

BROOKSIDE LABORATORIES, INC.

SOIL AUDIT AND INVENTORY REPORT

Name Western Golf Properties City Lake Forest State CAIndependent Consultant Soil and Water Consulting Date 06/15/2018

Sample Location				TEE	TEE	TEE	FAIRWAY	FAIRWAY
BIRCH HILLS GC								
Sample Identification				1	9	18	1	9
Lab Number				0009-1	0010-1	0011-1	0012-1	0013-1
Total Exchange Capacity (ME/100 g)				10.94	6.78	8.19	26.26	18.52
pH (H ₂ O 1:1)				a 8.2	a 7.7	a 7.7	a 8.0	a 7.5
Organic Matter (360°C LOI) %				0.99	1.01	1.15	1.94	4.58
Estimated Nitrogen Release lb/A				40	40	43	59	96
ANIONS	SOLUBLE SULFUR* ppm			57	67	69	279	150
	PHOSPHORUS	MEHLICH III lb/A	P as P ₂ O ₅ ppm of P					
		BRAY II lb/A	P as P ₂ O ₅ ppm of P					
		OLSEN lb/A	P as P ₂ O ₅ ppm of P	18 4	55 12	27 6	18 4	32 7
EXCHANGEABLE CATIONS	CALCIUM*		lb/A	3360	1816	2224	7598	4854
			ppm	1680	908	1112	3799	2427
	MAGNESIUM*		lb/A	352	324	390	1086	954
			ppm	176	162	195	543	477
	POTASSIUM*		lb/A	126	122	86	262	414
			ppm	63	61	43	131	207
	SODIUM*		lb/A	258	224	272	696	530
			ppm	129	112	136	348	265
BASE SATURATION PERCENT								
Calcium %				76.78	66.96	67.89	72.33	65.52
Magnesium %				13.41	19.91	19.84	17.23	21.46
Potassium %				1.48	2.31	1.35	1.28	2.87
Sodium %				5.13	7.18	7.22	5.76	6.22
Other Bases %				3.20	3.70	3.70	3.40	3.90
Hydrogen %				0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS								
Boron** (ppm)				0.56	0.68	1.03	0.76	1.34
Iron** (ppm)				169	142	161	55	124
Manganese** (ppm)				45	41	45	48	53
Copper** (ppm)				0.69	0.58	0.93	1.15	2.15
Zinc** (ppm)				2.83	2.39	6.64	1.34	7.65
Aluminum** (ppm)				161	138	107	113	227
OTHER TESTS	Soluble Salts (mmhos/cm)							
	Chlorides (ppm)							
	NO3-N (ppm)			0.6	0.9	0.5	4.3	4.6
	NH4-N (ppm)			1.0	1.7	1.2	2.8	5.1

a - alkaline soil

* Ammonium Acetate Extractable (pH of 8.1)

** Mehlich III Extractable

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Sample Location		BIRCH HILLS GC	FAIRWAY	GREEN	GREEN	GREEN	GREEN
Sample Identification			18	1	9	12	18
Lab Number			0014-1	0015-1	0016-1	0017-1	0018-1
Total Exchange Capacity (ME/100 g)			24.22	3.22	3.57	3.54	2.85
pH (H ₂ O 1:1)			a 7.8	a 8.0	a 7.9	a 8.0	a 8.0
Organic Matter (360°C LOI) %			2.76	0.43	0.42	0.40	0.38
Estimated Nitrogen Release lb/A			75	17	17	16	15
ANIONS	SOLUBLE SULFUR*	ppm	434	69	46	39	29
	PHOSPHORUS						
	MEHLICH III	lb/A P as P ₂ O ₅ ppm of P					
	BRAY II	lb/A P as P ₂ O ₅ ppm of P					
EXCHANGEABLE CATIONS	OLSEN	lb/A P as P ₂ O ₅ ppm of P	9 2	27 6	5 1	37 8	18 4
	CALCIUM*	lb/A	7018	812	918	928	728
		ppm	3509	406	459	464	364
	MAGNESIUM*	lb/A	956	126	148	136	114
EXCHANGEABLE CATIONS		ppm	478	63	74	68	57
	POTASSIUM*	lb/A	156	210	196	226	170
		ppm	78	105	98	113	85
	SODIUM*	lb/A	744	132	128	114	110
EXCHANGEABLE CATIONS		ppm	372	66	64	57	55
BASE SATURATION PERCENT							
Calcium %			72.44	63.04	64.29	65.54	63.86
Magnesium %			16.45	16.30	17.27	16.01	16.67
Potassium %			0.83	8.36	7.04	8.18	7.65
Sodium %			6.68	8.91	7.79	7.00	8.39
Other Bases %			3.60	3.40	3.50	3.40	3.40
Hydrogen %			0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS							
Boron** (ppm)			0.79	0.46	0.41	0.31	0.32
Iron** (ppm)			63	65	92	58	65
Manganese** (ppm)			44	21	29	22	22
Copper** (ppm)			0.95	0.53	0.48	0.68	0.61
Zinc** (ppm)			1.73	1.45	1.62	1.80	1.89
Aluminum** (ppm)			134	138	119	132	141
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	NO ₃ -N (ppm)		15.6	< 0.5	< 0.5	< 0.5	< 0.5
	NH ₄ -N (ppm)		4.4	0.9	2.3	1.3	1.9

a - alkaline soil

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** Mehlich III Extractable

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Sample Location		YUKAIPA VALLEY GC	TEE	TEE	TEE	FAIRWAY	FAIRWAY
Sample Identification			1	9	18	1	9
Lab Number			0019-1	0020-1	0021-1	0022-1	0023-1
Total Exchange Capacity (ME/100 g)			5.65	5.34	5.06	14.52	15.46
pH (H ₂ O 1:1)			7.0	7.3	7.1	^a 7.7	^a 8.0
Organic Matter (360°C LOI) %			3.61	2.23	2.13	2.98	2.45
Estimated Nitrogen Release lb/A			86	65	63	80	69
ANIONS	SOLUBLE SULFUR*	ppm	79	36	47	84	162
	PHOSPHORUS						
	MEHLICH III	lb/A P as P ₂ O ₅ ppm of P					
	BRAY II	lb/A P as P ₂ O ₅ ppm of P					
EXCHANGEABLE CATIONS	OLSEN	lb/A P as P ₂ O ₅ ppm of P	50 11	105 23	60 13	27 6	78 17
	CALCIUM*	lb/A ppm	1442 721	1380 690	1288 644	3832 1916	3930 1965
	MAGNESIUM*	lb/A ppm	296 148	258 129	248 124	708 354	764 382
	POTASSIUM*	lb/A ppm	92 46	106 53	102 51	134 67	170 85
	SODIUM*	lb/A ppm	204 102	210 105	212 106	590 295	784 392
BASE SATURATION PERCENT							
	Calcium	%	63.81	64.61	63.64	65.98	63.55
	Magnesium	%	21.83	20.13	20.42	20.32	20.59
	Potassium	%	2.09	2.54	2.58	1.18	1.41
	Sodium	%	7.85	8.55	9.11	8.83	11.02
	Other Bases	%	4.40	4.10	4.30	3.70	3.40
	Hydrogen	%	0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS							
	Boron** (ppm)		0.77	0.72	1.33	1.61	1.38
	Iron** (ppm)		285	248	227	271	194
	Manganese** (ppm)		8	10	6	58	65
	Copper** (ppm)		1.13	1.03	1.40	2.26	1.73
	Zinc** (ppm)		4.71	3.89	3.68	2.64	3.05
	Aluminum** (ppm)		140	135	149	306	301
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	NO ₃ -N (ppm)		< 0.5	1.2	0.5	4.5	1.3
	NH ₄ -N (ppm)		3.0	2.1	3.0	1.0	1.0

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Sample Location		YUKAIPA VALLEY GC	FAIRWAY	GREEN	GREEN	GREEN	GREEN
Sample Identification			18	1	9	12	18
Lab Number			0024-1	0025-1	0026-1	0027-1	0028-1
Total Exchange Capacity (ME/100 g)			7.14	4.48	4.39	3.17	4.23
pH (H ₂ O 1:1)			a 7.9	a 7.4	a 7.5	a 7.4	7.2
Organic Matter (360°C LOI) %			1.06	0.98	0.97	1.05	0.78
Estimated Nitrogen Release lb/A			41	39	39	41	31
ANIONS	SOLUBLE SULFUR*	ppm	25	30	35	45	43
	PHOSPHORUS						
	MEHLICH III	lb/A P as P ₂ O ₅ ppm of P					
	BRAY II	lb/A P as P ₂ O ₅ ppm of P					
EXCHANGEABLE CATIONS	OLSEN	lb/A P as P ₂ O ₅ ppm of P	23 5	50 11	78 17	46 10	37 8
	CALCIUM*	lb/A ppm	1844 922	1212 606	1124 562	798 399	1090 545
	MAGNESIUM*	lb/A ppm	372 186	208 104	226 113	172 86	220 110
	POTASSIUM*	lb/A ppm	142 71	72 36	86 43	66 33	82 41
	SODIUM*	lb/A ppm	250 125	144 72	162 81	114 57	140 70
BASE SATURATION PERCENT							
	Calcium	%	64.57	67.63	64.01	62.93	64.42
	Magnesium	%	21.71	19.35	21.45	22.61	21.67
	Potassium	%	2.55	2.06	2.51	2.67	2.49
	Sodium	%	7.61	6.99	8.02	7.82	7.19
	Other Bases	%	3.50	4.00	3.90	4.00	4.20
	Hydrogen	%	0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS							
	Boron** (ppm)		0.72	0.65	0.70	0.65	0.58
	Iron** (ppm)		127	170	172	157	164
	Manganese** (ppm)		30	25	22	24	21
	Copper** (ppm)		1.02	0.45	0.24	0.27	< 0.2
	Zinc** (ppm)		0.80	8.13	7.73	7.78	7.13
	Aluminum** (ppm)		298	80	69	71	83
OTHER TESTS	Soluble Salts (mmhos/cm)						
	Chlorides (ppm)						
	NO ₃ -N (ppm)		0.6	1.4	0.9	0.6	0.8
	NH ₄ -N (ppm)		2.4	1.6	1.2	1.0	2.2

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Sample Location <u>CAMARILLO</u>		TEE	TEE	TEE	FAIRWAY	FAIRWAY
Sample Identification		1	4	10	1	4
Lab Number		0029-1	0030-1	0031-1	0032-1	0033-1
Total Exchange Capacity (ME/100 g)		22.30	19.89	21.72	50.31	25.26
pH (H ₂ O 1:1)		a 7.8	a 7.7	a 7.8	a 8.2	a 8.4
Organic Matter (360°C LOI) %		6.98	7.52	7.03	7.52	5.53
Estimated Nitrogen Release lb/A		110	113	110	113	103
ANIONS	SOLUBLE SULFUR* ppm	56	71	63	2215	187
	PHOSPHORUS MEHLICH III lb/A P as P ₂ O ₅ ppm of P					
	BRAY II lb/A P as P ₂ O ₅ ppm of P					
	OLSEN lb/A P as P ₂ O ₅ ppm of P	394 86	527 115	737 161	618 135	495 108
EXCHANGEABLE CATIONS	CALCIUM* lb/A	4180	4174	4114	10696	4894
	ppm	2090	2087	2057	5348	2447
	MAGNESIUM* lb/A	2180	1770	2034	3934	2314
	ppm	1090	885	1017	1967	1157
	POTASSIUM* lb/A	712	514	940	1222	894
	ppm	356	257	470	611	447
	SODIUM* lb/A	482	316	448	1842	680
	ppm	241	158	224	921	340
BASE SATURATION PERCENT						
Calcium %		46.86	52.46	47.35	53.15	48.44
Magnesium %		40.73	37.08	39.02	32.58	38.17
Potassium %		4.09	3.31	5.55	3.11	4.54
Sodium %		4.70	3.45	4.48	7.96	5.85
Other Bases %		3.60	3.70	3.60	3.20	3.00
Hydrogen %		0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS						
Boron** (ppm)		2.93	2.40	3.75	7.28	3.65
Iron** (ppm)		249	239	300	114	77
Manganese** (ppm)		18	25	21	71	48
Copper** (ppm)		3.96	3.37	4.70	3.93	2.62
Zinc** (ppm)		36.28	42.57	38.46	11.27	7.62
Aluminum** (ppm)		256	207	228	171	130
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					
	NO ₃ -N (ppm)	13.7	14.5	15.7	27.9	13.6
	NH ₄ -N (ppm)	4.4	5.1	3.7	7.0	3.2

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Sample Location <u>CAMARILLO</u>		FAIRWAY	GREEN	GREEN	GREEN	GREEN
Sample Identification		10	1	4	8	10
Lab Number		0034-1	0035-1	0036-1	0037-1	0038-1
Total Exchange Capacity (ME/100 g)		26.16	10.94	9.81	8.31	7.60
pH (H ₂ O 1:1)		a 8.2	a 8.4	a 8.7	a 8.3	a 8.6
Organic Matter (360°C LOI) %		9.47	1.08	0.98	0.87	0.80
Estimated Nitrogen Release lb/A		122	42	39	35	32
ANIONS	SOLUBLE SULFUR* ppm	99	106	68	89	105
	PHOSPHORUS MEHLICH III lb/A P as P ₂ O ₅ ppm of P					
	BRAY II lb/A P as P ₂ O ₅ ppm of P					
	OLSEN lb/A P as P ₂ O ₅ ppm of P	307 67	60 13	64 14	78 17	124 27
EXCHANGEABLE CATIONS	CALCIUM* lb/A	4502	2870	2834	2344	2080
	ppm	2251	1435	1417	1172	1040
	MAGNESIUM* lb/A	2728	648	482	410	406
	ppm	1364	324	241	205	203
	POTASSIUM* lb/A	974	92	58	62	58
	ppm	487	46	29	31	29
	SODIUM* lb/A	670	284	174	188	194
	ppm	335	142	87	94	97
BASE SATURATION PERCENT						
Calcium %		43.02	65.59	72.22	70.52	68.42
Magnesium %		43.45	24.68	20.47	20.56	22.26
Potassium %		4.77	1.08	0.76	0.96	0.98
Sodium %		5.57	5.64	3.86	4.92	5.55
Other Bases %		3.20	3.00	2.70	3.10	2.80
Hydrogen %		0.00	0.00	0.00	0.00	0.00
EXTRACTABLE MINORS						
Boron** (ppm)		4.25	1.02	0.98	0.98	0.87
Iron** (ppm)		94	104	109	112	104
Manganese** (ppm)		63	101	98	102	109
Copper** (ppm)		2.81	1.18	1.02	0.92	0.95
Zinc** (ppm)		7.31	15.00	14.72	14.35	12.06
Aluminum** (ppm)		226	69	52	58	57
OTHER TESTS	Soluble Salts (mmhos/cm)					
	Chlorides (ppm)					
	NO ₃ -N (ppm)	13.3	2.9	1.8	1.9	3.6
	NH ₄ -N (ppm)	5.4	1.7	1.7	1.6	1.6

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