SUMMER 2017

Data Collection Report

Soil & Water Consulting

Course Name: Braemar Country Club
Date of Visit: June 21, 2017

	6/22/16	6/21/17
Humidity/Air Temperature	35%/95°	35%/96°
Greens Temperature	76°	82°
Fairway Temperature	78°	80°

WATER	**Acceptable Range For Water Sample**	**Masters Hole #1 6/22/16**	**US Open Hole #4 6/21/17**
EC	<2.25 mmhos/cm	0.75	0.42
Sodium		73.80	29.90
Calcium	20 - 60 ppm	53.72	33.95
Magnesium	10 - 25 ppm	14.39	6.33
Potassium	5 - 20 ppm	4.52	3.58
Phosphorus	0.1 - 0.4 ppm	0.24	n/t
Nitrate	5 - 50 ppm	0.70	n/t
Sulfur	30 - 90 ppm	121.89	53.19
Bicarbonate	<120 ppm	179.33	109.63
Boron	<0.67 ppm	0.49	0.38
Chloride	<177 ppm	75.74	26.04

TEE	**Acceptable Range For Alkaline Soils Sample**	**Masters 1 6/22/16**	**US Open 4 6/21/17**
Organic Matter (Humus)	2 - 3%	2.34	2.49
Sulfur	12 - 16 ppm	151.00	43.00
Olsen - Phosphorus	13 - 20 ppm	64.00	27.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	3,780.00	2,230.00
Magnesium	>7% base saturation or at least 200 lbs/acre	14.80%/456	15.65%/284
Potassium - TEC of 0 - 35	100 ppm	134.00	71.00
Copper	>0.8 ppm	1.31	0.74
Manganese	>1 ppm	1.00	<1
Zinc	>1 - 2 ppm	5.88	7.67

FAIRWAY	**Acceptable Range For Alkaline Soils Sample**	**Masters 1 6/22/16**	**US Open 4 6/21/17**
Organic Matter (Humus)	2 - 3%	9.84	11.47
Sulfur	12 - 16 ppm	99.00	2,963.00
Olsen - Phosphorus	13 - 20 ppm	57.00	75.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	5,164.00	11,784.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.85%/1024	22.16%/2336
Potassium - TEC of 0 - 35	100 ppm	388.00	383.00
Copper	>0.8 ppm	1.98	2.02
Manganese	>1 ppm	1.00	2.00
Zinc	>1 - 2 ppm	9.74	10.52

GREENS	**Acceptable Range For Alkaline Soils Sample**	**Masters 1 6/22/16**	**US Open 4 6/21/17**
Organic Matter (Humus)	2 - 3%	0.99	1.21
Sulfur	12 - 16 ppm	94.00	89.00
Olsen - Phosphorus	13 - 20 ppm	11.00	8.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	1,706.00	1,658.00
Magnesium	>7% base saturation or at least 200 lbs/acre	15.06%/214	14.26%/192
Potassium - TEC of 0 - 35	150 ppm	33.00	43.00
Copper	>0.8 ppm	0.95	1.01
Manganese	4 ppm or more	2.00	2.00
Zinc	>1 - 2 ppm	5.61	6.00

TEE	**Acceptable Range For Saturated Paste Sample**	**1,1,1 (avg) 6/22/16**	**4,4,3 (avg) 6/21/17**
Nitrate -Bermudagrass	10-15 ppm	30.13	22.43
Phosphorus	2 - 10 ppm	2.43	2.93
Potassium	40 - 100 ppm	37.08	43.04
Calcium	60 - 200 ppm	118.46	144.39
Magnesium	20 - 70 ppm	30.10	45.77
Sodium	0 - 30 ppm	115.13	125.47
Soluble Salts	<1,920 ppm	875.67	821.33
Bicarbonate	<60 ppm	83.78	73.21
Chloride	<1,000 ppm	185.33	163.33
SAR	<4%	2.45	2.31

FAIRWAY	**Acceptable Range For Saturated Paste Sample**	**1,1,1 (avg) 6/22/16**	**4,4,3 (avg) 6/21/17**
Nitrate -Bermudagrass	10-15 ppm	22.67	19.63
Phosphorus	2 - 10 ppm	3.10	1.92
Potassium	40 - 100 ppm	53.66	67.64
Calcium	60 - 200 ppm	181.24	381.26
Magnesium	20 - 70 ppm	55.38	171.19
Sodium	0 - 30 ppm	166.78	264.58
Soluble Salts	<1,920 ppm	1,240.67	2,310.33
Bicarbonate	<60 ppm	87.86	106.57
Chloride	<1,000 ppm	250.67	408.33
SAR	<4%	2.80	2.88

GREEN	**Acceptable Range For Saturated Paste Sample**	**1,1,1 (avg) 6/22/16**	**4,4,3 (avg) 6/21/17**
Nitrate - Bentgrass/Poa	1-3 ppm	9.67	7.60
Phosphorus	2 - 7 ppm	1.00	1.05
Potassium	25-40 ppm	17.69	25.19
Calcium	50- 75 ppm	92.17	119.25
Magnesium	15-30 ppm	23.02	33.50
Sodium	0 - 30 ppm	106.16	91.38
Soluble Salts	<1,000 ppm	723.00	777.33
Bicarbonate	<60 ppm	44.74	50.44
Chloride	<200 ppm	173.33	101.67
SAR	<4%	2.57	1.91

TEE	Acceptable Range For Tissue Sample	US Open 4 6/21/17
Nitrogen	2.49%-4.56%	4.33
Phosphorus	0.26% - 0.38%	0.50
Potassium	0.95% - 1.97%	2.13
Calcium	0.50%-0.90%	0.47
Magnesium	0.13%-0.16%	0.19
Sodium	622-1709 ppm	1,030.00

FAIRWAY	Acceptable Range For Tissue Sample	US Open 4 6/21/17
Nitrogen	2.49%-4.56%	4.32
Phosphorus	0.26% - 0.38%	0.38
Potassium	0.95% - 1.97%	1.62
Calcium	0.50%-0.90%	0.56
Magnesium	0.13%-0.16%	0.19
Sodium	622-1709 ppm	971.00

GREENS	Acceptable Range For Tissue Sample	US Open 4 6/21/17
Nitrogen	3.0%-6.5%	4.10
Phosphorus	0.2%-0.55%	0.56
Potassium	0.86%-2.55%	2.15
Calcium	0.21%-0.50%	0.53
Magnesium	0.09%-0.22%	0.18
Sodium	506- 2264 ppm	1,080.00

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RECOMMENDATIONS

SOIL and WATER CONSULTING

Thoughts on the course visit

It was nice to have lunch and sit down to go over the data from the last visit on 2016. I think it helps to have that more fresh on your mind when you get this Summer's data to look at. One thing we discussed was how you had run a very similar program on the turfgrass year-over- year. So, I would expect to see similar results in the data which I think I did. Nitrate levels were similar, the water may be actually a little better from a standpoint of sodium and bicarbonates and the greens still lag behind on phosphorus and potassium.

I think that the most important area to raise is the potassium on the greens. In the Summer you are watering more and it is leaching through the profile. Having more potassium available to the plant can actually allow you to use less water on the greens. Once it replaces sodium in the soil the plant can better regulate itself from water loss through the cells. The 0-0-50 application in March surely kept your year-over-year levels the same but you probably dip down to insufficient levels by the end of July.

The 22-5-10 applied to the tees and fairways in May definitely effects these test results. It is all positive but you may have a similar dip in available nutrition come August. When the membership may be used to some drop off then, especially if things are hot, you may want to consider an application of 0-0-50 on tees and fairways for the same reason you would do it on the greens. The cost is significant but you may see a reduction in water usage as well as giving the soil another shot of acidification later in the season.

Notes from the visit

- EC Meter readings on greens around 1.2-1.4.
- Greens mowing height at 0.120''.
- Recent greens Fertility was .05 #'s rate of N a week ago in liquid form. 0-0-50 at aerification in March.
- Fairway mowing height- 0.475''.
- Recent fairway fertility was .10#'s of n and iron.
- 22-5-10 applied in the May on tees and fairways.

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)

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)

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