IMPROVE Steering Committee Meeting Santa Fe NM 2016

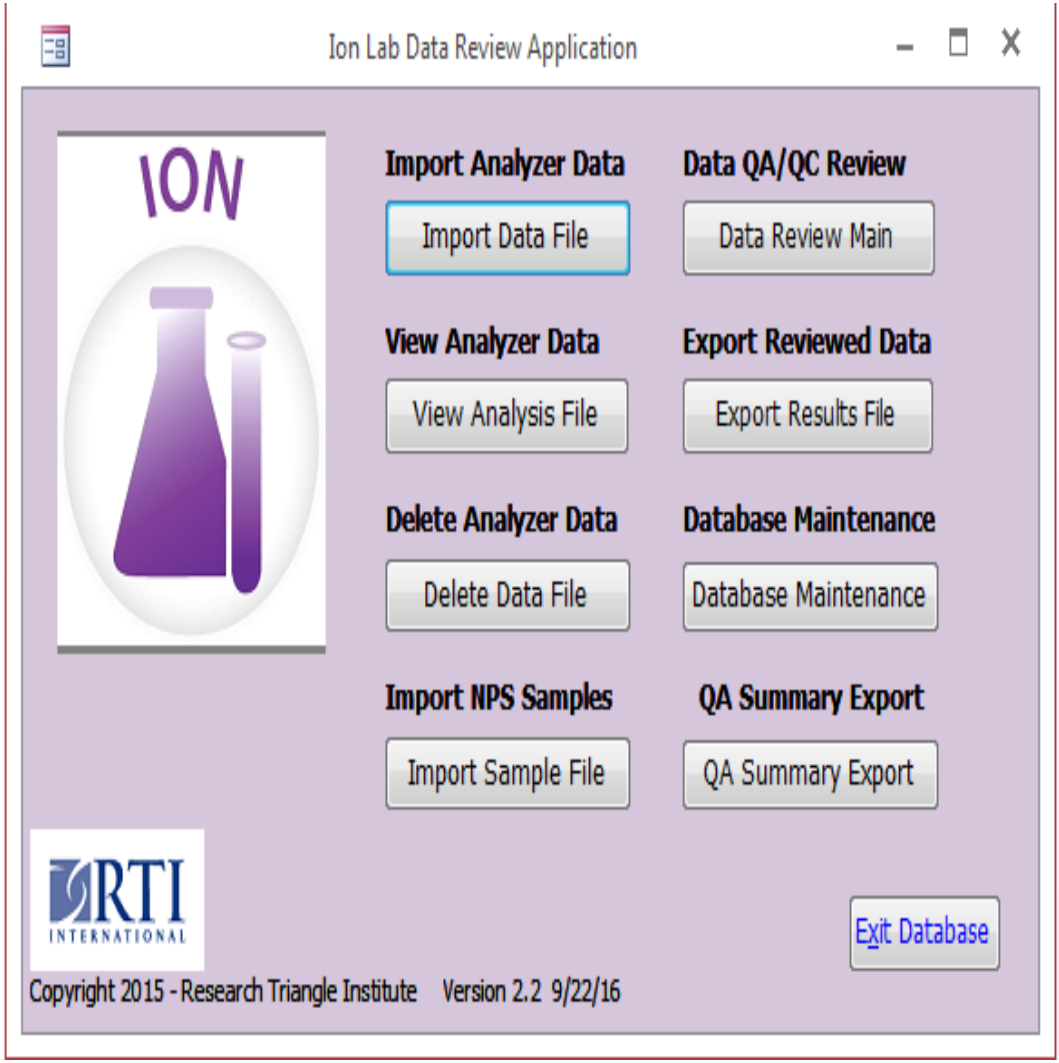
Ions Report

Samples Analyzed

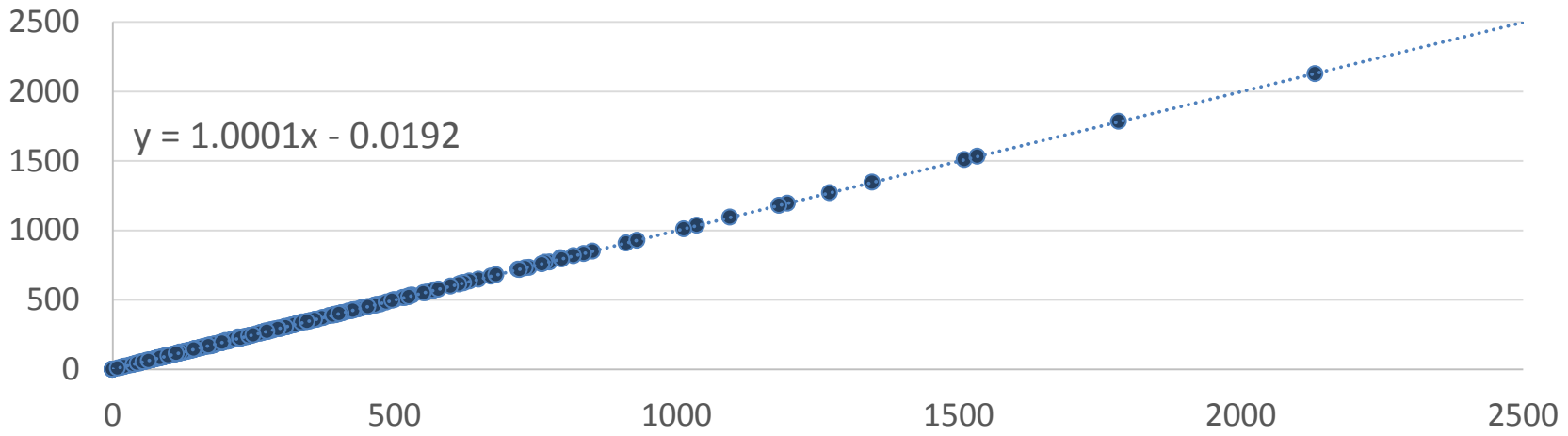
- Former contract 16,800 samples analyzed
- New contract 6,924 samples have been analyzed
- We are reporting data within 60 days of receiving the filters from UCD

Changes made to data review

- Data imported from instruments to database
- 3 levels of sign off before exporting, analyst, project manager, QA officer
- Summary QC report each analysis set- dup precision, spike recovery, QC sample recovery
- Export verified against 800 samples processed manually for accuracy

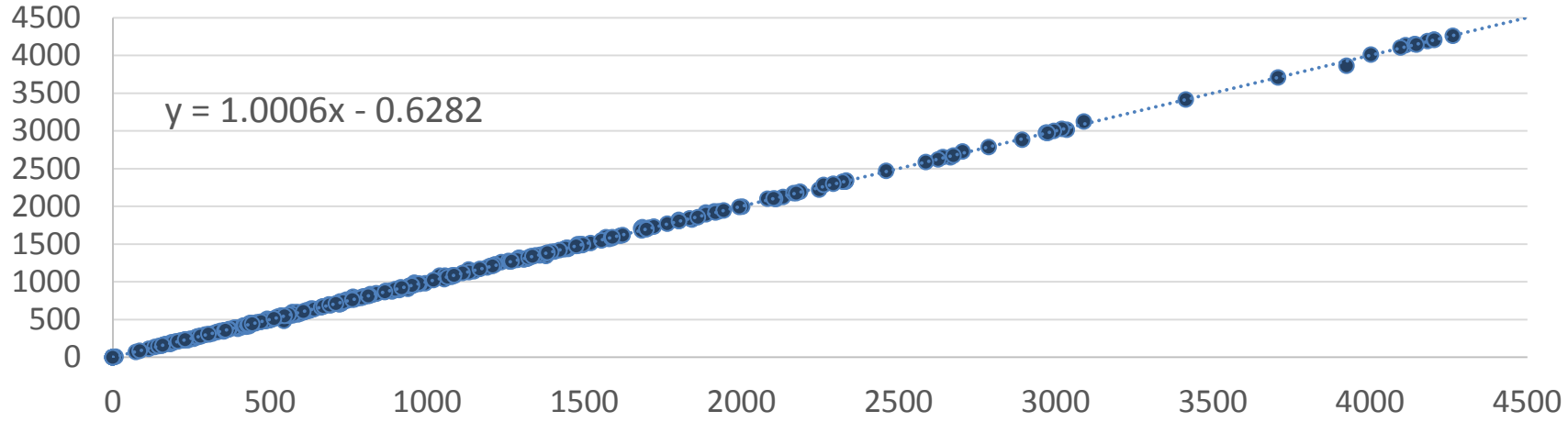


Nitrate Duplicate Precision

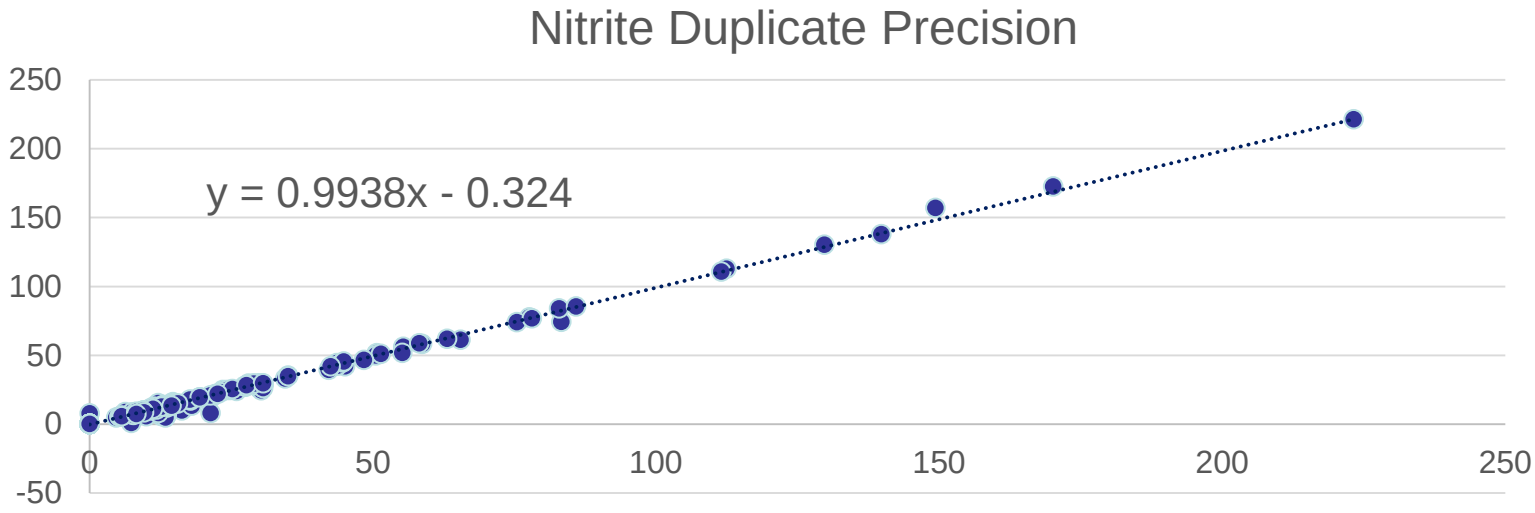


Average 1.63% Median 0.834% Min 0 Max 20.8% n = 313

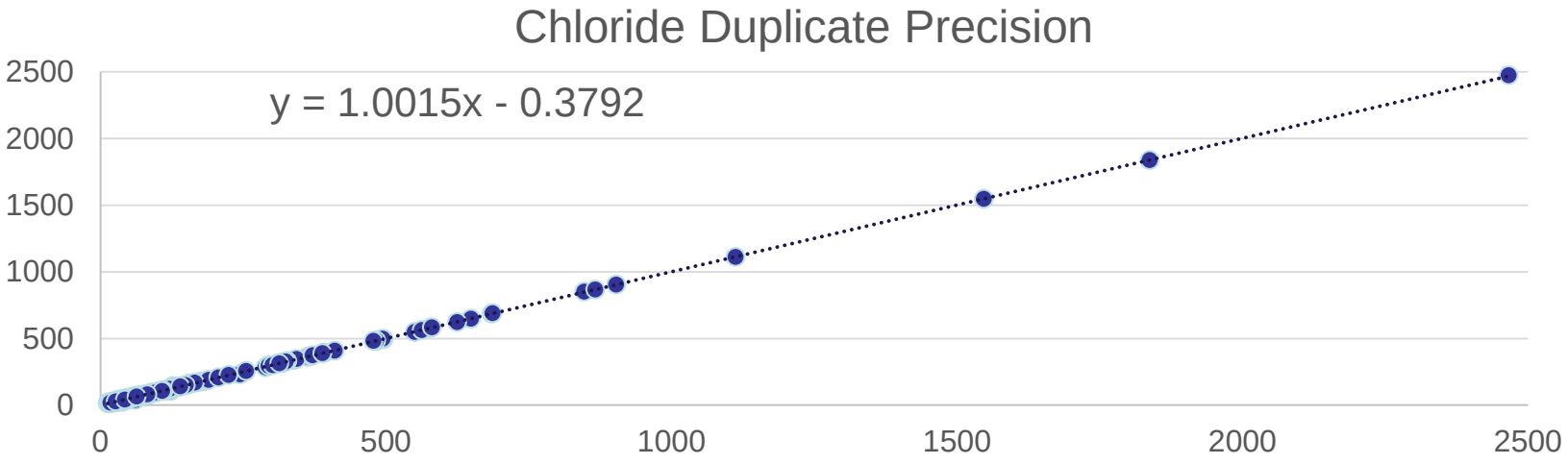
Sulfate Duplicate Precision



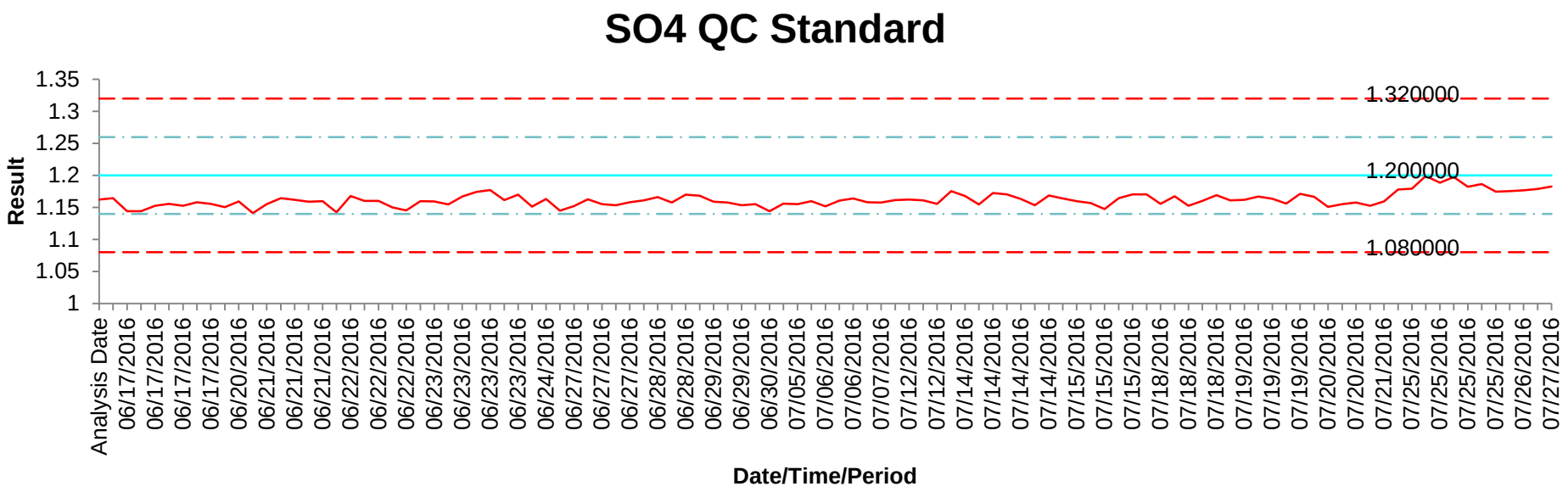
Average 1.06% Median 0.526% Min 0 Max 2.14% n = 313



Average 12.9% Median 3.33% Min 0.002% Max 200% n= 313



Average 4.26% Median 2.06 % Min 0 Max 49.8% n = 313



Standard	Chloride Avg Recovery	Nitrite Avg Recovery	Nitrate Avg Recovery	Sulfate Avg Recovery	Number Of Samples
LOW	98.1%	97.9%	98.5%	98.0%	290
MED	98.6%	99.0%	99.8%	99.3%	419
MED-HI	101%	99.2%	101%	100%	109
High	99.2%	99.1%	101%	101%	109

Routine Filter Re-Extraction

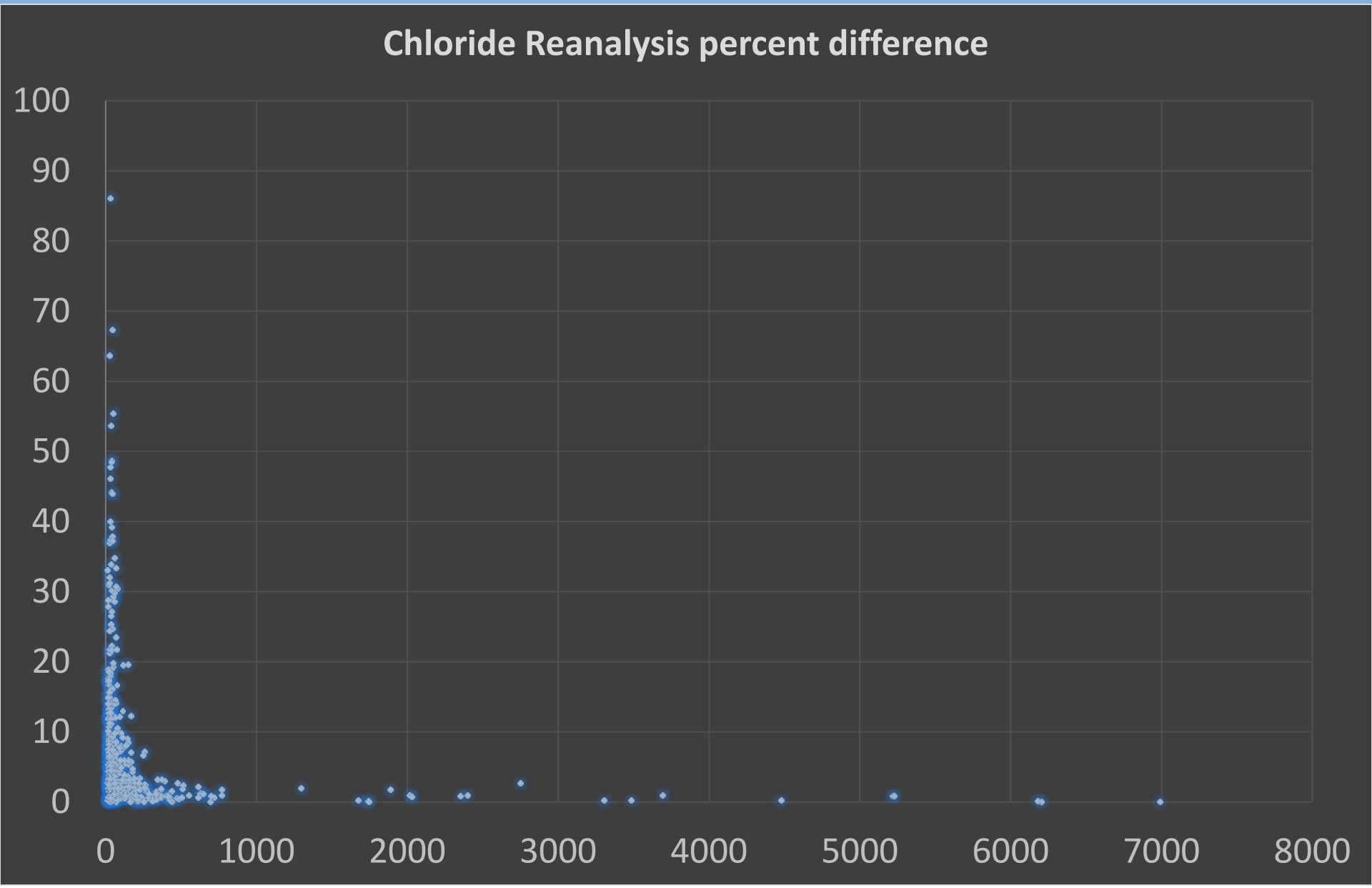
- **Extraction efficiencies were evaluated on nearly 400 samples**
- **Efficiency is determined by dividing the result measured on the re-extracted filter by the sum of the original and re-extracted results.**

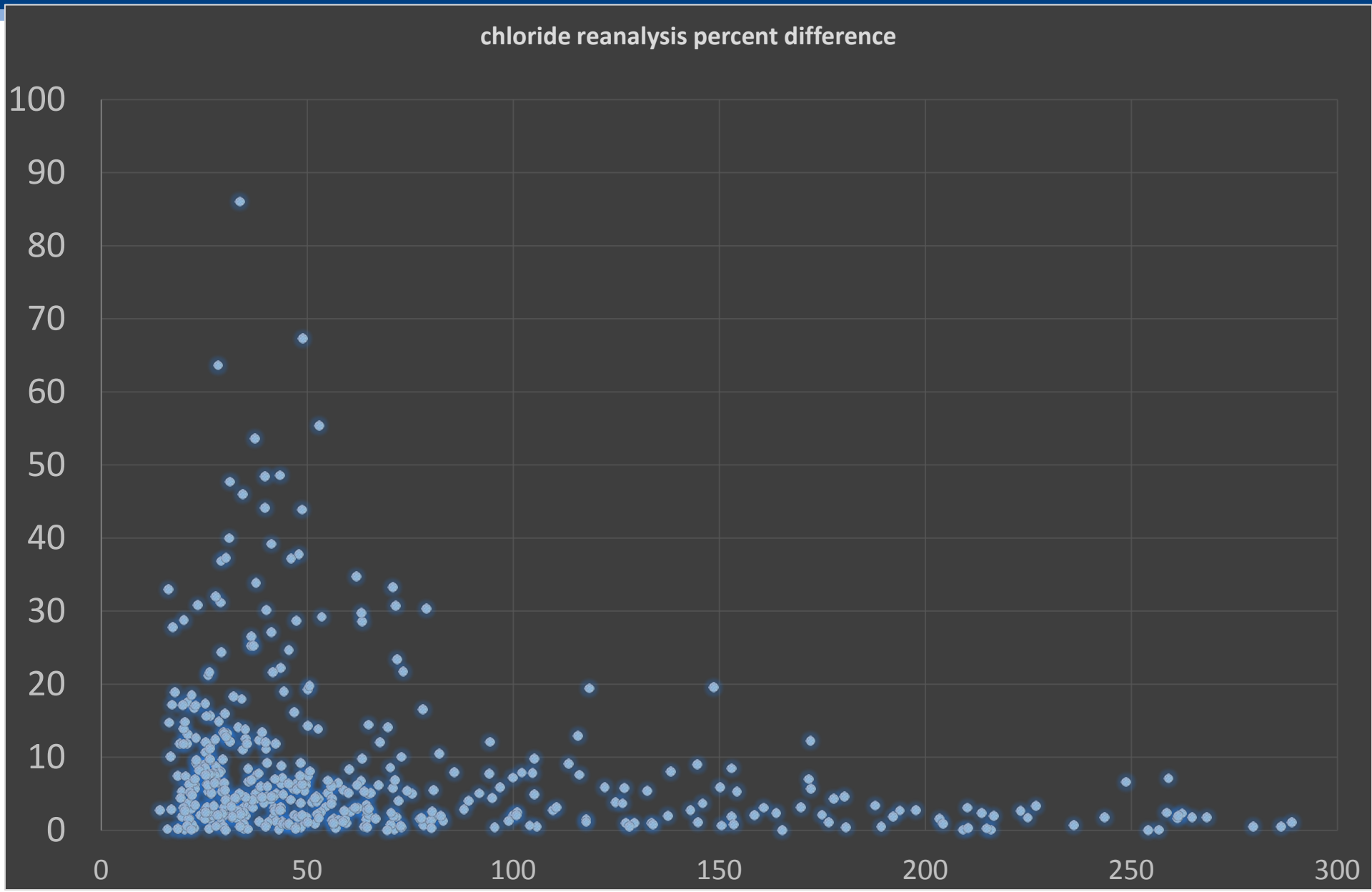
Chloride	Nitrite	Nitrate	Sulfate
99.3%	91.2%	95.6%	99.8%

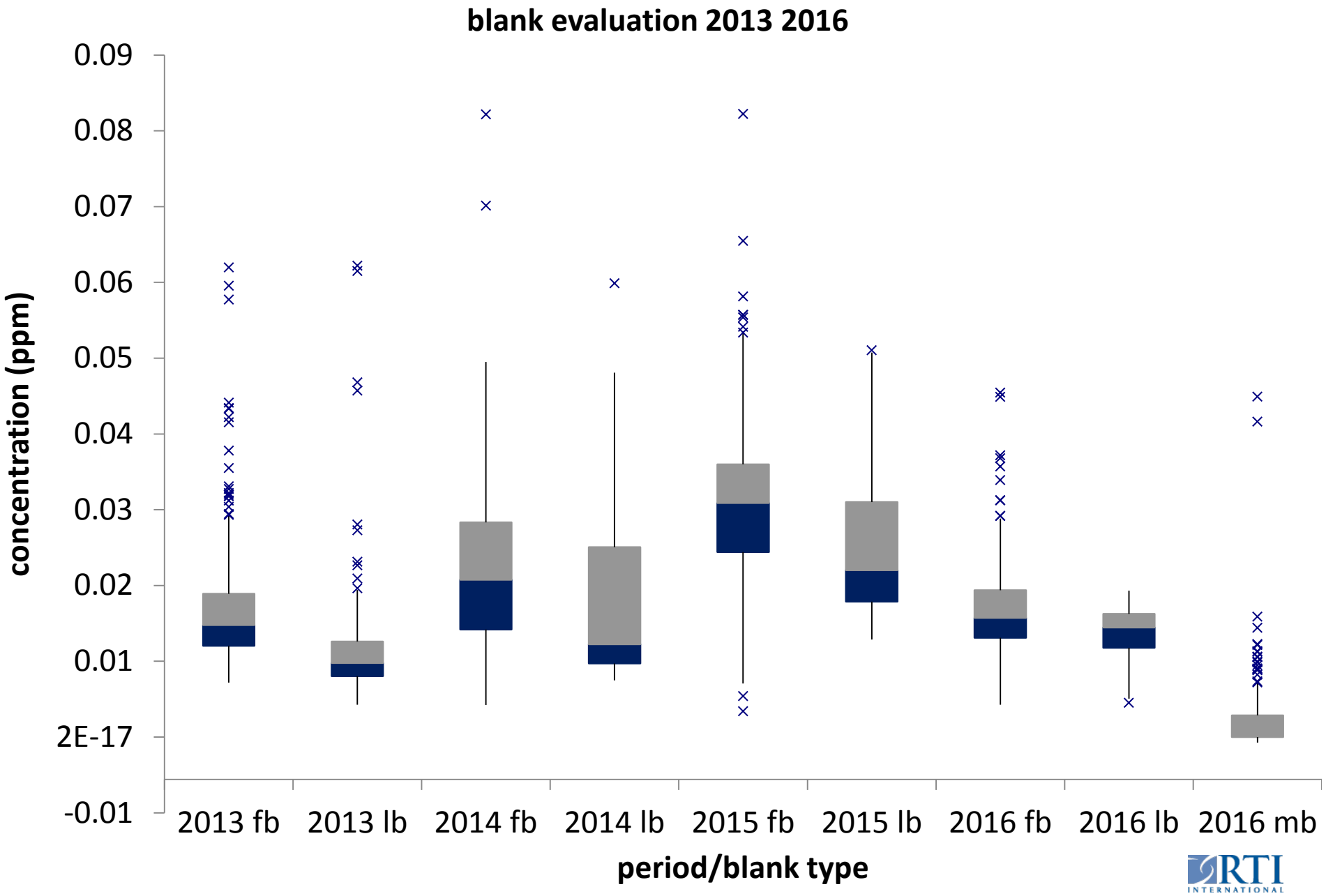
Reanalysis

	Chloride	Nitrite	Nitrate	sulfate
Average percent difference	7.53%	44.6%	3.02%	2.08%
Median percent difference	3.79%	1.33%	1.96%	1.03%

- Initially set recovery limits at 10 percent.
- Good for nitrate and sulfate…
- Not for chloride or nitrite


Chloride Reanalysis percent difference
100
90
80
70
60
50
40
30
20
10
0
0
1000
2000
3000
4000
5000
6000
7000
8000

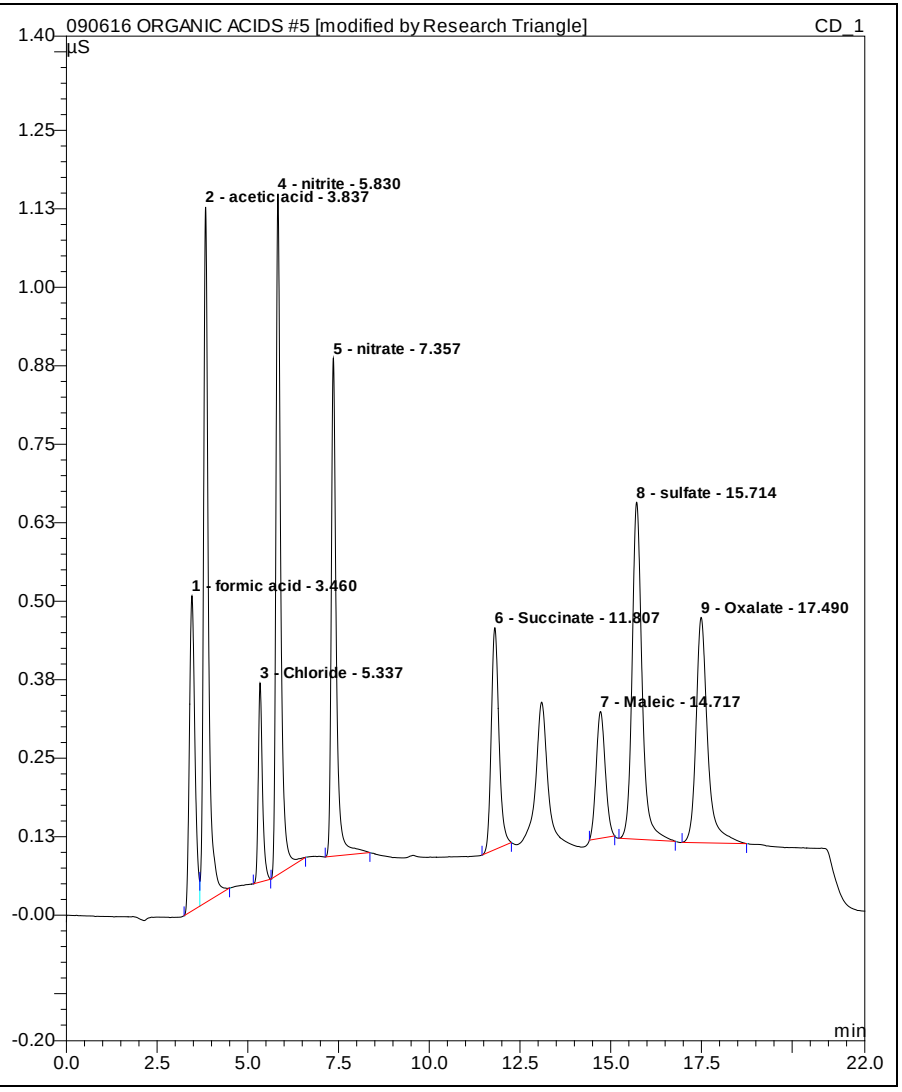

chloride reanalysis percent difference
100
90
80
70
60
50
40
30
20
10
0
0
50
100
150
200
250
300


blank evaluation 2013 2016
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
2E-17
-0.01
concentration (ppm)
2013 fb
2013 lb
2014 fb
2014 lb
2015 fb
2015 lb
2016 fb
2016 lb
2016 mb
period/blank type

MDL's

	Chloride	Nitrite	Nitrate	Sulfate
2015	0.005 ppm	0.005 ppm	0.010 ppm	0.008 ppm
2016	0.003 ppm	0.004 ppm	0.009 ppm	0.012 ppm

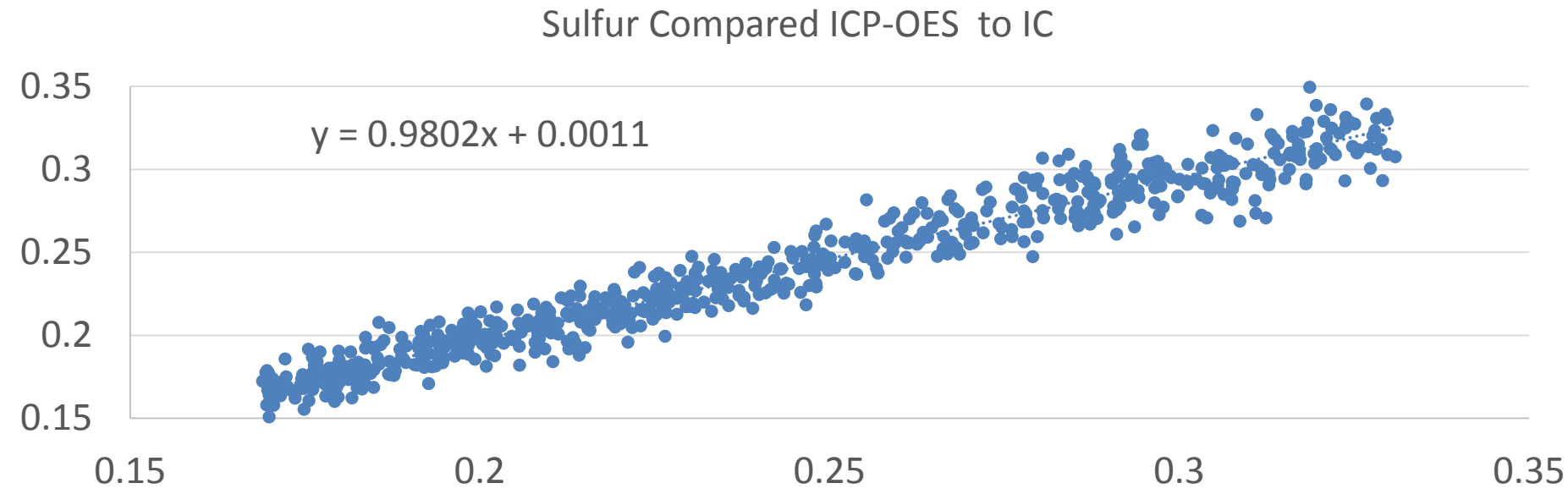
Method Development Organic acids

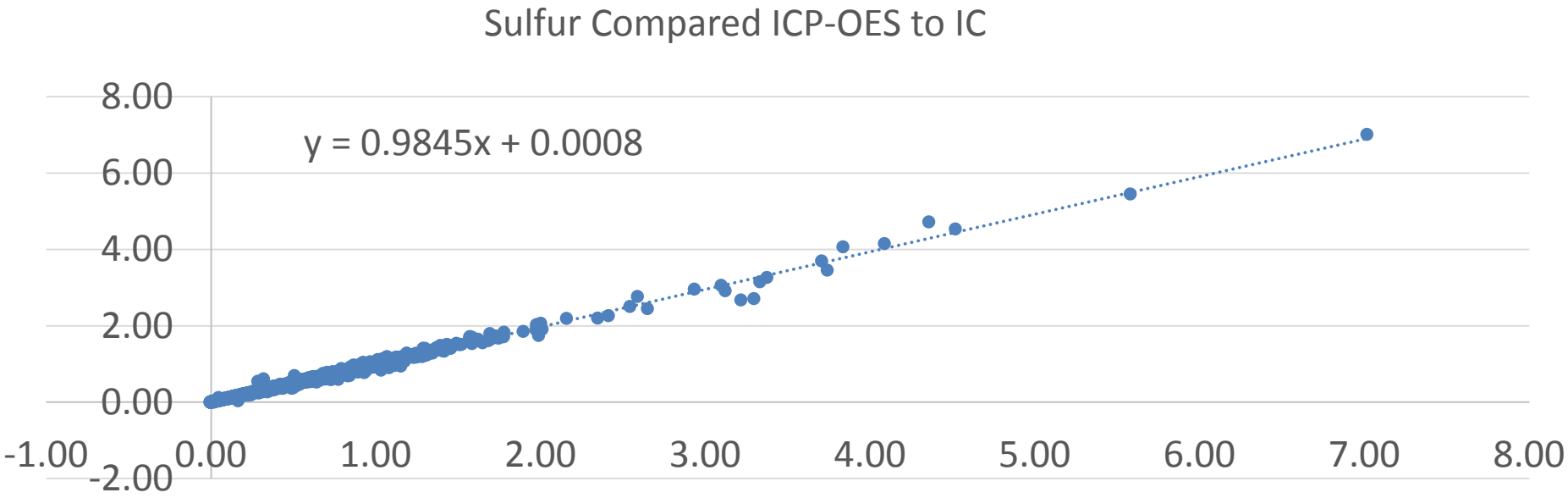


- Organic acid analysis in nearly 800 NPS samples exposed during May, June and July
- Formic, Acetic, Succinic, Malonic, Maleic, and Oxalic acids
- Dionex system eluent generation using KOH cartridge and AS11 Column

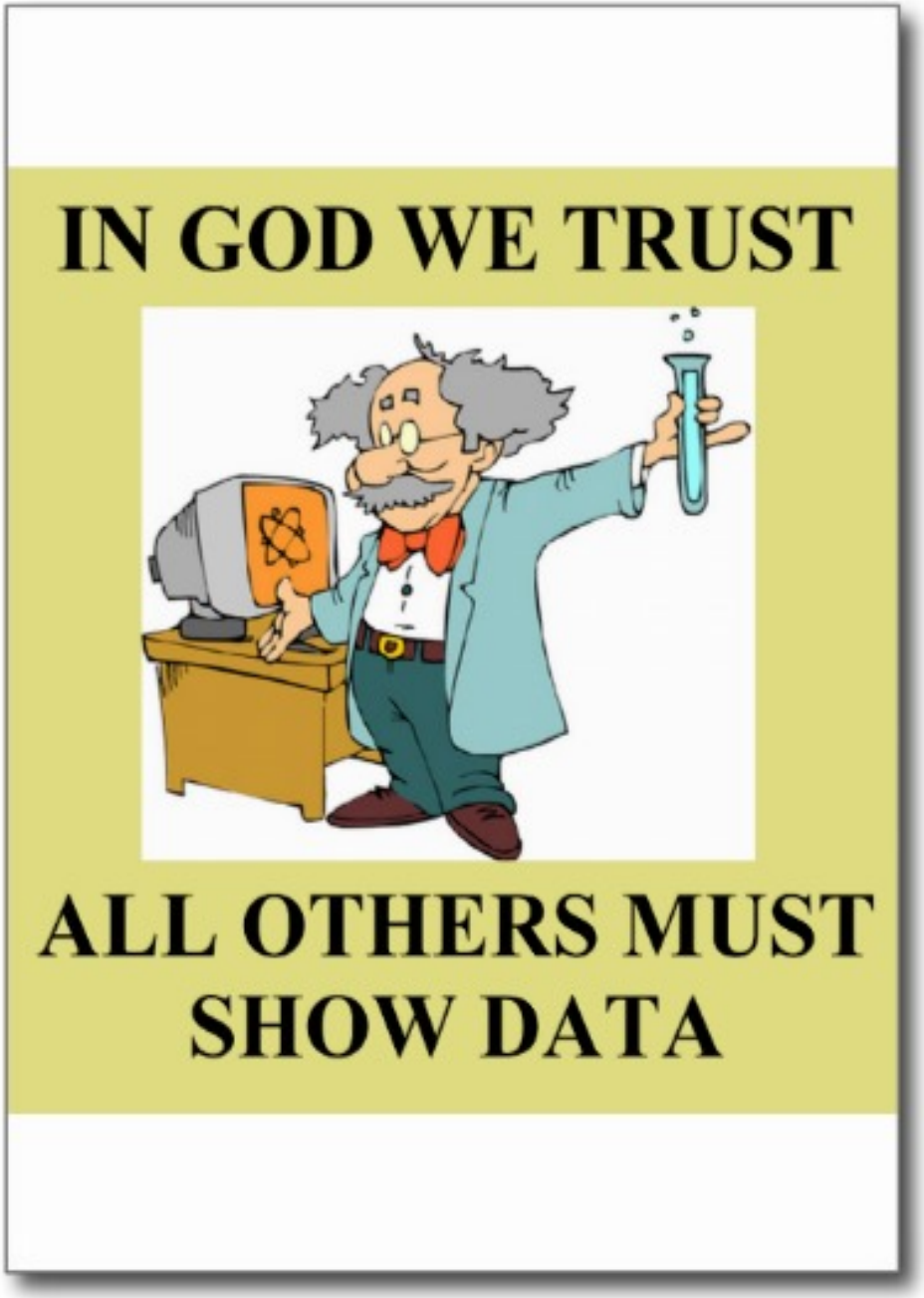
Results

	Formic	Acetic	Succinic	Maleic	Oxalic
Average	0.036 ppm	0.047 ppm	0.030 ppm	0.004 ppm	0.094 ppm
Median	0.028 ppm	0.039 ppm	0.014 ppm	0	0.067 ppm
Range	0-0.334 ppm	0-0.525 ppm	0-0.289 ppm	0-0.109 ppm	0-0.817 ppm
Method Background	0.011 ppb	0.007 ppm	0	0	0.0004 ppm





Average and Median ratios plot 1 = 1.01 plot 2 = 1.00



QUESTIONS

	Chloride	Nitrite	Nitrate	sulfate
25th percentile	0.028 ppm	0.014 ppm	0.126 ppm	0.507 ppm
50th percentile	0.046 ppm	0.028 ppm	0.269 ppm	0.990 ppm
75th percentile	0.116 ppm	0.043 ppm	0.581 ppm	1.912 ppm