

SUMMER 2016
Data Collection Report
Soil & Water Consulting





SOIL and WATER CONSULTING

Course Name: Braemar Country Club

Date of Visit: June 22, 2016

<u>6/22/16</u>	
Humidity/Air Temperature	35%/95°
Greens Temperature	76°
Fairway Temperature	78°

WATER	Acceptable Range For Water Sample	Masters Hole #1 <u>6/22/16</u>
EC	<2.25 mmhos/cm	0.75
Sodium		73.80
Calcium	20 - 60 ppm	53.72
Magnesium	10 - 25 ppm	14.39
Potassium	5 - 20 ppm	4.52
Phosphorus	0.1 - 0.4 ppm	0.24
Nitrate	5 - 50 ppm	0.70
Sulfur	30 - 90 ppm	121.89
Bicarbonate	<120 ppm	179.33
Boron	<0.67 ppm	0.49
Chloride	<177 ppm	75.74



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TEE	Acceptable Range For <u>Alkaline Soils Sample</u>	Masters 1 <u>6/22/16</u>
Organic Matter (Humus)	2 - 3%	2.34
Sulfur	12 - 16 ppm	151.00
Olsen - Phosphorus	13 - 20 ppm	64.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,780.00
Magnesium	>7% base saturation or at least 200 lbs/acre	14.80%/456
Potassium - TEC of 0 - 35	100 ppm	134.00
Copper	>0.8 ppm	1.31
Manganese	>1 ppm	1.00
Zinc	>1 - 2 ppm	5.88

FAIRWAY	Acceptable Range For <u>Alkaline Soils Sample</u>	Masters 1 <u>6/22/16</u>
Organic Matter (Humus)	2 - 3%	9.84
Sulfur	12 - 16 ppm	99.00
Olsen - Phosphorus	13 - 20 ppm	57.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	5,164.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.85%/1024
Potassium - TEC of 0 - 35	100 ppm	388.00
Copper	>0.8 ppm	1.98
Manganese	>1 ppm	1.00
Zinc	>1 - 2 ppm	9.74

GREENS	Acceptable Range For <u>Alkaline Soils Sample</u>	Masters 1 <u>6/22/16</u>
Organic Matter (Humus)	2 - 3%	0.99
Sulfur	12 - 16 ppm	94.00
Olsen - Phosphorus	13 - 20 ppm	11.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,706.00
Magnesium	>7% base saturation or at least 200 lbs/acre	15.06%/214
Potassium - TEC of 0 - 35	150 ppm	33.00
Copper	>0.8 ppm	0.95
Manganese	4 ppm or more	2.00
Zinc	>1 - 2 ppm	5.61



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TEE	Acceptable Range For Saturated Paste Sample	1,1,1 (avg) 6/22/16
Nitrate -Bermudagrass	10-15 ppm	30.13
Phosphorus	2 - 10 ppm	2.43
Potassium	40 - 100 ppm	37.08
Calcium	60 - 200 ppm	118.46
Magnesium	20 - 70 ppm	30.10
Sodium	0 - 30 ppm	115.13
Soluble Salts	<1,920 ppm	875.67
Bicarbonate	<60 ppm	83.78
Chloride	<1,000 ppm	185.33
SAR	<4%	2.45

FAIRWAY	Acceptable Range For Saturated Paste Sample	1,1,1 (avg) 6/22/16
Nitrate -Bermudagrass	10-15 ppm	22.67
Phosphorus	2 - 10 ppm	3.10
Potassium	40 - 100 ppm	53.66
Calcium	60 - 200 ppm	181.24
Magnesium	20 - 70 ppm	55.38
Sodium	0 - 30 ppm	166.78
Soluble Salts	<1,920 ppm	1,240.67
Bicarbonate	<60 ppm	87.86
Chloride	<1,000 ppm	250.67
SAR	<4%	2.80

GREEN	Acceptable Range For Saturated Paste Sample	1,1,1 (avg) 6/22/16
Nitrate - Bentgrass/Poa	1-3 ppm	9.67
Phosphorus	2 - 7 ppm	1.00
Potassium	25-40 ppm	17.69
Calcium	50- 75 ppm	92.17
Magnesium	15-30 ppm	23.02
Sodium	0 - 30 ppm	106.16
Soluble Salts	<1,000 ppm	723.00
Bicarbonate	<60 ppm	44.74
Chloride	<200 ppm	173.33
SAR	<4%	2.57



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TEE	Acceptable Range For Tissue Sample	Masters 1 6/22/16
Nitrogen	2.49%-4.56%	3.32
Phosphorus	0.26% - 0.38%	0.53
Potassium	.95% - 1.97%	2.03
Calcium	0.50%-0.90%	0.59
Magnesium	0.13%-0.16%	0.19
Sulfur	0.32% - 0.51%	0.45
Boron	6-12 ppm	29.10
Iron	104-316 ppm	117.00
Manganese	45-80 ppm	22.90
Copper	2-10 ppm	10.00
Zinc	46-122 ppm	41.20
Aluminum	135-397 ppm	86.50
Sodium	622-1709 ppm	1,600.00

FAIRWAY	Acceptable Range For Tissue Sample	Masters 1 6/22/16
Nitrogen	2.49%-4.56%	3.95
Phosphorus	0.26% - 0.38%	0.42
Potassium	.95% - 1.97%	1.91
Calcium	0.50%-0.90%	0.50
Magnesium	0.13%-0.16%	0.17
Sulfur	0.32% - 0.51%	0.42
Boron	6-12 ppm	35.20
Iron	104-316 ppm	154.00
Manganese	45-80 ppm	22.20
Copper	2-10 ppm	11.50
Zinc	46-122 ppm	41.60
Aluminum	135-397 ppm	69.80
Sodium	622-1709 ppm	1,330.00

GREENS	Acceptable Range For Tissue Sample	Masters 1 6/22/16
Nitrogen	3.0%-6.5%	3.43
Phosphorus	0.2%-0.55%	0.49
Potassium	0.86%-2.55%	2.30
Calcium	0.21%-0.50%	0.73
Magnesium	0.09%-0.22%	0.17
Sulfur	0.23%-0.39%	0.41
Boron	5-24 ppm	190.00
Iron	99-500 ppm	210.00
Manganese	30-160 ppm	58.60
Copper	9-40 ppm	11.60
Zinc	5-60 ppm	52.30
Aluminum	63- 408 ppm	96.70
Sodium	506- 2264 ppm	1,660.00



RECOMMENDATIONS



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Thoughts on the course visit

Thank you again for the visit and opportunity to work with you. I hope this first report will be one of many going forward. When I start with a new client, I focus solely on what I see as deficiencies in the test results. It takes some time to get used to how a fertility recommendation reacts at your golf course with your soils and cultural practices. So, if you can use the information below for the next few months we can evaluate in September on the next visit.

The use of potable water is very helpful and contributes greatly to the conditions of the course. With the expense you incur using better water, you need to get all you can out of it. It is by far your largest input to the golf course. However, even good water with low "negative" salts can compound in the soil and lead to elevated salt levels. If you can't technically flush soils then the best you can do is keep your root-zone in a given area as clean as possible. The picture (below) is of a green during my visit. You said as you begin to see the yellowing color that you start to flush irrigate. (or at least leach as best you can on the greens) What I see from this data is a higher Sodium level in the soil but it seems to be offset proportionally with the "positive" salts such as calcium and magnesium. One thing I see missing on the greens test data is Potassium. At the time of sample collection you had the calcium in the system so as you leach irrigate the sodium will get carried down the soil profile, but maybe not enough available Potassium to take its place and give the turf a "perkier" look to it.

There is more to talk about. As you have time to sit down and go over the data, please feel free to call me.



Notes from the visit

- Using CPS line of foliars.
- EC Meter readings on greens around 1.5.
- Greens mowing height at 0.120".
- 22-5-10 applied in the Spring on tees and fairways.
- Overseed rate of seed is 300 pounds per acre.
- Having a "hodge podge" in the tees and fairways has been acceptable.
- Flushing greens using mister heads and doing it day after my visit.

Fertilizer and Product Recommendations

Tee & Fairways

Use Acidifying products such as pHacid, to access minerals already in the soil to keep them plant available.

Greens (Monthly applications)

Calcium- 5 pounds of product per 1,000 square feet. (Gypsum)

Phosphorus- 2 pounds of product per 1,000 square feet. (11-55-00)

Potassium- 2 pounds of product per 1,000 square feet (0-0-50)

Manganese- Spray 3 ounces per 1,000 square feet rate of Tech-Magnum.