

Matrix Spike Recoveries

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Matrix Spike vs Field Samples

- Procedure and limitations
- Improved accuracy with Method 1623.1 in challenging water matrices
- Observed matrix spike recovery with Method 1623.1, $n = 165$



Matrix Spike Procedure

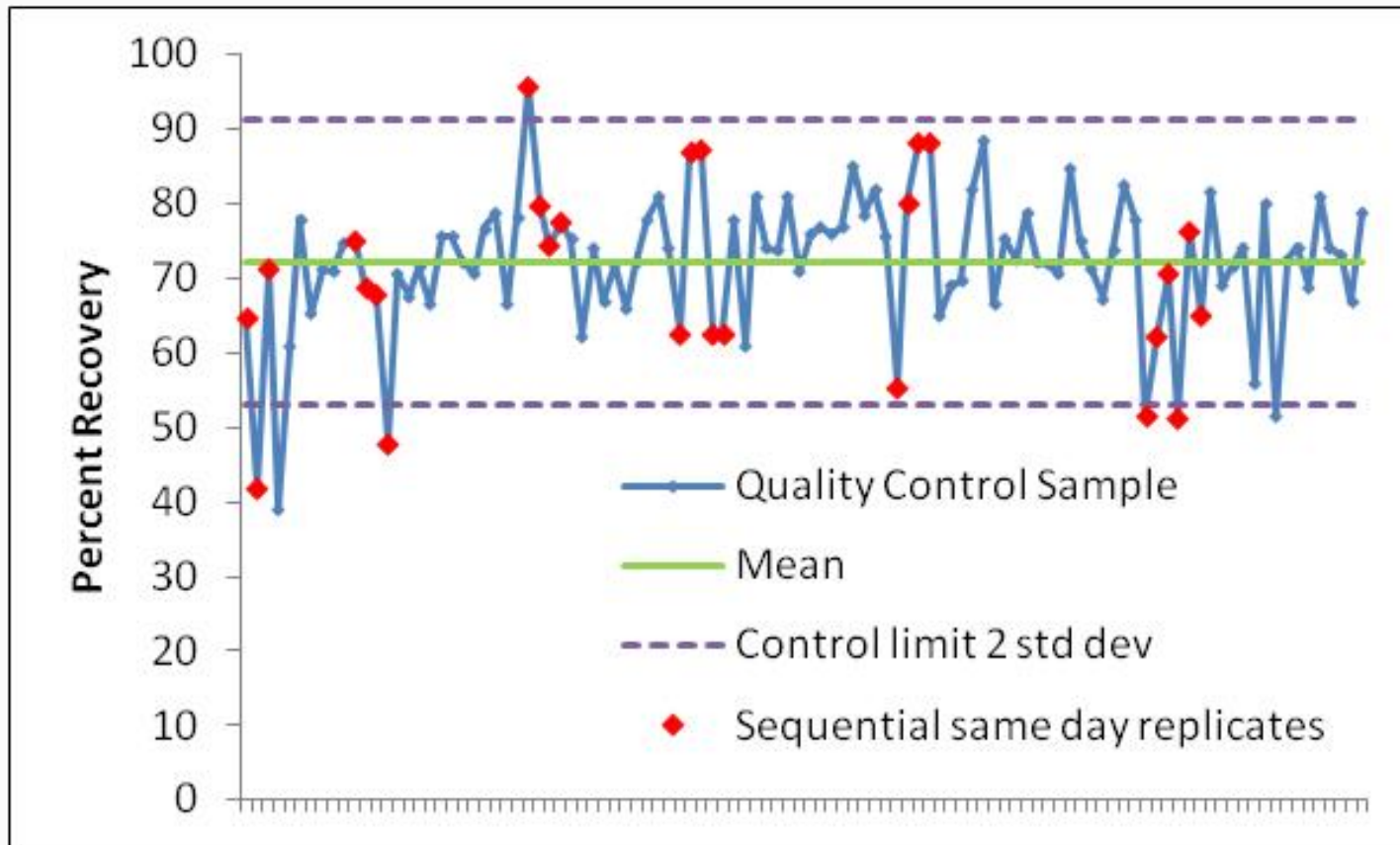
- Mix sample continuously
- Spike with pre-determined number of *Cryptosporidium* oocysts
- Perform Method 1623 or 1623.1
- Compare number detected with quantity added
- Typically two matrix spikes for each source



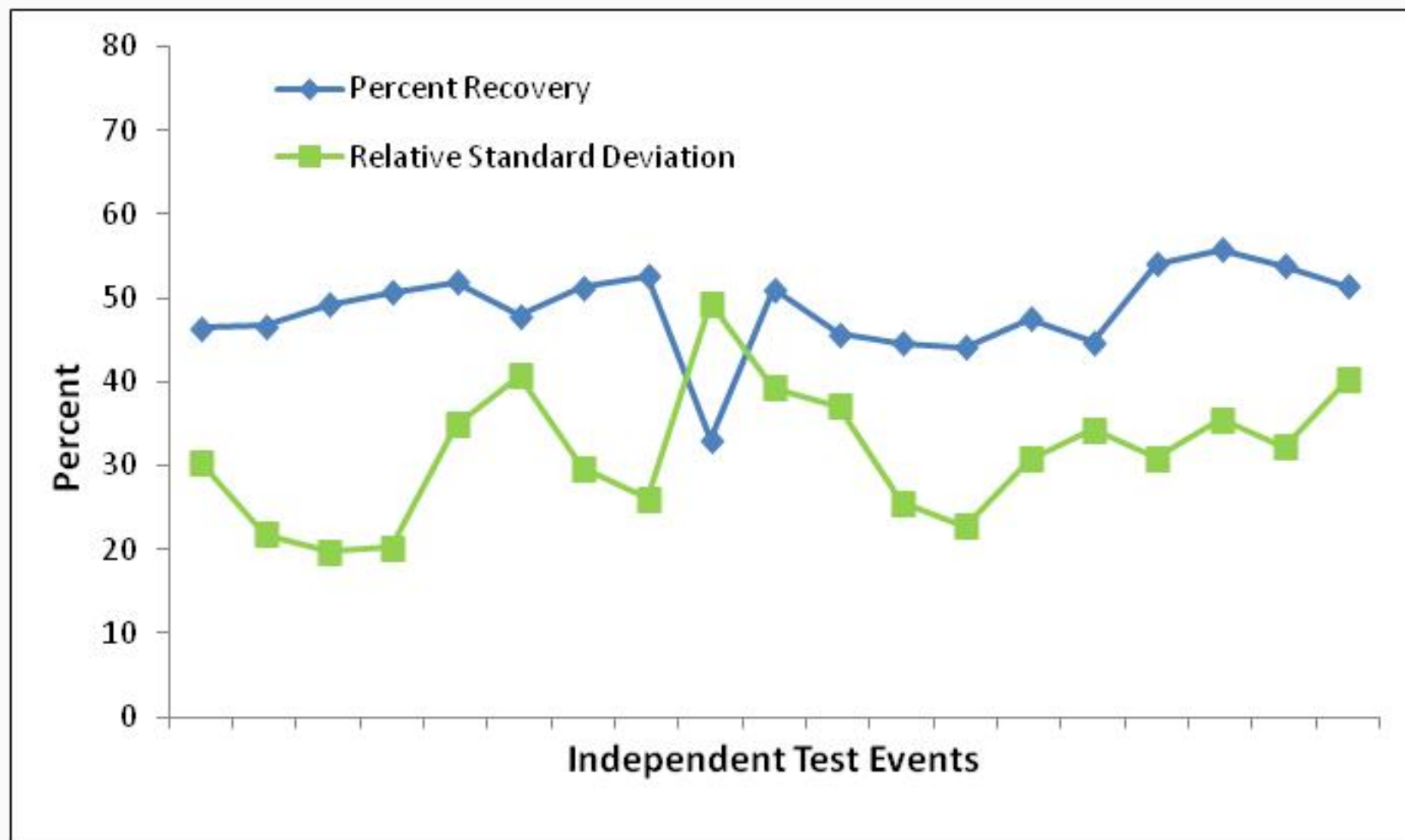
Matrix Spike Limitations

- Method variability
- Matrix interference
- Assumption
 - spiked sample recovery = field sample recovery

Method 1623 Variable in Reagent Water

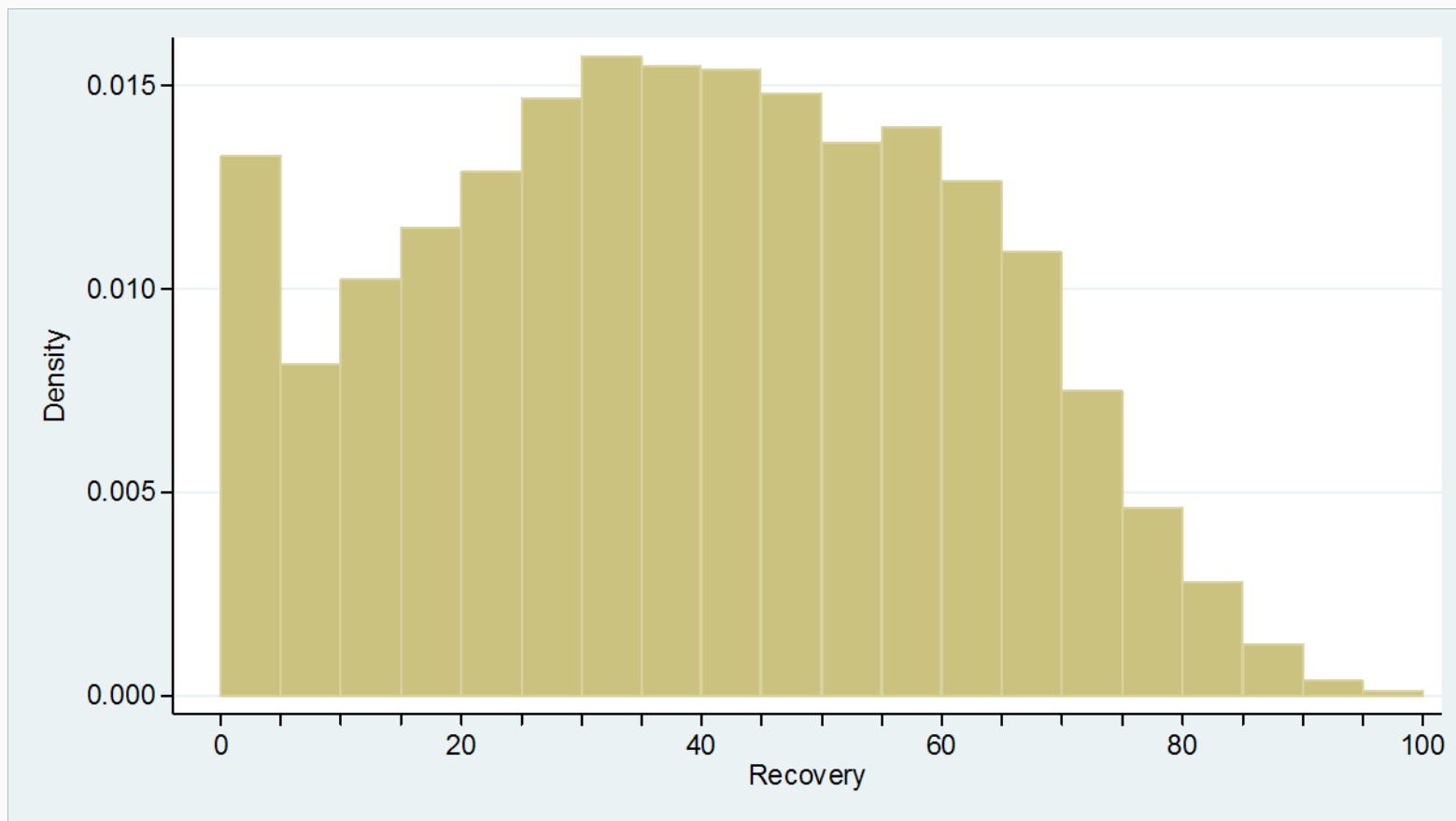


Blind Spike Average, Method 1623 ~50 Laboratories





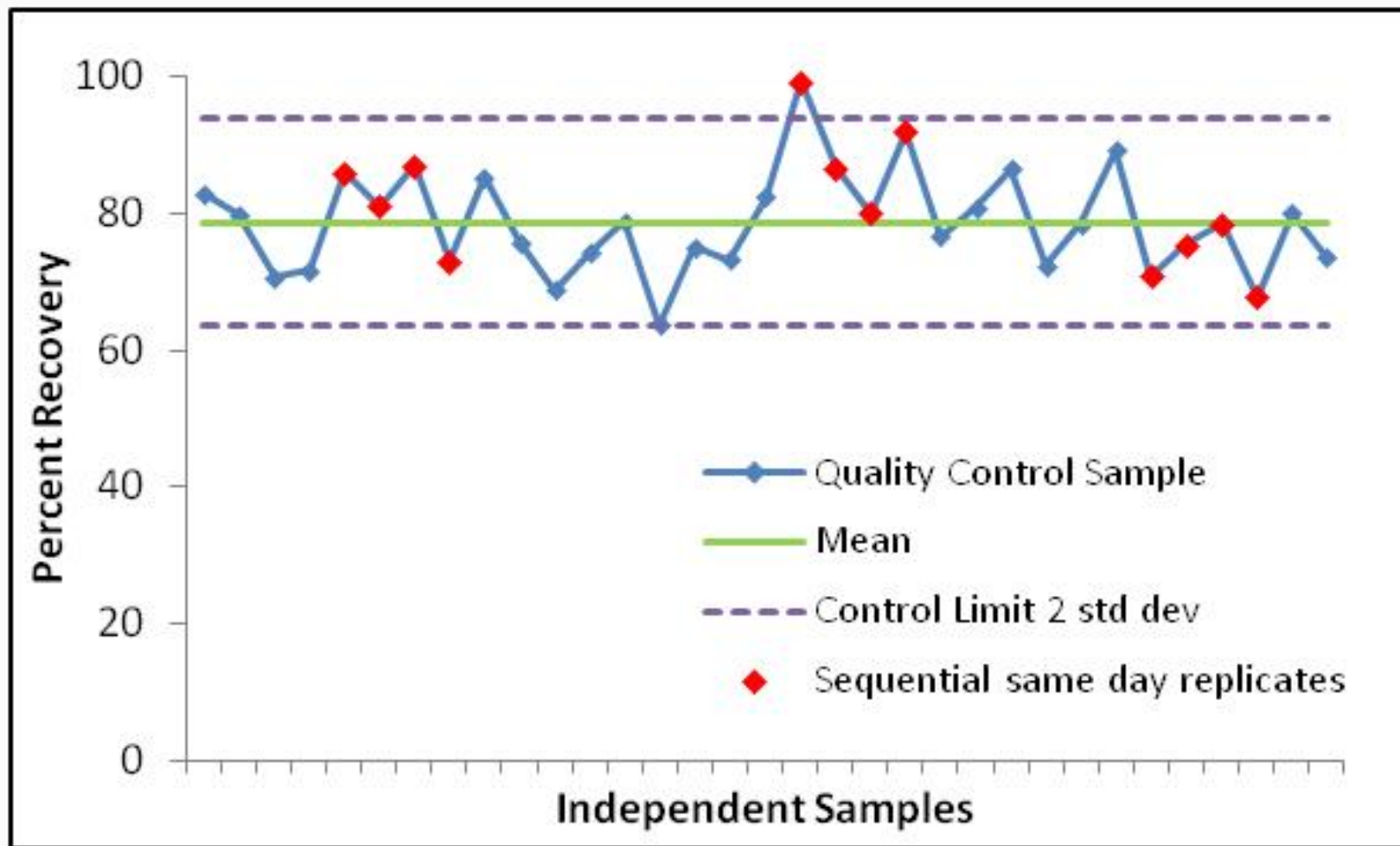
MS Recoveries Round 1 Method 1623 n=3,335



Method 1623.1 Available June 2012

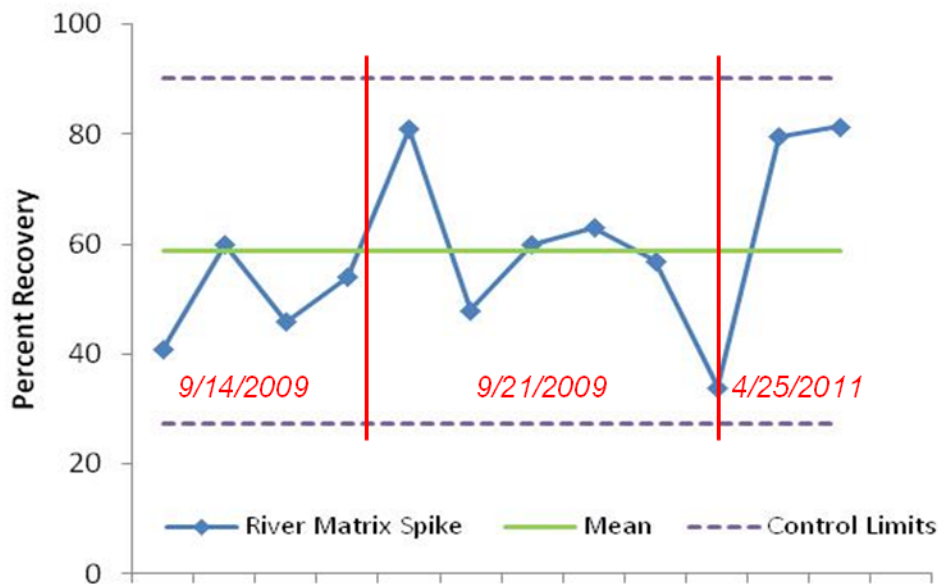


Method 1623.1 Variable in Reagent Water

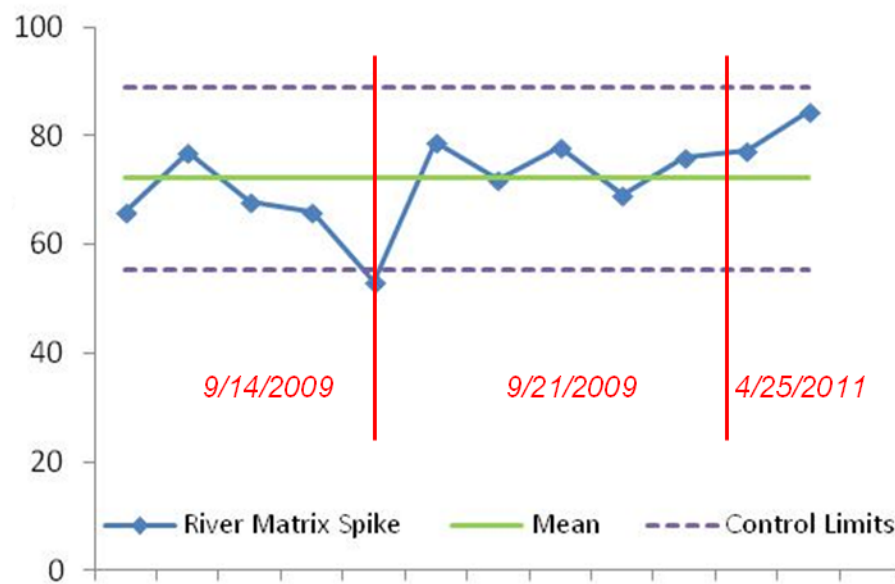


Improved Accuracy in River Matrix

Method 1623



Method 1623.1



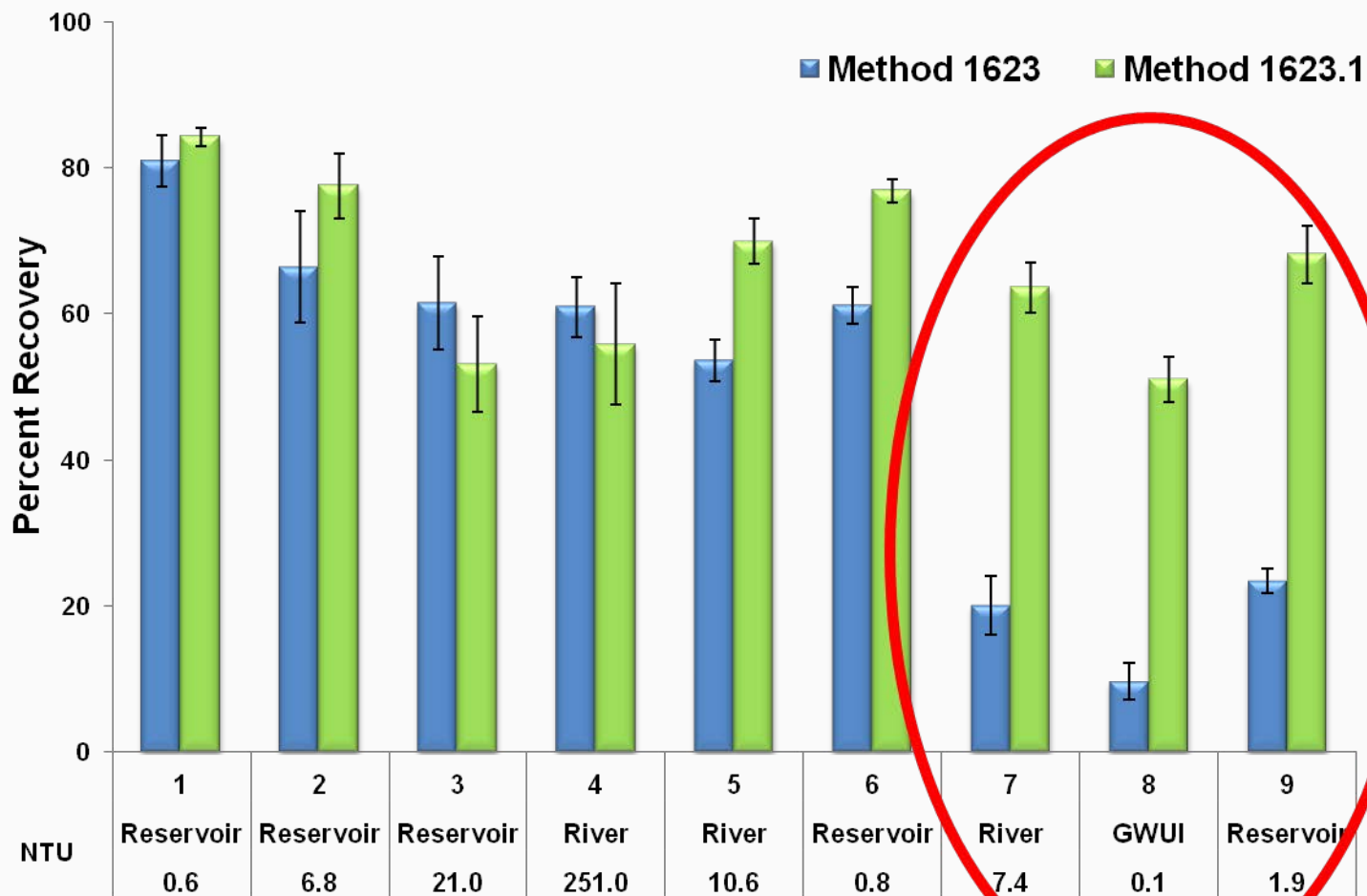
Independent Samples



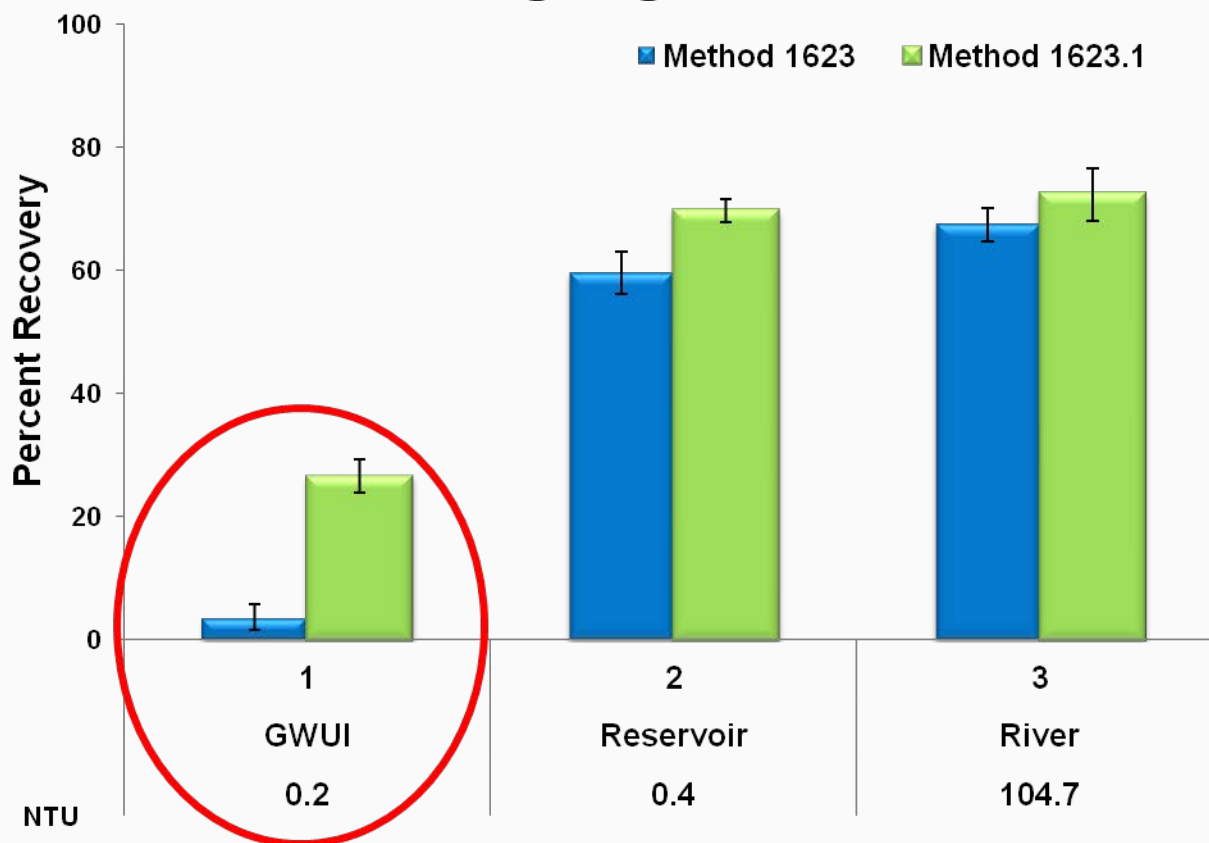
Matrix Spike Results in Method Validations

	Method 1623 1999	Method 1623.1 2011
	8 sources	14 sources
Mean % Recovery	34 (n=14)	61 (n=53)
Mean RSD (%)	25	13
Standard Deviation	9	7

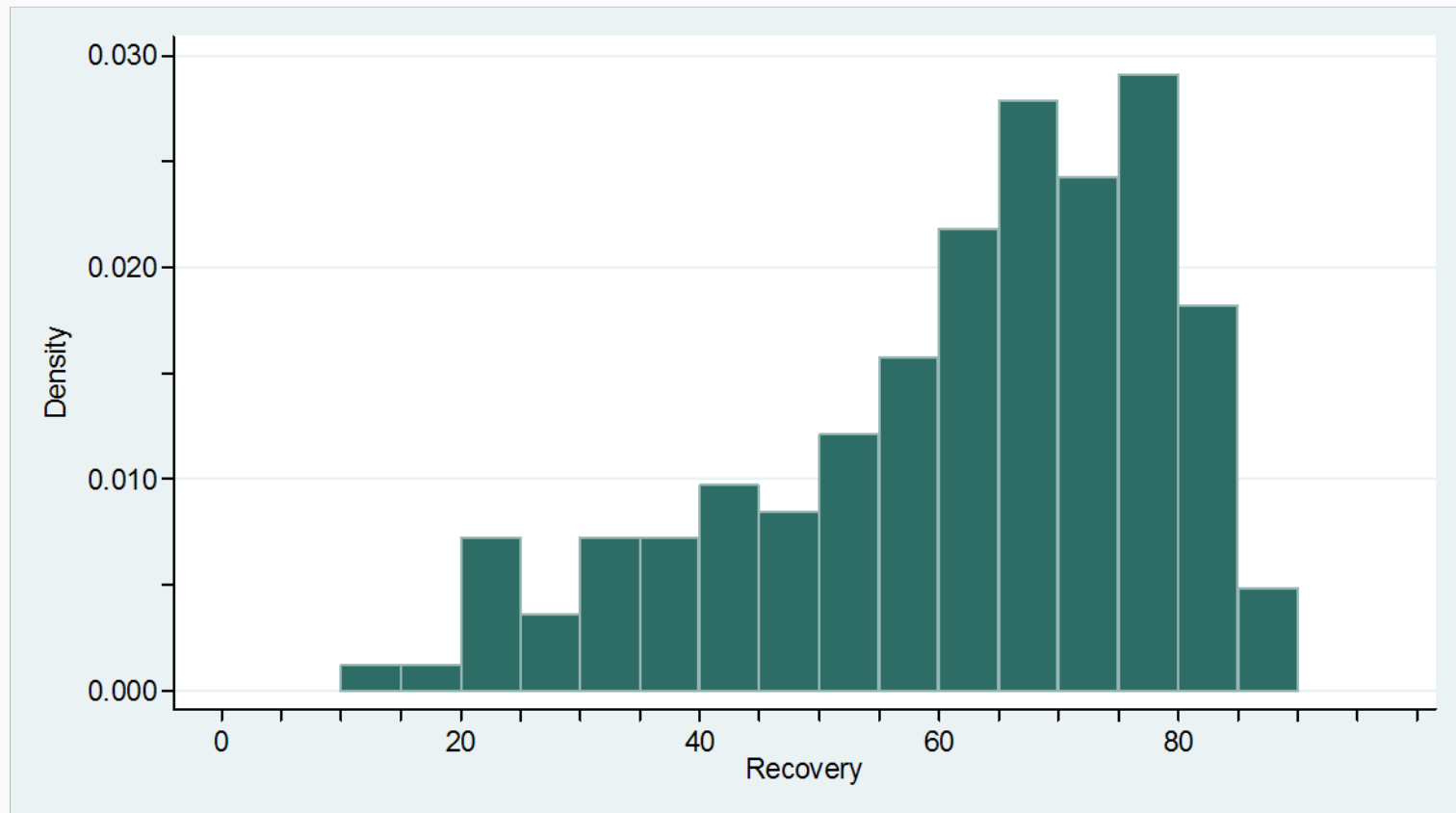
Improved Recovery in Challenging Matrices



Multi-Laboratory Improvement with Challenging Matrix



Observed Matrix Spike Recovery With Method 1623.1 n=165





Summary

Matrix spike recoveries with Method 1623.1 should be more accurate than recoveries with Method 1623 in challenging source waters.



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We appreciate data you may have gathered using Method 1623.1, especially side-by-side data with Method 1623 to further inform our review of methods for the LT2 Rule.