



Client: El Caballero Country Club
Fall 2023 Report

	<u>10/18/23</u>
Humidity/Air Temperature	50%/90°
Green Temperature	(avg)64.9°
Fairway Temperature	(avg)65.65°

WATER	Acceptable Range For Water Sample	Hole #3 9/20/14	Hole #3 10/18/23
pH	6.0-6.5	7.81	7.25
EC	<2.25 mmhos/cm	0.55	0.35
Sodium		60.44	37.15
Calcium	20 - 60 ppm	29.06	26.48
Magnesium	10 - 25 ppm	9.23	6.06
Potassium	5 - 20 ppm	5.59	4.14
Sulfur	30 - 90 ppm	47.58	37.10
Bicarbonate	<120 ppm	146.14	133.31
Boron	<0.67 ppm	0.44	0.44
Chloride	<177 ppm	46.47	33.70

TEE	Acceptable Range For Tissue Sample	9 10/18/23
Nitrogen	2.49%-4.56%	3.96
Phosphorus	0.26%-0.38%	0.47
Potassium	0.95% - 1.97%	1.72
Calcium	0.50%-0.90%	0.61
Magnesium	0.13%-0.16%	0.15
Sodium	622-1709 ppm	919.40

FAIRWAY	Acceptable Range For Tissue Sample	9 10/18/23
Nitrogen	2.49%-4.56%	4.92
Phosphorus	0.26%-0.38%	0.42
Potassium	0.95% - 1.97%	1.56
Calcium	0.50%-0.90%	0.46
Magnesium	0.13%-0.16%	0.11
Sodium	622-1709 ppm	690.20

GREENS	Acceptable Range For Tissue Sample	9,13(avg) 10/18/23	9,13(avg) 11/18/23
Nitrogen	3.0%-6.5%	4.56	3.58
Phosphorus	0.2%-0.55%	0.51	0.42
Potassium	0.86%-2.55%	2.20	5.29
Calcium	0.21%-0.50%	0.51	0.35
Magnesium	0.09%-0.22%	0.15	2.66
Sodium	506- 2264 ppm	1,082.40	1,022.70

TEES	Acceptable Range For Alkaline Soils Sample	9/20/14	9,13 (avg) 10/18/23
Organic Matter (Humus)	2 - 3%	n/r	2.36
Sulfur	12 - 16 ppm	n/r	26.50
Olsen - Phosphorus	13 - 20 ppm	n/r	20.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	n/r	2,728.00
Magnesium	>7% base saturation or at least 200 lbs/acre	n/r	12.37%/252
Potassium - TEC of 0 - 35	100 ppm	n/r	121.00
Manganese	>50 ppm	n/r	27.00

FAIRWAYS	Acceptable Range For Alkaline Soils Sample	9,13(avg) 9/20/14	9,13 (avg) 10/18/23
Organic Matter (Humus)	2 - 3%	7.65	5.89
Sulfur	12 - 16 ppm	112.00	29.50
Olsen - Phosphorus	13 - 20 ppm	59.50	14.50
Calcium - TEC of 6 - 12	1,000 lbs/acre	7,626.00	5,843.00
Magnesium	>7% base saturation or at least 200 lbs/acre	14.4%/936	11.16%/500
Potassium - TEC of 0 - 35	100 ppm	631.50	328.00
Manganese	>50 ppm	n/r	25.00

GREENS	Acceptable Range For Alkaline Soils Sample	9,13(avg) 9/20/14	9,13 (avg) 10/18/23
Organic Matter (Humus)	2 - 3%	1.18	0.71
Sulfur	12 - 16 ppm	25.00	6.00
Olsen - Phosphorus	13 - 20 ppm	18.00	2.50
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,289.00	1,622.00
Magnesium	>7% base saturation or at least 200 lbs/acre	15.32%/190	8.89%/102
Potassium - TEC of 0 - 35	150 ppm	200.50	57.00
Manganese	>50 ppm	n/r	10.00

TEES	Acceptable Range For Saturated Paste Sample	9/20/14	9 10/18/23
Nitrate-Bermudagrass	10 -15 ppm	n/r	<0.5
Phosphorus	2 - 10 ppm	n/r	5.37
Potassium	40 - 100 ppm	n/r	29.13
Calcium	60 - 200 ppm	n/r	32.27
Magnesium	20 - 70 ppm	n/r	7.66
Sodium	0 - 30 ppm	n/r	20.95
Soluble Salts	<1,920 ppm	n/r	253.00
Bicarbonate	<60 ppm	n/r	76.89
Chloride	<1,000 ppm	n/r	27.00
SAR	<4%	n/r	0.86

FAIRWAYS	Acceptable Range For Saturated Paste Sample	9,13(avg) 9/20/14	9 10/18/23
Nitrate-Bermudagrass	10 -15 ppm	108.35	42.00
Phosphorus	2 - 10 ppm	0.88	1.67
Potassium	40 - 100 ppm	71.21	38.61
Calcium	60 - 200 ppm	187.25	109.54
Magnesium	20 - 70 ppm	38.83	16.82
Sodium	0 - 30 ppm	172.65	69.10
Soluble Salts	<1,920 ppm	1,427.50	593.00
Bicarbonate	<60 ppm	42.71	135.49
Chloride	<1,000 ppm	378.50	48.00
SAR	<4%	2.94	1.62

GREENS	Acceptable Range For Saturated Paste Sample	9,13(avg) 9/20/14	9,13(avg) 10/18/23
Nitrate - Pure Distinction Bentgrass	1-3 ppm	28.05	<0.5
Phosphorus	2 - 7 ppm	3.92	1.13
Potassium	25-40 ppm	52.25	9.84
Calcium	50- 75 ppm	43.88	11.92
Magnesium	15-30 ppm	14.02	2.05
Sodium	0 - 30 ppm	119.15	16.04
Soluble Salts	<1,000 ppm	732.00	113.00
Bicarbonate	<60 ppm	47.59	50.69
Chloride	<200 ppm	235.50	7.50
SAR	<4%	4.02	1.14



	Green #3	Green #8	Green #13	50/60 Greens Topdress Sand	Green #3 Below 1"	Green #8 Below 1"	Green #13 Below 1"	Original Greens- mix Sand	USGA Recommendations
	0- 1"	0- 1"	0- 1"						
Clay	2.20	2.20	2.20	0.20	1.20	1.20	1.20	1.40	<= 5.0%
Silt	0.60	0.90	0.50	0.80	0.50	1.30	0.50	combined	<= 3.0%
Sand	96.90	93.50	94.60	99.00	98.10	97.30	97.60	97.90	94 - 100%
Gravel	0.30	3.40	2.70	0.00	0.20	0.20	0.70	0.70	
Organic Material	1.14	1.23	2.84	0.16	0.74	0.64	0.71	1.10	
<u>Sieve #:</u>									
Fine Gravel 10	0.30	3.40	2.70	0.00	0.20	0.20	0.70	0.70	2.0mm <= 3.0%
Very Coarse Sand 18	6.90	6.30	7.60	0.00	7.20	6.70	8.10	9.20	2.0mm + 1.0mm <= 10%
Coarse Sand 35	31.70	30.60	35.00	0.50	33.30	30.50	37.10	35.00	
Medium Sand 60	42.30	42.50	39.50	64.30	42.90	43.50	39.70	40.00	0.5mm + 0.25mm >= 60%
Fine Sand 100	13.00	11.80	10.20	26.30	12.60	13.90	10.20	12.00	0.15mm <= 20%
Very Fine Sand 140	2.10	1.50	1.70	6.00	1.60	2.00	1.90	1.40	0.106mm + 0.053mm <= 5.0%
Very Fine Sand 270	0.90	0.70	0.70	1.90	0.50	0.70	0.60	0.20	
Infiltration Rate in/hr	1.0"	1.3"	1.8"	12.6"	7.3"	7.1"	10.2"	31.1"	Greater than 6" per hour
Coefficient of Uniformity	2.71	2.67	2.90	2.25	2.56	2.63	2.80	n/r	1.8 to 3.5 for peat and sand mixes



Green #3



Green #8



Green #13

Nutrient Deficiencies

		P	Mg	K	Mn
TEE	9	21	240	124	32
TEE	13	19	264	118	22
FAIRWAY	9	16	510	338	26
FAIRWAY	13	13	490	318	24
GREEN	9	4	100	47	13
GREEN	13	1	104	67	7

Phosphorus can be added in the form of 11-55-00 at a rate of 3 pounds of product 1,000 sq ft in November, December and monthly until we recheck in the Spring.

Magnesium can be added in the form of 0-0-22 at a rate of 4 pounds of product 1,000 sq ft two times before Winter.

Potassium can be added in the form of 0-0-50 at a rate of 2 pounds of product per 1,000 sq feet monthly- opposite weeks of the 0-0-22.

Manganese can be added in the form of Manganese Oxide at a rate of 3 pounds of product per 1,000 sq ft in November, December and monthly until we recheck in the Spring.

Comments and Next Level Cultural Practices

- The tees and airways are at good nutrient levels and the turf looked great heading into cool down in temperatures
- The greens were lacking in root mass and depth
- There was a “black layer” in the greens-mix profile at approximately 0-1 ½” on each green I sampled. That tells me the greens are not draining well in that top layer
- The combination of a shallow layer and weak roots can lead to soft and wet greens. It is something that can be turned around- but more like turning a boat than a car. It will need to involve multiple aerifications at that 0-2” level in the soil
- It was surprising to find out that there had been only one aerification prior to your arrival. That alone explains some of the current concerns I have.

