Pacific Geotech
Consulting Geotechnical Engineers

Environmental Laboratory Method Uncertainty and Spike Recovery Data

Element	Unit	Concentration used to calculate MU	Estimated MU$_{95\%}$	Initial Conc	% Recovery	Initial Conc	% Recovery
Al	mg/L	0.100	±0.015	0.23	95	1.56	96
B	mg/L	0.100	±0.018	0.06	94	0.56	105
Ba	mg/L	0.100	±0.011	0.04	106	0.14	94
Ca	mg/L	10.00	±2.07	23	105	51	108
Cd	mg/L	0.050	±0.003	0.000	98	0.01	96
Co	mg/L	0.050	±0.004	0.000	97	0.04	95
Cr	mg/L	0.050	±0.002	0.000	101	0.01	97
Cu	mg/L	0.100	±0.007	0.000	103	0.48	106
Fe	mg/L	0.100	±0.009	0.14	98	2.36	99
K	mg/L	10.00	±1.71	5.4	93	18	94
Li	mg/L	0.100	±0.007	0.23	90	1.25	96
Mg	mg/L	10.00	±1.50	16	108	35	105
Mn	mg/L	0.100	±0.003	0.06	99	1.89	103
Na	mg/L	10.00	±1.74	46	109	96	96
Ni	mg/L	0.050	±0.002	0.04	97	0.12	102
Pb	mg/L	0.050	±0.004	0	90	0.06	95
S	mg/L	1.000	±0.195	11	93	19	97
Si	mg/L	10.00	±0.53	0.56	103	10.3	105
V	mg/L	0.100	±0.005	0.03	96	0.06	101
Zn	mg/L	0.100	±0.016	0.09	95	1.28	103
Chloride	mg/L	38	±2.7	84	108	195	98
SO4	mg/L	29	±2.06	33	105	46	99
Turbidity	NTU	40	±3.00	2.3	N/A	45	N/A
Elec Cond	mg/L	1413	±25	370	N/A	755	N/A
Hardness	mg/L	66	±6.3	122	107	270	105
pH	pH Unit	7.0	±0.02	6.4	N/A	7.6	N/A
TDS	mg/L	291	±67	240	N/A	490	N/A

$$\text{Estimated } MU_{(95\%)} = 2((S_x^2 + B^2)^{1/2})$$

Where $MU_{x95\%}$ Measurement Uncertainty with 95% Confidence Level

S_x Standard Deviation of Multiple (11) observations

B   Bias, the difference between the average results of multiple (11) analyses and the true reading when corrected for % recovery