NAPT Program
North American Proficiency Testing

Soil Science Society of America

2023 North American Proficiency Testing Program
Quarter 4 Report - 1/18/2024

Laboratory ID
General

Soil			Soil 2023-116			Soil 2023-117			Soil 2023-118			Soil 2023-119			Soil 2023-120			Current	Required
Analysis	**Units**	***n***	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**PAP Score**	**Groups**
Saturated Paste																			
Moisture - sp	%	16	**47.0**	1.55		**51.2**	2.31		**41.0**	1.95		**34.6**	1.13		**32.4**	1.71			
pH - sp	Unit	21	**7.12**	0.14		**6.64**	0.13		**6.82**	0.14		**7.57**	0.15		**6.20**	0.15			**pH Group**
ECe - sp	dS/m	23	**1.04**	0.095		**0.71**	0.060		**1.33**	0.16		**2.08**	0.17		**1.16**	0.100			**EC Group**
HCO3 - sp	mmolc/L	11	**2.72**	0.82		**4.65**	1.35		**7.08**	1.62		**6.47**	3.45		**3.64**	1.91			
Ca - sp	mmolc/L	17	**7.40**	0.81		**3.83**	0.63		**9.55**	0.73		**9.84**	1.58		**7.30**	1.33			
Mg - sp	mmolc/L	18	**1.80**	0.14		**2.72**	0.51		**4.31**	0.56		**5.17**	0.97		**3.12**	0.40			
Na - sp	mmolc/L	18	**0.22**	0.043		**0.21**	0.050		**1.71**	0.20		**4.93**	0.52		**1.27**	0.23			
SAR - sp	value	19	**0.11**	0.020		**0.11**	0.020		**0.67**	0.060		**1.76**	0.13		**0.57**	0.070			
Cl - sp	mmolc/L	13	**0.39**	0.030		**0.33**	0.034		**1.38**	0.22		**7.93**	0.77		**2.34**	0.35			
SO4 - sp	mmolc/L	12	**0.95**	0.11		**1.10**	0.29		**2.38**	0.65		**5.37**	0.88		**2.14**	0.33			
NO3 - sp	mmolc/L	10	**5.99**	0.92		**0.36**	0.27		**3.71**	2.08		**1.80**	1.61		**3.45**	1.41			
B - sp	mg/L	11	**0.044**	0.030		**0.096**	0.040		**0.15**	0.050		**0.59**	0.080		**0.093**	0.034			
pH & EC (1:1 or 1:2)																			
EC (1:1)	(dS/m)	28	**0.57**	0.055		**0.32**	0.024		**0.59**	0.042		**0.62**	0.087		**0.32**	0.045			**EC Group**
EC (1:2)	(dS/m)	34	**0.35**	0.044		**0.23**	0.025		**0.44**	0.060		**0.45**	0.067		**0.25**	0.036			**EC Group**
pH (1:1) Water	Unit	73	**7.30**	0.15		**6.80**	0.14		**7.10**	0.14		**7.90**	0.16		**6.10**	0.12			**pH Group**
pH (1:2) Water	Unit	18	**7.33**	0.15		**6.88**	0.14		**7.20**	0.14		**8.10**	0.16		**6.19**	0.12			**pH Group**
pH (1:1) 0.01M CaCl2	Unit	18	**6.91**	0.14		**6.34**	0.13		**6.72**	0.14		**7.52**	0.15		**5.72**	0.11			**pH Group**
pH (1:2) 0.01M CaCl2	Unit	7	**7.00**	0.14		**6.38**	0.13		**6.93**	0.14		**7.54**	0.15		**5.81**	0.12			**pH Group**
Lime Req.																			
SMP Buffer pH	Unit	23	**7.27**	0.15		**6.99**	0.14		**7.09**	0.14		**7.50**	0.15		**6.90**	0.14			**pH Group**
Adams-Evans Buf pH	Unit	7	**7.76**	0.16		**7.67**	0.15		**7.68**	0.15		**7.96**	0.16		**7.72**	0.15			**pH Group**
Woodruff Buf. pH	Unit	18	**7.02**	0.14		**6.82**	0.14		**6.94**	0.14		**7.18**	0.14		**6.74**	0.14			**pH Group**
Mehlich Buffer pH	Unit	8	**6.62**	0.13		**6.43**	0.13		**6.50**	0.13		**6.78**	0.14		**6.28**	0.13			**pH Group**
Sikora Buffer pH	Unit	27	**7.30**	0.15		**6.99**	0.14		**7.15**	0.14		**7.58**	0.15		**6.98**	0.14			**pH Group**
Titratable Acidity	cmol/kg																		
Inorganic Nitrogen (NO3-N & NH4-N)																			
NO3-N Cd. Rd.	mg/kg	60	**45.5**	2.50		**6.71**	0.53		**34.1**	1.43		**17.9**	1.18		**20.6**	1.25			**NO3 Group**
NO3-N ISE	mg/kg	4	**46.0**	N/A		**7.33**	N/A		**31.5**	N/A		**18.5**	N/A		**20.9**	N/A			**NO3 Group**
NO3-N CTA	mg/kg																		**NO3 Group**
NO3-N Ion Chr.	mg/kg																		**NO3 Group**
NO3-N Other	mg/kg	9	**43.5**	2.61		**7.24**	1.01		**31.9**	3.63		**16.6**	1.08		**19.0**	2.01			**NO3 Group**
NH4 - N (KCl Extr.)	mg/kg	39	**87.2**	3.87		**71.1**	4.29		**15.2**	1.15		**10.2**	0.96		**14.1**	1.10			
Phosphorus and Sulfur																			
PO4-P Bray P (1:10)	mg/kg	35	**35.5**	3.50		**72.3**	2.30		**50.4**	3.53		**3.44**	2.00		**81.7**	4.30			**PO4 Group**
PO4-P Bray P1 (1:7)	mg/kg	8	**23.2**	3.14		**54.0**	8.93		**43.8**	2.39		**3.26**	1.34		**63.4**	4.16			**PO4 Group**
PO4-P Olsen/Bicarb	mg/kg	49	**30.7**	1.54		**53.7**	3.59		**31.7**	2.09		**27.0**	1.59		**31.7**	3.36			**PO4 Group**
PO4-P AB-DTPA	mg/kg	1	**20.3**	N/A		**31.8**	N/A		**20.8**	N/A		**24.1**	N/A		**23.2**	N/A			
PO4-P Modified Morgan	mg/kg	2	**8.80**	N/A		**13.6**	N/A		**12.7**	N/A		**42.0**	N/A		**11.7**	N/A			
PO4-P True Morgan	mg/kg	4	**8.76**	N/A		**13.3**	N/A		**12.2**	N/A		**35.4**	N/A		**10.7**	N/A			
PO4-P Mod. Kelowna	mg/kg																		
PO4-P Stong Bray (1:10)	mg/kg	7	**120.0**	6.00		**177.0**	5.00		**136.0**	5.00		**103.0**	5.65		**162.0**	3.24			
PO4-P Water Soluble	mg/kg	1	**0.10**	N/A		**0.59**	N/A		**0.090**	N/A		**2.31**	N/A		**4.21**	N/A			
SO4 - S (PO4 Extr.)	mg/kg	22	**7.00**	0.32		**10.2**	1.38		**19.5**	2.19		**32.7**	4.51		**14.1**	1.96			
Bases																			
K NH4OAc	mg/kg	66	**132.0**	2.99		**257.0**	10.7		**266.0**	12.0		**339.0**	14.5		**211.0**	16.3			**K Group**
Ca NH4OAc	mg/kg	59	**3290.0**	111.0		**1770.0**	86.2		**3640.0**	260.0		**3530.0**	484.0		**1210.0**	96.9			
Mg NH4OAc	mg/kg	61	**342.0**	15.1		**452.0**	19.0		**488.0**	25.8		**332.0**	20.4		**188.0**	15.7			
Na NH4OAc	mg/kg	45	**12.1**	2.49		**10.9**	2.01		**53.9**	1.38		**89.7**	2.40		**29.0**	1.61			
Bray Extractable K	mg/kg	4	**88.2**	N/A		**179.0**	N/A		**187.0**	N/A		**264.0**	N/A		**191.0**	N/A			
K- Bicarb.	mg/kg	3	**106.0**	N/A		**219.0**	N/A		**205.0**	N/A		**291.0**	N/A		**192.0**	N/A			**K Group**

K - Modified Morgan	mg/kg	2	**139.0**	N/A	**279.0**	N/A	**266.0**	N/A	**318.0**	N/A	**207.0**	N/A	
K - True Morgan	mg/kg	3	**76.5**	N/A	**162.0**	N/A	**159.0**	N/A	**259.0**	N/A	**163.0**	N/A	
Ca Modified Morgan	mg/kg	1	**3340.0**	N/A	**2260.0**	N/A	**3930.0**	N/A	**5220.0**	N/A	**1760.0**	N/A	
Aluminum KCL Extr.	mg/kg	6	**0.35**	N/A	**0.30**	N/A	**0.40**	N/A	**0.20**	N/A	**1.90**	1.45	
Mehlich-1 Multi Element													
Scoop Soil Mass	g	4	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	
P	mg/kg	9	**34.9**	4.03	**42.3**	3.75	**53.7**	10.2	**23.9**	2.72	**92.7**	8.22	
K	mg/kg	8	**74.4**	3.74	**169.0**	9.57	**140.0**	6.73	**194.0**	15.9	**168.0**	5.19	
Ca	mg/kg	8	**2850.0**	118.0	**1750.0**	62.5	**4450.0**	353.0	**5620.0**	720.0	**1650.0**	50.4	
Mg	mg/kg	6	**270.0**	9.89	**403.0**	23.8	**523.0**	38.8	**313.0**	24.5	**197.0**	3.92	
Mn	mg/kg	8	**40.8**	1.27	**406.0**	22.9	**62.6**	5.04	**12.4**	0.44	**68.5**	3.62	
Zn	mg/kg	7	**1.10**	0.022	**15.3**	0.91	**2.29**	0.32	**0.41**	0.090	**3.33**	0.075	
Mehlich-3 Multi-Element													
Scoop Soil Mass	g	26	**1.98**	0.050	**1.90**	0.100	**2.16**	0.062	**2.22**	0.070	**2.38**	0.095	
Assumed Density	g/cm3	24	**1.01**	0.067	**0.99**	0.085	**1.11**	0.072	**1.13**	0.052	**1.19**	0.057	
Volume of Scoop	cm3	0		N/A		N/A		N/A		N/A		N/A	
Extractrant Volume mL	mL	0		N/A		N/A		N/A		N/A		N/A	
P Colorimetric	mg/kg	8	**50.6**	2.34	**105.0**	2.11	**55.9**	1.33	**50.5**	6.05	**92.0**	1.85	
P ICP-AES	mg/kg	51	**54.7**	2.85	**121.0**	8.46	**63.8**	3.32	**60.3**	5.00	**105.0**	5.66	**PO4 Group**
K	mg/kg	48	**130.0**	6.50	**255.0**	8.09	**277.0**	10.9	**360.0**	18.0	**232.0**	11.1	**K Group**
Ca	mg/kg	43	**3670.0**	186.0	**1970.0**	102.0	**4690.0**	149.0	**7860.0**	1120.0	**1550.0**	99.0	
Mg	mg/kg	46	**371.0**	14.5	**477.0**	19.7	**591.0**	28.0	**425.0**	24.9	**220.0**	13.0	
Na	mg/kg	38	**13.5**	1.94	**12.8**	1.63	**59.3**	3.94	**98.7**	6.34	**32.5**	2.55	
S	mg/kg	41	**11.8**	0.67	**19.7**	0.90	**31.9**	2.00	**52.4**	2.70	**26.0**	1.46	
Al	mg/kg	31	**382.0**	15.9	**787.0**	30.0	**574.0**	29.4	**44.5**	14.2	**703.0**	39.6	
Zn	mg/kg	42	**1.15**	0.13	**12.7**	0.65	**4.34**	0.26	**14.5**	0.93	**4.42**	0.21	
Mn	mg/kg	42	**40.3**	1.60	**433.0**	32.5	**110.0**	7.53	**51.5**	4.00	**77.4**	4.20	
Fe	mg/kg	40	**511.0**	28.6	**491.0**	35.5	**168.0**	14.2	**150.0**	14.2	**259.0**	18.2	
Cu	mg/kg	40	**1.25**	0.31	**1.66**	0.38	**3.76**	0.17	**2.42**	0.19	**1.80**	0.11	
B	mg/kg	34	**0.80**	0.15	**0.85**	0.13	**1.28**	0.080	**2.69**	0.23	**0.53**	0.095	
Micronutrients													
Zn - DTPA	mg/kg	53	**0.65**	0.050	**7.67**	0.52	**2.15**	0.13	**7.57**	0.40	**2.46**	0.17	
Mn - DTPA	mg/kg	47	**25.8**	1.16	**341.0**	16.9	**46.3**	3.39	**10.5**	1.33	**47.0**	3.06	
Fe - DTPA	mg/kg	49	**129.0**	15.5	**179.0**	19.3	**61.0**	7.15	**33.7**	5.00	**72.5**	9.15	
Cu - DTPA	mg/kg	49	**2.96**	0.32	**2.55**	0.24	**2.07**	0.19	**1.40**	0.16	**1.03**	0.092	
Zn - HCl	mg/kg												
Mn-H3PO4	mg/kg	9	**32.2**	0.64	**356.0**	7.12	**49.2**	2.61	**14.4**	2.20	**52.2**	4.14	
Cl - Ca(NO3)2 Extr.	mg/kg	10	**6.96**	1.39	**5.80**	1.95	**20.6**	1.84	**101.0**	9.75	**28.6**	2.72	
B - Hot Wat.	mg/kg	17	**0.35**	0.10	**0.52**	0.13	**0.76**	0.16	**1.67**	0.25	**0.31**	0.074	
B - DTPA/Sorbitol	mg/kg	17	**0.31**	0.060	**0.45**	0.14	**0.68**	0.050	**1.63**	0.16	**0.23**	0.060	
N & C													
Total N - Kjeldahl	%	7	**0.16**	0.020	**0.22**	0.020	**0.16**	0.020	**0.17**	0.020	**0.10**	0.020	
Total N - combustion	%	38	**0.16**	0.020	**0.23**	0.020	**0.16**	0.020	**0.17**	0.020	**0.099**	0.020	
TOC - combustion	%	16	**1.61**	0.049	**2.29**	0.059	**1.84**	0.053	**2.11**	0.20	**1.10**	0.073	
Total C - combustion	%	34	**1.65**	0.058	**2.34**	0.070	**1.98**	0.070	**3.30**	0.11	**1.16**	0.042	
OM - Walkley-Black	%	18	**2.69**	0.18	**3.99**	0.21	**3.30**	0.15	**3.69**	0.35	**1.99**	0.18	**OM Group**
OM - LOI (% Wt loss)	%	62	**3.20**	0.16	**4.42**	0.20	**3.44**	0.14	**3.28**	0.14	**2.20**	0.086	**OM Group**
Miscellaneous													
CaCO3 Content	%	6	**0.50**	0.10	**0.31**	0.090	**1.30**	0.38	**9.20**	0.67	**0.36**	0.25	
CEC - Cation Displacement	cmol/kg	5	**21.3**	2.52	**17.1**	1.55	**18.4**	2.35	**9.90**	0.88	**8.80**	N/A	
CEC - Estimation	cmol/kg	11	**20.6**	1.20	**14.2**	1.40	**25.2**	2.00	**24.0**	0.80	**10.7**	1.90	
Soil Density (Scoop)	g/cc	13	**1.18**	0.030	**1.13**	0.023	**1.27**	0.030	**1.30**	0.026	**1.40**	0.030	
Particle Size Analysis - Hydrometer													
Sand 2000 - 50 um	%	29	**17.5**	2.73	**18.1**	3.66	**41.0**	2.38	**73.4**	2.84	**67.9**	2.76	
Silt 50 - 2 um	%	29	**56.6**	1.46	**58.1**	3.05	**38.9**	2.19	**16.6**	2.50	**22.0**	2.00	
Clay 2 - 0 um	%	30	**26.7**	1.75	**21.5**	3.30	**20.0**	2.70	**10.4**	2.14	**10.0**	2.25	
Particle Size Analysis - Pipette													

Sand 2000 - 50 um	%	3	**16.5**	N/A	**19.2**	N/A	**45.0**	N/A	**76.3**	N/A	**74.0**	N/A
Silt 50 - 2 um	%	3	**58.0**	N/A	**62.0**	N/A	**36.7**	N/A	**13.0**	N/A	**20.0**	N/A
Clay 2 - 0 um	%	3	**24.9**	N/A	**22.4**	N/A	**20.8**	N/A	**11.0**	N/A	**10.0**	N/A
Soil Health												
Autoclave-Citrate Extractable (ACE) protein	mg/g	4	**3.89**	N/A	**8.49**	N/A	**5.86**	N/A	**6.85**	N/A	**5.46**	N/A
Microbial CO2 respiration (1 day incubation-ST(	mg/g	6	**0.071**	0.032	**0.15**	N/A	**0.12**	N/A	**0.098**	0.044	**0.13**	0.062
Microbial CO2 respiration (4 day incubation-ST(	mg/g	2	**0.40**	N/A	**0.94**	N/A	**0.96**	N/A	**0.46**	N/A	**0.62**	N/A
Microbial enzyme activity - As	mg PNP/kg soil h											
Microbial enzyme activity - Beta Glucosidase (B	mg PNP/kg soil h											
Microbial enzyme activity - NAG	mg PNP/kg soil h											
Microbial enzyme activity - Pase	mg PNP/kg soil h											
PMN 7 day anaerobic	mg/kg	1	**17.0**	N/A	**94.0**	N/A	**56.0**	N/A	**67.0**	N/A	**38.0**	N/A
Reactive carbon - permanganate oxidizable (PO	mg/kg	6	**506.0**	66.1	**713.0**	94.1	**443.0**	59.3	**536.0**	63.0	**256.0**	27.3

Plant			Plant 2023-210			Plant 2023-211			Plant 2023-212			Current
Analysis	**Units**	**n**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**PAP Score**
Dry Matter & Non-Digest Nutrients												
Dry Matter	%	19	**94.1**	1.88		**94.3**	1.89		**94.2**	1.88		
NO3 - N Cd Rd.	mg/kg	22	**238.0**	51.5		**42.5**	6.53		**353.0**	37.8		
NO3 - N ISE	mg/kg	3	**465.0**	N/A		**230.0**	N/A		**441.0**	N/A		
NO3 - N Other	mg/kg	7	**252.0**	68.0		**83.7**	N/A		**398.0**	100.0		
NH4 - N	mg/kg	5	**162.0**	N/A		**108.0**	N/A		**186.0**	N/A		
PO4 - P	mg/kg	9	**527.0**	92.9		**640.0**	44.0		**1200.0**	91.3		
SO4 - S	mg/kg	5	**1230.0**	N/A		**2440.0**	N/A		**1780.0**	N/A		
Cl	%	15	**0.27**	0.045		**0.87**	0.035		**0.75**	0.035		
Total Nâ€“Kjeldahl	%	7	**2.74**	0.070		**2.50**	0.065		**3.84**	0.077		
Total N-combustion	%	60	**2.79**	0.060		**2.65**	0.070		**4.15**	0.083		
Total S-combustion	%	7	**0.21**	0.020		**0.31**	0.020		**0.36**	0.020		
Total C-combustion	%	18	**42.4**	0.85		**42.6**	0.85		**43.2**	0.87		
Nitric / Perchloric Digest												
P	%	53	**0.14**	0.020		**0.19**	0.020		**0.31**	0.020		
K	%	53	**2.15**	0.080		**2.13**	0.060		**2.10**	0.080		
Ca	%	56	**3.26**	0.090		**1.13**	0.040		**0.58**	0.030		
Mg	%	53	**0.69**	0.021		**0.31**	0.020		**0.21**	0.020		
S	%	51	**0.20**	0.020		**0.30**	0.020		**0.34**	0.020		
Na	%	44	**0.030**	0.020		**0.026**	0.020		**0.008**	0.020		
B	mg/kg	49	**44.4**	2.02		**50.2**	2.05		**6.00**	0.56		
Cu	mg/kg	52	**6.40**	0.52		**7.94**	0.53		**8.09**	0.33		
Fe	mg/kg	52	**192.0**	7.89		**99.2**	4.72		**191.0**	9.60		
Mn	mg/kg	52	**69.7**	3.73		**26.1**	1.15		**33.3**	1.39		
Mo	mg/kg	15	**0.090**	0.042		**1.51**	0.13		**0.76**	0.11		
Zn	mg/kg	51	**26.0**	2.38		**27.4**	1.45		**27.8**	1.14		
Al	mg/kg	34	**156.0**	32.0		**49.2**	12.4		**114.0**	21.1		
Ba	mg/kg	5	**42.4**	N/A		**14.9**	N/A		**23.0**	N/A		
Cd	mg/kg	3	**0.063**	N/A		**0.026**	N/A		**0.034**	N/A		
Co	mg/kg	4	**0.11**	N/A		**0.12**	N/A		**0.19**	N/A		
Cr	mg/kg	5	**0.37**	N/A		**0.31**	N/A		**1.15**	N/A		
Ni	mg/kg	5	**3.70**	0.32		**1.20**	N/A		**2.50**	N/A		
Pb	mg/kg	3	**0.16**	N/A		**0.055**	N/A		**0.17**	N/A		
Se	mg/kg	3	**0.11**	N/A		**0.076**	N/A		**0.025**	N/A		
Sr	mg/kg	4	**169.0**	N/A		**26.5**	N/A		**8.13**	N/A		
V	mg/kg	3	**0.47**	N/A		**0.18**	N/A		**0.33**	N/A		
Dry Ash												
P	%	13	**0.13**	0.020		**0.18**	0.020		**0.31**	0.020		
K	%	14	**2.11**	0.14		**2.05**	0.11		**1.96**	0.13		
Ca	%	13	**3.10**	0.070		**1.10**	0.022		**0.53**	0.029		
Mg	%	12	**0.68**	0.025		**0.30**	0.020		**0.20**	0.020		
Na	%	9	**0.030**	0.020		**0.030**	0.020		**0.011**	0.020		
B	mg/kg	12	**43.9**	1.20		**50.1**	2.38		**6.15**	0.94		
Cu	mg/kg	12	**7.50**	1.28		**7.13**	0.65		**4.20**	1.00		
Fe	mg/kg	12	**163.0**	23.9		**98.4**	5.20		**170.0**	12.7		
Mn	mg/kg	14	**69.0**	4.45		**24.5**	2.48		**28.0**	3.65		
Mo	mg/kg	5	**0.40**	N/A		**1.69**	N/A		**0.81**	N/A		
Zn	mg/kg	14	**26.6**	2.80		**27.0**	1.65		**22.8**	3.77		
Al	mg/kg	6	**165.0**	31.8		**76.8**	21.0		**103.0**	30.4		
Ba	mg/kg											
Cd	mg/kg											
Co	mg/kg											
Cr	mg/kg											
Ni	mg/kg											
Pb	mg/kg											
Se	mg/kg											
Sr	mg/kg											
V	mg/kg											

Water			Water 2023-310			Water 2023-311			Water 2023-312		
Analysis	**Units**	**n**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**
pH & EC											
pH		25	**7.80**	0.16		**8.20**	0.16		**8.20**	0.16	
EC	dS/m	22	**0.12**	0.020		**0.54**	0.020		**0.27**	0.020	
Cations											
Ca	mmolc/L	24	**0.88**	0.060		**2.51**	0.11		**1.58**	0.062	
Mg	mmolc/L	24	**0.17**	0.020		**1.97**	0.094		**0.95**	0.030	
Na	mmolc/L	22	**0.13**	0.020		**1.16**	0.045		**0.22**	0.020	
K	mmolc/L	18	**0.012**	0.020		**0.16**	0.020		**0.050**	0.020	
NH4-N	mmolc/L	5	**0.003**	N/A		**0.003**	N/A		**0.002**	N/A	
Sum Cations	mmolc/L	11	**1.28**	0.090		**5.95**	0.15		**2.90**	0.12	
SAR	---	10	**0.17**	0.020		**0.75**	0.020		**0.20**	0.020	
Adj-SAR	---	4	**0.14**	N/A		**1.59**	N/A		**0.30**	N/A	
Anions											
HCO3	mmolc/L	16	**1.06**	0.060		**4.80**	0.19		**2.20**	0.075	
CO3	mmolc/L	5	**0.000**	N/A		**0.28**	N/A		**0.11**	N/A	
Cl	mmolc/L	17	**0.036**	0.027		**0.65**	0.050		**0.24**	0.020	
NO3	mmolc/L	13	**0.010**	0.020		**0.036**	0.020		**0.006**	0.020	
SO4	mmolc/L	14	**0.080**	0.020		**0.35**	0.020		**0.24**	0.020	
Sum Anions	mmolc/L	9	**1.24**	0.100		**5.51**	0.41		**2.68**	0.21	
Cation-Anion Difference	---	7	**0.059**	0.025		**0.43**	0.33		**0.15**	0.11	
Miscellaneous											
Boron	mg/L	15	**0.008**	0.020		**0.052**	0.020		**0.013**	0.020	
PO4-P Phosphorus - Spec	mg/L	4	**0.020**	0.020		**0.031**	N/A		**0.012**	N/A	
Phosphorus - ICP (Total)	mg/L	3	**0.020**	N/A		**0.031**	N/A		**0.003**	N/A	
TKN	mg/L	3	**0.54**	N/A		**1.21**	N/A		**0.82**	N/A	
Nitrogen Combustion (Total)	mg/L	3	**0.45**	N/A		**1.75**	N/A		**0.37**	N/A	
Total Organic Carbon	mg/L	4	**1.22**	N/A		**1.31**	N/A		**1.68**	N/A	

Environmental			Soil 2023-116			Soil 2023-117			Soil 2023-118			Soil 2023-119			Soil 2023-120		
Soil Analyses	**Units**	***n***	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**
Metals																	
Ag	mg/kg																
Al	mg/kg	7	**9770.0**	2070.0		**12400.0**	1770.0		**13000.0**	1490.0		**4970.0**	954.0		**8920.0**	646.0	
As	mg/kg	4	**3.14**	N/A		**5.38**	N/A		**4.59**	N/A		**4.55**	N/A		**2.99**	N/A	
Ba	mg/kg	2	**147.0**	N/A		**137.0**	N/A		**138.0**	N/A		**68.5**	N/A		**69.4**	N/A	
Be	mg/kg																
Bi	mg/kg																
B	mg/kg	4	**3.30**	N/A		**5.30**	N/A		**8.13**	N/A		**7.69**	N/A		**3.56**	N/A	
Ca	mg/kg	5	**5150.0**	N/A		**3120.0**	N/A		**8170.0**	N/A		**37400.0**	N/A		**3080.0**	N/A	
Cd	mg/kg	5	**0.21**	N/A		**0.28**	N/A		**0.29**	N/A		**0.39**	N/A		**0.23**	N/A	
Co	mg/kg	7	**4.09**	0.61		**9.13**	0.56		**8.03**	0.19		**3.60**	N/A		**6.28**	0.43	
Cr	mg/kg	6	**13.9**	1.64		**19.5**	2.92		**25.2**	N/A		**11.2**	2.15		**15.8**	1.66	
Cu	mg/kg	5	**13.5**	N/A		**12.2**	N/A		**18.2**	N/A		**9.90**	N/A		**9.70**	N/A	
Fe	mg/kg	5	**11300.0**	N/A		**17900.0**	N/A		**18100.0**	N/A		**9290.0**	N/A		**15100.0**	N/A	
K	mg/kg	5	**1070.0**	N/A		**1550.0**	N/A		**2390.0**	N/A		**1410.0**	N/A		**1550.0**	N/A	
Li	mg/kg																
Mg	mg/kg	5	**1520.0**	N/A		**2770.0**	N/A		**5610.0**	N/A		**5530.0**	N/A		**2580.0**	N/A	
Mn	mg/kg	5	**122.0**	N/A		**820.0**	N/A		**372.0**	N/A		**215.0**	N/A		**285.0**	N/A	
Mo	mg/kg	4	**0.17**	N/A		**0.52**	N/A		**0.60**	N/A		**0.55**	N/A		**0.32**	N/A	
Na	mg/kg	5	**54.2**	N/A		**59.9**	N/A		**153.0**	N/A		**298.0**	N/A		**170.0**	N/A	
Ni	mg/kg	7	**9.50**	1.10		**14.8**	1.07		**27.6**	2.30		**7.97**	0.80		**9.75**	0.75	
P	mg/kg	5	**396.0**	N/A		**767.0**	N/A		**538.0**	N/A		**680.0**	N/A		**580.0**	N/A	
Pb	mg/kg	6	**13.6**	1.38		**13.9**	2.04		**12.3**	2.58		**13.4**	1.03		**11.3**	1.75	
S	mg/kg	5	**178.0**	N/A		**280.0**	N/A		**275.0**	N/A		**372.0**	N/A		**146.0**	N/A	
Sb	mg/kg																
Se	mg/kg	2	**1.45**	N/A		**1.45**	N/A		**1.38**	N/A		**0.70**	N/A		**0.87**	N/A	
Sn	mg/kg																
Sr	mg/kg	2	**21.9**	N/A		**14.6**	N/A		**30.5**	N/A		**75.9**	N/A		**19.7**	N/A	
V	mg/kg	1	**39.9**	N/A		**44.3**	N/A		**41.0**	N/A		**30.7**	N/A		**35.8**	N/A	
Zn	mg/kg	5	**26.9**	N/A		**80.7**	N/A		**49.7**	N/A		**54.5**	N/A		**38.2**	N/A	
Hg (US-EPA 7470 or 7471)	mg/kg	1	**0.026**	N/A		**0.020**	N/A		**0.023**	N/A		**0.029**	N/A		**0.015**	N/A	

n = Number of labs submtting results
MAD = Median Average Deviation
N/A = Not applicable as there are too few labs submitting data for this test to run statistics

H = High - Outside 2.5* +/- MAD
L = Low - Outside 2.5* +/- MAD

VH = Very High - Outside 4* +/- MAD
VL = Very Low - Outside 4* +/- MAD