NAPT Program
North American Proficiency Testing

Soil Science Society of America

2023 North American Proficiency Testing Program
Quarter 3 Report - 10/11/2023

Laboratory ID
General

Soil			Soil 2023-111			Soil 2023-112			Soil 2023-113			Soil 2023-114			Soil 2023-115			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	%	18	**48.8**	3.25		**53.8**	2.82		**39.0**	2.91		**48.9**	2.45		**47.0**	3.87			
pH - sp	Unit	26	**6.60**	0.13		**6.64**	0.13		**7.79**	0.16		**7.41**	0.15		**7.54**	0.15			**pH Group**
ECe - sp	dS/m	28	**0.85**	0.087		**0.71**	0.062		**1.63**	0.18		**1.54**	0.16		**1.34**	0.13			**EC Group**
HCO3 - sp	mmolc/L	14	**6.19**	0.51		**4.60**	0.98		**4.12**	1.10		**4.41**	0.58		**4.47**	0.90			
Ca - sp	mmolc/L	23	**6.47**	1.14		**4.09**	0.37		**9.96**	1.18		**8.03**	1.27		**6.22**	0.72			
Mg - sp	mmolc/L	21	**2.25**	0.32		**2.81**	0.39		**6.03**	0.86		**5.39**	0.60		**2.08**	0.27			
Na - sp	mmolc/L	22	**0.48**	0.064		**0.21**	0.023		**3.09**	0.21		**1.88**	0.16		**3.54**	0.31			
SAR - sp	value	22	**0.22**	0.020		**0.11**	0.020		**1.03**	0.074		**0.70**	0.065		**1.69**	0.10			
Cl - sp	mmolc/L	17	**0.32**	0.050		**0.32**	0.062		**1.30**	0.19		**0.78**	0.15		**2.49**	0.31			
SO4 - sp	mmolc/L	15	**1.65**	0.26		**1.01**	0.34		**11.1**	2.08		**1.64**	0.29		**1.80**	0.29			
NO3 - sp	mmolc/L	8	**0.26**	0.25		**0.16**	0.15		**1.30**	0.71		**5.64**	0.52		**2.16**	0.44			
B - sp	mg/L	15	**0.072**	0.038		**0.091**	0.020		**0.28**	0.020		**0.17**	0.030		**0.13**	0.021			
pH & EC (1:1 or 1:2)																			
EC (1:1)	(dS/m)	28	**0.40**	0.070		**0.31**	0.024		**0.71**	0.068		**0.74**	0.048		**0.58**	0.049			**EC Group**
EC (1:2)	(dS/m)	37	**0.26**	0.055		**0.22**	0.020		**0.52**	0.058		**0.49**	0.042		**0.40**	0.031			**EC Group**
pH (1:1) Water	Unit	72	**6.58**	0.13		**6.77**	0.14		**8.02**	0.16		**7.60**	0.15		**7.72**	0.15			**pH Group**
pH (1:2) Water	Unit	23	**6.80**	0.14		**6.84**	0.14		**8.10**	0.16		**7.69**	0.15		**7.80**	0.16			**pH Group**
pH (1:1) 0.01M CaCl2	Unit	22	**6.22**	0.12		**6.38**	0.13		**7.72**	0.15		**7.31**	0.15		**7.34**	0.15			**pH Group**
pH (1:2) 0.01M CaCl2	Unit	6	**6.40**	0.13		**6.38**	0.13		**7.69**	0.15		**7.30**	0.15		**7.29**	0.15			**pH Group**
Lime Req.																			
SMP Buffer pH	Unit	21	**6.94**	0.14		**6.93**	0.14		**7.50**	0.15		**7.33**	0.15		**7.38**	0.15			**pH Group**
Adams-Evans Buf pH	Unit	7	**7.57**	0.15		**7.58**	0.15		**7.81**	0.16		**7.66**	0.15		**7.74**	0.16			**pH Group**
Woodruff Buf. pH	Unit	17	**6.80**	0.14		**6.84**	0.14		**7.15**	0.14		**7.11**	0.14		**7.11**	0.14			**pH Group**
Mehlich Buffer pH	Unit	8	**6.38**	0.13		**6.40**	0.13		**6.76**	0.14		**6.72**	0.13		**6.76**	0.14			**pH Group**
Sikora Buffer pH	Unit	29	**7.00**	0.14		**7.00**	0.14		**7.56**	0.15		**7.32**	0.15		**7.40**	0.15			**pH Group**
Titratable Acidity	cmol/kg																		
Inorganic Nitrogen (NO3-N & NH4-N)																			
NO3-N Cd. Rd.	mg/kg	57	**7.66**	0.62		**6.90**	0.49		**16.2**	1.07		**55.0**	2.80		**27.0**	1.20			**NO3 Group**
NO3-N ISE	mg/kg	7	**8.46**	N/A		**7.86**	1.37		**19.4**	3.24		**61.3**	31.3		**33.3**	9.74			**NO3 Group**
NO3-N CTA	mg/kg	3	**9.46**	N/A		**8.00**	N/A		**13.0**	N/A		**58.6**	N/A		**26.3**	N/A			**NO3 Group**
NO3-N Ion Chr.	mg/kg																		**NO3 Group**
NO3-N Other	mg/kg	11	**7.22**	1.19		**7.08**	1.82		**16.4**	1.46		**51.8**	2.77		**26.1**	1.62			**NO3 Group**
NH4 - N (KCl Extr.)	mg/kg	40	**6.48**	0.58		**70.3**	4.48		**19.9**	1.69		**74.1**	4.31		**74.1**	3.67			
Phosphorus and Sulfur																			
PO4-P Bray P (1:10)	mg/kg	36	**44.0**	2.32		**70.4**	2.30		**66.0**	7.90		**71.0**	3.60		**118.0**	7.52			**PO4 Group**
PO4-P Bray P1 (1:7)	mg/kg	5	**37.9**	0.76		**53.8**	7.50		**51.7**	5.70		**56.3**	3.95		**91.6**	N/A			**PO4 Group**
PO4-P Olsen/Bicarb	mg/kg	45	**23.3**	1.75		**54.0**	3.00		**21.1**	2.50		**64.7**	5.65		**81.2**	5.15			**PO4 Group**
PO4-P AB-DTPA	mg/kg	1	**18.3**	N/A		**37.2**	N/A		**16.5**	N/A		**33.1**	N/A		**48.7**	N/A			
PO4-P Modified Morgan	mg/kg	3	**8.50**	N/A		**12.5**	N/A		**90.8**	N/A		**20.6**	N/A		**46.3**	N/A			
PO4-P True Morgan	mg/kg	6	**9.27**	1.77		**14.2**	2.60		**80.0**	23.2		**21.9**	N/A		**51.2**	8.69			
PO4-P Mod. Kelowna	mg/kg	1	**29.0**	N/A		**57.0**	N/A		**21.0**	N/A		**61.0**	N/A		**86.0**	N/A			
PO4-P Stong Bray (1:10)	mg/kg	11	**97.3**	5.13		**167.0**	16.6		**282.0**	10.3		**294.0**	18.7		**438.0**	23.0			
PO4-P Water Soluble	mg/kg																		
SO4 - S (PO4 Extr.)	mg/kg	25	**13.3**	2.13		**10.2**	2.20		**65.6**	9.15		**15.0**	2.00		**13.1**	2.47			
Bases																			
K NH4OAc	mg/kg	65	**291.0**	10.9		**261.0**	12.0		**274.0**	16.2		**478.0**	18.0		**690.0**	37.0			**K Group**
Ca NH4OAc	mg/kg	60	**2910.0**	124.0		**1810.0**	93.7		**4000.0**	488.0		**3070.0**	139.0		**2820.0**	108.0			
Mg NH4OAc	mg/kg	60	**395.0**	20.0		**458.0**	19.5		**624.0**	37.0		**906.0**	48.0		**405.0**	15.1			
Na NH4OAc	mg/kg	48	**20.0**	2.55		**11.6**	2.18		**74.1**	4.70		**64.2**	3.25		**110.0**	5.20			
Bray Extractable K	mg/kg	5	**215.0**	N/A		**188.0**	N/A		**210.0**	N/A		**315.0**	N/A		**469.0**	N/A			
K- Bicarb.	mg/kg	4	**226.0**	N/A		**222.0**	N/A		**184.0**	N/A		**330.0**	N/A		**491.0**	N/A			**K Group**

K - Modified Morgan	mg/kg	4	**271.0**	N/A	**255.0**	N/A	**254.0**	N/A	**390.0**	N/A	**671.0**	N/A	
K - True Morgan	mg/kg	4	**186.0**	N/A	**187.0**	N/A	**143.0**	N/A	**268.0**	N/A	**412.0**	N/A	
Ca Modified Morgan	mg/kg	3	**2820.0**	N/A	**1720.0**	N/A	**9190.0**	N/A	**2700.0**	N/A	**2760.0**	N/A	
Aluminum KCL Extr.	mg/kg	5	**0.40**	N/A	**0.50**	N/A	**0.60**	N/A	**0.75**	N/A	**0.50**	N/A	
Mehlich-1 Multi Element													
Scoop Soil Mass	g	5	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	**5.00**	N/A	
P	mg/kg	8	**62.0**	5.60	**36.5**	3.48	**84.1**	8.96	**146.0**	17.9	**271.0**	29.1	
K	mg/kg	8	**183.0**	6.64	**173.0**	3.46	**113.0**	5.85	**274.0**	18.6	**418.0**	23.0	
Ca	mg/kg	8	**2730.0**	181.0	**1790.0**	120.0	**5220.0**	714.0	**2670.0**	130.0	**3130.0**	142.0	
Mg	mg/kg	7	**372.0**	25.9	**400.0**	18.7	**498.0**	16.2	**726.0**	38.4	**366.0**	8.18	
Mn	mg/kg	7	**58.7**	1.42	**407.0**	8.13	**22.7**	3.11	**284.0**	12.8	**241.0**	4.81	
Zn	mg/kg	6	**4.05**	N/A	**16.0**	N/A	**0.11**	0.020	**7.50**	0.64	**5.50**	0.18	
Mehlich-3 Multi-Element													
Scoop Soil Mass	g	23	**2.14**	0.070	**1.90**	0.100	**2.26**	0.075	**2.04**	0.045	**2.00**	0.040	
Assumed Density	g/cm3	21	**1.08**	0.040	**0.96**	0.080	**1.13**	0.045	**1.03**	0.040	**1.04**	0.050	
Volume of Scoop	cm3	18	**2.00**	0.040	**2.00**	0.040	**2.00**	0.040	**2.00**	0.040	**2.00**	0.040	
Extractrant Volume mL	mL	14	**20.0**	0.40	**20.0**	0.40	**20.0**	0.40	**20.0**	0.40	**20.0**	0.40	
P Colorimetric	mg/kg	10	**48.4**	2.45	**102.0**	9.90	**90.8**	5.85	**92.9**	3.26	**155.0**	13.0	
P ICP-AES	mg/kg	53	**55.6**	3.14	**114.0**	6.75	**97.4**	5.50	**101.0**	4.30	**174.0**	8.72	**PO4 Group**
K	mg/kg	50	**303.0**	15.2	**254.0**	18.0	**303.0**	15.8	**487.0**	29.1	**715.0**	37.8	**K Group**
Ca	mg/kg	48	**3250.0**	167.0	**1950.0**	97.0	**5590.0**	248.0	**3200.0**	127.0	**3120.0**	148.0	
Mg	mg/kg	46	**428.0**	17.2	**472.0**	23.6	**753.0**	34.2	**965.0**	36.8	**451.0**	16.8	
Na	mg/kg	38	**23.0**	2.76	**13.3**	2.27	**83.6**	5.25	**66.3**	4.54	**113.0**	6.93	
S	mg/kg	41	**23.3**	1.27	**19.2**	0.84	**113.0**	6.57	**22.6**	0.75	**22.9**	1.26	
Al	mg/kg	29	**679.0**	24.5	**795.0**	27.9	**226.0**	22.8	**515.0**	20.0	**564.0**	18.9	
Zn	mg/kg	44	**5.78**	0.41	**12.6**	0.55	**4.44**	0.27	**9.77**	0.87	**6.95**	0.38	
Mn	mg/kg	44	**114.0**	7.63	**436.0**	16.6	**107.0**	8.66	**328.0**	12.8	**284.0**	13.7	
Fe	mg/kg	43	**174.0**	11.1	**489.0**	50.0	**85.6**	6.14	**388.0**	25.6	**354.0**	25.6	
Cu	mg/kg	44	**2.32**	0.14	**1.36**	0.42	**2.33**	0.21	**4.96**	0.47	**4.58**	0.35	
B	mg/kg	36	**0.80**	0.055	**0.83**	0.11	**2.65**	0.13	**1.52**	0.13	**1.56**	0.15	
Micronutrients													
Zn - DTPA	mg/kg	52	**3.20**	0.20	**7.65**	0.44	**1.59**	0.12	**5.30**	0.32	**3.39**	0.19	
Mn - DTPA	mg/kg	43	**45.1**	3.68	**339.0**	15.3	**31.7**	2.58	**210.0**	9.85	**197.0**	7.13	
Fe - DTPA	mg/kg	47	**52.6**	4.43	**176.0**	13.0	**15.4**	1.24	**81.9**	12.5	**85.1**	8.72	
Cu - DTPA	mg/kg	46	**1.40**	0.100	**2.46**	0.16	**1.23**	0.080	**4.47**	0.24	**3.30**	0.20	
Zn - HCl	mg/kg	1	**5.60**	N/A	**18.9**	N/A	**4.00**	N/A	**13.1**	N/A	**8.40**	N/A	
Mn-H3PO4	mg/kg	8	**45.9**	3.25	**356.0**	9.00	**27.3**	4.42	**220.0**	12.0	**194.0**	8.00	
Cl - Ca(NO3)2 Extr.	mg/kg	12	**5.50**	1.30	**5.19**	1.48	**19.0**	3.90	**13.0**	1.40	**40.2**	4.06	
B - Hot Wat.	mg/kg	18	**0.41**	0.12	**0.42**	0.13	**1.26**	0.37	**0.93**	0.19	**0.81**	0.11	
B - DTPA/Sorbitol	mg/kg	17	**0.35**	0.035	**0.45**	0.13	**1.70**	0.034	**0.95**	0.020	**0.89**	0.060	
N & C													
Total N - Kjeldahl	%	6	**0.15**	0.020	**0.23**	0.020	**0.099**	0.020	**0.14**	0.020	**0.18**	0.020	
Total N - combustion	%	38	**0.15**	0.020	**0.23**	0.020	**0.090**	0.020	**0.13**	0.020	**0.17**	0.020	
TOC - combustion	%	18	**1.55**	0.031	**2.35**	0.080	**0.74**	0.047	**1.46**	0.045	**1.64**	0.045	
Total C - combustion	%	34	**1.62**	0.050	**2.36**	0.072	**1.24**	0.030	**1.50**	0.050	**1.66**	0.050	
OM - Walkley-Black	%	20	**2.72**	0.17	**4.05**	0.21	**1.30**	0.11	**2.70**	0.097	**2.92**	0.095	**OM Group**
OM - LOI (% Wt loss)	%	59	**3.18**	0.13	**4.51**	0.090	**1.73**	0.14	**3.52**	0.22	**3.20**	0.17	**OM Group**
Miscellaneous													
CaCO3 Content	%	8	**0.71**	0.25	**0.39**	0.14	**4.40**	0.37	**0.44**	0.040	**0.39**	0.13	
CEC - Cation Displacement	cmol/kg	7	**18.8**	1.40	**18.9**	1.47	**14.2**	2.49	**24.0**	2.80	**20.0**	0.87	
CEC - Estimation	cmol/kg	12	**20.5**	1.20	**14.0**	0.95	**28.8**	3.19	**25.4**	1.10	**20.2**	1.15	
Soil Density (Scoop)	g/cc	10	**1.26**	0.025	**1.11**	0.040	**1.31**	0.026	**1.20**	0.024	**1.19**	0.030	
Particle Size Analysis - Hydrometer													
Sand 2000 - 50 um	%	29	**32.6**	2.30	**16.6**	3.54	**59.0**	2.00	**45.0**	4.00	**25.0**	5.00	
Silt 50 - 2 um	%	28	**43.0**	3.00	**60.0**	2.50	**16.0**	1.60	**33.1**	2.25	**53.8**	3.49	
Clay 2 - 0 um	%	29	**25.9**	1.84	**23.0**	3.00	**25.0**	1.80	**22.0**	2.72	**21.7**	3.10	
Particle Size Analysis - Pipette													

Sand 2000 - 50 um	%	7	**35.0**	5.00	**22.5**	10.3	**62.5**	2.50	**47.0**	3.52	**27.5**	7.02
Silt 50 - 2 um	%	7	**41.2**	6.15	**56.2**	11.8	**15.0**	3.00	**31.0**	4.80	**48.0**	6.35
Clay 2 - 0 um	%	7	**25.5**	3.50	**21.8**	1.16	**23.2**	2.20	**21.3**	2.30	**22.4**	3.32
Soil Health												
Autoclave-Citrate Extractable (ACE) protein	mg/g	3	**3.44**	N/A	**7.09**	N/A	**1.23**	N/A	**4.79**	N/A	**4.07**	N/A
Microbial CO2 respiration (1 day incubation-ST(	mg/g	5	**0.17**	N/A	**0.22**	N/A	**0.060**	N/A	**0.11**	N/A	**0.12**	N/A
Microbial CO2 respiration (4 day incubation-ST(	mg/g	1	**1.46**	N/A	**1.64**	N/A	**0.56**	N/A	**0.96**	N/A	**0.97**	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	**42.0**	N/A	**48.8**	N/A	**19.7**	N/A	**12.4**	N/A	**26.3**	N/A
Reactive carbon - permanganate oxidizable (PO	mg/kg	5	**510.0**	N/A	**767.0**	84.0	**270.0**	N/A	**640.0**	N/A	**710.0**	N/A

Plant			Plant 2023-207			Plant 2023-208			Plant 2023-209			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	%	20	**94.3**	1.89		**94.1**	1.88		**94.8**	1.90		
NO3 - N Cd Rd.	mg/kg	22	**312.0**	23.5		**60.2**	11.8		**50.7**	8.20		
NO3 - N ISE	mg/kg	2	**466.0**	N/A		**216.0**	N/A		**133.0**	N/A		
NO3 - N Other	mg/kg	5	**342.0**	N/A		**70.0**	N/A		**47.0**	N/A		
NH4 - N	mg/kg	3	**100.0**	N/A		**88.4**	N/A		**80.0**	N/A		
PO4 - P	mg/kg	8	**1050.0**	54.2		**1530.0**	57.6		**1190.0**	60.0		
SO4 - S	mg/kg	3	**3100.0**	N/A		**720.0**	N/A		**5500.0**	N/A		
Cl	%	19	**0.77**	0.024		**0.16**	0.020		**1.07**	0.021		
Total Nâ€"Kjeldahl	%	10	**3.87**	0.11		**1.03**	0.080		**1.64**	0.033		
Total N-combustion	%	59	**4.11**	0.082		**1.10**	0.035		**1.66**	0.047		
Total S-combustion	%	6	**0.35**	0.020		**0.12**	0.024		**0.47**	0.025		
Total C-combustion	%	17	**44.0**	0.88		**42.7**	0.85		**41.9**	0.84		
Wet Digest												
P	%	65	**0.30**	0.020		**0.24**	0.020		**0.23**	0.020		
K	%	65	**2.08**	0.05		**1.07**	0.039		**1.85**	0.038		
Ca	%	64	**0.54**	0.027		**0.49**	0.020		**0.63**	0.026		
Mg	%	65	**0.20**	0.020		**0.26**	0.020		**0.31**	0.020		
S	%	62	**0.33**	0.020		**0.10**	0.020		**0.46**	0.020		
Na	%	46	**0.007**	0.020		**0.010**	0.020		**0.14**	0.020		
B	mg/kg	62	**5.93**	0.70		**10.9**	0.60		**88.0**	3.41		
Cu	mg/kg	65	**7.91**	0.47		**7.05**	0.43		**5.13**	0.33		
Fe	mg/kg	65	**167.7**	7.8		**131.1**	9.4		**101.9**	6.60		
Mn	mg/kg	65	**32.3**	1.69		**34.0**	1.12		**37.4**	2.01		
Mo	mg/kg	20	**0.75**	0.12		**1.23**	0.19		**1.30**	0.17		
Zn	mg/kg	65	**26.8**	1.00		**20.5**	1.01		**29.7**	1.26		
Al	mg/kg	36	**90.4**	14.23		**98.0**	16.00		**48.0**	17.81		
Ba	mg/kg	5	**22.4**	N/A		**7.00**	N/A		**8.18**	N/A		
Cd	mg/kg	4	**0.10**	N/A		**0.20**	N/A		**0.15**	N/A		
Co	mg/kg	2	**0.09**	N/A		**0.20**	N/A		**0.10**	N/A		
Cr	mg/kg	6	**1.13**	0.310		**1.81**	0.377		**0.74**	N/A		
Ni	mg/kg	7	**2.06**	0.240		**0.92**	N/A		**1.70**	N/A		
Pb	mg/kg	3	**0.40**	N/A		**1.10**	N/A		**0.20**	N/A		
Se	mg/kg	1	**0.02**	N/A		**0.04**	N/A		**0.22**	N/A		
Sr	mg/kg	4	**7.73**	N/A		**19.0**	N/A		**12.4**	N/A		
V	mg/kg	3	**4.98**	N/A		**7.42**	N/A		**6.60**	N/A		
Dry Ash												
P	%	12	**0.29**	0.020		**0.23**	0.020		**0.22**	0.020		
K	%	11	**1.98**	0.080		**1.03**	0.021		**1.72**	0.095		
Ca	%	13	**0.47**	0.020		**0.42**	0.020		**0.54**	0.050		
Mg	%	9	**0.18**	0.020		**0.25**	0.020		**0.28**	0.020		
Na	%	8	**0.011**	0.020		**0.015**	0.020		**0.11**	0.022		
B	mg/kg	10	**4.78**	0.19		**9.75**	0.20		**71.7**	5.08		
Cu	mg/kg	13	**3.90**	1.43		**5.61**	1.22		**2.68**	0.81		
Fe	mg/kg	13	**147.0**	31.5		**114.0**	28.0		**87.1**	23.1		
Mn	mg/kg	13	**28.2**	1.80		**30.6**	1.96		**30.6**	2.41		
Mo	mg/kg	5	**0.73**	N/A		**1.07**	N/A		**1.14**	N/A		
Zn	mg/kg	13	**21.2**	3.64		**18.8**	1.43		**22.2**	1.81		
Al	mg/kg	4	**78.2**	N/A		**94.2**	N/A		**66.0**	N/A		
Ba	mg/kg	1	**14.6**	N/A		**5.96**	N/A		**6.16**	N/A		
Cd	mg/kg											
Co	mg/kg											
Cr	mg/kg											
Ni	mg/kg	1	**0.90**	N/A		**0.46**	N/A		**0.40**	N/A		
Pb	mg/kg											
Se	mg/kg											
Sr	mg/kg											
V	mg/kg											

Water			Water 2023-307			Water 2023-308			Water 2023-309		
Analysis	**Units**	***n***	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**	**Median**	**MAD**	**Lab Result**
pH & EC											
pH		26	**7.95**	0.16		**7.70**	0.15		**7.95**	0.16	
EC	dS/m	23	**0.28**	0.020		**0.12**	0.020		**0.39**	0.020	
Cations											
Ca	mmolc/L	30	**1.62**	0.074		**0.66**	0.031		**2.29**	0.095	
Mg	mmolc/L	20	**0.65**	0.020		**0.39**	0.020		**1.17**	0.039	
Na	mmolc/L	26	**0.53**	0.022		**0.080**	0.020		**0.54**	0.027	
K	mmolc/L	25	**0.047**	0.020		**0.010**	0.020		**0.13**	0.020	
NH4-N	mmolc/L	9	**0.005**	0.020		**0.003**	0.020		**0.003**	0.020	
Sum Cations	mmolc/L	13	**2.85**	0.057		**1.17**	0.070		**4.17**	0.083	
SAR	---	11	**0.50**	0.020		**0.11**	0.020		**0.42**	0.020	
Adj-SAR	---	4	**0.77**	N/A		**0.10**	N/A		**0.65**	N/A	
Anions											
HCO3	mmolc/L	18	**2.00**	0.085		**0.81**	0.073		**3.23**	0.19	
CO3	mmolc/L	5	**0.070**	N/A		**0.00**	N/A		**0.21**	N/A	
Cl	mmolc/L	20	**0.56**	0.022		**0.056**	0.020		**0.50**	0.048	
NO3	mmolc/L	21	**0.027**	0.020		**0.018**	0.020		**0.040**	0.020	
SO4	mmolc/L	18	**0.19**	0.020		**0.26**	0.020		**0.24**	0.020	
Sum Anions	mmolc/L	11	**2.76**	0.13		**1.14**	0.083		**4.00**	0.31	
Cation-Anion Difference	---	9	**0.15**	0.13		**0.12**	0.060		**0.12**	0.098	
Miscellaneous											
Boron	mg/L	14	**0.020**	0.020		**0.010**	0.020		**0.029**	0.020	
PO4-P Phosphorus - Spec	mg/L	4	**0.012**	N/A		**0.010**	N/A		**0.11**	N/A	
Phosphorus - ICP (Total)	mg/L	6	**0.012**	0.020		**0.009**	N/A		**0.15**	0.025	
TKN	mg/L	1	**0.080**	N/A					**0.51**	N/A	
Nitrogen Combustion (Total)	mg/L	1	**0.48**	N/A		**0.24**	N/A		**0.92**	N/A	
Total Organic Carbon	mg/L	1	**2.47**	N/A		**0.71**	N/A		**4.18**	N/A	

Environmental			Soil 2023-111			Soil 2023-112			Soil 2023-113			Soil 2023-114			Soil 2023-115		
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	6	**11000.0**	N/A		**12700.0**	N/A		**9840.0**	N/A		**15100.0**	1090.0		**14600.0**	1480.0	
As	mg/kg	4	**6.05**	N/A		**5.77**	N/A		**5.84**	N/A		**1.92**	N/A		**4.67**	N/A	
Ba	mg/kg	2	**78.5**	N/A		**64.5**	N/A		**51.8**	N/A		**100.0**	N/A		**72.4**	N/A	
Be	mg/kg																
Bi	mg/kg																
B	mg/kg	4	**5.17**	N/A		**3.94**	N/A		**8.17**	N/A		**17.8**	N/A		**8.52**	N/A	
Ca	mg/kg	5	**4680.0**	N/A		**3050.0**	N/A		**17700.0**	N/A		**6050.0**	N/A		**5440.0**	N/A	
Cd	mg/kg	6	**0.44**	0.13		**0.28**	N/A		**0.46**	0.10		**0.47**	0.26		**0.73**	N/A	
Co	mg/kg	7	**7.61**	0.34		**9.16**	0.50		**5.04**	0.25		**18.2**	1.86		**6.80**	0.31	
Cr	mg/kg	5	**15.7**	2.10		**19.6**	2.55		**13.1**	1.91		**12.9**	N/A		**19.9**	3.08	
Cu	mg/kg	5	**12.2**	N/A		**12.6**	N/A		**10.5**	N/A		**18.8**	N/A		**15.6**	N/A	
Fe	mg/kg	5	**14600.0**	N/A		**17200.0**	N/A		**14200.0**	N/A		**35100.0**	N/A		**16500.0**	N/A	
K	mg/kg	5	**2130.0**	N/A		**1410.0**	N/A		**2500.0**	N/A		**3320.0**	N/A		**4340.0**	N/A	
Li	mg/kg																
Mg	mg/kg	5	**2950.0**	N/A		**2690.0**	N/A		**5470.0**	N/A		**5170.0**	N/A		**4500.0**	N/A	
Mn	mg/kg	5	**542.0**	N/A		**795.0**	N/A		**270.0**	N/A		**849.0**	N/A		**531.0**	N/A	
Mo	mg/kg	4	**0.22**	N/A		**0.45**	N/A		**0.47**	N/A		**0.22**	N/A		**0.33**	N/A	
Na	mg/kg	5	**94.5**	N/A		**95.0**	N/A		**178.0**	N/A		**357.0**	N/A		**284.0**	N/A	
Ni	mg/kg	7	**15.9**	0.59		**14.5**	1.27		**11.9**	0.50		**10.4**	0.48		**15.6**	0.73	
P	mg/kg	5	**463.0**	N/A		**748.0**	N/A		**721.0**	N/A		**932.0**	N/A		**1010.0**	N/A	
Pb	mg/kg	5	**11.6**	N/A		**12.0**	N/A		**11.5**	N/A		**5.75**	N/A		**10.4**	N/A	
S	mg/kg	5	**223.0**	N/A		**275.0**	N/A		**318.0**	N/A		**187.0**	N/A		**251.0**	N/A	
Sb	mg/kg																
Se	mg/kg	1	**2.42**	N/A		**2.55**	N/A		**2.69**	N/A		**2.77**	N/A		**2.93**	N/A	
Sn	mg/kg																
Sr	mg/kg	1	**22.6**	N/A		**10.9**	N/A		**74.1**	N/A		**39.5**	N/A		**26.9**	N/A	
V	mg/kg	1				**0.55**	N/A		**0.32**	N/A		**5.55**	N/A				
Zn	mg/kg	5	**55.2**	N/A		**81.0**	N/A		**54.1**	N/A		**97.9**	N/A		**73.6**	N/A	
Hg (US-EPA 7470 or 7471)	mg/kg	1	**0.014**	N/A		**0.015**	N/A		**0.009**	N/A		**0.012**	N/A		**0.008**	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

✓