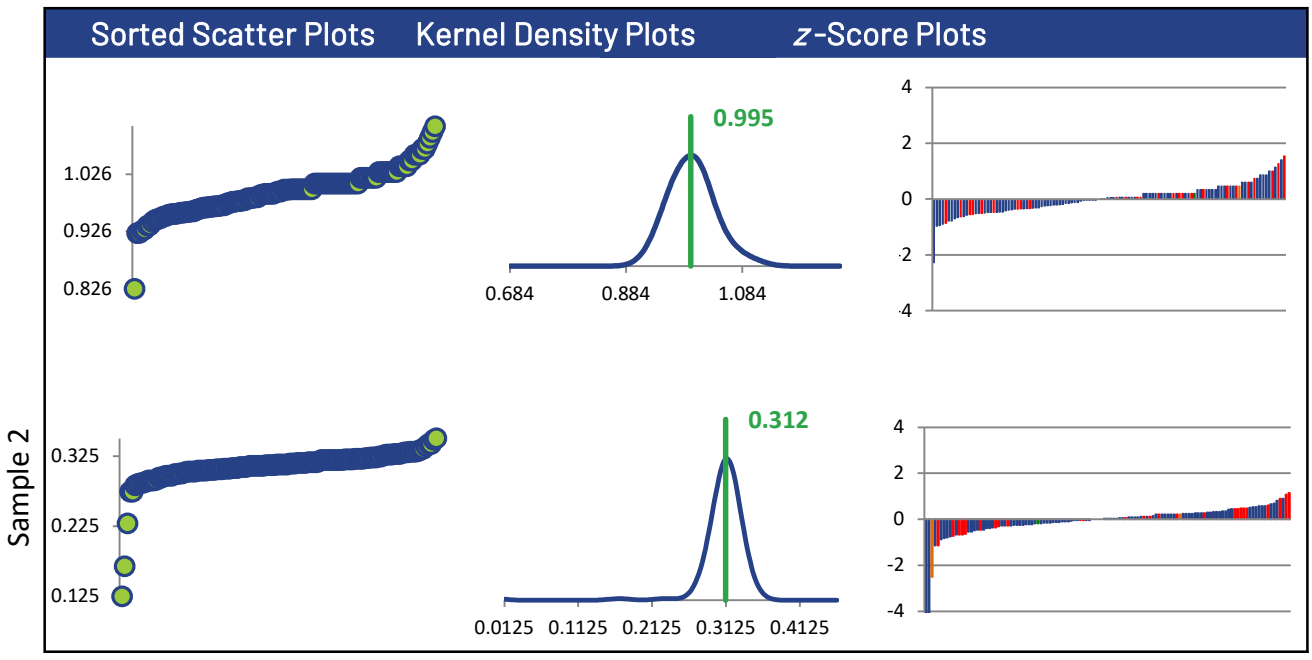
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	118	121	118	112
Median mg/L	0.999	0.313	0.959	0.00960
Robust Mean mg/L	0.995	0.312	0.960	0.00954
U mg/L	0.00414	0.00161	0.00442	0.0000566
Robust Standard Deviation mg/L	0.0360	0.0142	0.0384	0.000479
Regression Standard Deviation mg/L	0.0746	0.0234	0.0720	0.000715
Stability Flag		Stability		
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0746	0.0333	0.0720	0.000715
Outliers	3	0	3	2
|z|>3.0	0	2	0	5
2<|z|<3	1	1	0	7

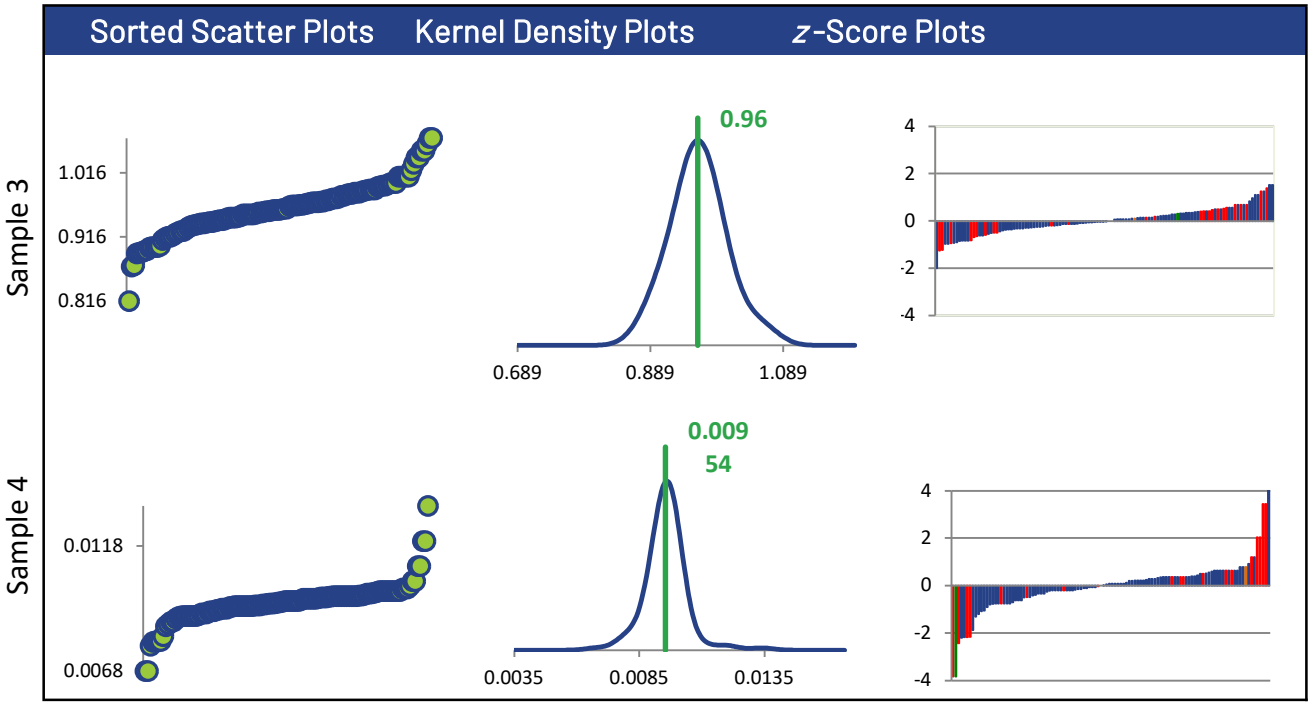
Methods Used

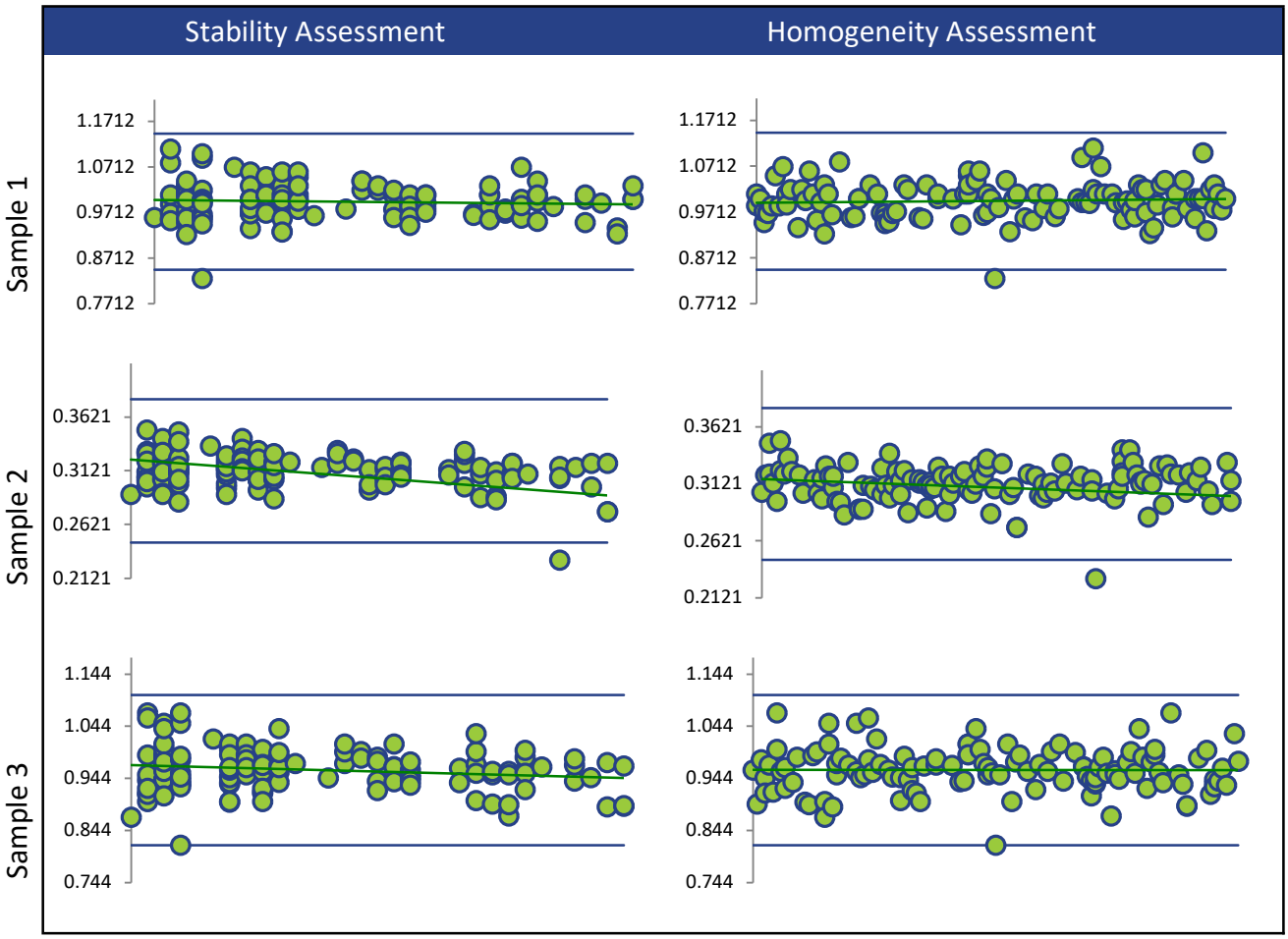
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	90	92	90	91
ICP/OES (Red)	26	26	26	19
AA FLAME (Green)	1	1	1	1
AA GRAPHITE (Orange)	1	2	1	1

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



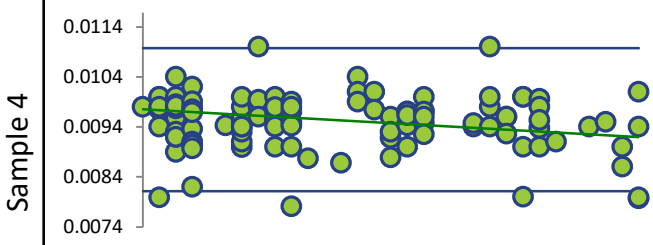
LEAD


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
1.016
0.916
0.816
0.96
0.689
0.889
1.089
4
2
0
-2
-4
Sample 4
0.0118
0.0068
0.009
54
0.0035
0.0085
0.0135
4
2
0
-2
-4

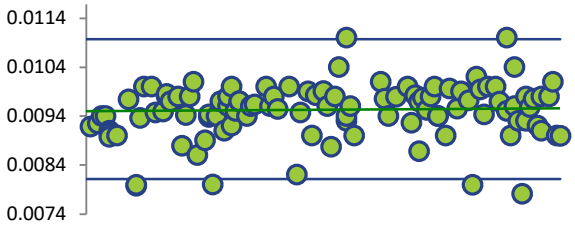

Stability Assessment
Homogeneity Assessment
Sample 1
1.1712
1.0712
0.9712
0.8712
0.7712
Sample 2
0.3621
0.3121
0.2621
0.2121
Sample 3
1.144
1.044
0.944
0.844
0.744

LEAD

Stability Assessment



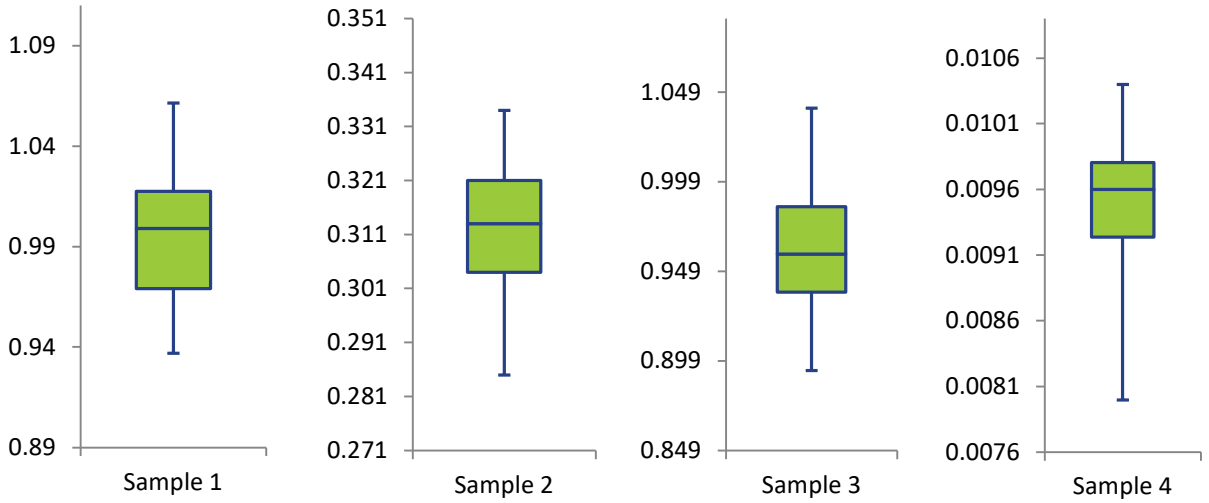
Homogeneity Assessment



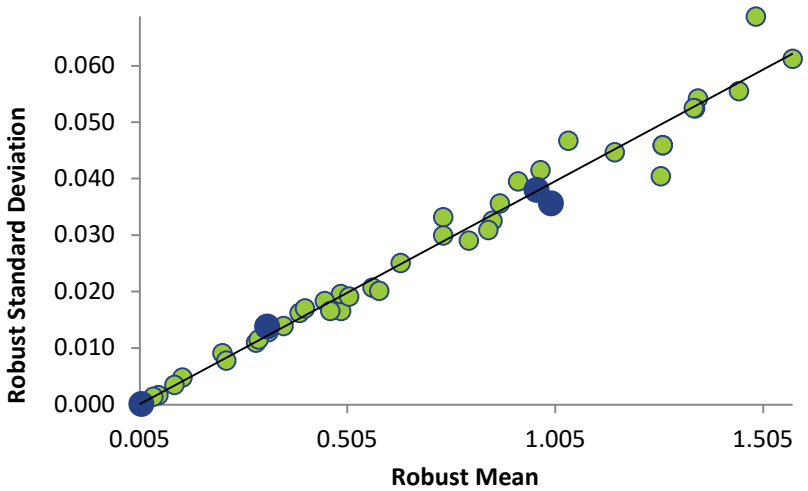
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



LITHIUM

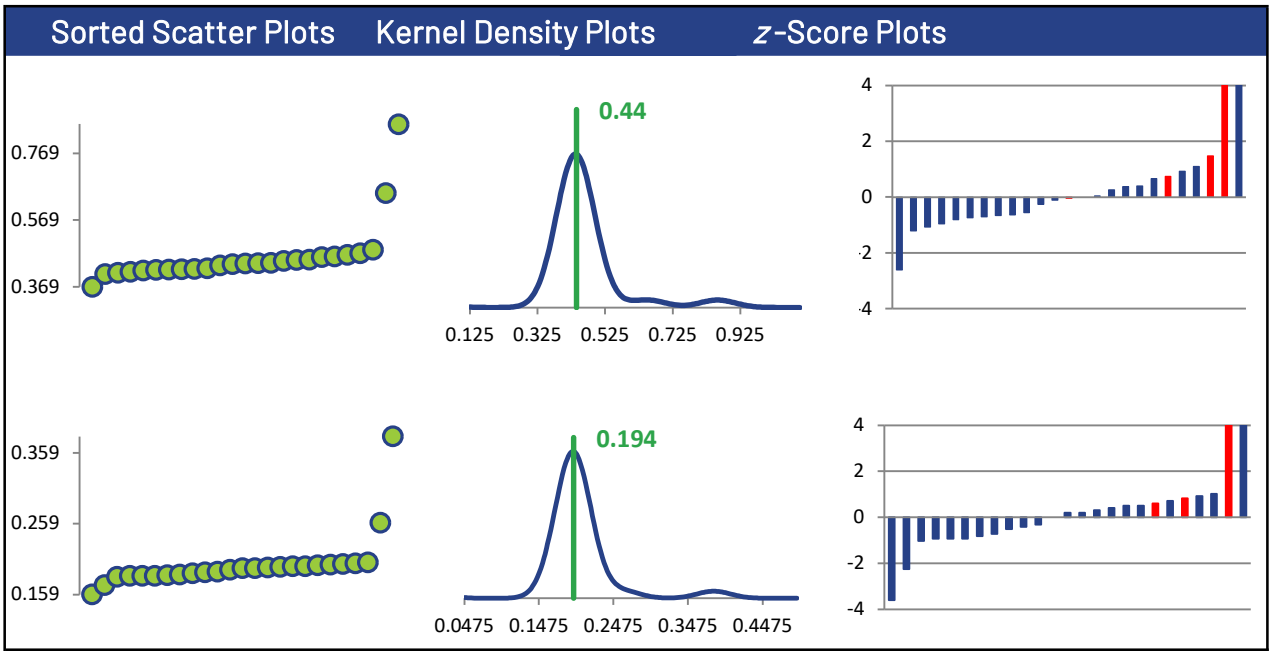
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	25	25	25	22
Median mg/L	0.439	0.196	0.311	0.00710
Robust Mean mg/L	0.440	0.194	0.314	0.00718
U mg/L	0.00680	0.00244	0.00418	0.000147
Robust Standard Deviation mg/L	0.0272	0.00976	0.0167	0.000550
Regression Standard Deviation mg/L				
Stability Flag				Stability
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0272	0.00976	0.0167	0.000997
Outliers	0	0	0	0
|z|>3.0	2	3	3	0
2<|z|<3	1	1	0	0

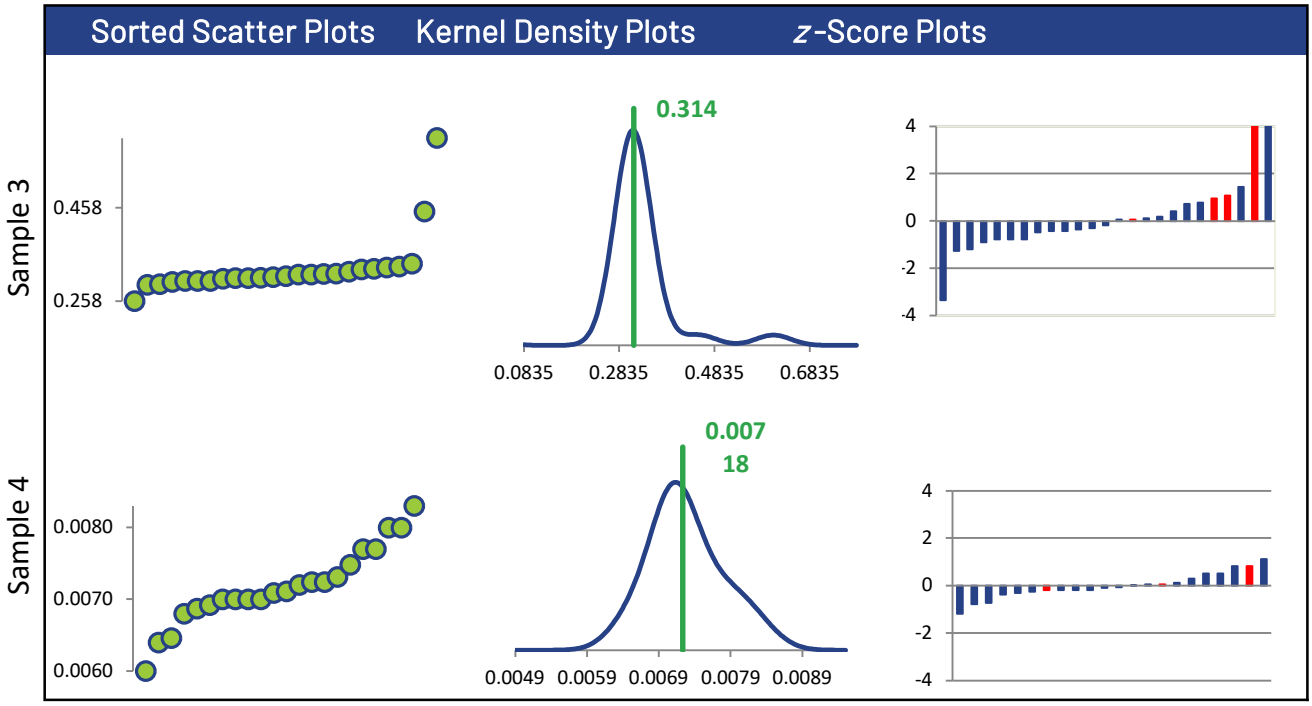
Methods Used

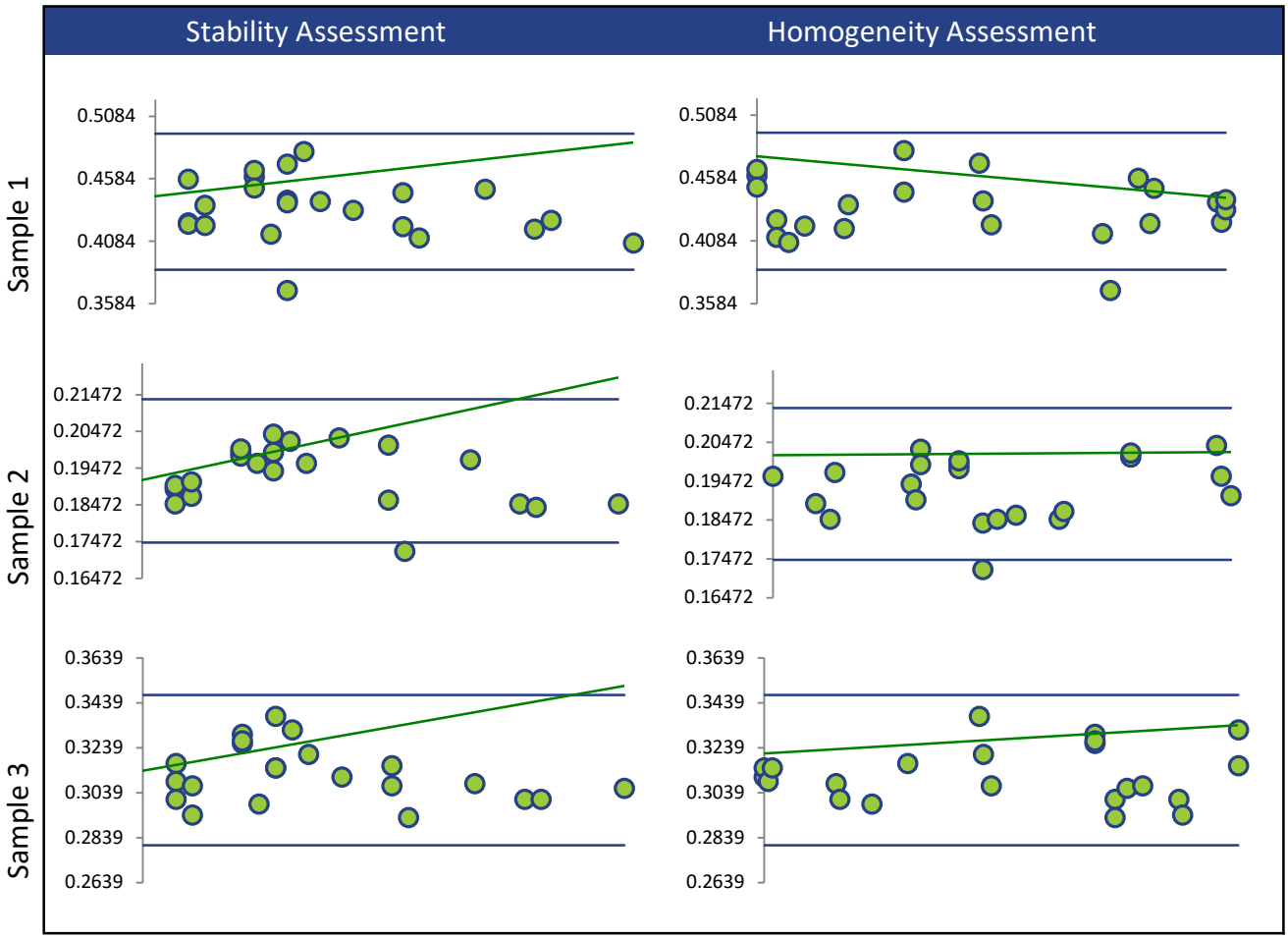
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	21	21	21	19
ICP/OES (Red)	4	4	4	3

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



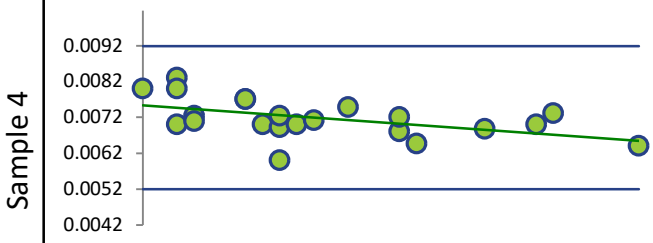
LITHIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.458
0.258
0.314
0.0835
0.2835
0.4835
0.6835
4
2
0
-2
-4
Sample 4
0.0080
0.0070
0.0060
0.007
18
0.0049
0.0059
0.0069
0.0079
0.0089
4
2
0
-2
-4

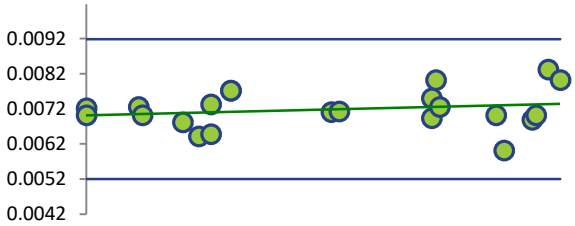

Stability Assessment
Homogeneity Assessment
Sample 1
0.5084
0.4584
0.4084
0.3584
Sample 2
0.21472
0.20472
0.19472
0.18472
0.17472
0.16472
Sample 3
0.3639
0.3439
0.3239
0.3039
0.2839
0.2639

LITHIUM

Stability Assessment



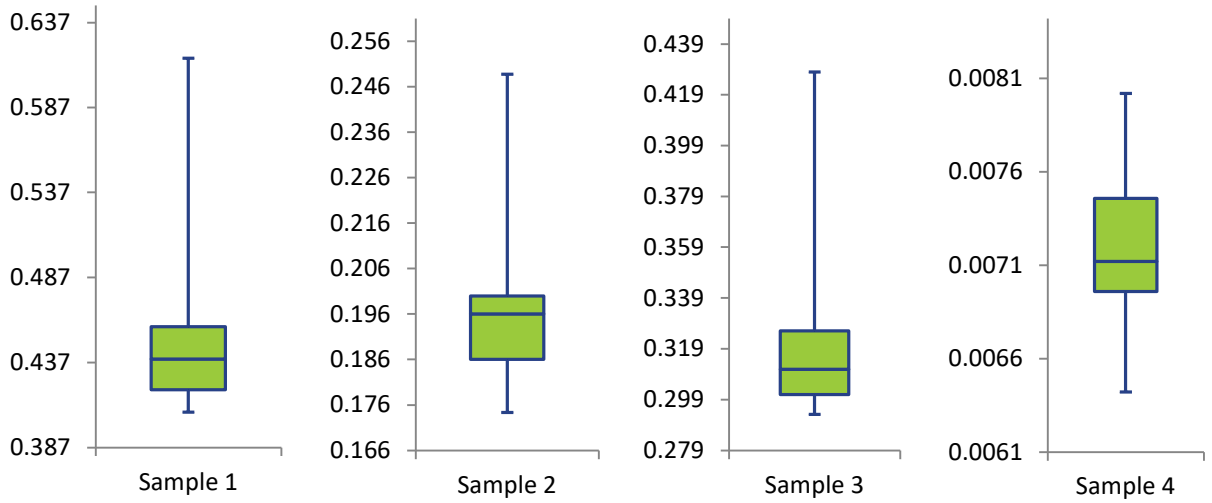
Homogeneity Assessment



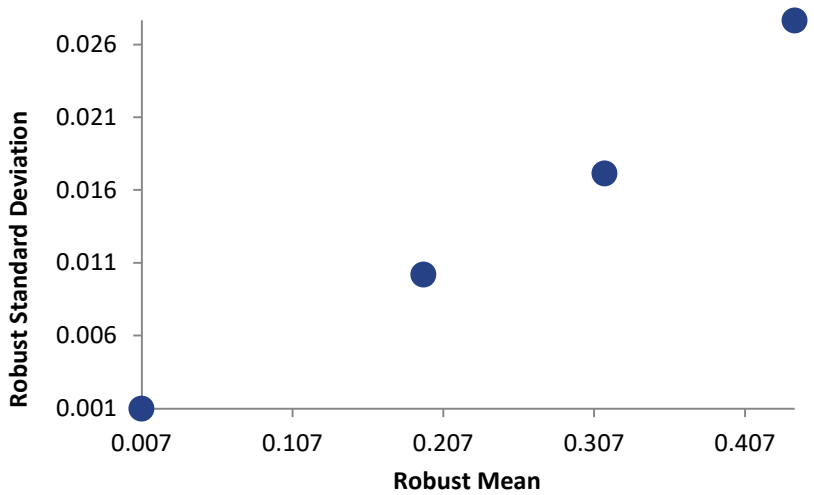
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



MANGANESE

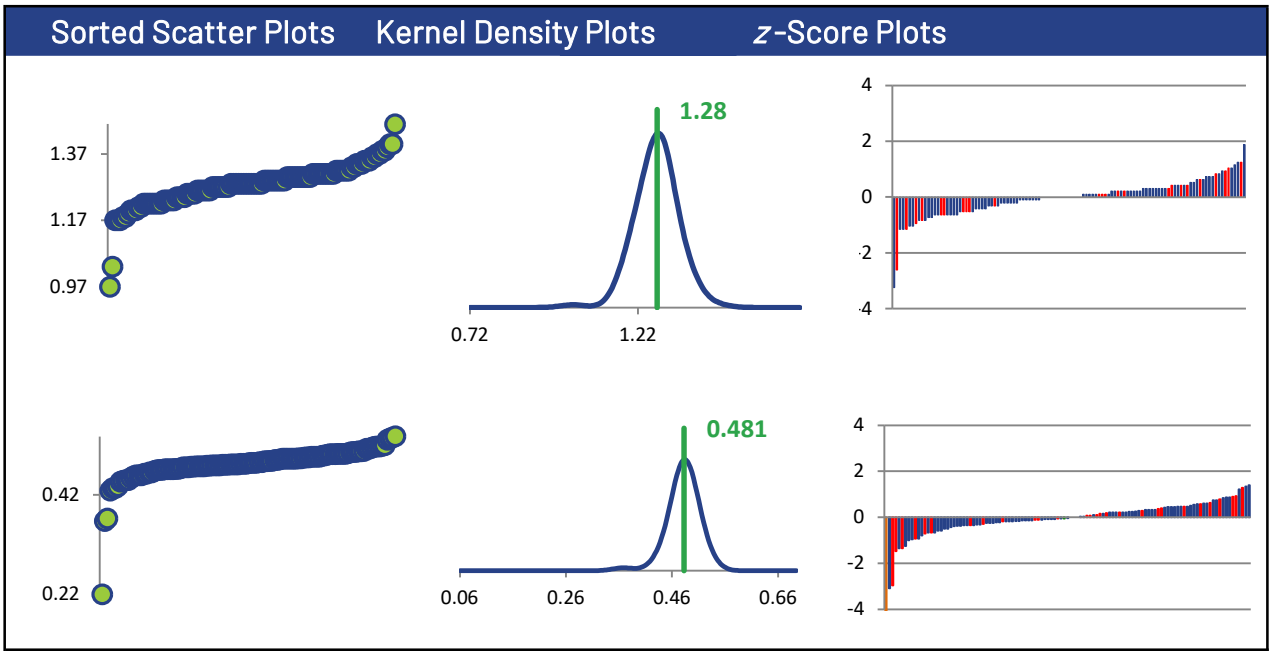
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	112	113	113	112
Median mg/L	1.28	0.480	0.559	0.0395
Robust Mean mg/L	1.28	0.481	0.559	0.0396
U mg/L	0.00643	0.00245	0.00281	0.000209
Robust Standard Deviation mg/L	0.0544	0.0208	0.0239	0.00177
Regression Standard Deviation mg/L	0.0959	0.0361	0.0419	0.00297
Stability Flag		Stability		
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0959	0.0380	0.0419	0.00297
Outliers	2	1	1	1
|z|>3.0	1	2	3	0
2<|z|<3	1	1	0	2

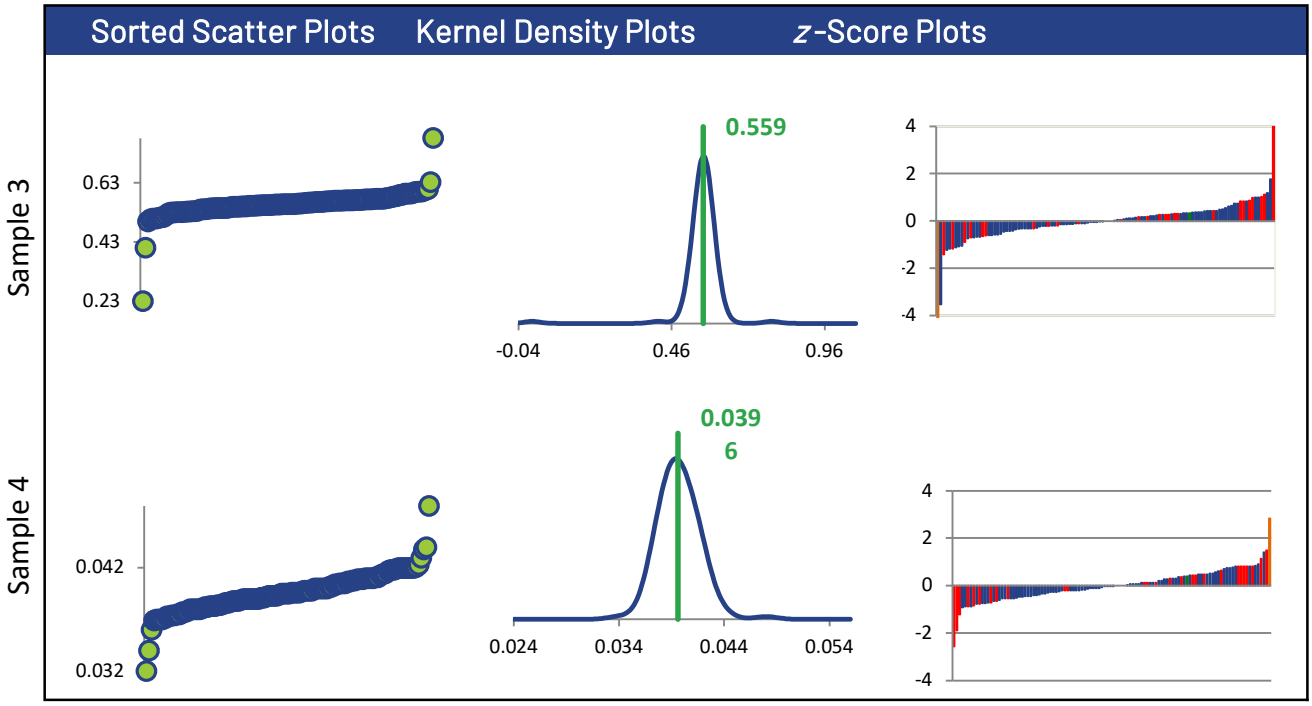
Methods Used

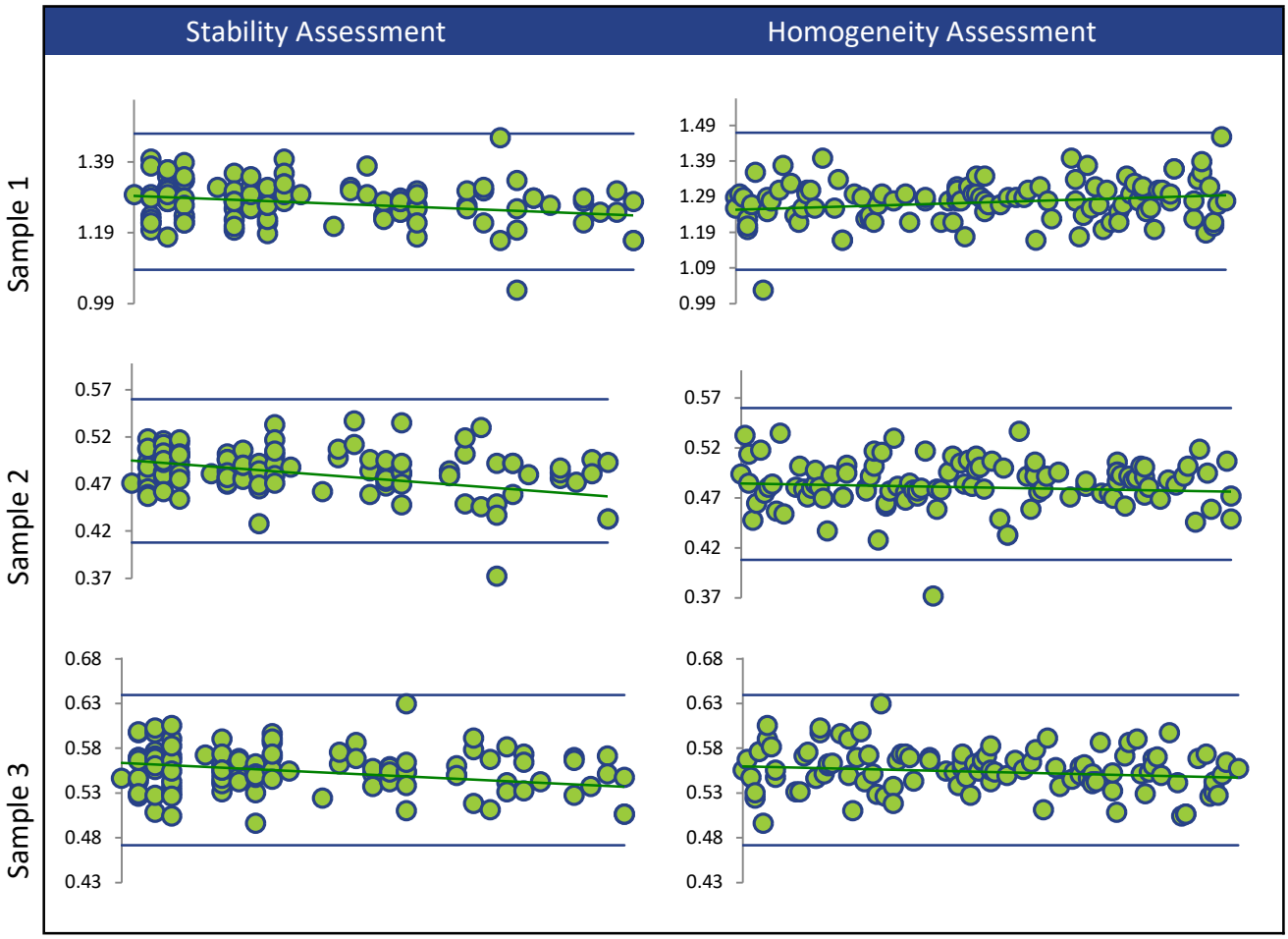
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	83	83	83	82
ICP/OES (Red)	28	28	28	28
AA FLAME (Green)	1	1	1	1
AA GRAPHITE (Orange)	0	1	1	1

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



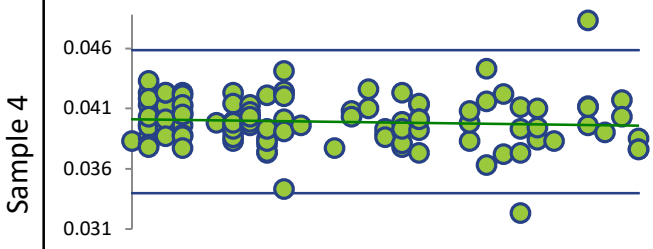
MANGANESE


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.63
0.43
0.23
0.559
-0.04
0.46
0.96
4
2
0
-2
-4
Sample 4
0.042
0.032
0.039
6
0.024
0.034
0.044
0.054
4
2
0
-2
-4

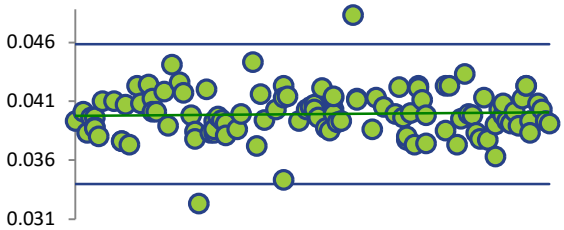

Stability Assessment
Homogeneity Assessment
Sample 1
1.39
1.19
0.99
1.49
1.39
1.29
1.19
1.09
0.99
Sample 2
0.57
0.52
0.47
0.42
0.37
0.57
0.52
0.47
0.42
0.37
Sample 3
0.68
0.63
0.58
0.53
0.48
0.43
0.68
0.63
0.58
0.53
0.48
0.43

MANGANESE

Stability Assessment



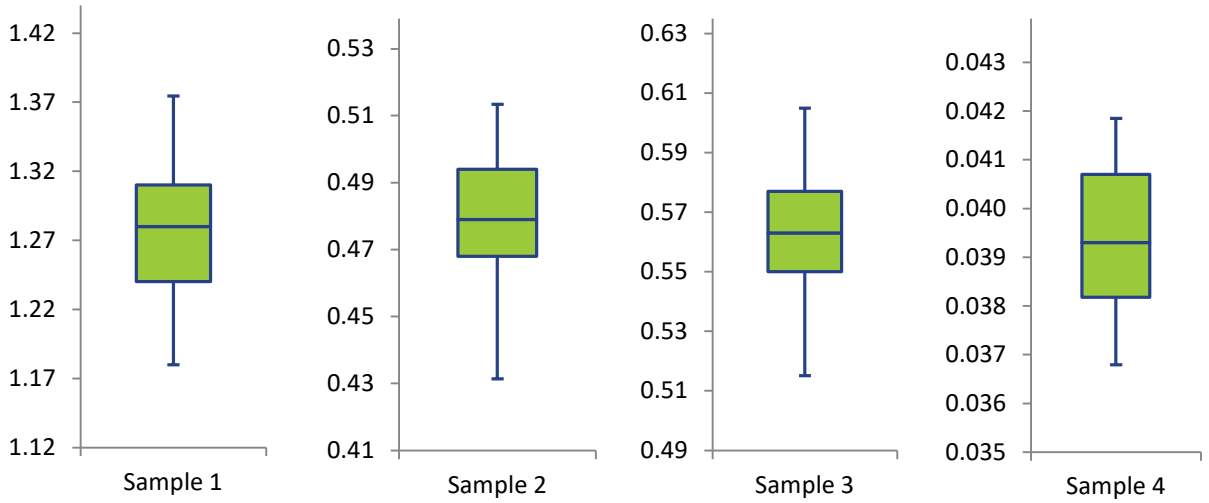
Homogeneity Assessment



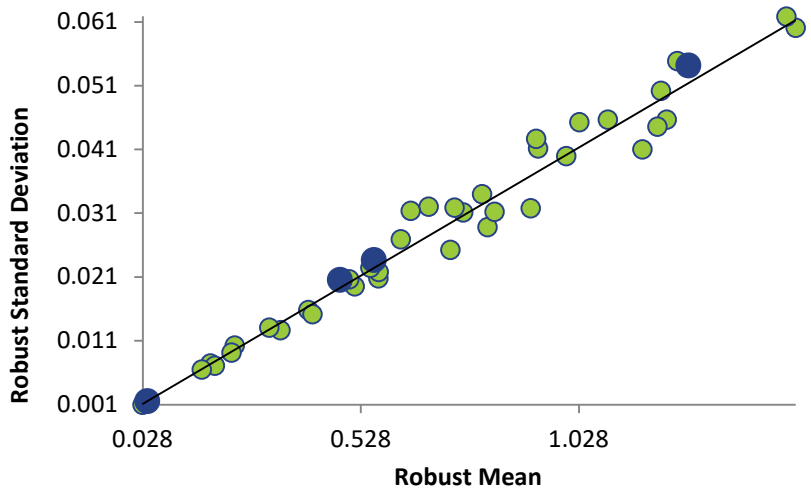
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



MOLYBDENUM

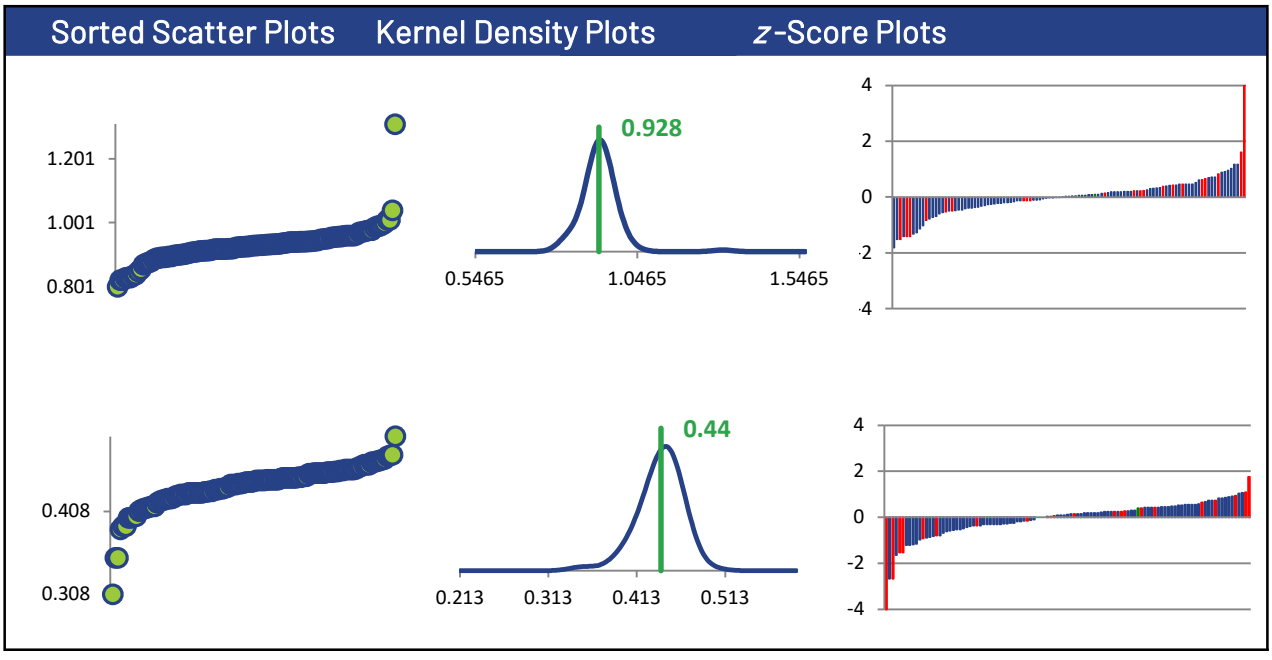
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	109	109	108	109
Median mg/L	0.930	0.444	0.707	0.0456
Robust Mean mg/L	0.928	0.440	0.704	0.0458
U mg/L	0.00448	0.00251	0.00385	0.000358
Robust Standard Deviation mg/L	0.0374	0.0210	0.0320	0.00299
Regression Standard Deviation mg/L	0.0696	0.0330	0.0528	0.00343
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0696	0.0330	0.0528	0.00343
Outliers	0	0	1	0
|z|>3.0	1	1	0	5
2<|z|<3	0	2	2	5

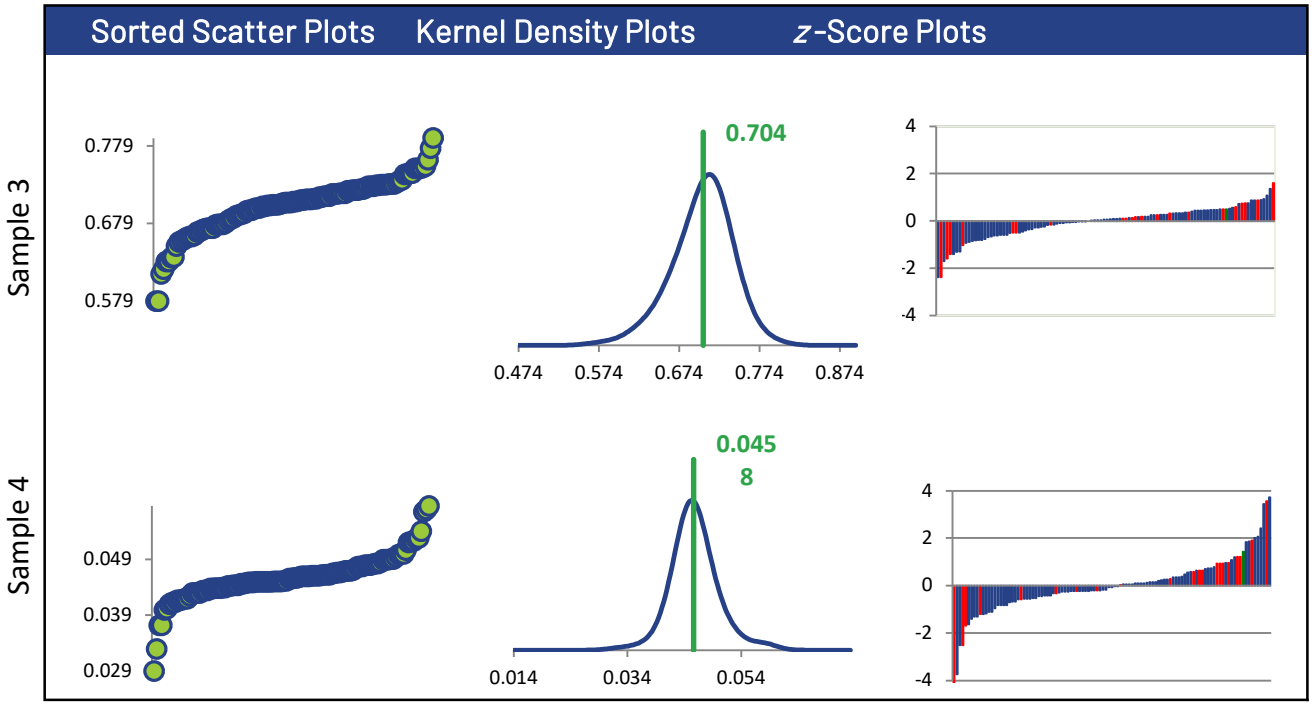
Methods Used

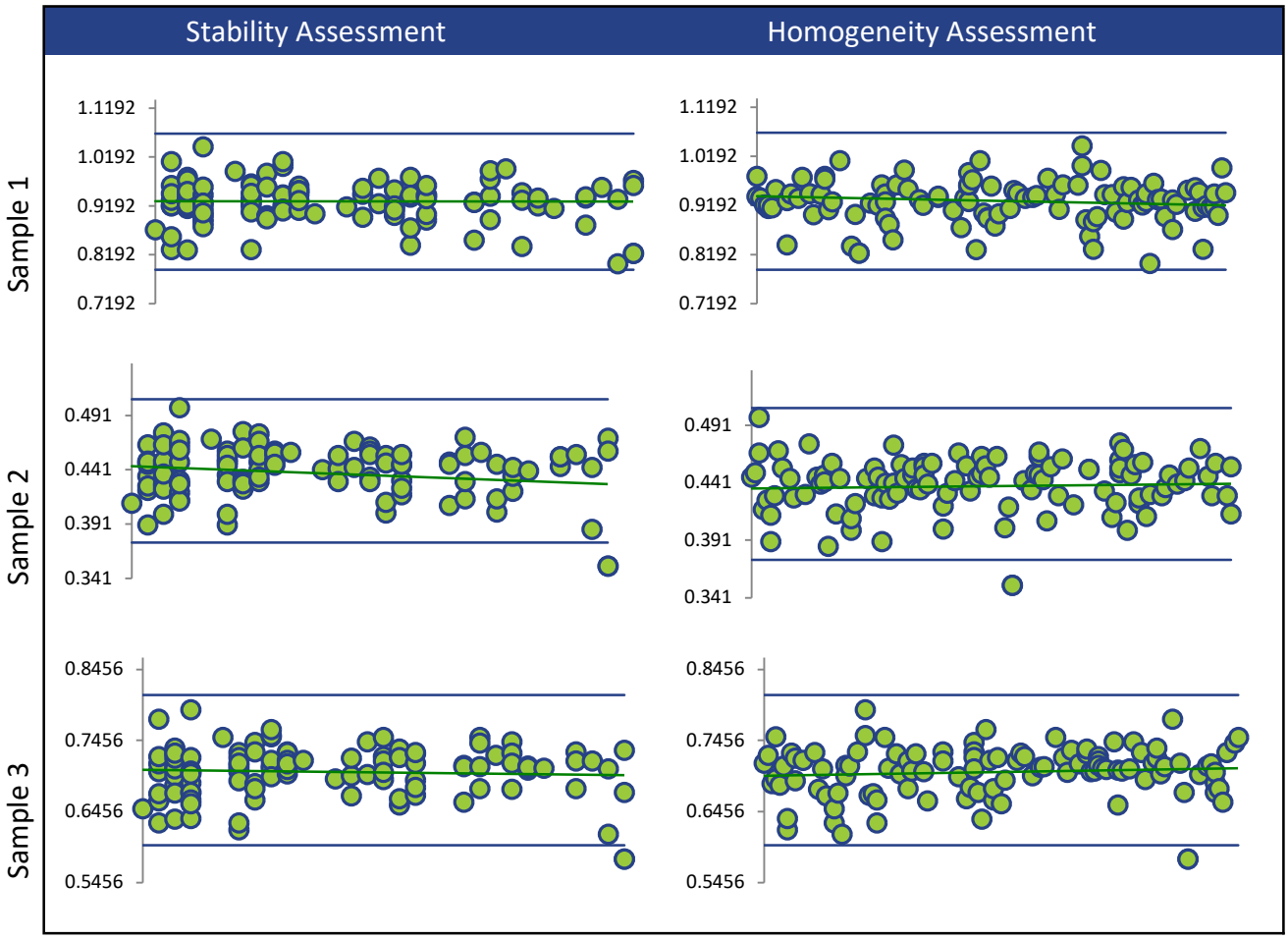
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	87	87	86	87
ICP/OES (Red)	21	21	21	21
AA FLAME (Green)	1	1	1	1

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



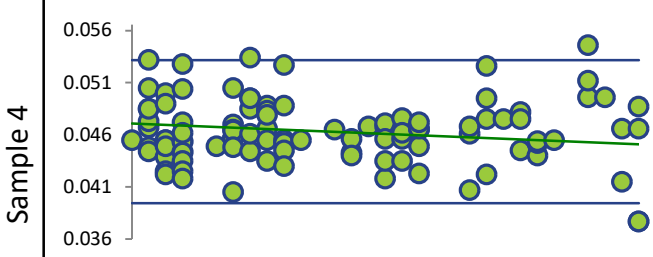
MOLYBDENUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.779
0.679
0.579
0.704
0.474
0.574
0.674
0.774
0.874
4
2
0
-2
-4
Sample 4
0.049
0.039
0.029
0.0458
0.014
0.034
0.054

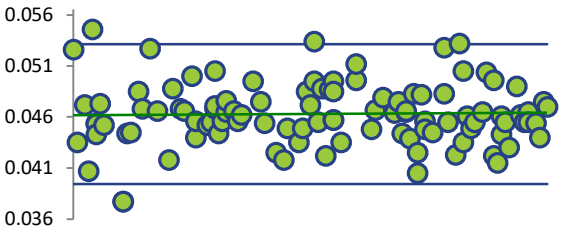

Stability Assessment
Homogeneity Assessment
Sample 1
1.1192
1.0192
0.9192
0.8192
0.7192
Sample 2
0.491
0.441
0.391
0.341
Sample 3
0.8456
0.7456
0.6456
0.5456

MOLYBDENUM

Stability Assessment



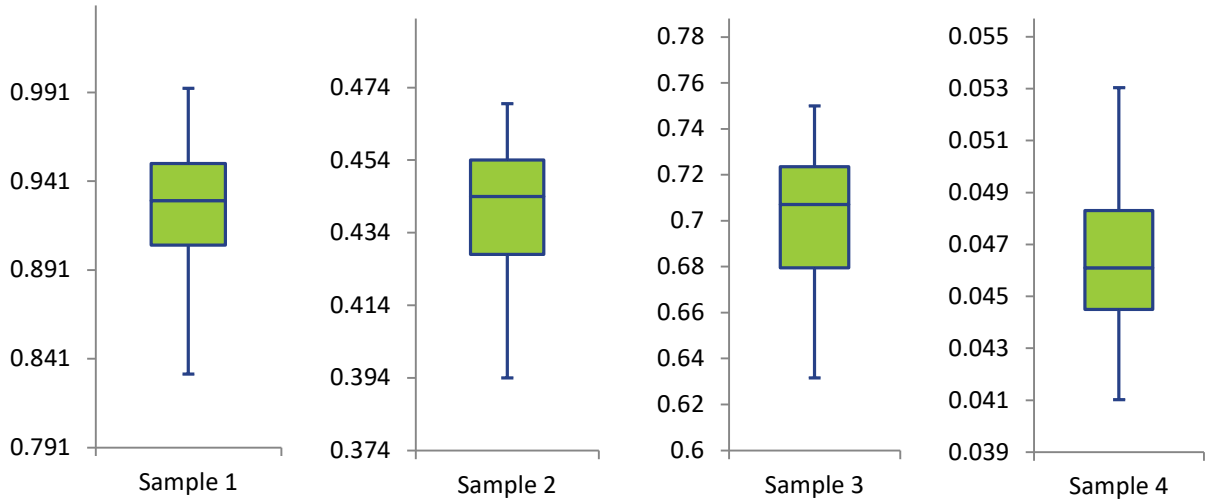
Homogeneity Assessment



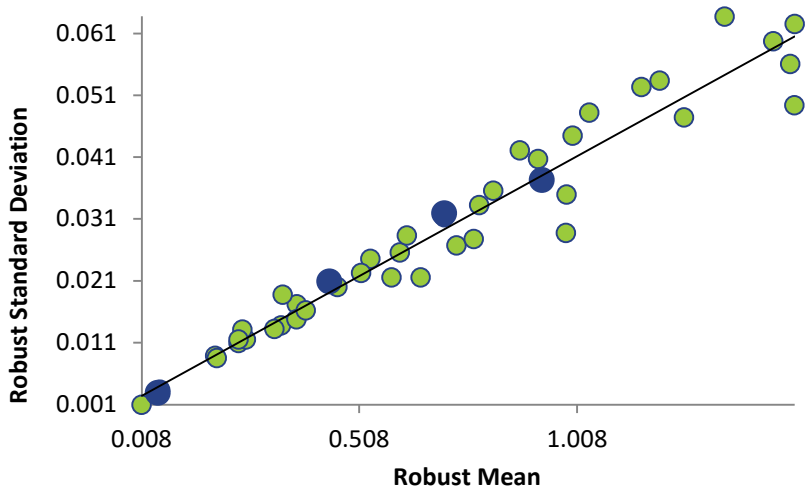
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



NICKEL

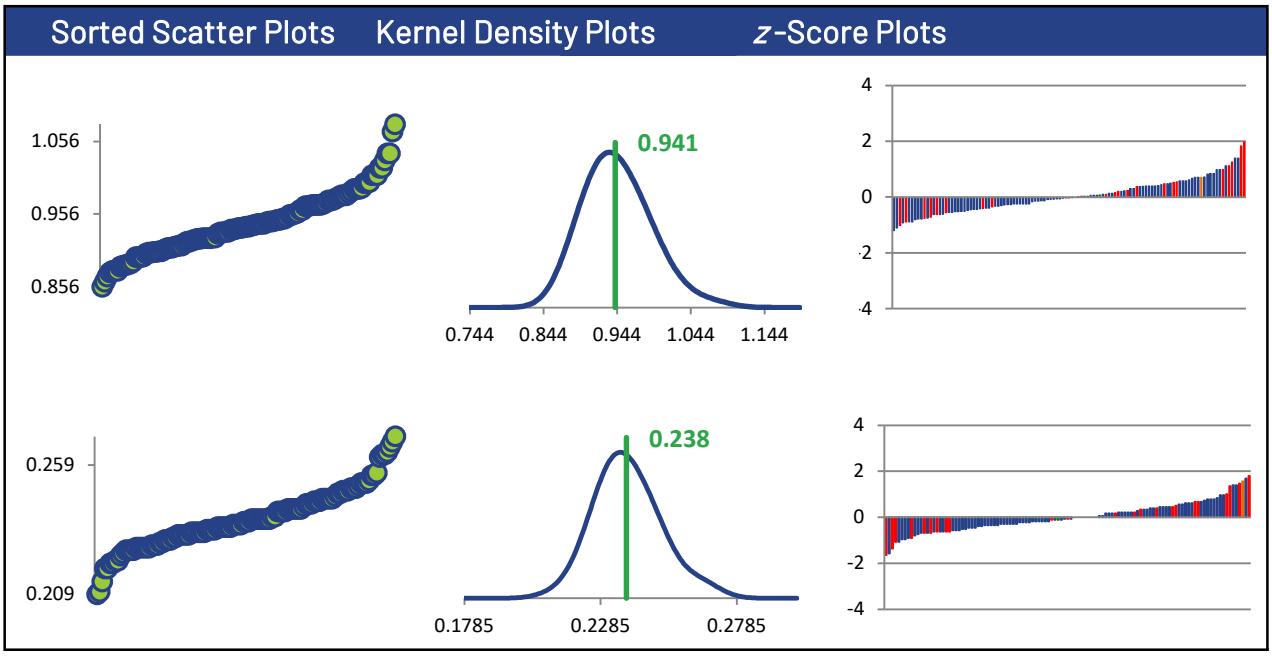
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	115	115	115	111
Median mg/L	0.939	0.237	0.528	0.0129
Robust Mean mg/L	0.941	0.238	0.529	0.0129
U mg/L	0.00501	0.00129	0.00289	0.0000817
Robust Standard Deviation mg/L	0.0430	0.0111	0.0248	0.000689
Regression Standard Deviation mg/L	0.0706	0.0178	0.0396	0.000970
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0706	0.0178	0.0396	0.000970
Outliers	0	0	0	0
|z|>3.0	0	0	1	2
2<|z|<3	0	0	1	2

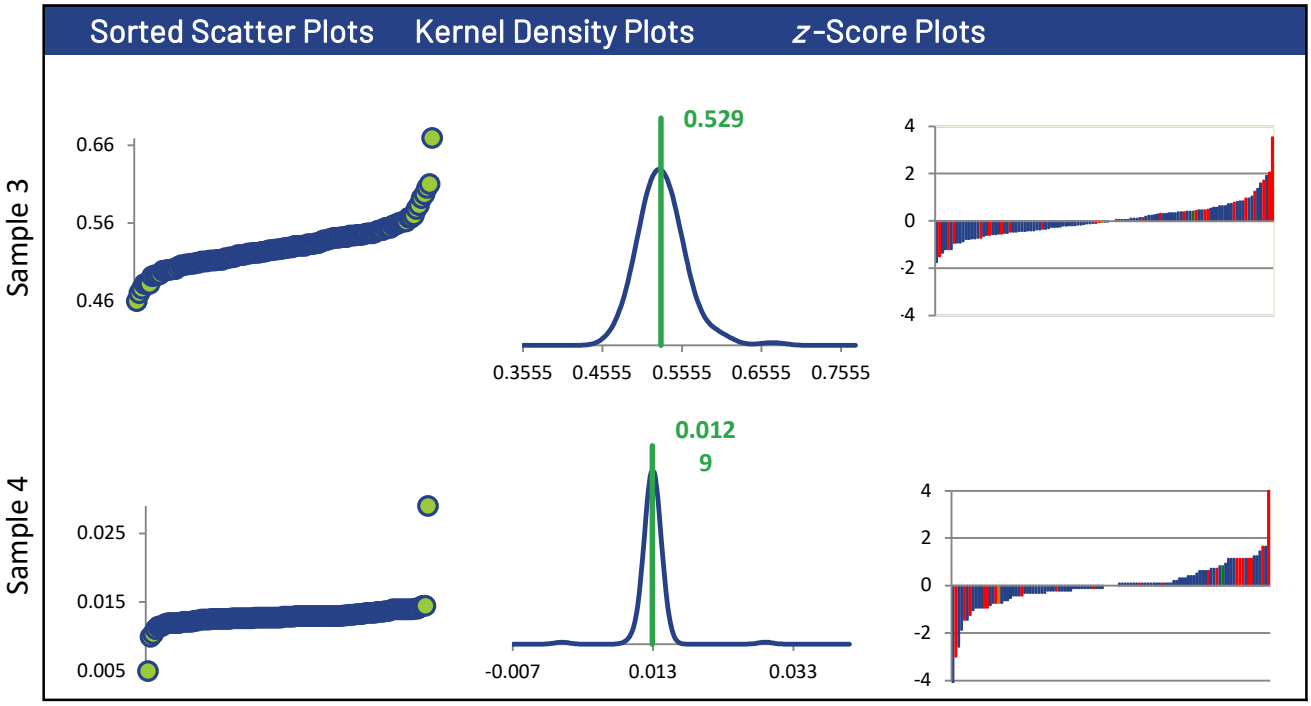
Methods Used

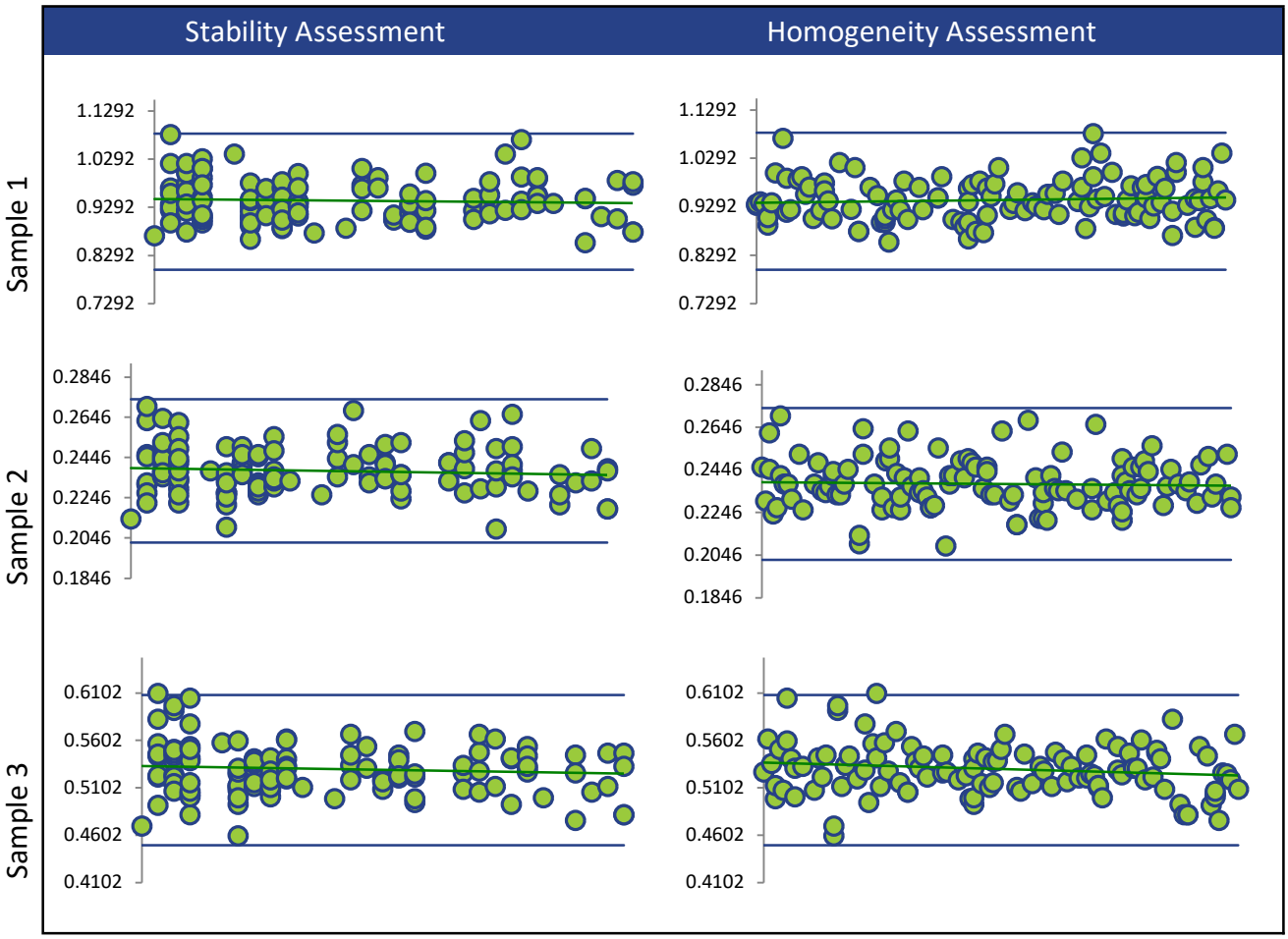
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	90	90	90	89
ICP/OES (Red)	23	23	23	20
AA FLAME (Green)	1	1	1	1
AA GRAPHITE (Orange)	1	1	1	1

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



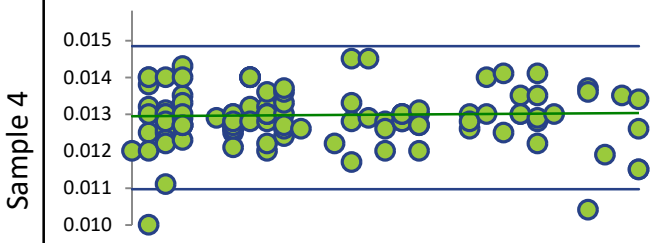
NICKEL


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.66
0.56
0.46
0.529
0.3555
0.4555
0.5555
0.6555
0.7555
4
2
0
-2
-4
Sample 4
0.025
0.015
0.005
0.012
9
-0.007
0.013
0.033
4
2
0
-2
-4

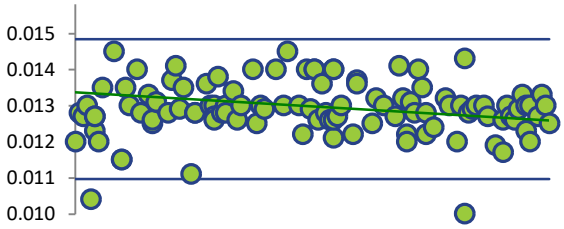

Stability Assessment
Homogeneity Assessment
Sample 1
1.1292
1.0292
0.9292
0.8292
0.7292
Sample 2
0.2846
0.2646
0.2446
0.2246
0.2046
0.1846
Sample 3
0.6102
0.5602
0.5102
0.4602
0.4102

NICKEL

Stability Assessment



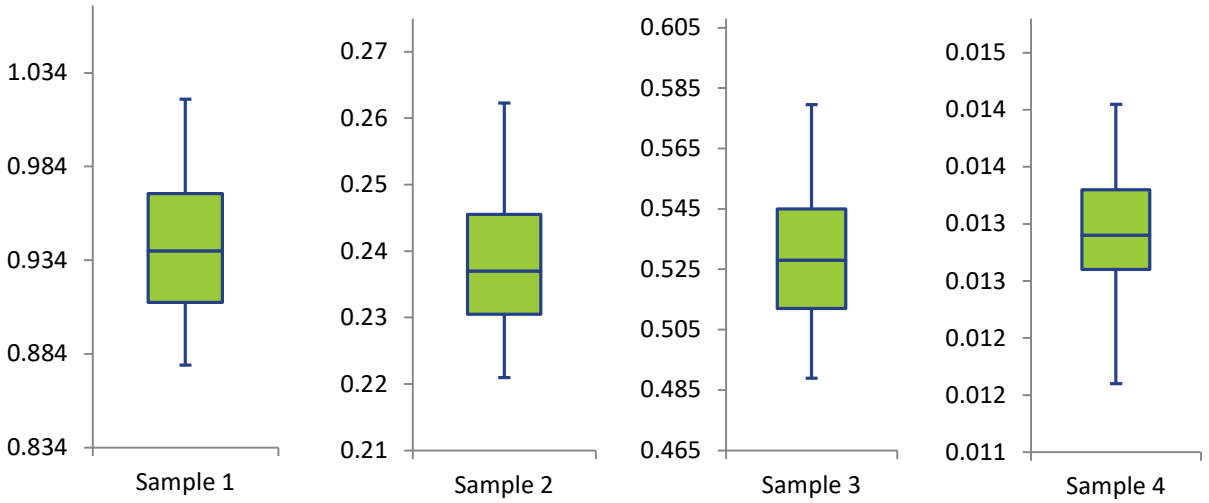
Homogeneity Assessment



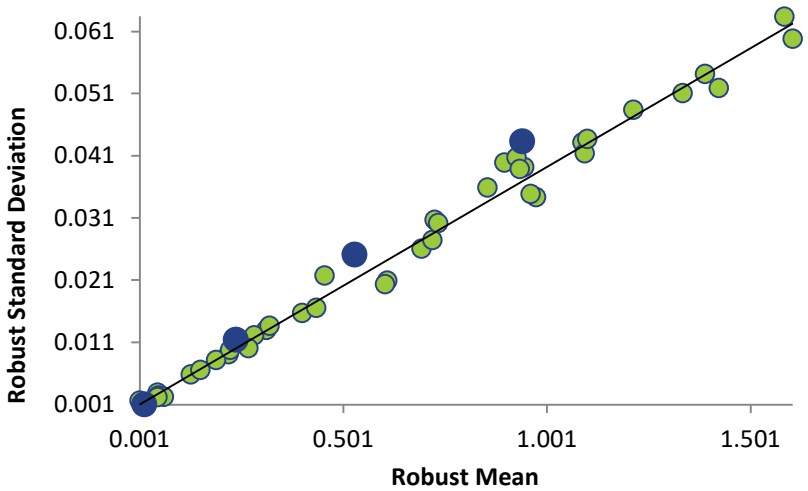
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



SELENIUM

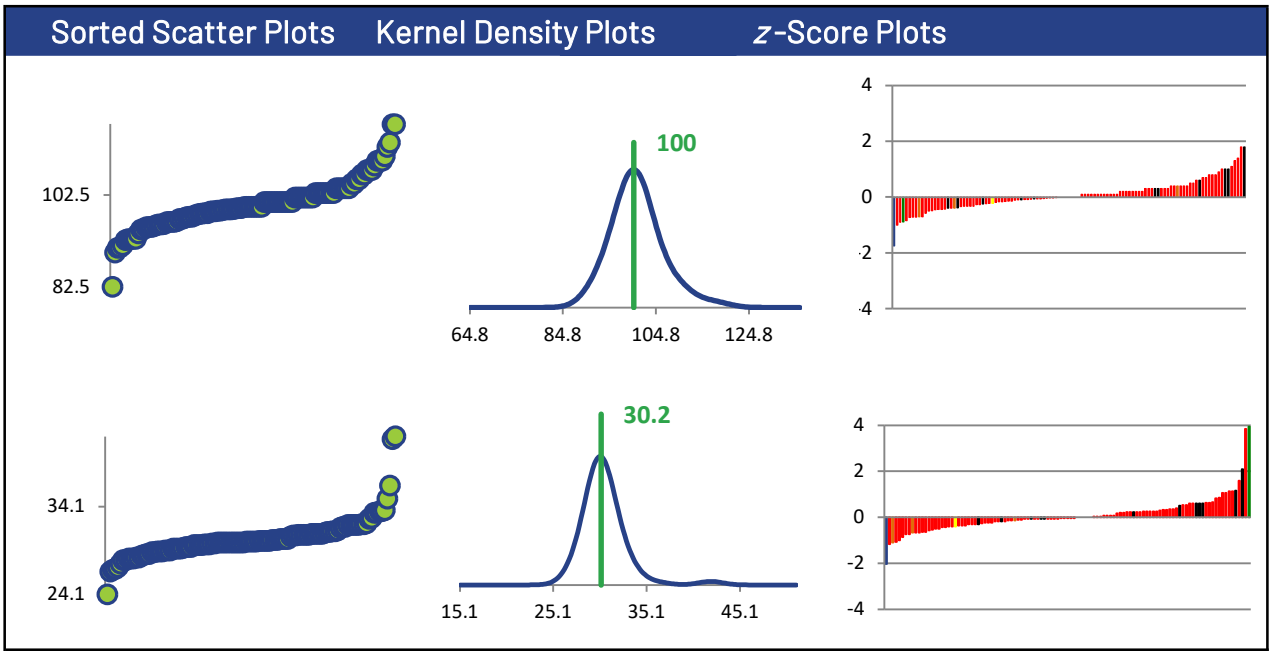
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	111	111	111	98
Median mg/L	100	30.1	74.5	2.68
Robust Mean mg/L	100	30.2	74.8	2.70
U mg/L	0.545	0.178	0.422	0.0306
Robust Standard Deviation mg/L	4.61	1.50	3.59	0.245
Regression Standard Deviation mg/L	10.0	3.02	7.48	0.270
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	10.0	3.02	7.48	0.270
Outliers	2	3	1	2
|z|>3.0	0	2	1	8
2<|z|<3	0	2	2	0

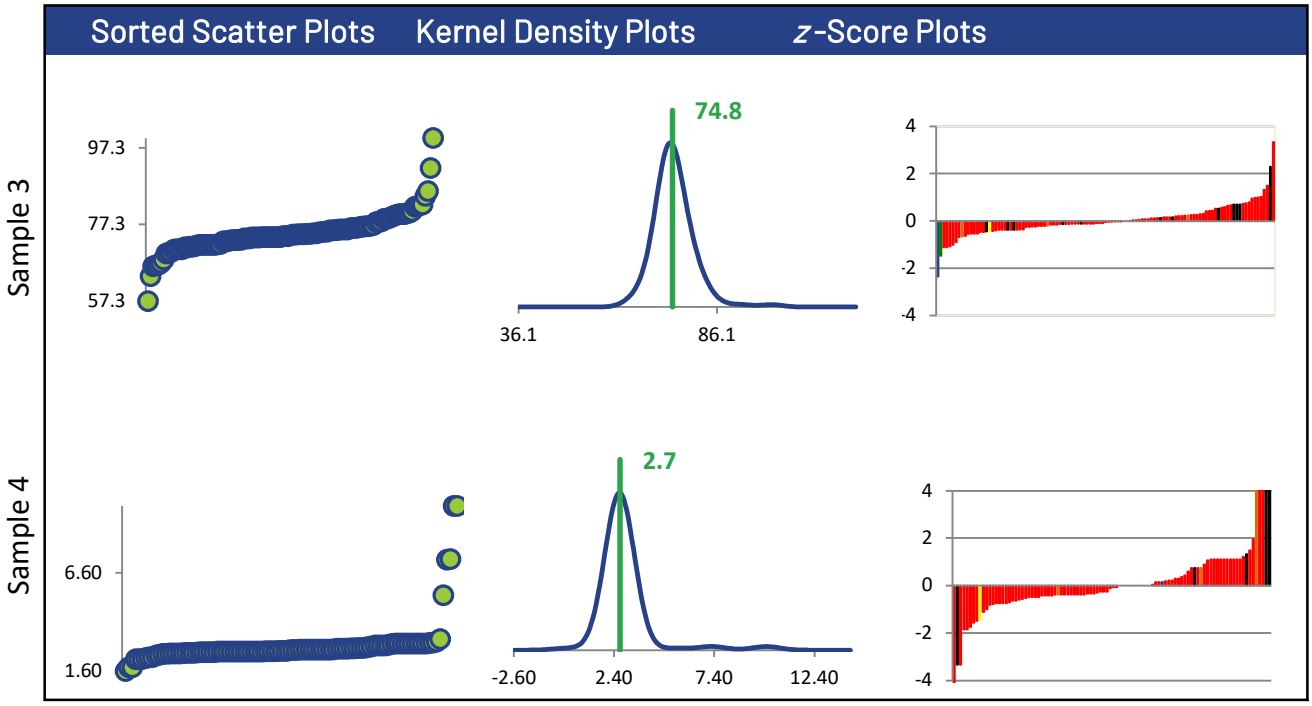
Methods Used

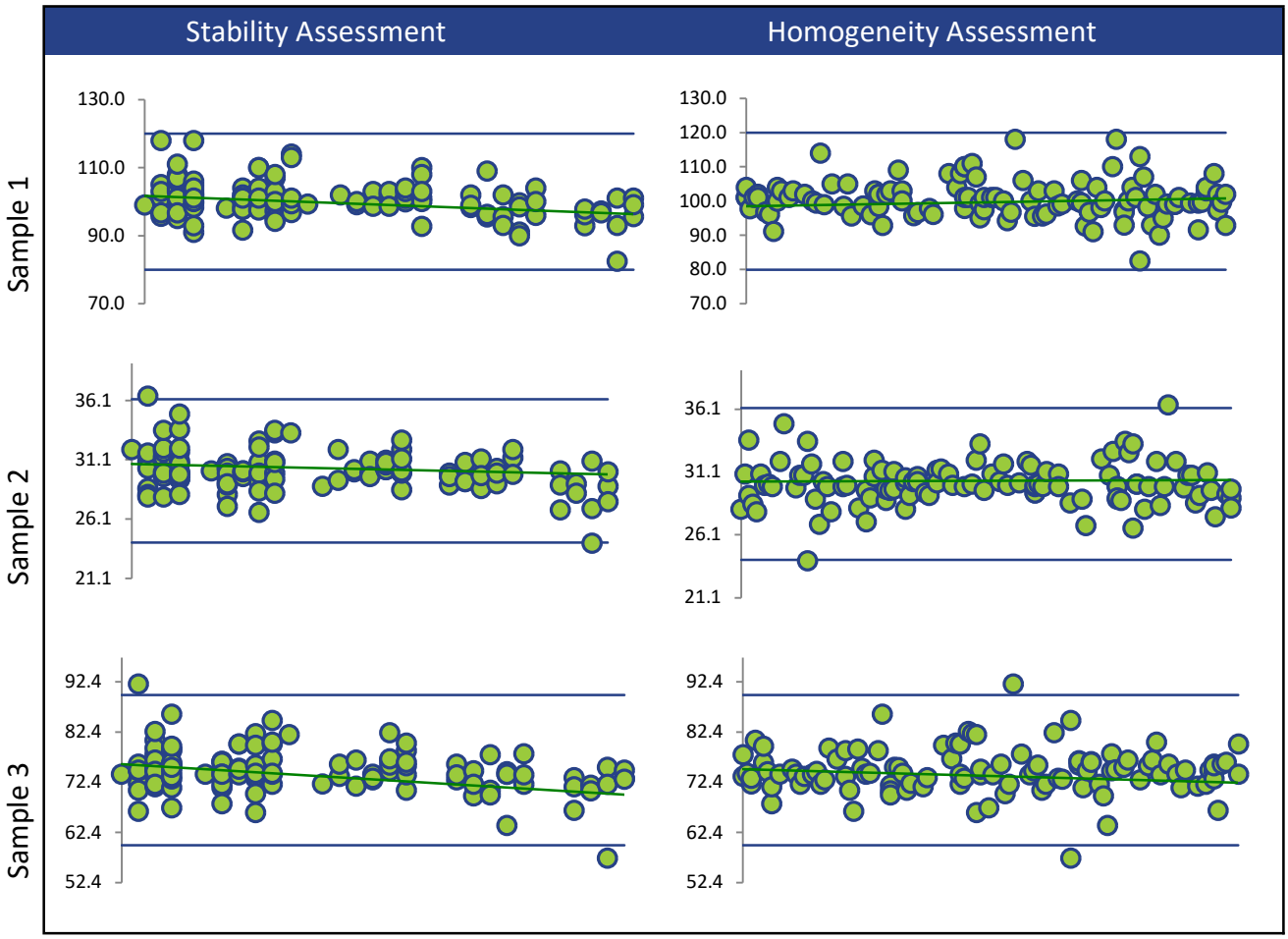
Method	C02A-1	C02A-2	C02A-3	C02A-4
IR ATOMIC FLUORESCENCE SPECTROPHOTOMETRY (Blue)	1	1	1	1
ICP/MS (Red)	92	92	92	86
HYDRIDE ICP (Green)	1	1	1	0
HYDRIDE AA (Orange)	3	3	3	3
ICP/OES (Black)	13	13	13	7
ATOMIC FLUORESCENCE SPECTROMETER (Yellow)	1	1	1	1

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



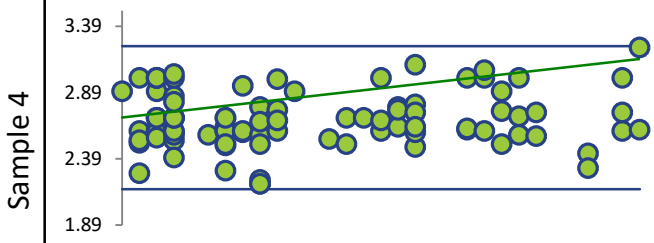
SELENIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
97.3
77.3
57.3
74.8
36.1
86.1
4
2
0
-2
-4
Sample 4
6.60
1.60
2.7
-2.60
2.40
7.40
12.40
4
2
0
-2
-4

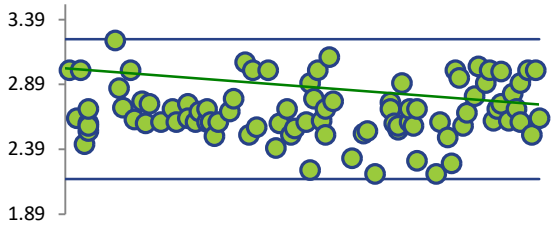

Stability Assessment
Homogeneity Assessment
Sample 1
130.0
110.0
90.0
70.0
130.0
120.0
110.0
100.0
90.0
80.0
70.0
Sample 2
36.1
31.1
26.1
21.1
36.1
31.1
26.1
21.1
Sample 3
92.4
82.4
72.4
62.4
52.4
92.4
82.4
72.4
62.4
52.4

SELENIUM

Stability Assessment



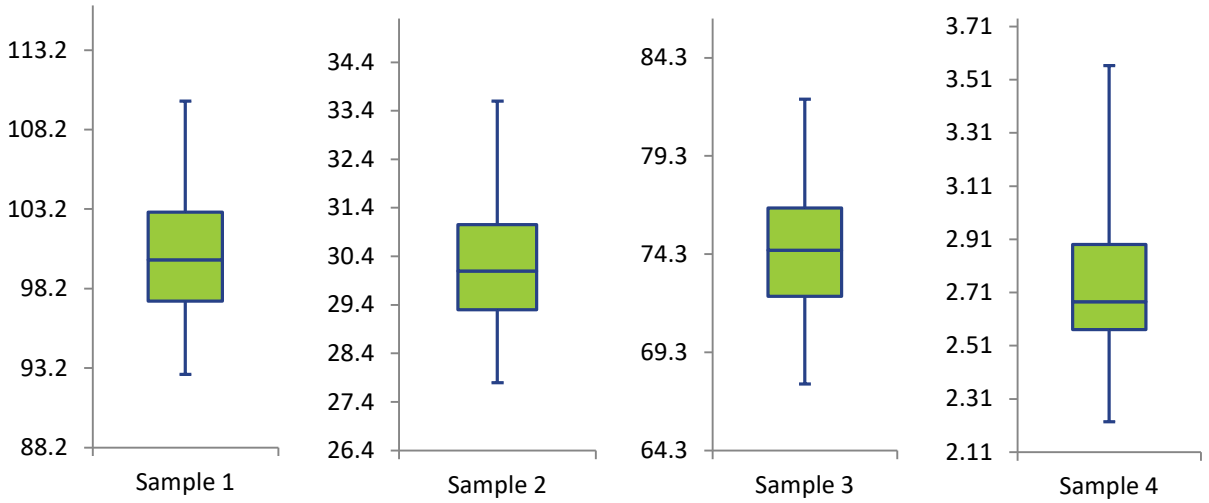
Homogeneity Assessment



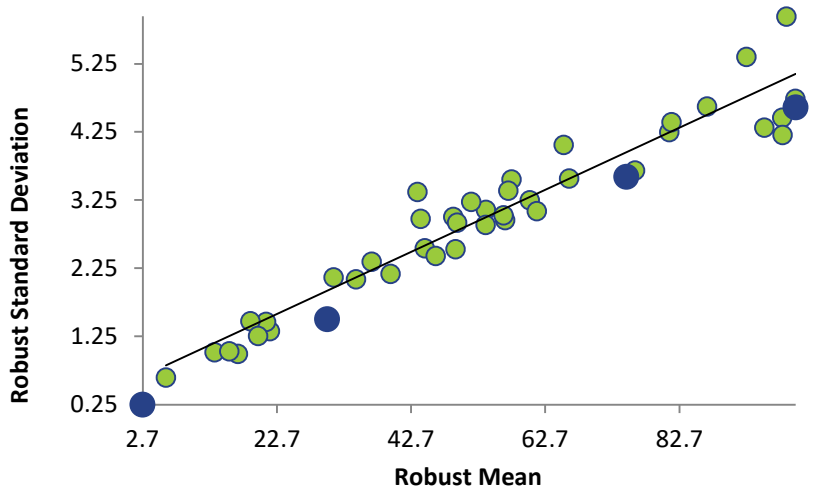
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



SILVER

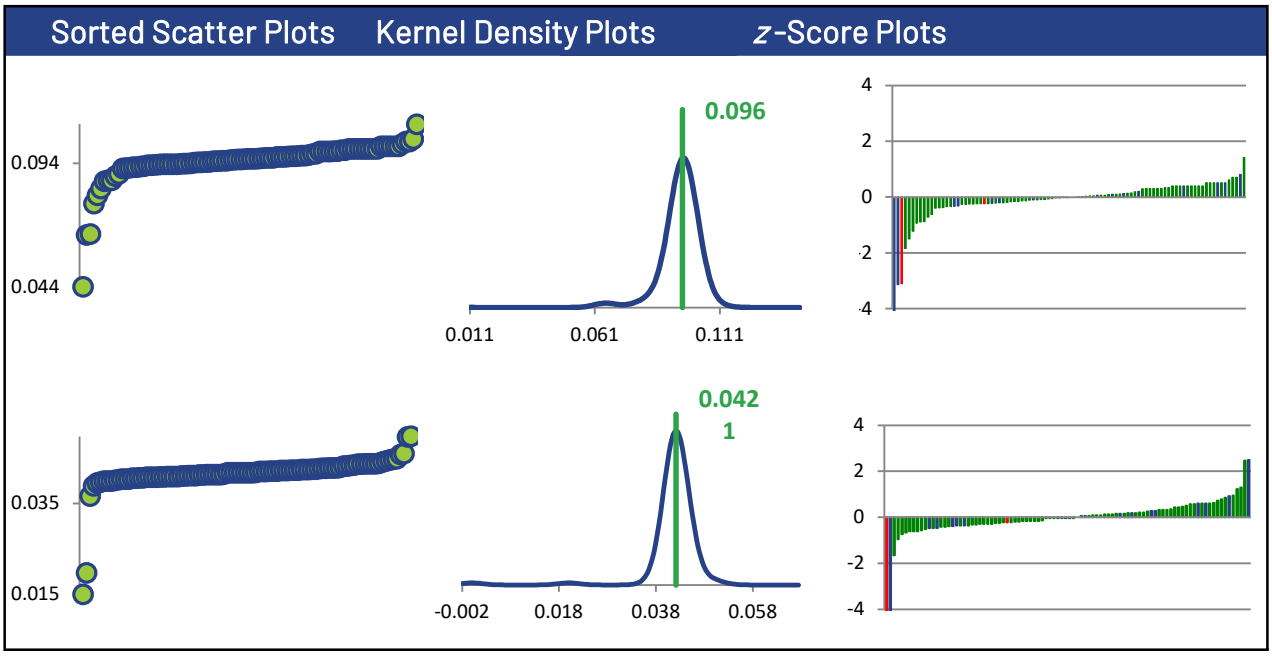
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	94	94	94	90
Median mg/L	0.0960	0.0420	0.0724	0.00620
Robust Mean mg/L	0.0960	0.0421	0.0722	0.00619
U mg/L	0.000505	0.000195	0.000344	0.0000440
Robust Standard Deviation mg/L	0.00392	0.00151	0.00267	0.000334
Regression Standard Deviation mg/L	0.00720	0.00316	0.00542	0.000464
Stability Flag	Stability		Stability	
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00988	0.00316	0.00576	0.000464
Outliers	1	1	1	1
|z|>3.0	3	2	2	6
2<|z|<3	0	2	0	2

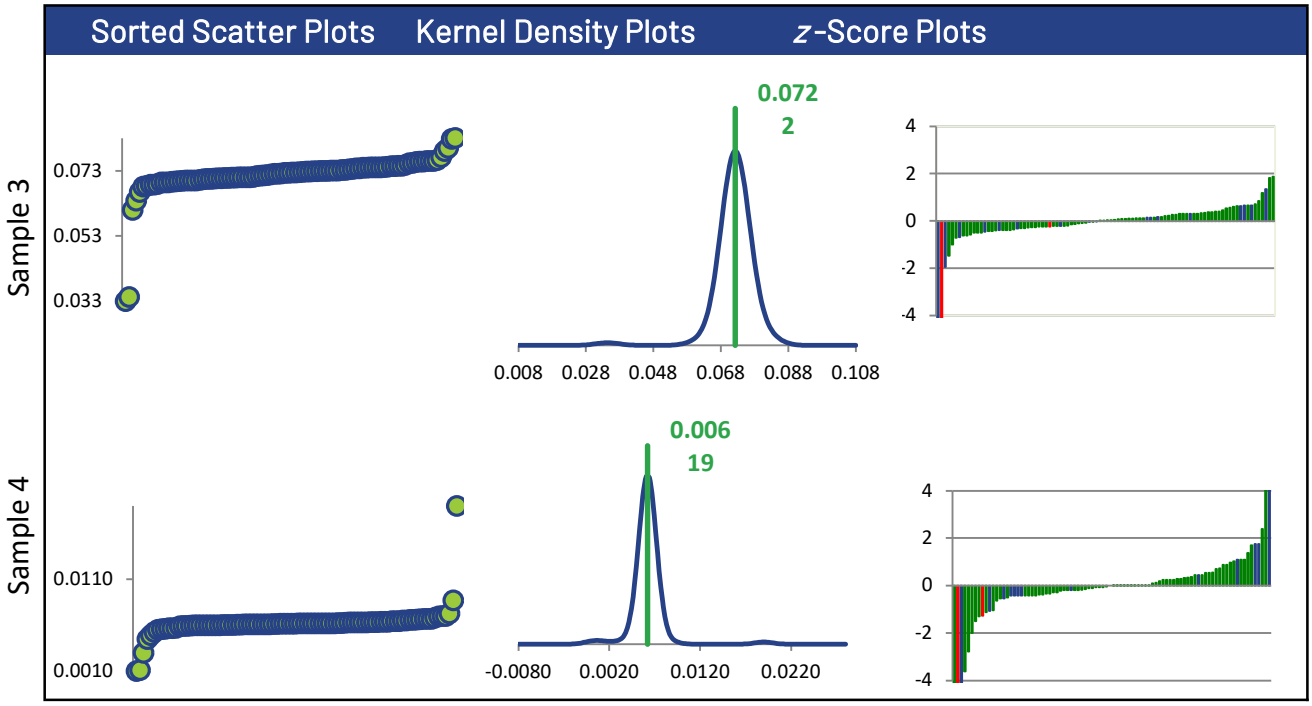
Methods Used

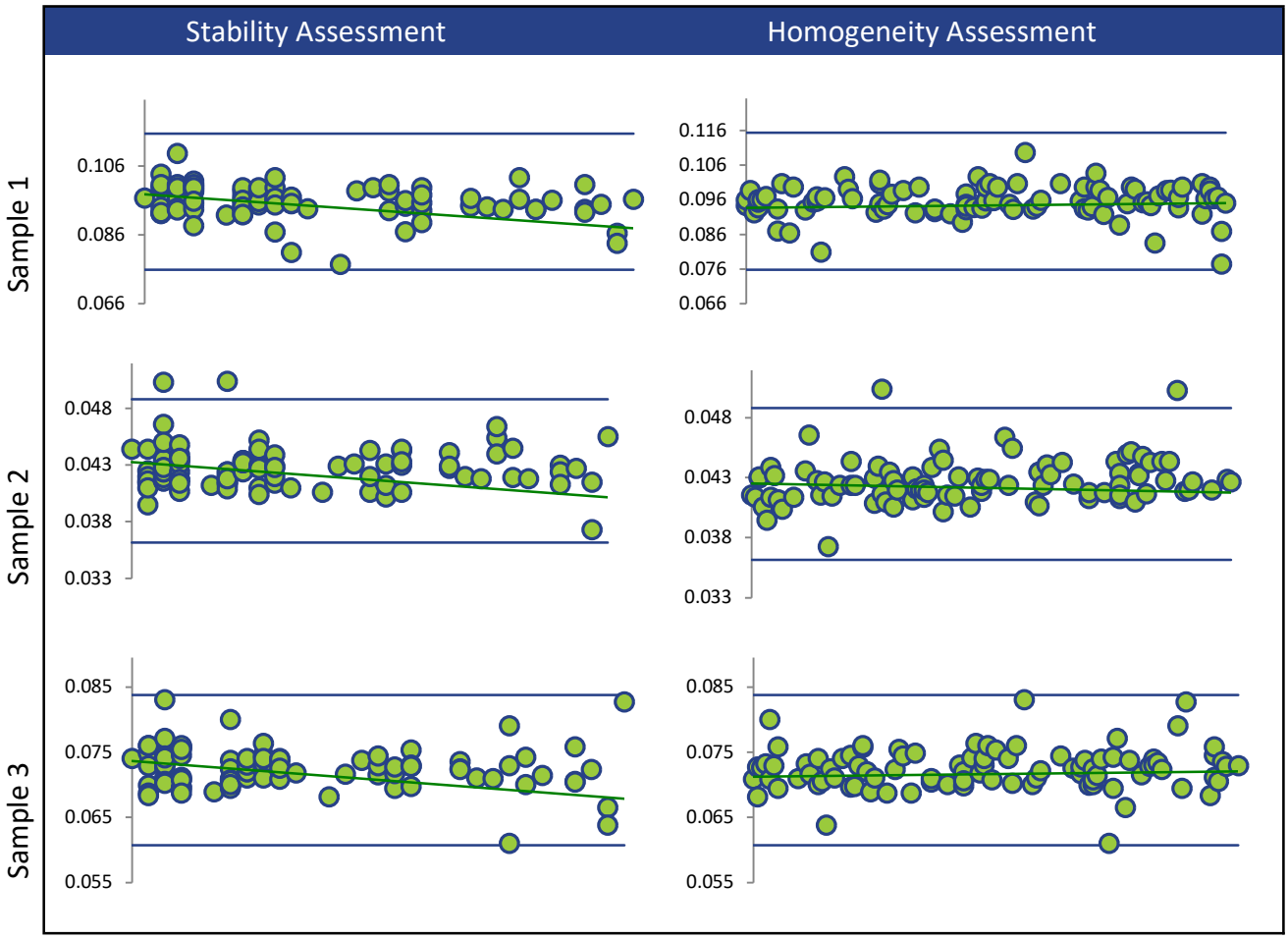
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/OES (Blue)	17	17	17	13
AA FLAME (Red)	2	2	2	2
ICP/MS (Green)	75	75	75	75

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



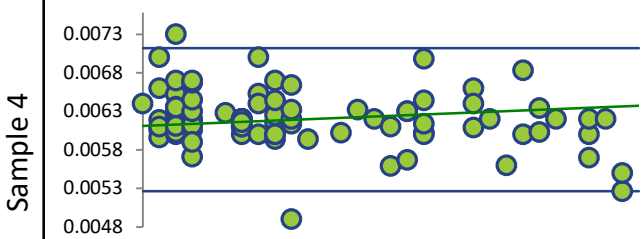
SILVER


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.073
0.053
0.033
0.072
2
0.008 0.028 0.048 0.068 0.088 0.108
4 2 0 -2 -4
Sample 4
0.0110
0.0010
0.006
19
-0.0080 0.0020 0.0120 0.0220
4 2 0 -2 -4

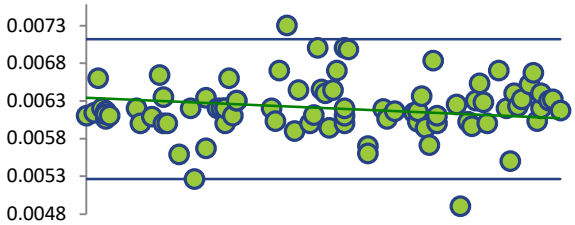

Stability Assessment
Homogeneity Assessment
Sample 1
0.106 0.086 0.066
0.116 0.106 0.096 0.086 0.076 0.066
Sample 2
0.048 0.043 0.038 0.033
0.048 0.043 0.038 0.033
Sample 3
0.085 0.075 0.065 0.055
0.085 0.075 0.065 0.055

SILVER

Stability Assessment



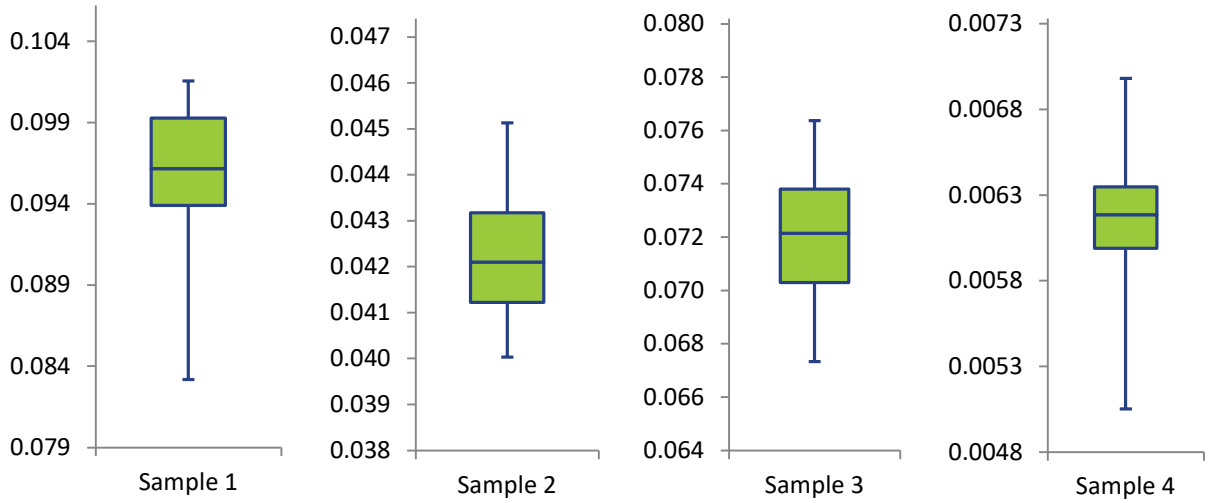
Homogeneity Assessment



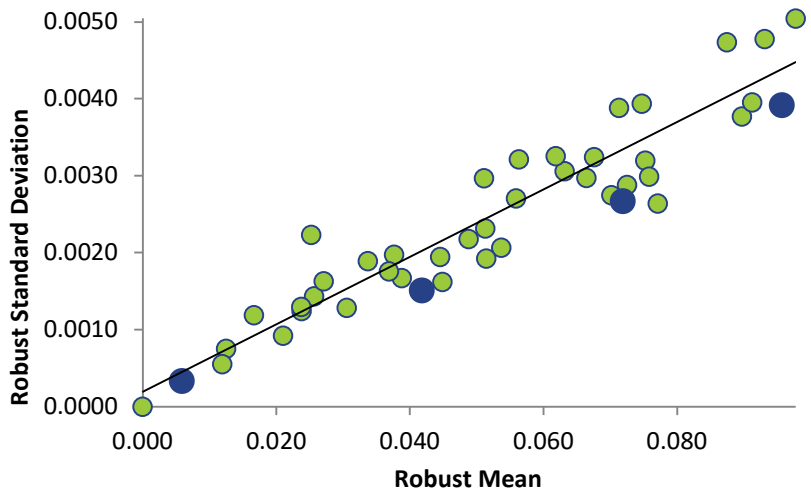
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



STRONTIUM

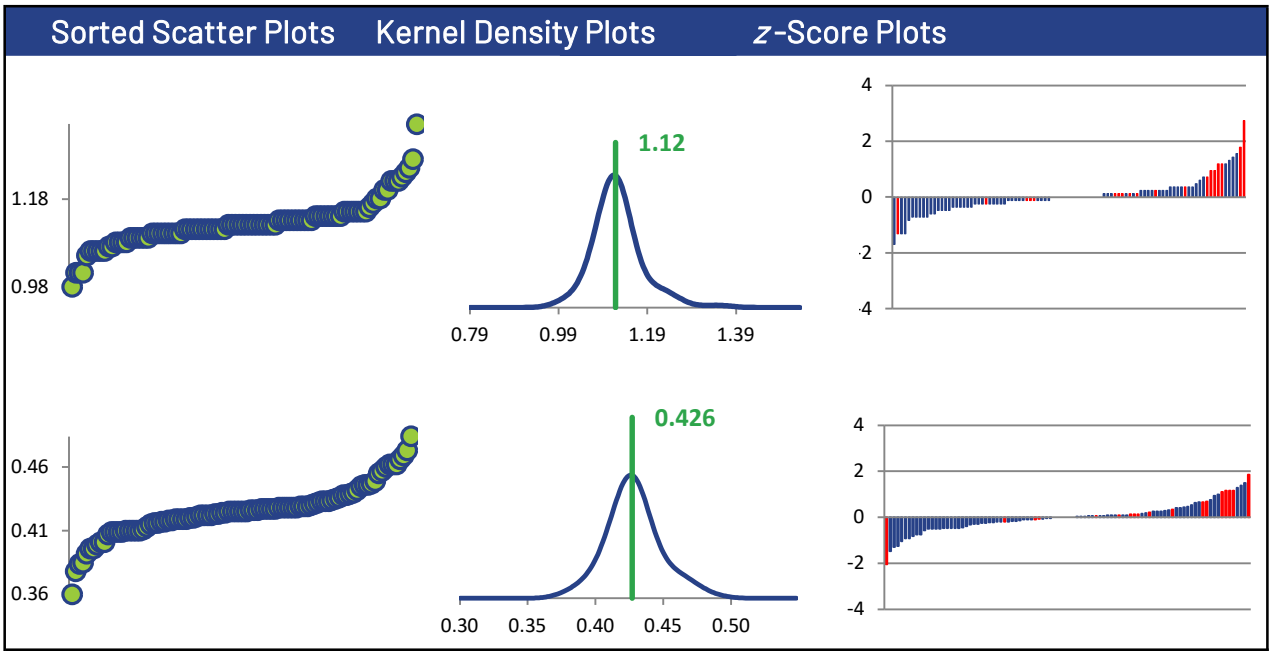
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	96	96	96	96
Median mg/L	1.12	0.426	0.499	0.0130
Robust Mean mg/L	1.12	0.426	0.499	0.0129
U mg/L	0.00490	0.00208	0.00235	0.0000842
Robust Standard Deviation mg/L	0.0384	0.0163	0.0184	0.000660
Regression Standard Deviation mg/L	0.0839	0.0319	0.0374	0.000970
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0839	0.0319	0.0374	0.000970
Outliers	1	1	1	0
|z|>3.0	0	0	1	5
2<|z|<3	1	1	0	2

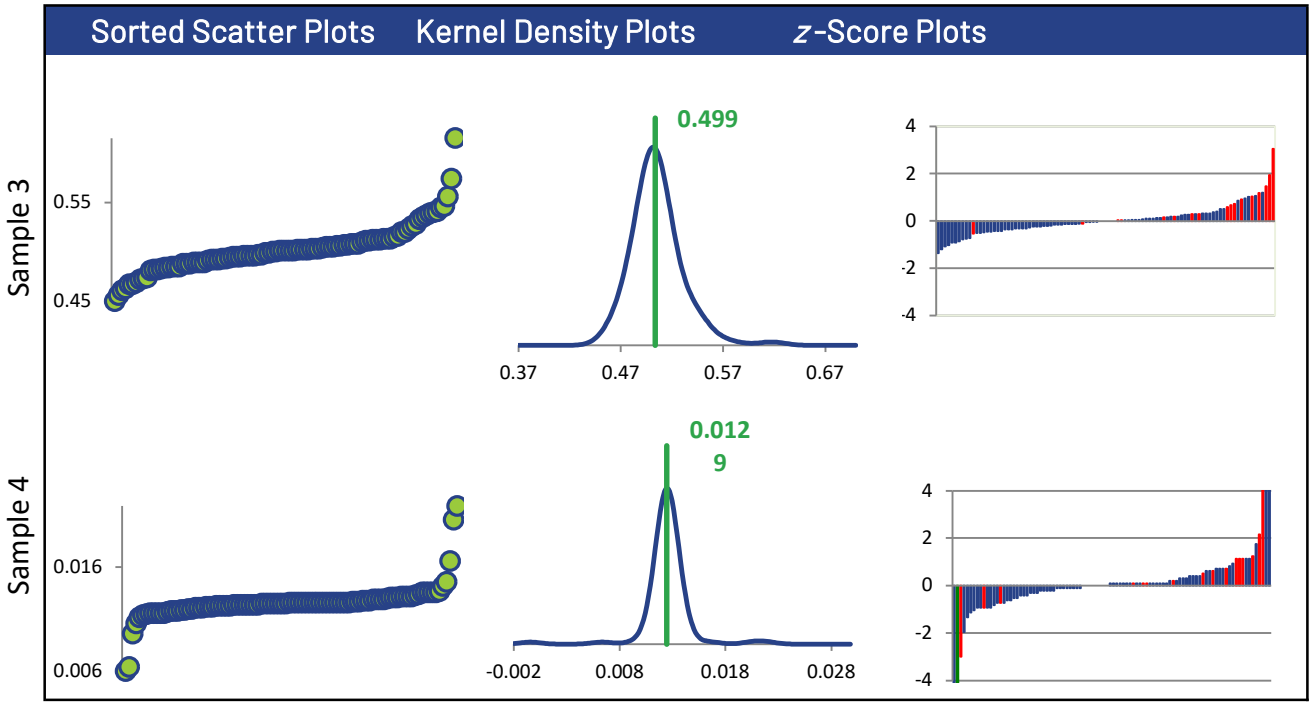
Methods Used

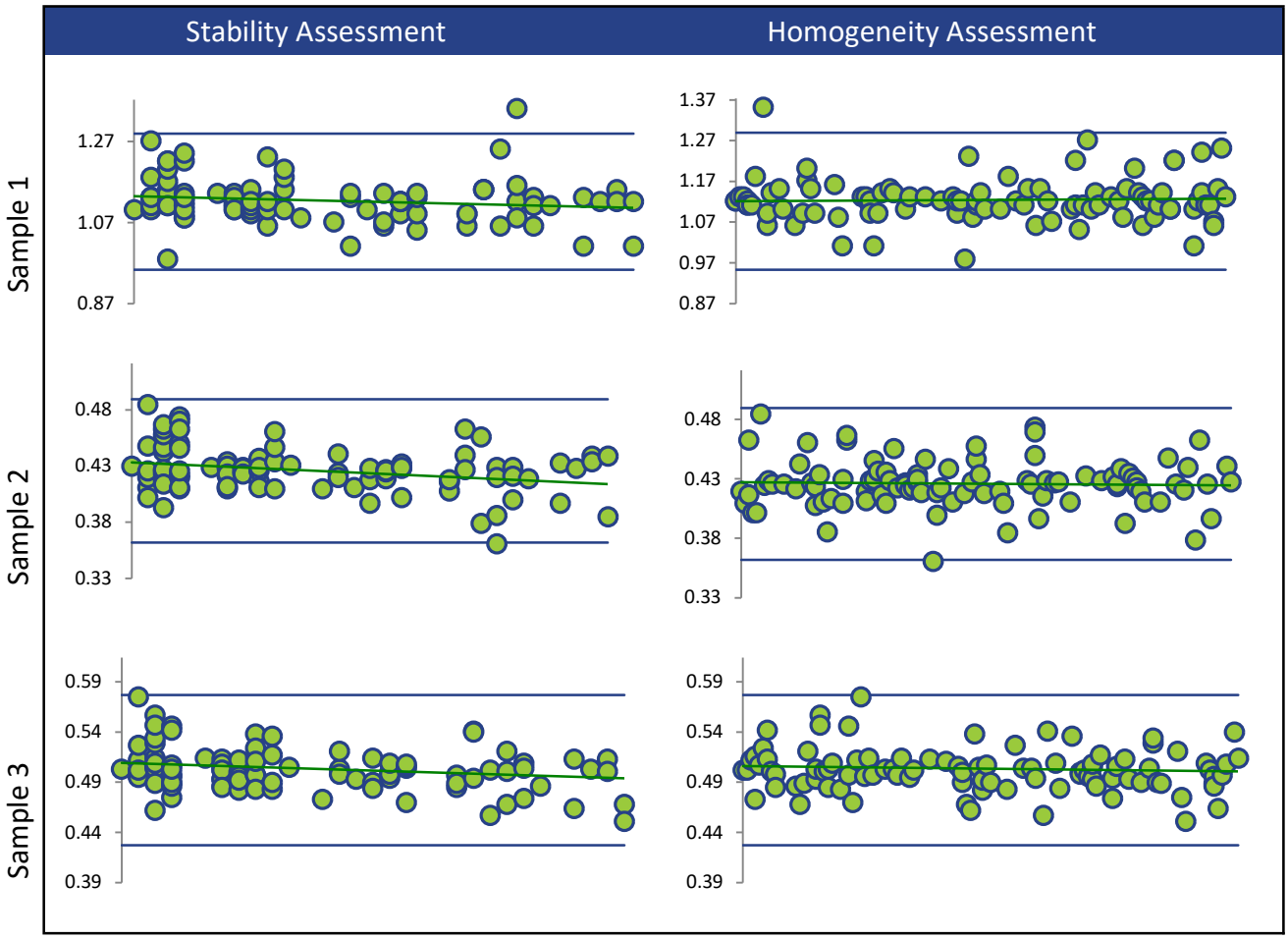
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	77	77	77	77
ICP/OES (Red)	19	19	19	18
AA FLAME (Green)	0	0	0	1

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



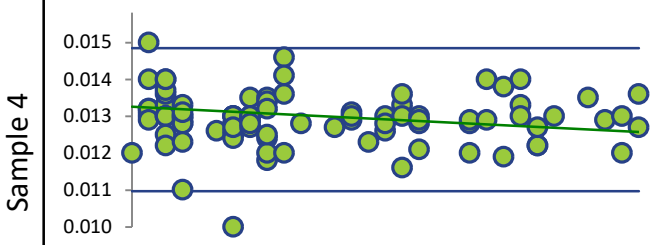
STRONTIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.55
0.45
0.499
0.37
0.47
0.57
0.67
4
2
0
-2
-4
Sample 4
0.016
0.006
0.012
9
-0.002
0.008
0.018
0.028

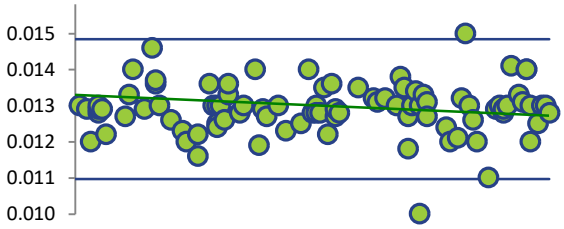

Stability Assessment
Homogeneity Assessment
Sample 1
1.27
1.07
0.87
1.37
1.17
0.97
Sample 2
0.48
0.43
0.38
0.33
Sample 3
0.59
0.54
0.49
0.44
0.39

STRONTIUM

Stability Assessment



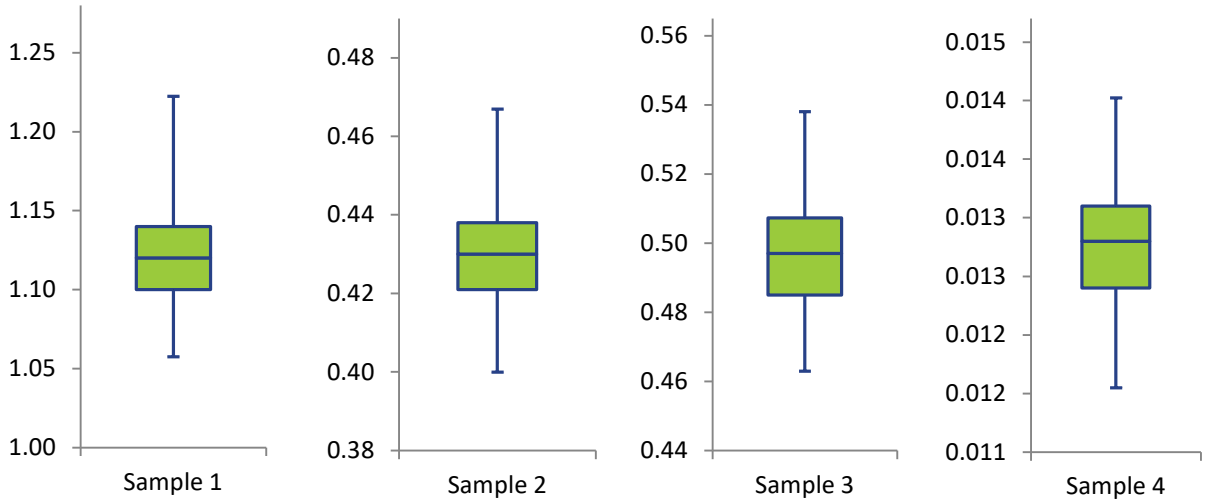
Homogeneity Assessment



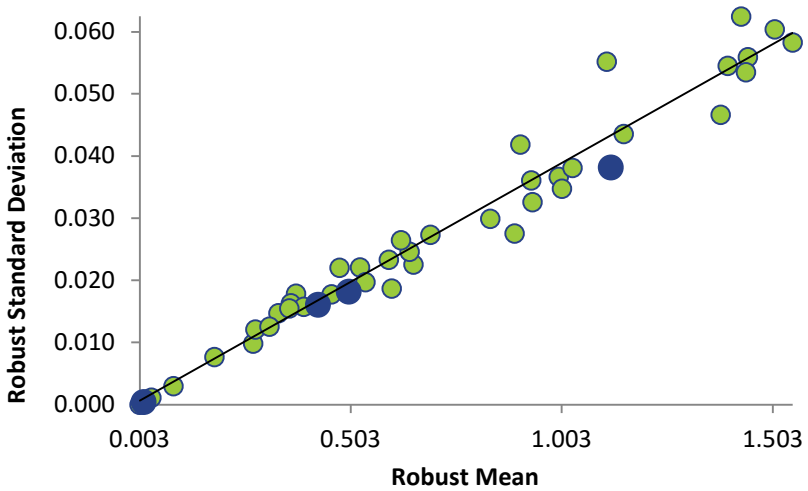
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



THALLIUM

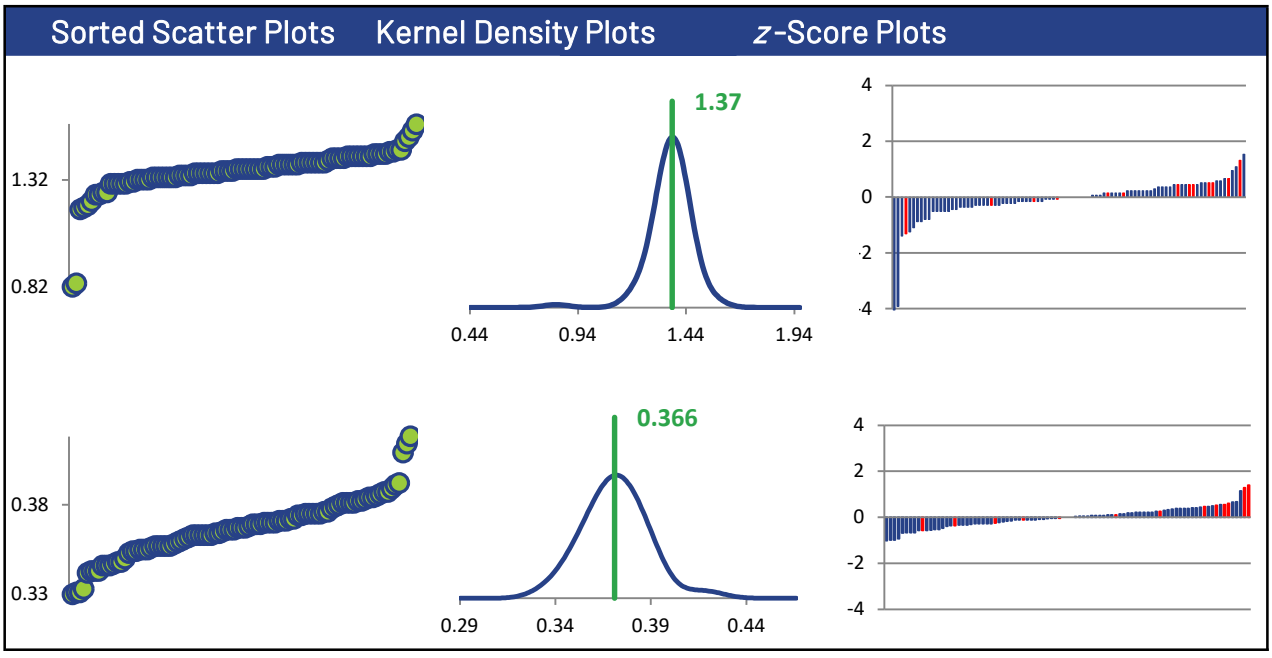
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	91	91	91	91
Median mg/L	1.37	0.366	0.962	0.0357
Robust Mean mg/L	1.37	0.366	0.959	0.0357
U mg/L	0.00835	0.00204	0.00480	0.000207
Robust Standard Deviation mg/L	0.0637	0.0156	0.0366	0.00158
Regression Standard Deviation mg/L	0.137	0.0366	0.0959	0.00357
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.137	0.0366	0.0959	0.00357
Outliers	1	1	1	0
|z|>3.0	2	0	2	0
2<|z|<3	0	0	0	2

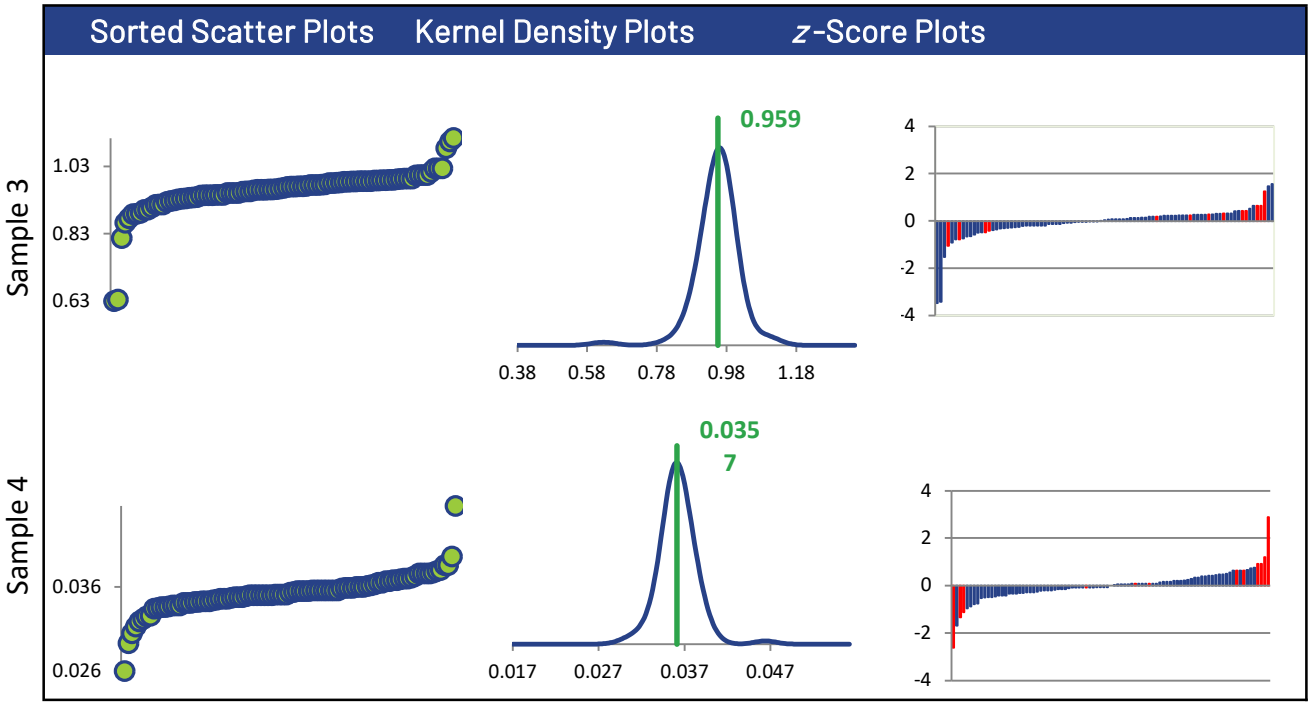
Methods Used

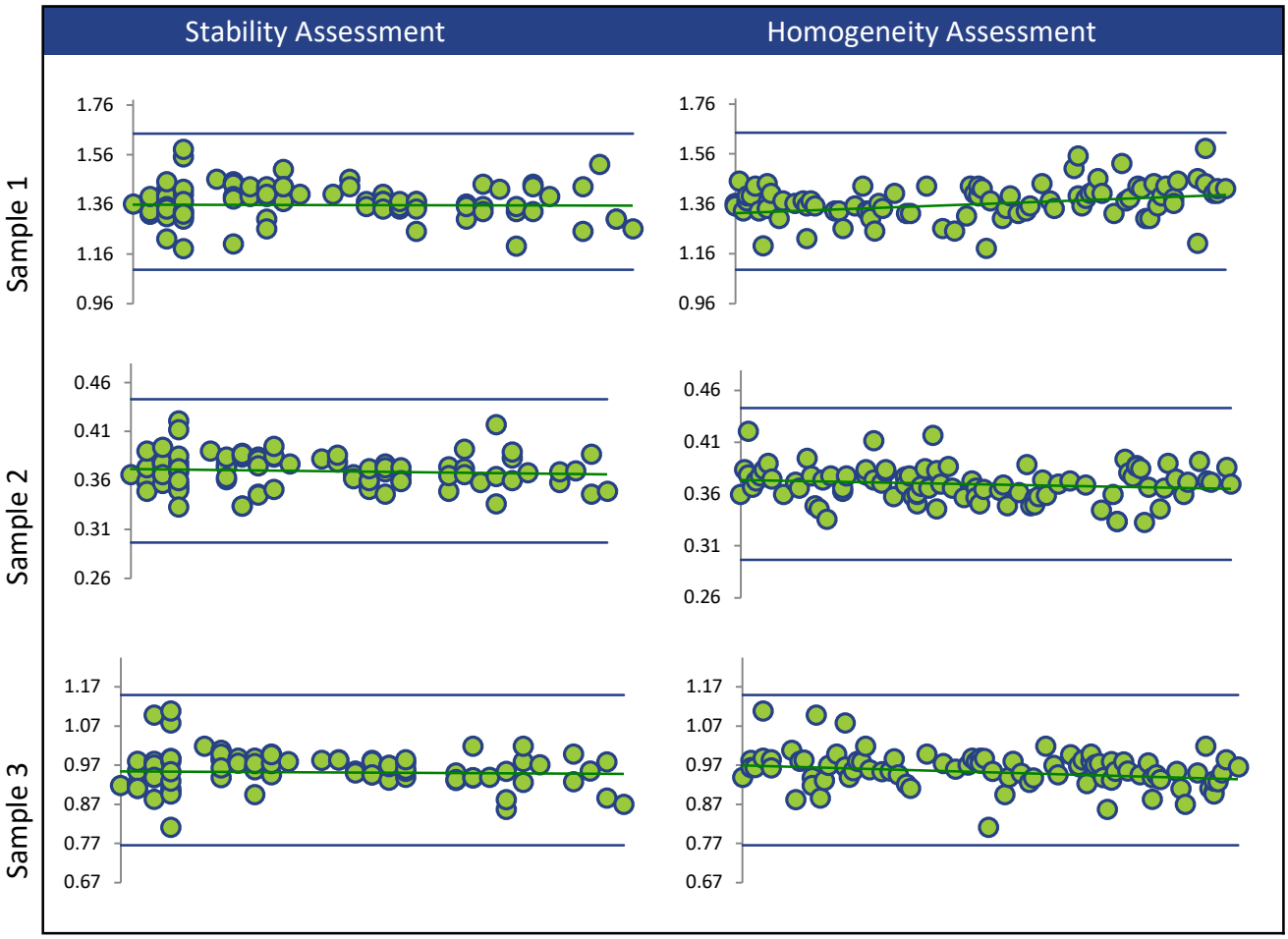
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	78	78	78	79
ICP/OES (Red)	13	13	13	12

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



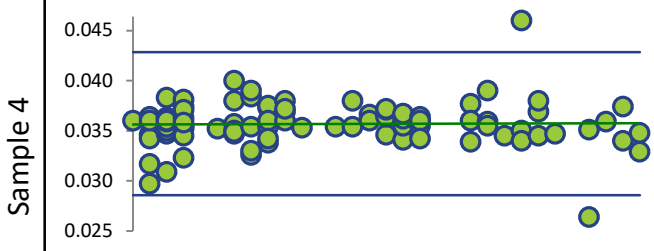
THALLIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
1.03
0.83
0.63
0.959
0.38
0.58
0.78
0.98
1.18
4
2
0
-2
-4
Sample 4
0.036
0.026
0.035
7
0.017
0.027
0.037
0.047
4
2
0
-2
-4

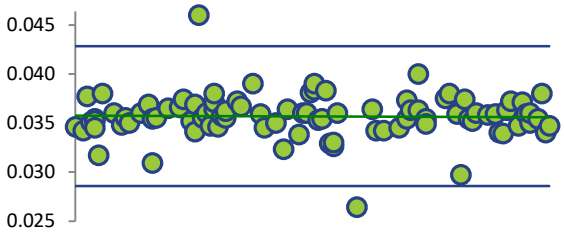

Stability Assessment
Homogeneity Assessment
Sample 1
1.76
1.56
1.36
1.16
0.96
Sample 2
0.46
0.41
0.36
0.31
0.26
Sample 3
1.17
1.07
0.97
0.87
0.77
0.67

THALLIUM

Stability Assessment



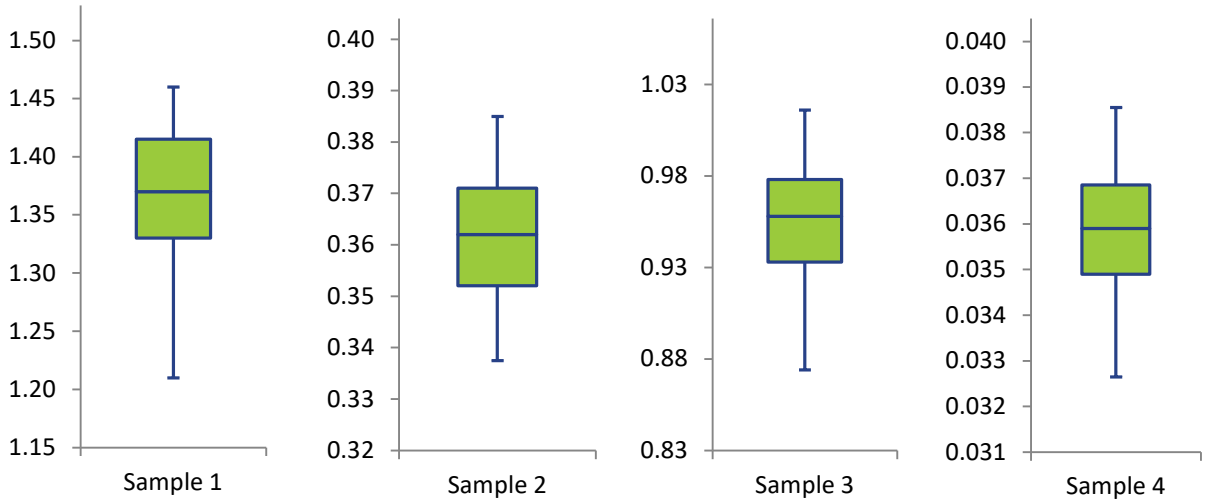
Homogeneity Assessment



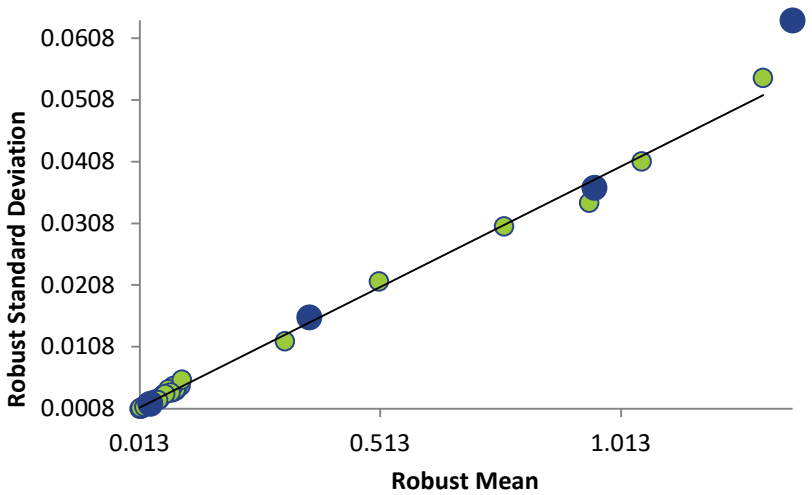
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



TIN

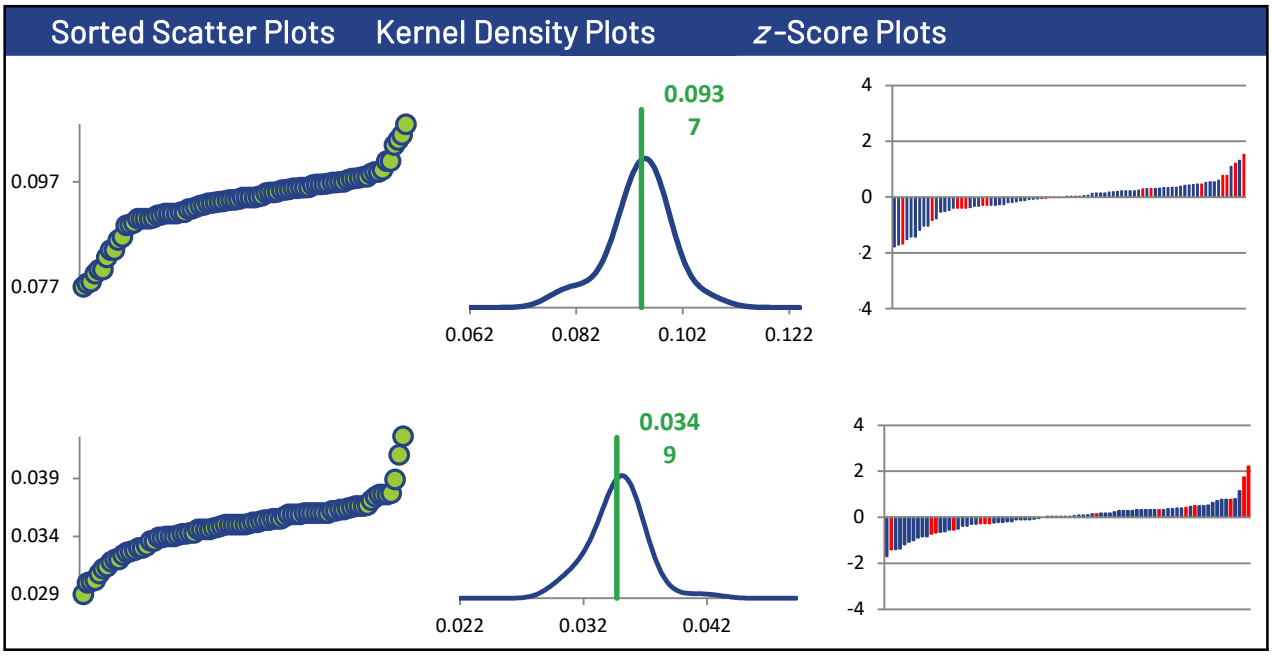
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	84	82	84	83
Median mg/L	0.0940	0.0350	0.0630	0.0348
Robust Mean mg/L	0.0937	0.0349	0.0628	0.0347
U mg/L	0.000621	0.000261	0.000417	0.000346
Robust Standard Deviation mg/L	0.00455	0.00189	0.00306	0.00252
Regression Standard Deviation mg/L	0.00937	0.00349	0.00628	0.00347
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00937	0.00349	0.00628	0.00347
Outliers	0	0	0	0
|z|>3.0	0	0	0	1
2<|z|<3	0	1	0	1

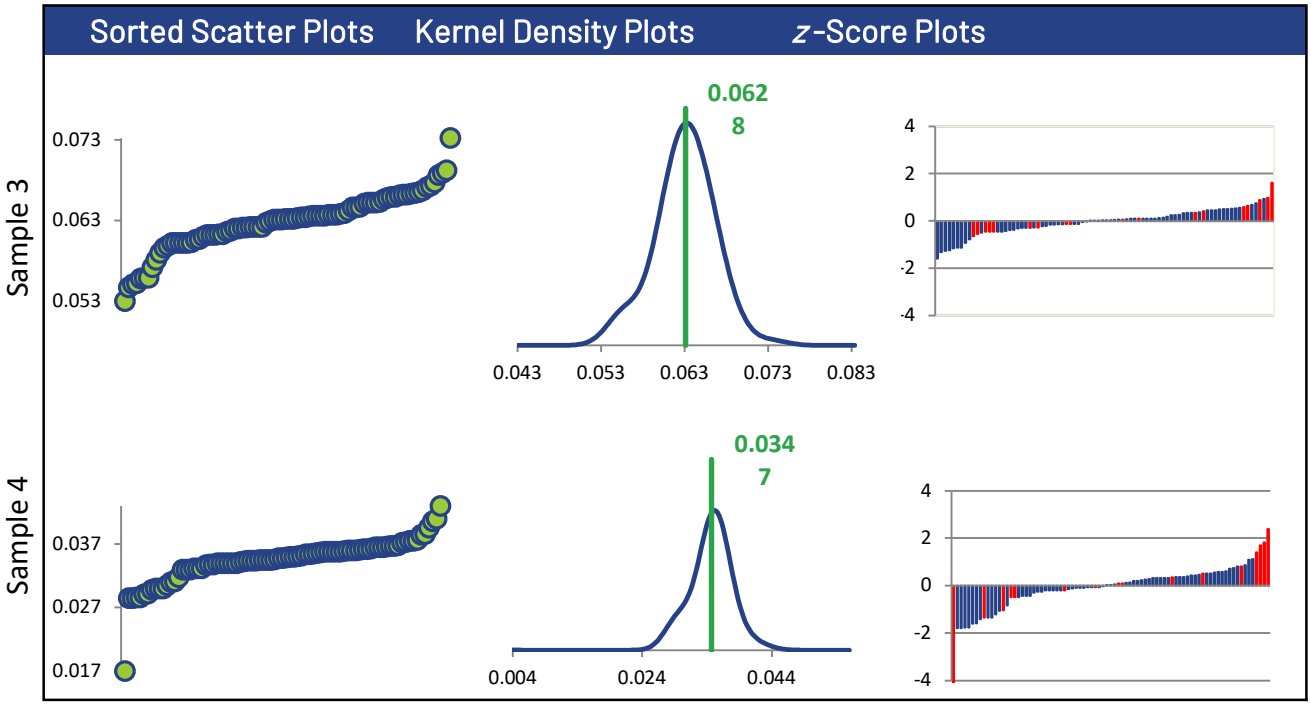
Methods Used

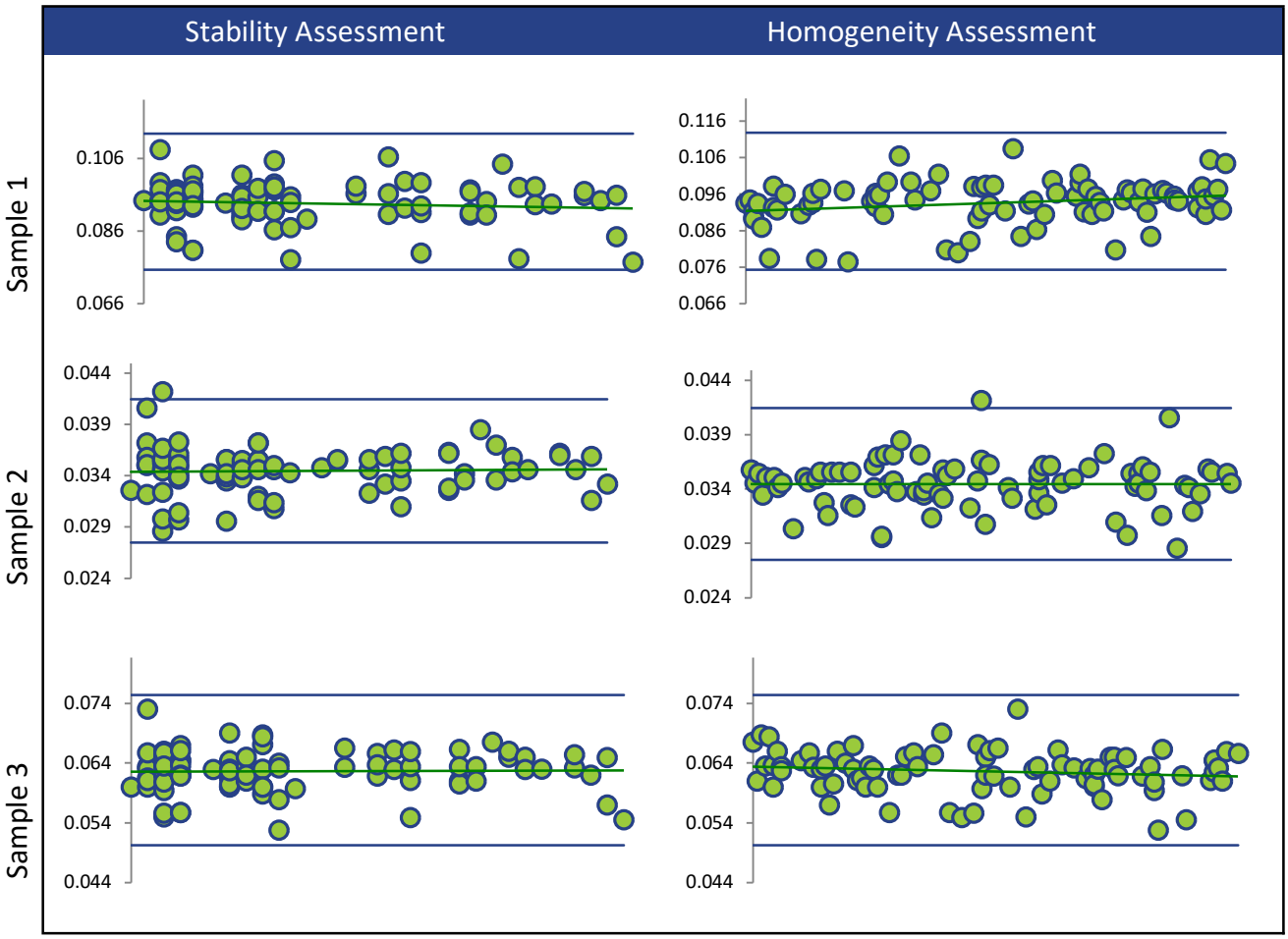
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	66	67	66	67
ICP/OES (Red)	18	15	18	16

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



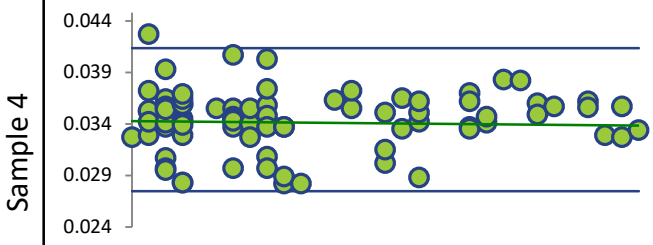
TIN


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.073
0.063
0.053
0.062
8
0.043
0.053
0.063
0.073
0.083
4
2
0
-2
-4
Sample 4
0.037
0.027
0.017
0.034
7
0.004
0.024
0.044
4
2
0
-2
-4

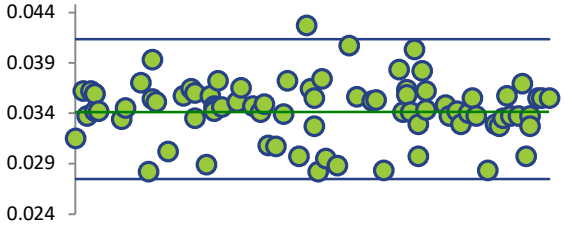

Stability Assessment
Homogeneity Assessment
Sample 1
0.106
0.086
0.066
0.116
0.106
0.096
0.086
0.076
0.066
Sample 2
0.044
0.039
0.034
0.029
0.024
Sample 3
0.074
0.064
0.054
0.044

TIN

Stability Assessment



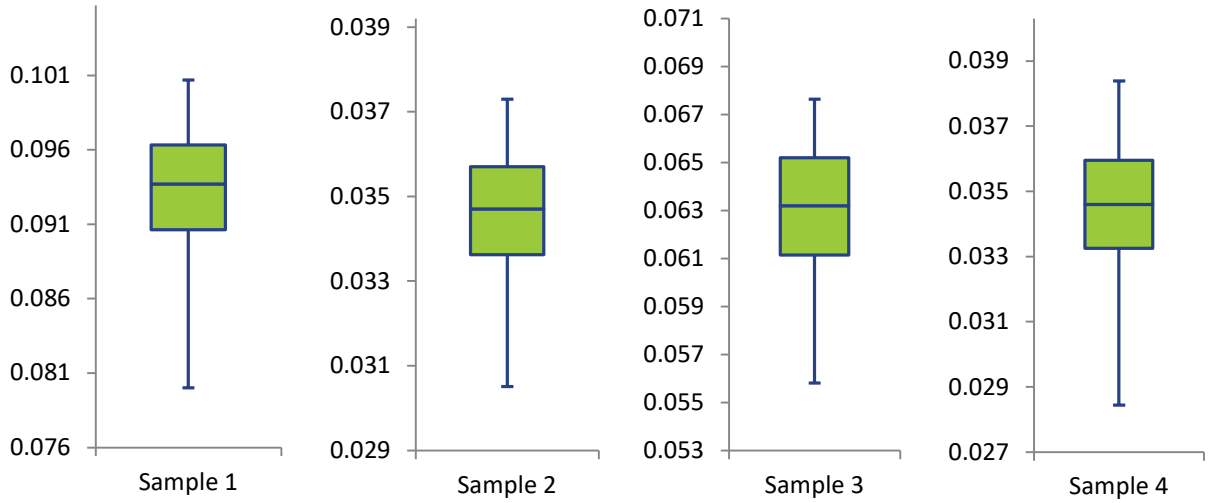
Homogeneity Assessment



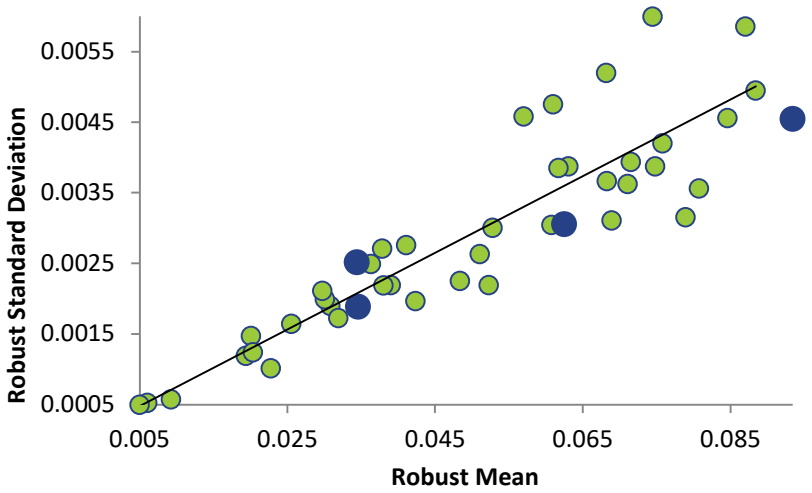
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



TITANIUM

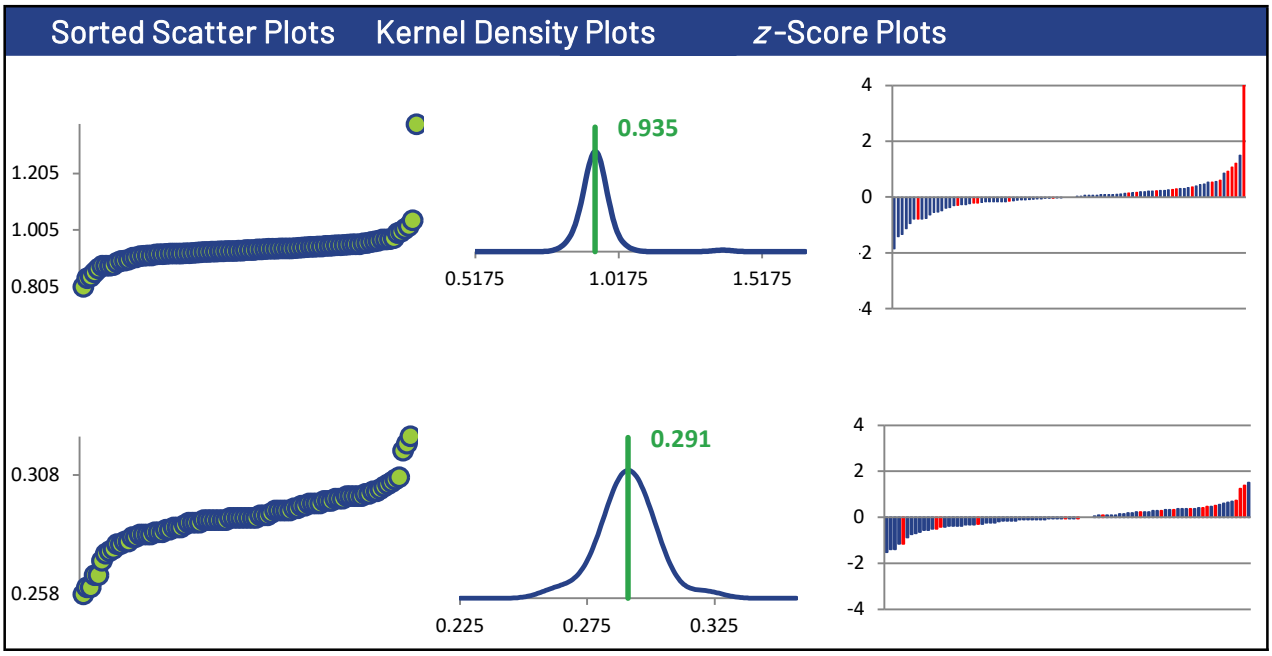
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	89	88	89	87
Median mg/L	0.935	0.290	0.571	0.0275
Robust Mean mg/L	0.935	0.291	0.570	0.0275
U mg/L	0.00356	0.00123	0.00236	0.000154
Robust Standard Deviation mg/L	0.0269	0.00922	0.0178	0.00115
Regression Standard Deviation mg/L	0.0701	0.0218	0.0427	0.00207
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0701	0.0218	0.0427	0.00207
Outliers	0	1	0	0
|z|>3.0	1	0	0	1
2<|z|<3	0	0	1	0

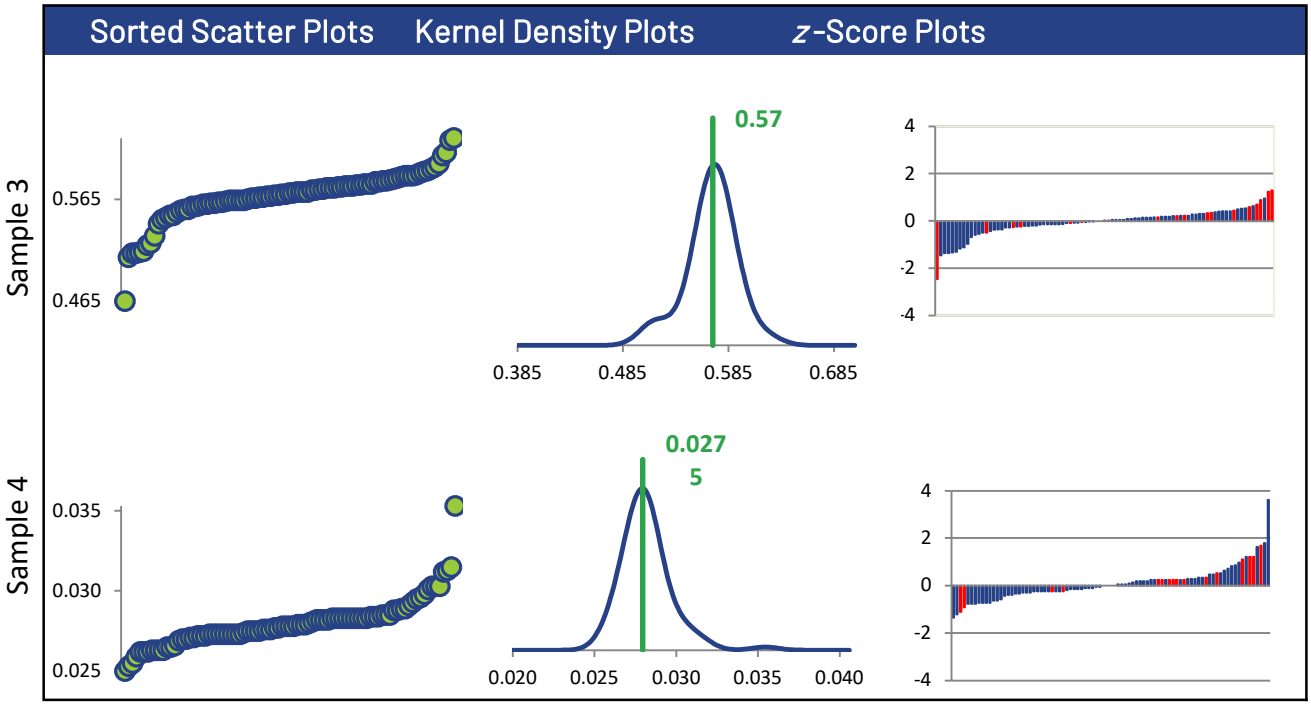
Methods Used

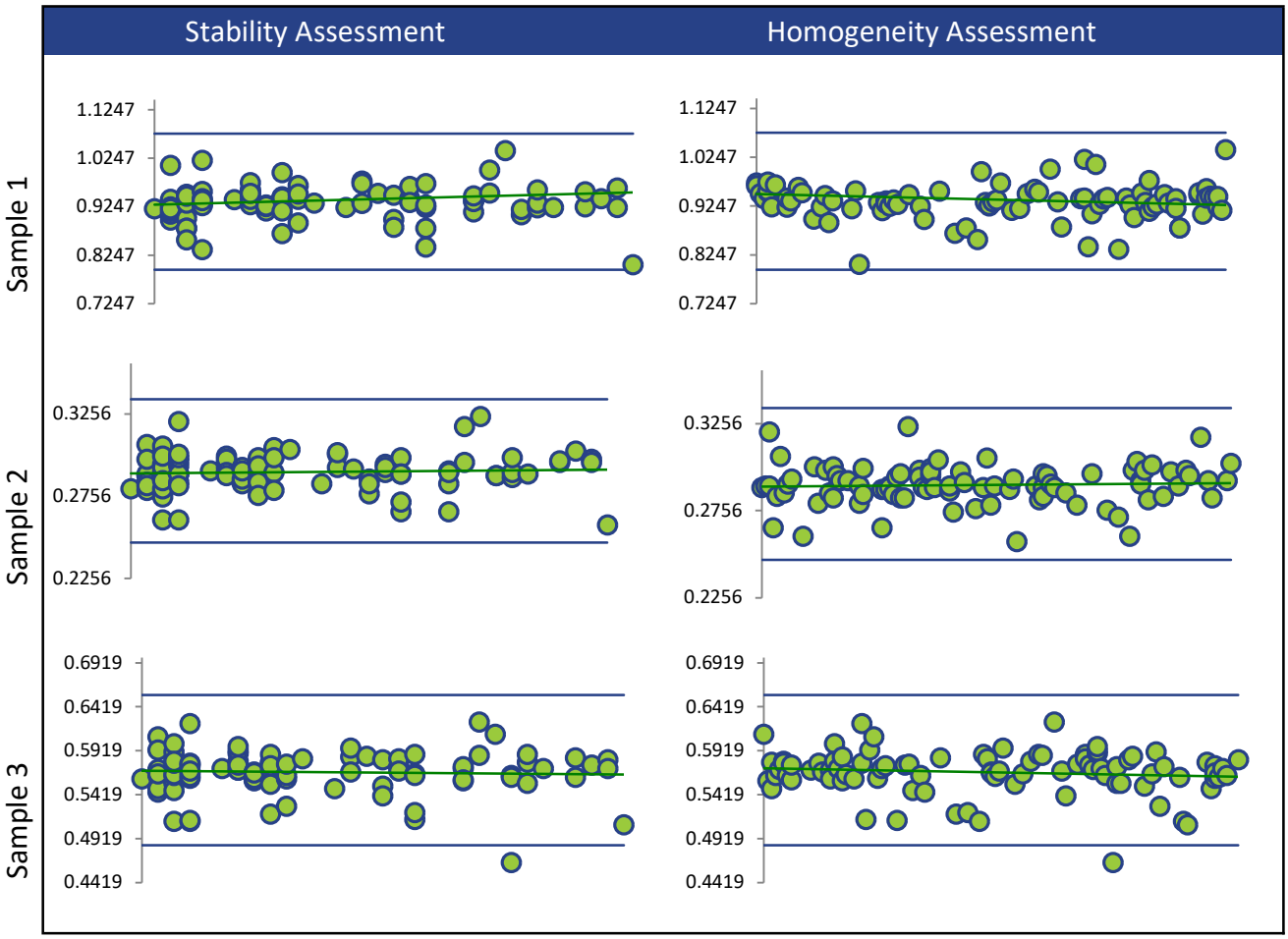
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	71	71	71	71
ICP/OES (Red)	18	17	18	16

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



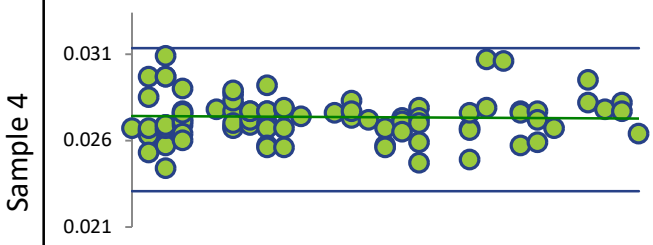
TITANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.565
0.465
0.57
0.385
0.485
0.585
0.685
4
2
0
-2
-4
Sample 4
0.035
0.030
0.025
0.027
5
0.020
0.025
0.030
0.035
0.040
4
2
0
-2
-4

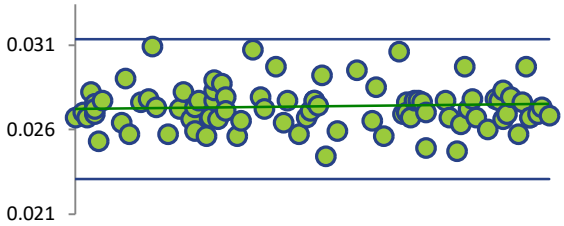

Stability Assessment
Homogeneity Assessment
Sample 1
1.1247
1.0247
0.9247
0.8247
0.7247
Sample 2
0.3256
0.2756
0.2256
Sample 3
0.6919
0.6419
0.5919
0.5419
0.4919
0.4419

TITANIUM

Stability Assessment



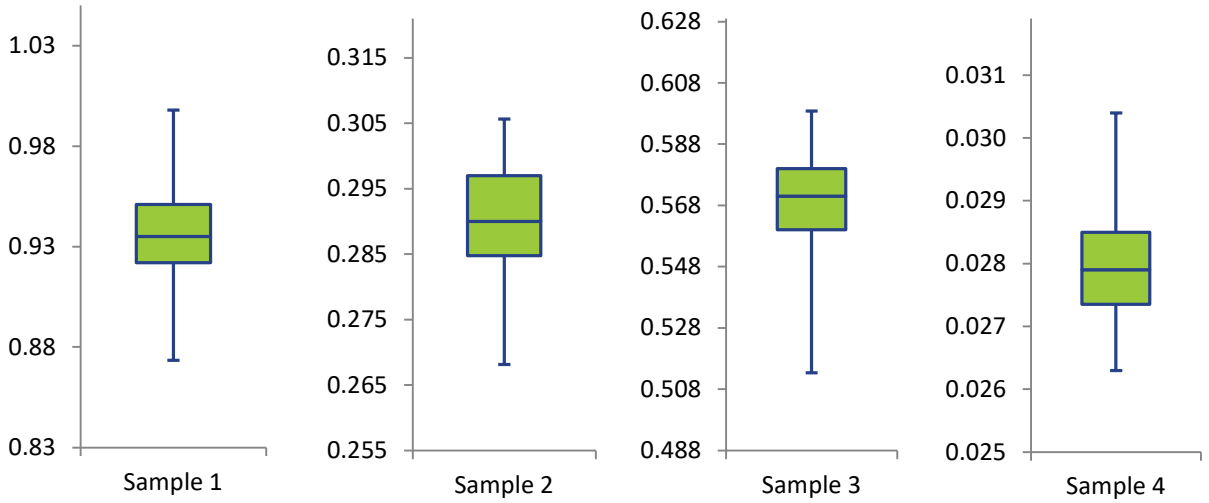
Homogeneity Assessment



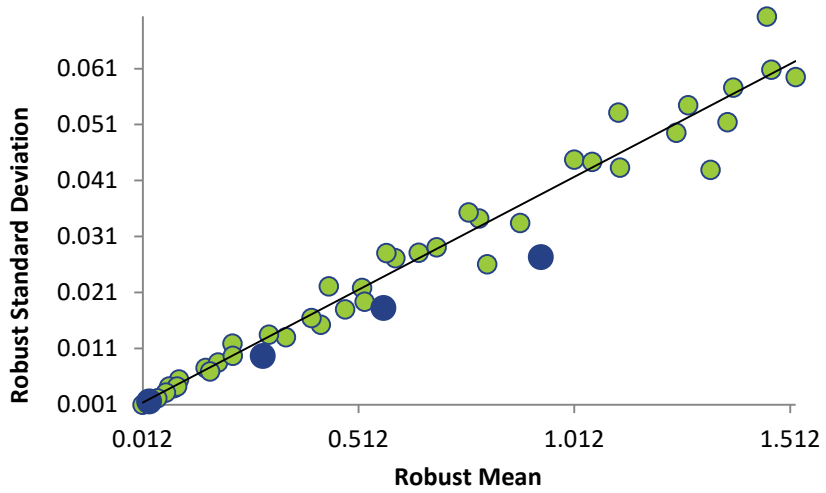
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



URANIUM

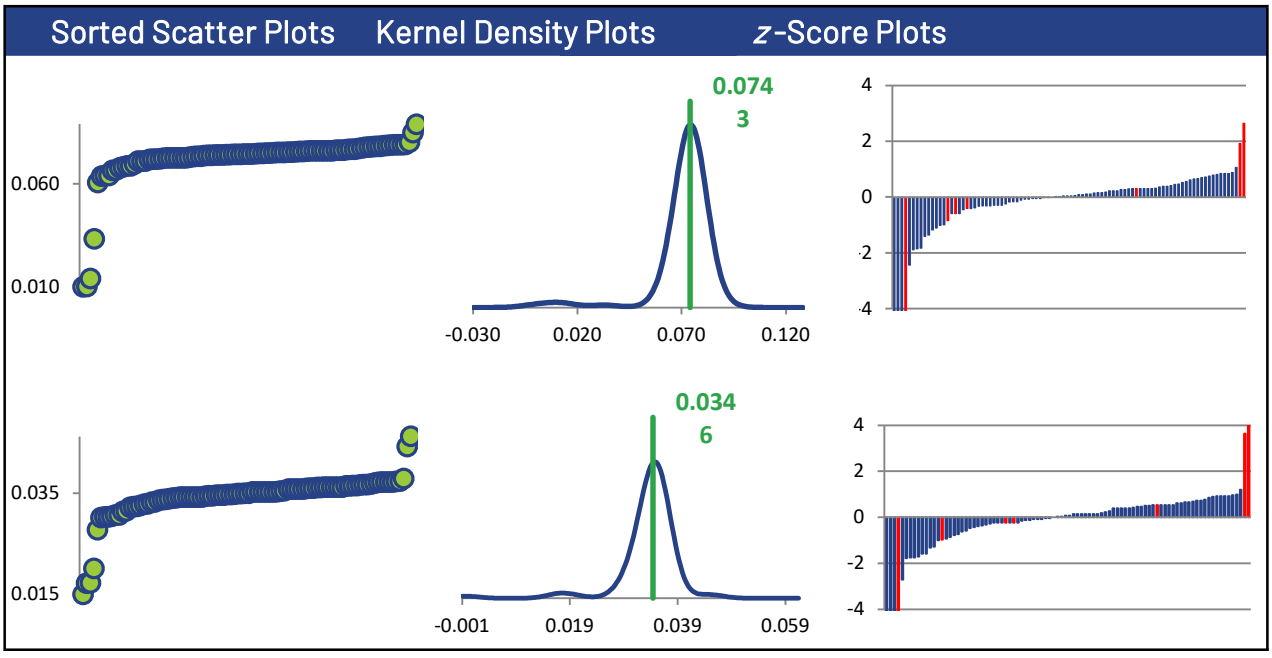
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	92	92	92	92
Median mg/L	0.0745	0.0348	0.0593	0.0317
Robust Mean mg/L	0.0743	0.0346	0.0592	0.0316
U mg/L	0.000463	0.000265	0.000400	0.000211
Robust Standard Deviation mg/L	0.00355	0.00203	0.00307	0.00162
Regression Standard Deviation mg/L	0.00557	0.00259	0.00444	0.00237
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.00557	0.00259	0.00444	0.00237
Outliers	0	0	0	0
|z|>3.0	4	6	4	3
2<|z|<3	2	1	4	2

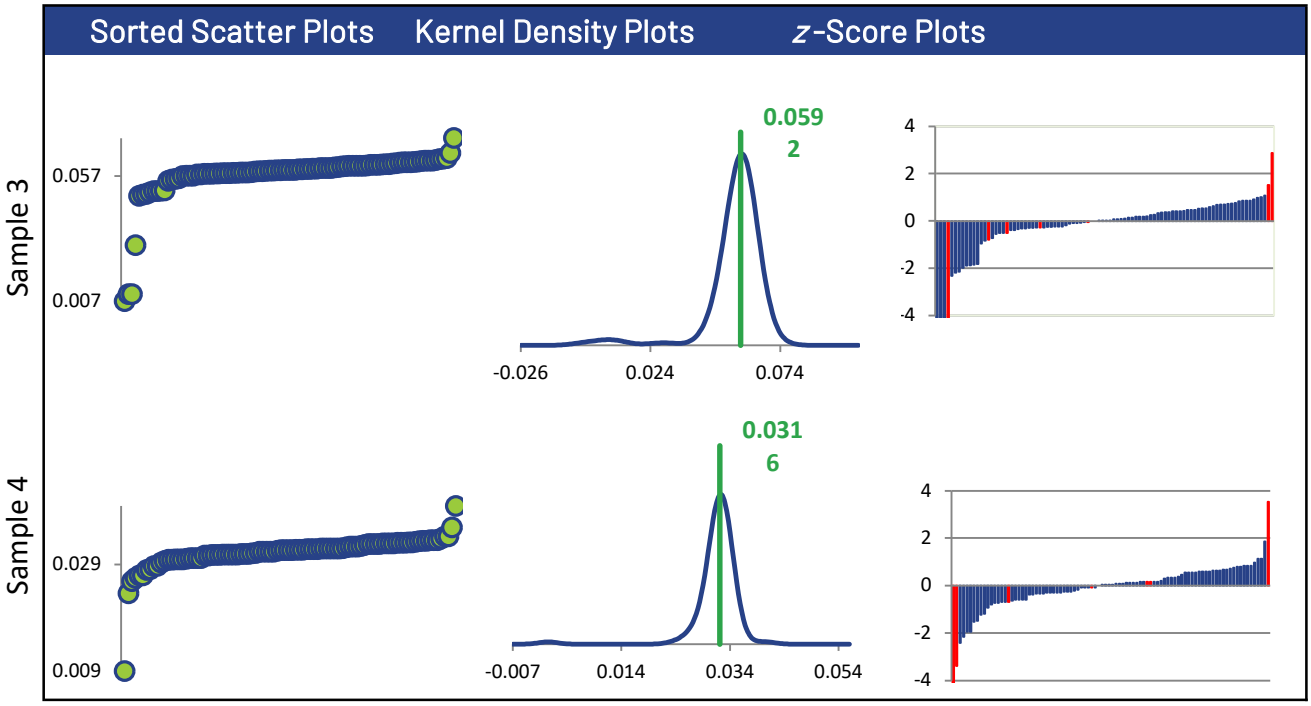
Methods Used

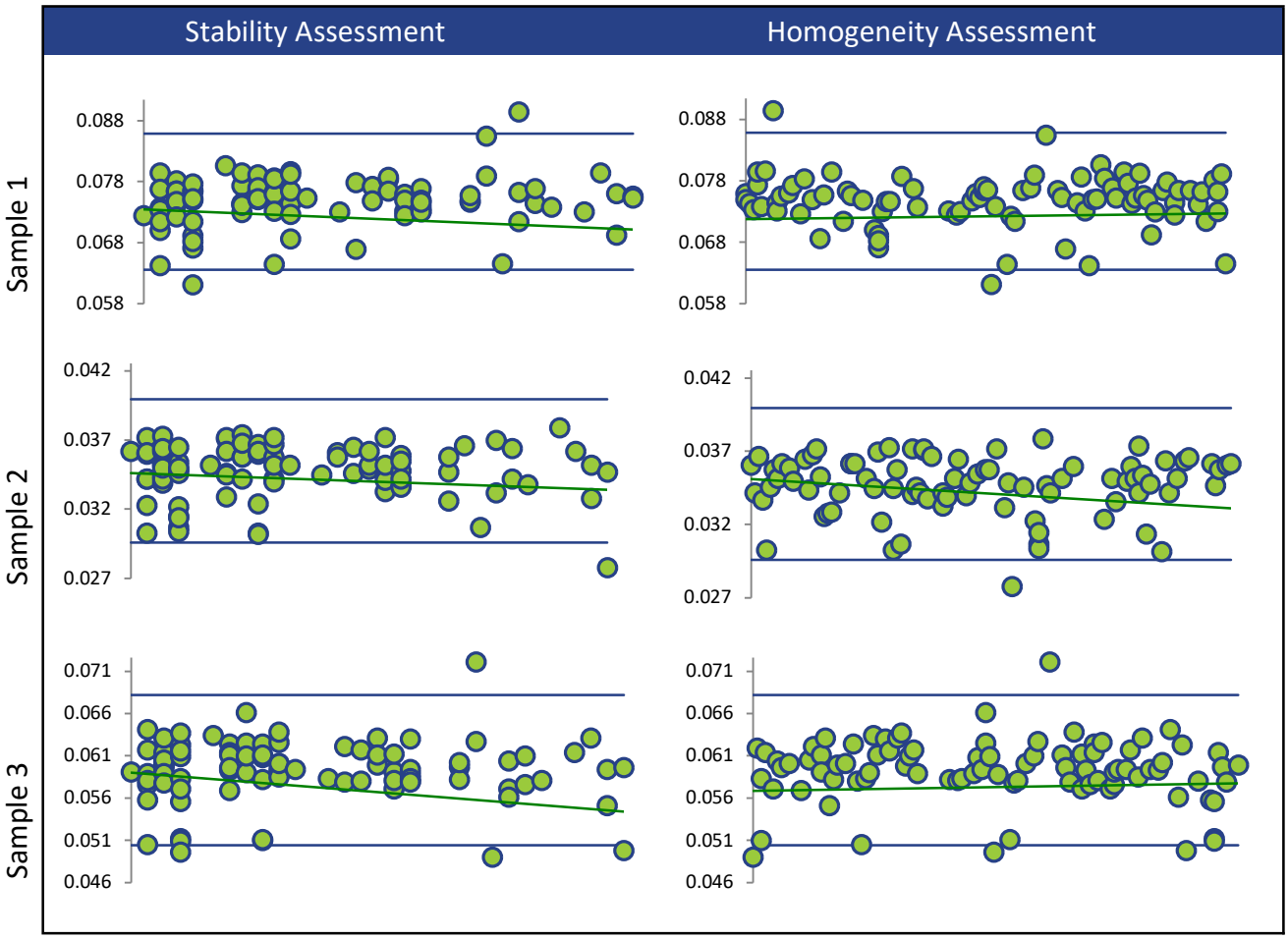
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	85	85	85	85
ICP/OES (Red)	7	7	7	7

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



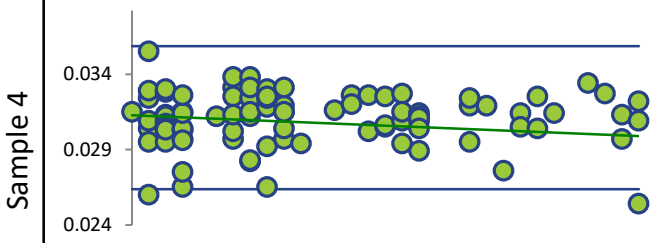
URANIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.057
0.007
0.059
2
-0.026
0.024
0.074
4
2
0
-2
-4
Sample 4
0.029
0.009
0.031
6
-0.007
0.014
0.034
0.054
4
2
0
-2
-4

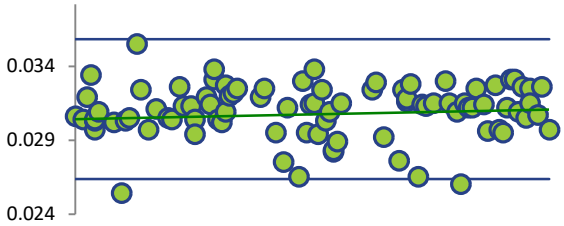

Stability Assessment
Homogeneity Assessment
Sample 1
0.088
0.078
0.068
0.058
Sample 2
0.042
0.037
0.032
0.027
Sample 3
0.071
0.066
0.061
0.056
0.051
0.046

URANIUM

Stability Assessment



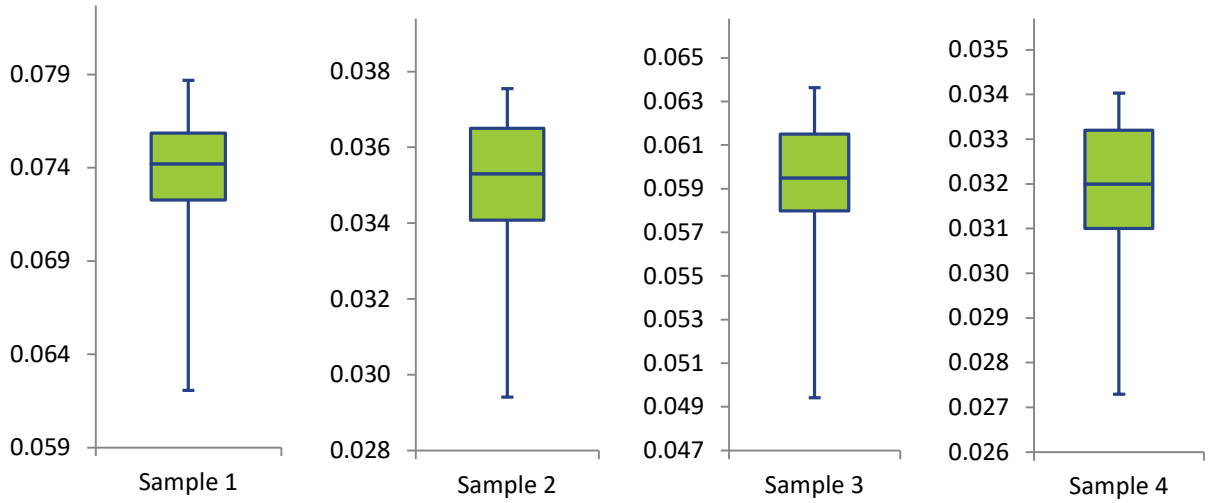
Homogeneity Assessment



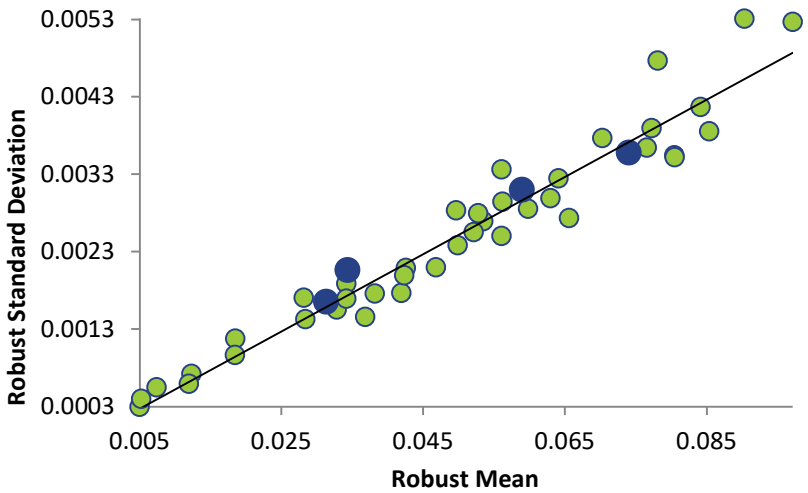
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



VANADIUM

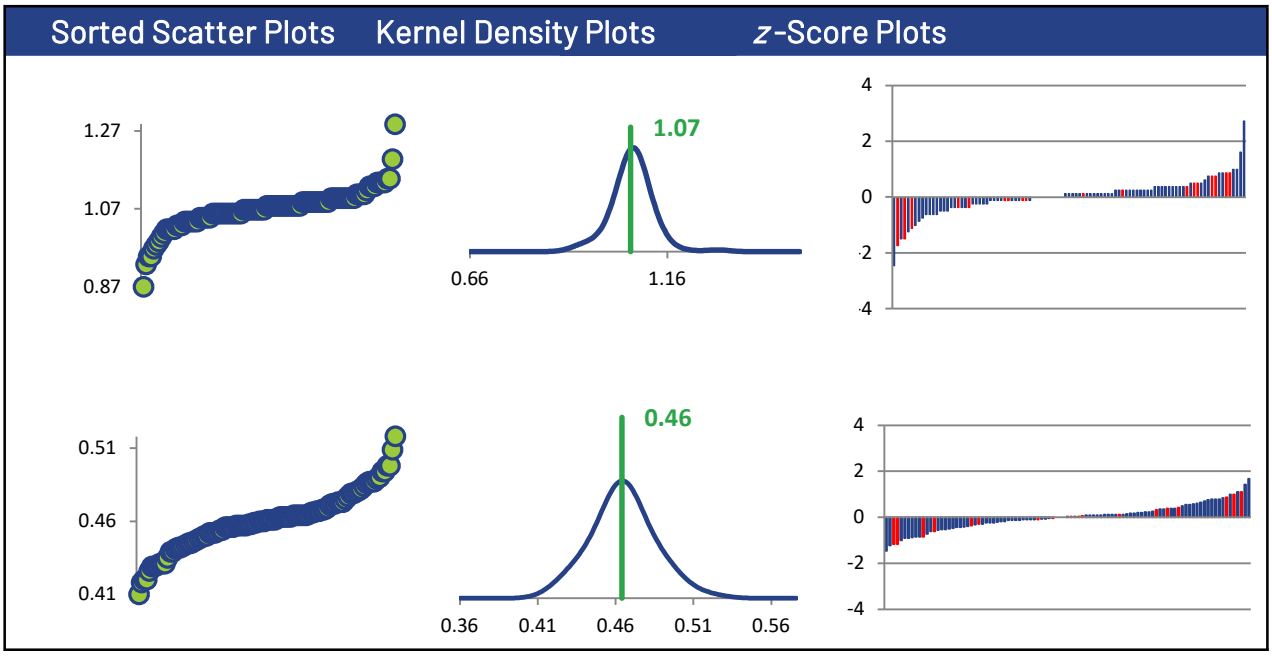
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	99	99	99	96
Median mg/L	1.08	0.461	0.763	0.00880
Robust Mean mg/L	1.07	0.460	0.764	0.00876
U mg/L	0.00485	0.00240	0.00377	0.0000555
Robust Standard Deviation mg/L	0.0386	0.0191	0.0300	0.000435
Regression Standard Deviation mg/L	0.0805	0.0345	0.0573	0.000657
Stability Flag				
Homogeneity Flag				
Standard Deviation Used (SDPA) mg/L	0.0805	0.0345	0.0573	0.000657
Outliers	0	0	0	1
|z|>3.0	0	0	0	2
2<|z|<3	2	0	0	6

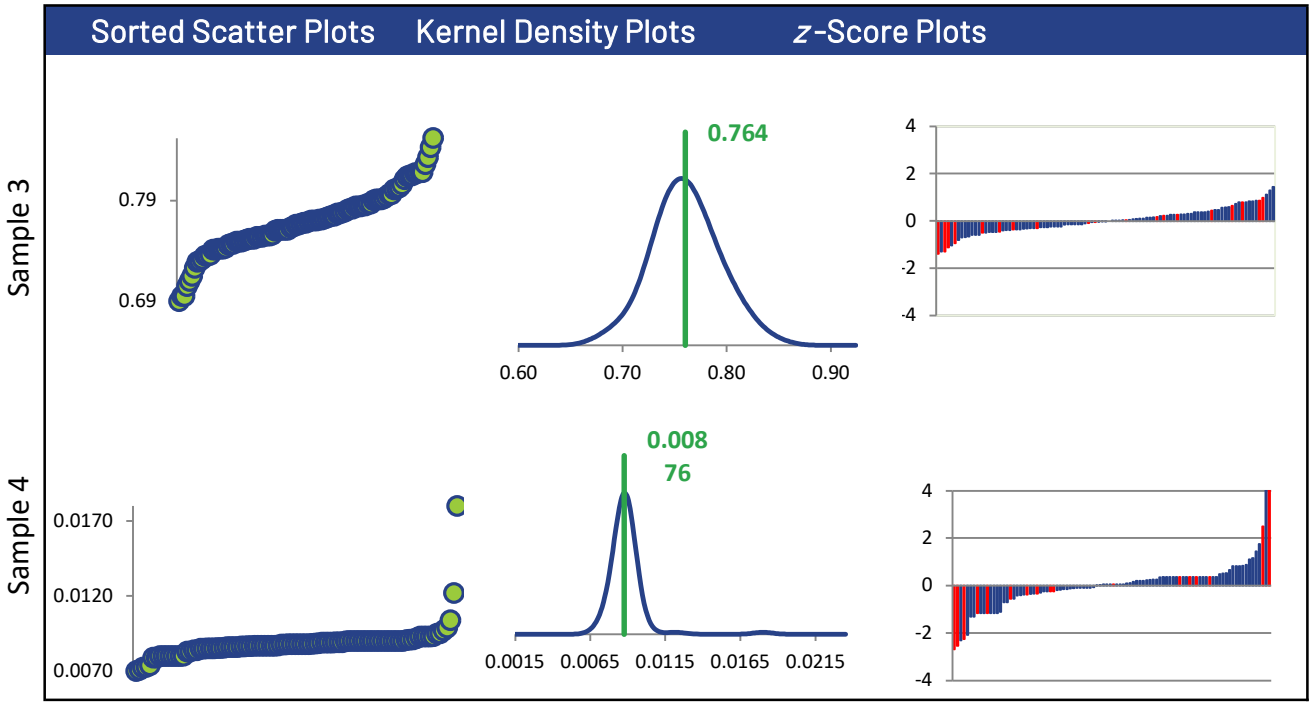
Methods Used

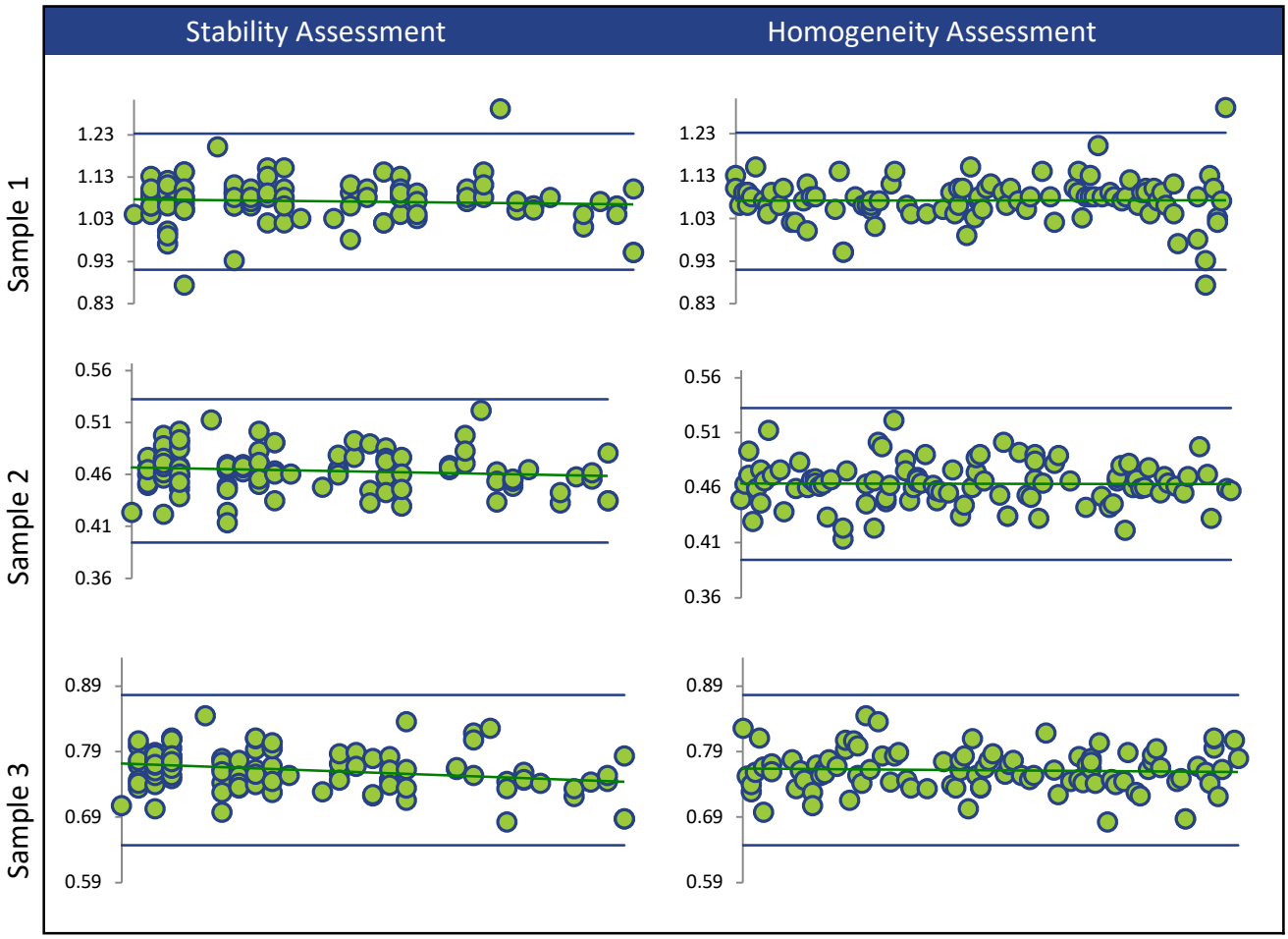
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	80	80	80	79
ICP/OES (Red)	19	19	19	17

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



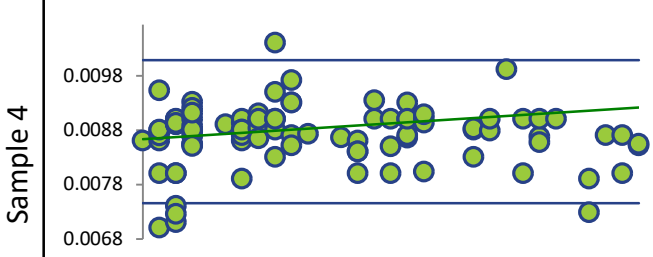
VANADIUM


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.79
0.69
0.764
0.60
0.70
0.80
0.90
4
2
0
-2
-4
Sample 4
0.0170
0.0120
0.0070
0.008
76
0.0015
0.0065
0.0115
0.0165
0.0215

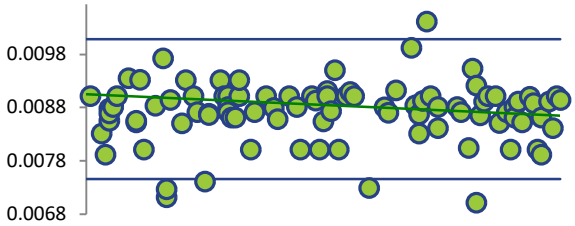

Stability Assessment
Homogeneity Assessment
Sample 1
1.23
1.13
1.03
0.93
0.83
Sample 2
0.56
0.51
0.46
0.41
0.36
Sample 3
0.89
0.79
0.69
0.59

VANADIUM

Stability Assessment



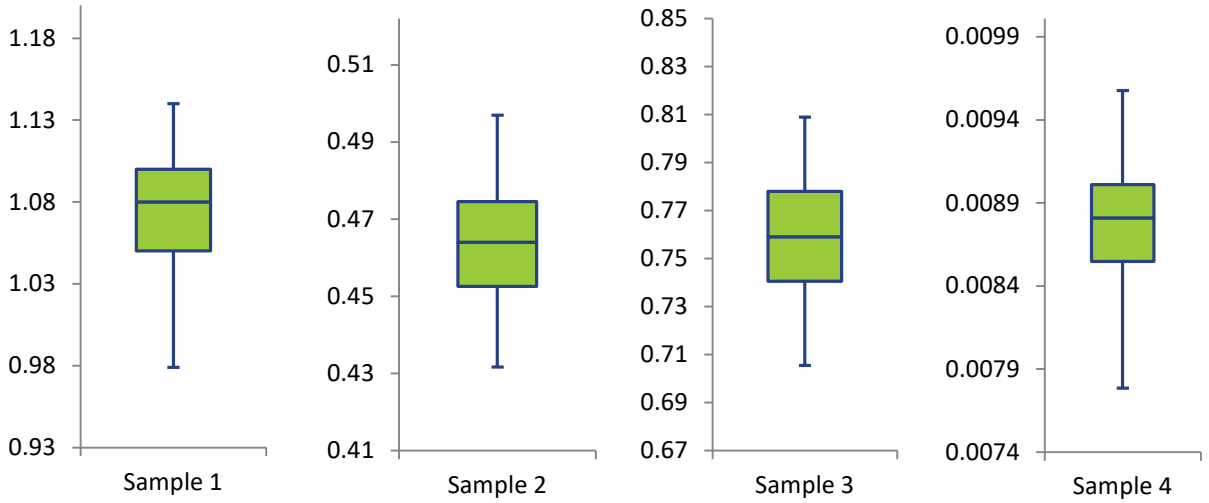
Homogeneity Assessment



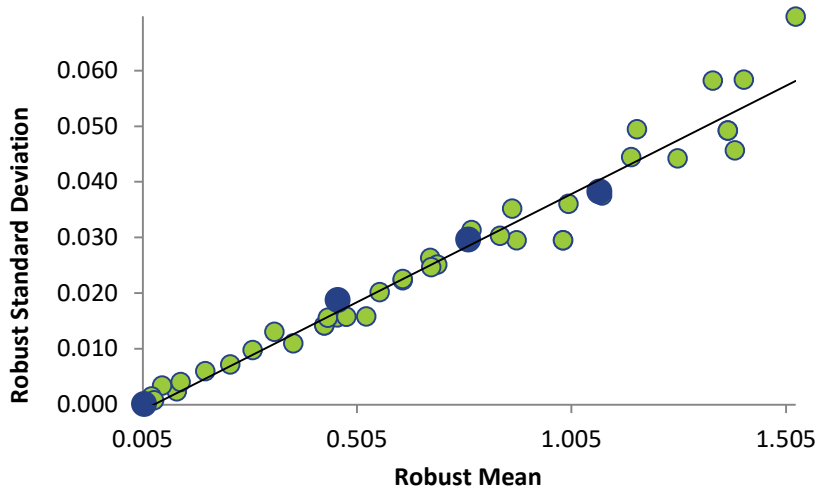
Stability assessments are regression analysis of reported result against date of analysis.

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

Box and Whisker Plots



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



ZINC

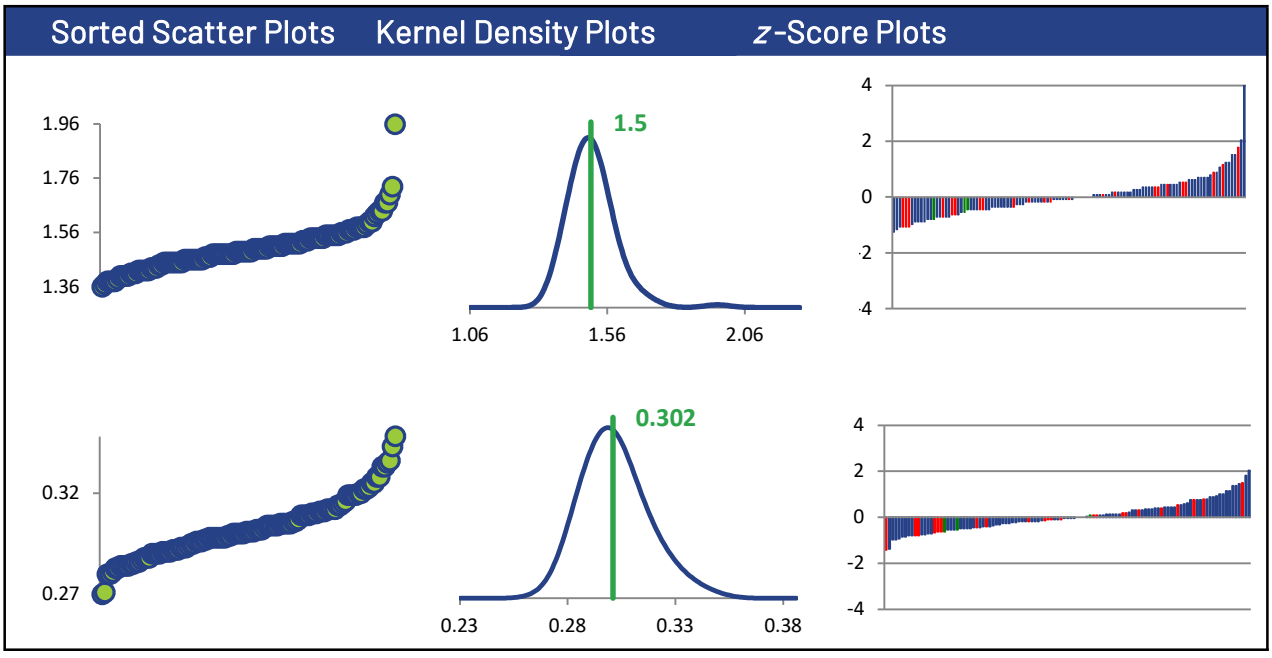
Summary Statistics

Statistic	C02A-1	C02A-2	C02A-3	C02A-4
N	115	113	115	110
Median mg/L	1.49	0.301	0.599	0.0155
Robust Mean mg/L	1.50	0.302	0.599	0.0156
U mg/L	0.00825	0.00168	0.00340	0.000155
Robust Standard Deviation mg/L	0.0708	0.0143	0.0292	0.00130
Regression Standard Deviation mg/L	0.112	0.0227	0.0449	0.00117
Stability Flag				
Homogeneity Flag				Homogeneity
Standard Deviation Used (SDPA) mg/L	0.112	0.0227	0.0449	0.00193
Outliers	0	2	0	1
|z|>3.0	1	0	1	2
2<|z|<3	1	1	2	3

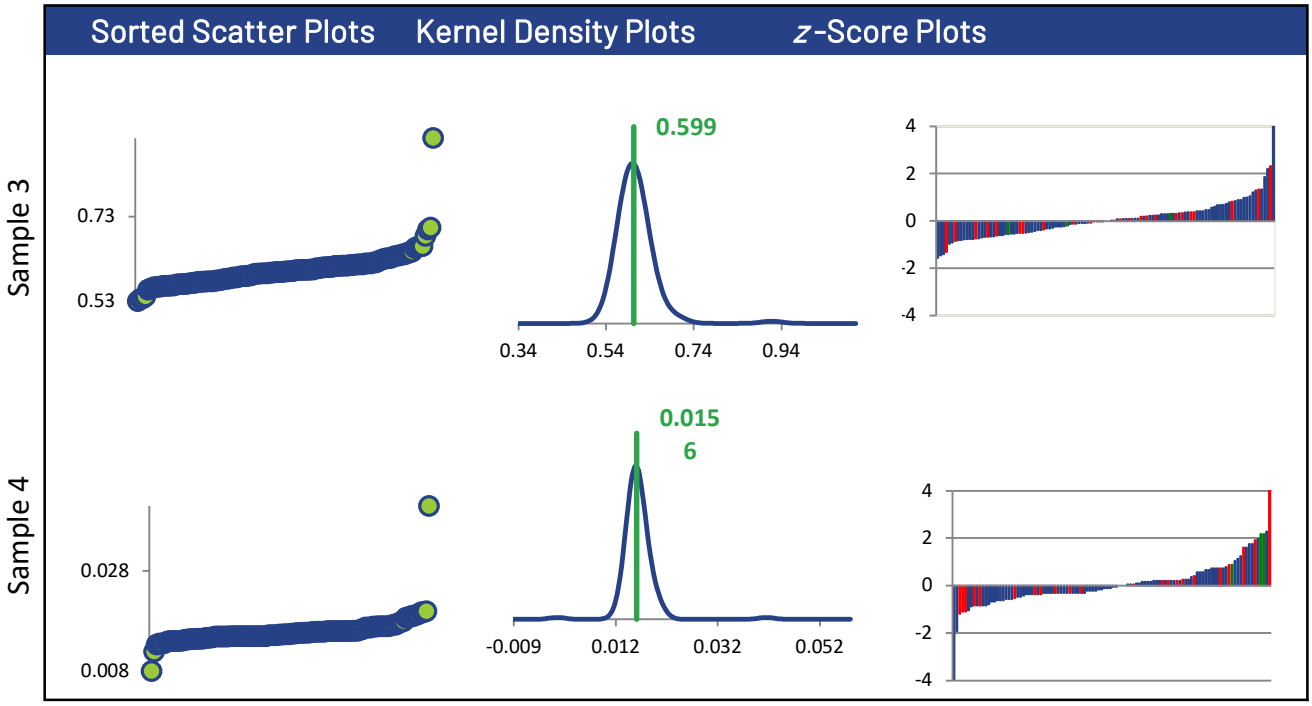
Methods Used

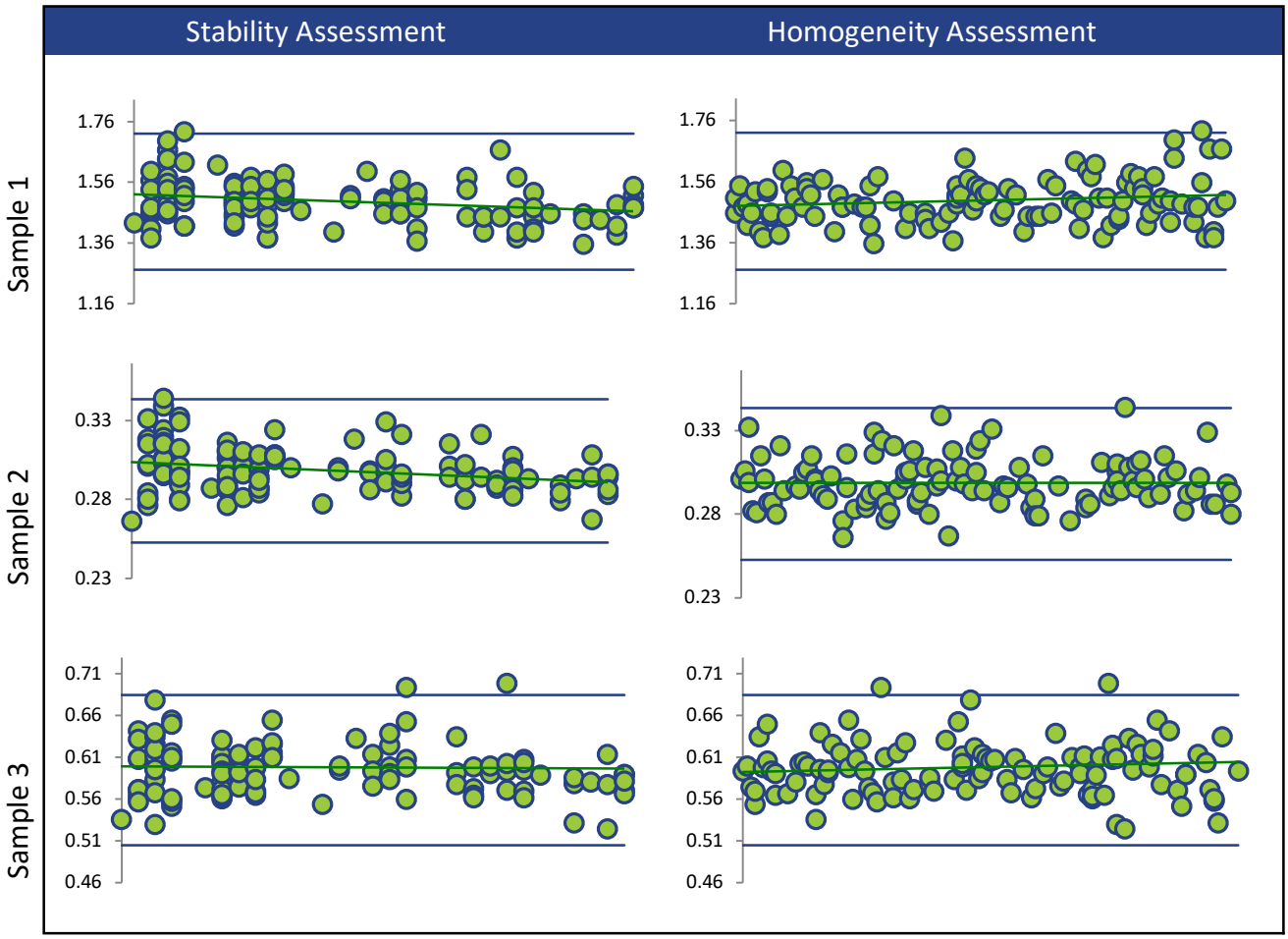
Method	C02A-1	C02A-2	C02A-3	C02A-4
ICP/MS (Blue)	87	86	87	85
ICP/OES (Red)	25	24	25	22
AA FLAME (Green)	3	3	3	3

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



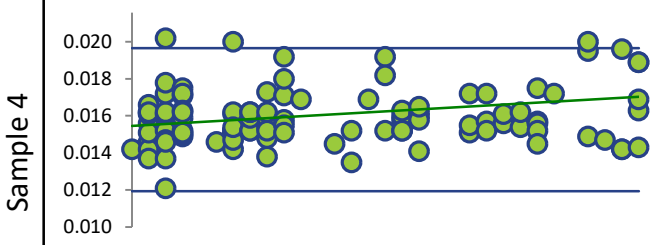
ZINC


Sorted Scatter Plots
Kernel Density Plots
z-Score Plots
Sample 3
0.73
0.53
0.599
0.34
0.54
0.74
0.94
4
2
0
-2
-4
Sample 4
0.028
0.008
0.015
6
-0.009
0.012
0.032
0.052
4
2
0
-2
-4

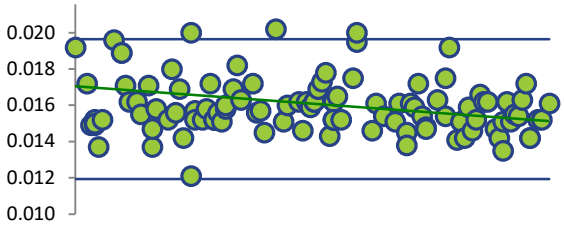

Stability Assessment
Homogeneity Assessment
Sample 1
1.76
1.56
1.36
1.16
Sample 2
0.33
0.28
0.23
Sample 3
0.71
0.66
0.61
0.56
0.51
0.46

ZINC

Stability Assessment



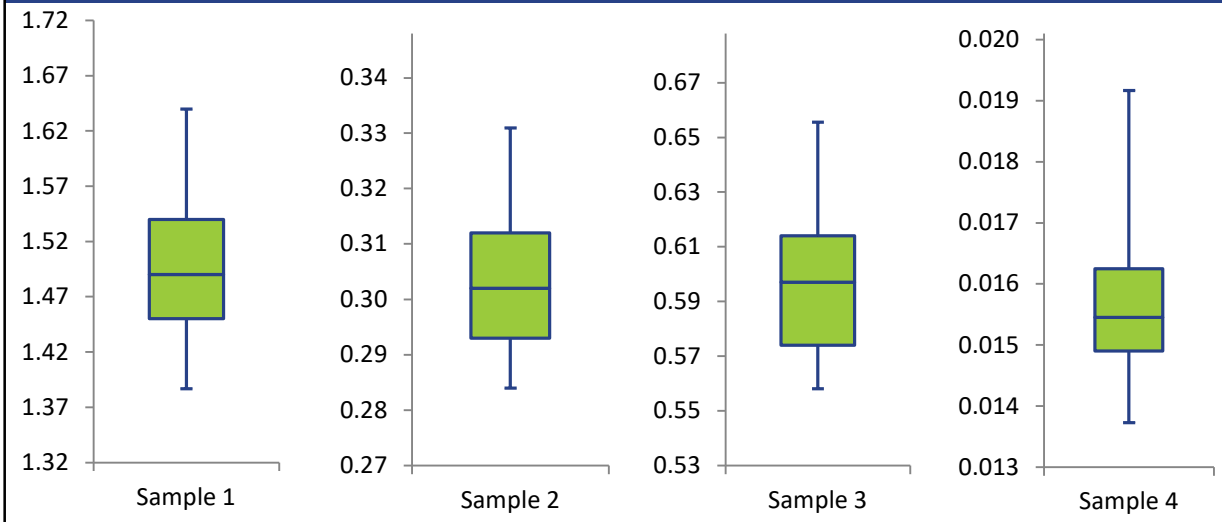
Homogeneity Assessment



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)