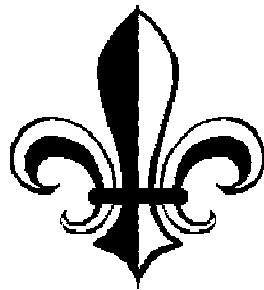


SUMMER 2017
Data Collection Report
Soil & Water Consulting



Las Vegas Country Club



SOIL and WATER CONSULTING

Course Name: Las Vegas Country Club

Date of Visit: June 24, 2017

	<u>6/8/16</u>	<u>9/27/16</u>	<u>3/24/17</u>	<u>6/24/17</u>
Humidity/Air Temperature	10%/105°	20%/88°	37%/64°	5%/110°
Greens Temperature	83.3°	70°	56°	82°
Fairway Temperature	82.6°	72°	59°	80°

	Acceptable Range For Water Sample	Hole #16 <u>6/8/16</u>	Hole #7 <u>9/27/16</u>	Hole #1 <u>3/24/17</u>	Hole #4 <u>6/24/17</u>
EC	<2.25 mmhos/cm	0.80	0.78	0.82	0.76
Sodium		20.40	17.87	21.37	18.35
Calcium	20 - 60 ppm	80.54	75.22	80.62	73.74
Magnesium	10 - 25 ppm	42.38	40.63	43.78	36.50
Potassium	5 - 20 ppm	4.55	10.48	10.61	3.34
Sulfur	30 - 90 ppm	213.72	182.70	211.56	168.27
Bicarbonate	<120 ppm	222.89	228.93	254.13	227.97
Boron	<0.67 ppm	0.10	0.09	0.12	0.09
Chloride	<177 ppm	20.60	26.38	24.34	20.77



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TEE	Acceptable Range For Alkaline Soils Sample	6 6/8/16	7 9/27/16	1 3/24/17	4 6/24/17
Organic Matter (Humus)	2 - 3%	3.94	2.13	1.41	1.20
Sulfur	12 - 16 ppm	96.00	43.00	80.00	268.00
Olsen - Phosphorus	13 - 20 ppm	22.00	15.00	12.00	9.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,422.00	4,022.00	4,188.00	5,582.00
Magnesium	>7% base saturation or at least 200 lbs/acre	23.45%/928	19.38%/646	17.73%/648	14.87%/634
Potassium - TEC of 0 - 35	100 ppm	269.00	186.00	440.00	137.00
Copper	>0.8 ppm	1.23	2.36	0.81	0.89
Manganese	>1 ppm	1.00	2.00	2.00	2.00
Zinc	>1 - 2 ppm	8.57	5.69	2.66	2.39

FAIRWAY	Acceptable Range For Alkaline Soils Sample	6 6/8/16	7 9/27/16	1 3/24/17	4 6/24/17
Organic Matter (Humus)	2 - 3%	5.12	3.72	5.06	5.13
Sulfur	12 - 16 ppm	894.00	179.00	8,376.00	3,557.00
Olsen - Phosphorus	13 - 20 ppm	23.00	20.00	34.00	48.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	6,738.00	5,084.00	22,882.00	13,456.00
Magnesium	>7% base saturation or at least 200 lbs/acre	20.86%/1190	17.13%/690	6.56%/1020	13.97%/1430
Potassium - TEC of 0 - 35	100 ppm	264.00	147.00	244.00	382.00
Copper	>0.8 ppm	1.64	1.38	1.22	1.05
Manganese	>1 ppm	1.00	2.00	2.00	1.00
Zinc	>1 - 2 ppm	11.38	8.72	6.76	9.14

GREENS	Acceptable Range For Alkaline Soils Sample	6 6/8/16	7 9/27/16	1 3/24/17	4 6/24/17
Organic Matter (Humus)	2 - 3%	0.57	0.77	1.00	0.82
Sulfur	12 - 16 ppm	37.00	36.00	126.00	139.00
Olsen - Phosphorus	13 - 20 ppm	45.00	51.00	62.00	53.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,514.00	2,754.00	3,446.00	3,610.00
Magnesium	>7% base saturation or at least 200 lbs/acre	13.03%/242	13.34%/274	14.94%/390	14.86%/412
Potassium - TEC of 0 - 35	150 ppm	41.00	58.00	60.00	122.00
Copper	>0.8 ppm	0.71	0.78	1.66	0.71
Manganese	4 ppm or more	2.00	2.00	2.00	1.00
Zinc	>1 - 2 ppm	3.94	3.66	4.53	3.56



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TEE	Acceptable Range For Saturated Paste Sample	1,10 (avg) 3/24/17	4,13 (avg) 6/24/17
Nitrate - Ryegrass	5 - 10 ppm	<0.5	
Nitrate - Bermudagrass	10 -15 ppm		49.65
Phosphorus	2 - 10 ppm	2.51	1.83
Potassium	40 - 100 ppm	34.02	60.95
Calcium	60 - 200 ppm	205.42	214.12
Magnesium	20 - 70 ppm	97.13	108.03
Sodium	0 - 30 ppm	50.37	67.22
Soluble Salts	<1,920 ppm	1,029.00	1,454.50
Bicarbonate	<60 ppm	333.12	302.61
Chloride	<1,000 ppm	52.50	80.50
SAR	<4%	0.76	0.95

FAIRWAY	Acceptable Range For Saturated Paste Sample	1,10 (avg) 3/24/17	4,13 (avg) 6/24/17
Nitrate - Ryegrass	5 - 10 ppm	14.05	
Nitrate - Bermudagrass	10 -15 ppm		55.85
Phosphorus	2 - 10 ppm	1.47	1.26
Potassium	40 - 100 ppm	82.08	110.12
Calcium	60 - 200 ppm	557.34	599.42
Magnesium	20 - 70 ppm	213.18	260.59
Sodium	0 - 30 ppm	67.22	121.76
Soluble Salts	<1,920 ppm	2,195.00	2,700.50
Bicarbonate	<60 ppm	283.09	267.23
Chloride	<1,000 ppm	84.00	208.00
SAR	<4%	0.61	1.05

GREENS	Acceptable Range For Saturated Paste Sample	1,10 (avg) 3/24/17	4,13 (avg) 6/24/17
Nitrate - Bentgrass	1-3 ppm	<0.5	14.00
Phosphorus	2 - 7 ppm	3.54	2.00
Potassium	25-40 ppm	19.34	89.12
Calcium	50- 75 ppm	65.24	184.27
Magnesium	15-30 ppm	33.24	82.08
Sodium	0 - 30 ppm	21.44	48.32
Soluble Salts	<1,000 ppm	381.50	1,132.00
Bicarbonate	<60 ppm	174.49	198.90
Chloride	<200 ppm	18.00	50.50
SAR	<4%	0.54	0.76



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TEE	Acceptable Range For Tissue Sample	4,13 (avg) <u>6/24/17</u>
Nitrogen	2.49%-4.56%	3.82
Phosphorus	0.26% - 0.38%	0.41
Potassium	0.95% - 1.97%	1.71
Calcium	0.50%-0.90%	0.59
Magnesium	0.13%-0.16%	0.27
Sodium	622-1709 ppm	671.00

FAIRWAY	Acceptable Range For Tissue Sample	4,13 (avg) <u>6/24/17</u>
Nitrogen	2.49%-4.56%	4.76
Phosphorus	0.26% - 0.38%	0.46
Potassium	0.95% - 1.97%	2.58
Calcium	0.50%-0.90%	0.73
Magnesium	0.13%-0.16%	0.41
Sodium	622-1709 ppm	956.50

GREENS	Acceptable Range For Tissue Sample	4,13 (avg) <u>6/24/17</u>
Nitrogen	3.0%-6.5%	5.02
Phosphorus	0.2%-0.55%	0.49
Potassium	0.86%-2.55%	2.17
Calcium	0.21%-0.50%	0.72
Magnesium	0.09%-0.22%	0.36
Sodium	506- 2264 ppm	557.00



RECOMMENDATIONS



SOIL and WATER CONSULTING

Thoughts on the course visit

You will notice that the recommendations haven't changed since Spring except to increase the acid sprays and reduce the 0-0-50 amounts per month. The reason is mainly due to the high bicarbonate levels in the water. That is the only thing that is currently holding back very good soil chemistry. The numbers on this round of data are good but I believe it is because of your recent fertility applications. The 21-0-0 in the tees and fairways data will look a little higher and even better than if you had not applied it. So, as long as you are not seeing too much top growth to keep up with, those applications could continue through Summer on the bermudagrass.

The greens nitrate levels were elevated on both the saturated pastes and the tissues. Your new Helena spray program may have something to do with that- at least on the tissue samples. One comment you had made during the visit was that you were growing the greens a "little healthier" this year. I think meaning that leaner turf conditions for the sake of green speeds were not going to be the goal. I agree with that strategy. Especially this Summer as you find out how the sale of the course proceeds. With that topic of discussion, I would highly recommend going back to sulfur burner usage if the new owners will allow. Treating your water during the critical times of over-seeding and Summer, will make for a simpler to manage fertility program.



Notes from the visit

- Greens Mowing Height- 0.115"
- Recent Greens fertility was Gypsum and 0-0-50 about 1 month ago. Helena Spray Program.
- Fairways Mowing Height- 0.500"
- Recent Fairways fertility was 21-0-0 at 0.5#'s of N every two weeks CAN 17 irrigated.
- Pond at #7 Green was fixed.
- Keeping greens healthy.
- Bermudagrass may be slow but as you get to the first part of July, you may see more than you think now.

Fertilizer and Product Recommendations

Tee & Fairways

*** Synthetic acid spray and water in every two weeks.**

Greens (Monthly applications)

Calcium- 5 pounds of product per acre. (Gypsum)

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

*** Synthetic acid spray and water in every two weeks.**