

FALL 2016
Data Collection Report
Soil & Water Consulting



Coyote Springs Golf Club



SOIL and WATER CONSULTING

Course Name: Coyote Springs Golf Club

Date of Visit: September 22, 2016

	<u>9/30/15</u>	<u>3/24/16</u>	<u>6/9/16</u>	<u>9/22/16</u>
Humidity/Air Temperature	20%/92°	15%/70°	10%/100°	33%/85°
Greens Temperature	78.8°	57.8°	79°	72°
Fairway Temperature	77.4°	57.4°	78°	72°

	Acceptable Range For Water Sample	Hole #2 <u>9/30/15</u>	Hole #5 <u>3/24/16</u>	Hole #6 <u>6/9/16</u>	Hole #6 <u>9/22/16</u>
EC	<2.25 mmhos/cm	0.77	0.79	0.76	0.77
Sodium		78.12	84.04	89.22	81.08
Calcium	20 - 60 ppm	43.39	48.50	42.63	47.39
Magnesium	10 - 25 ppm	19.69	19.93	18.44	21.23
Potassium	5 - 20 ppm	11.19	10.68	11.75	13.63
Sulfur	30 - 90 ppm	97.56	99.60	90.12	100.80
Bicarbonate	<120 ppm	313.01	311.00	278.79	236.13
Boron	<0.67 ppm	0.40	0.33	0.35	0.33
Chloride	<177 ppm	27.74	31.83	30.64	36.59



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TEE	Acceptable Range For Alkaline Soils Sample	2 9/30/15	5 3/24/16	6 6/9/16	6 9/22/16
Organic Matter (Humus)	2 - 3%	0.44	0.43	0.69	1.04
Sulfur	12 - 16 ppm	18.00	19.00	34.00	22.00
Olsen - Phosphorus	13 - 20 ppm	17.00	8.00	13.00	16.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,322.00	4,512.00	4,132.00	4,230.00
Magnesium	>7% base saturation or at least 200 lbs/acre	14.82%/520	15.59%/586	17.90%/666	16.67%/614
Potassium - TEC of 0 - 35	100 ppm	308.00	391.00	471.00	434.00
Copper	>0.8 ppm	0.31	0.31	0.35	0.49
Manganese	>1 ppm	<1	<1	1.00	1.00
Zinc	>1 - 2 ppm	0.63	0.44	0.61	0.98

FAIRWAY	Acceptable Range For Alkaline Soils Sample	2 9/30/15	5 3/24/16	6 6/9/16	6 9/22/16
Organic Matter (Humus)	2 - 3%	0.64	0.33	0.53	1.32
Sulfur	12 - 16 ppm	26.00	37.00	28.00	49.00
Olsen - Phosphorus	13 - 20 ppm	22.00	16.00	22.00	59.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	4,076.00	4,420.00	4,218.00	3,964.00
Magnesium	>7% base saturation or at least 200 lbs/acre	17.38%/618	17.08%/662	18.30%/698	17.28%/628
Potassium - TEC of 0 - 35	100 ppm	383.00	496.00	478.00	471.00
Copper	>0.8 ppm	<0.2	<0.2	0.22	0.32
Manganese	>1 ppm	<1	<1	<1	<1
Zinc	>1 - 2 ppm	0.44	0.90	0.47	0.75

GREEN	Acceptable Range For Alkaline Soils Sample	2 9/30/15	5 3/24/16	6 6/9/16	6 9/22/16
Organic Matter (Humus)	2 - 3%	0.50	0.27	0.59	0.72
Sulfur	12 - 16 ppm	31.00	25.00	25.00	21.00
Olsen - Phosphorus	13 - 20 ppm	24.00	19.00	17.00	22.00
Calcium - TEC of 6 - 12	1,000 lbs/acre	2,956.00	3,228.00	3,658.00	3,664.00
Magnesium	>7% base saturation or at least 200 lbs/acre	12.61%/288	12.45%/320	12.48%/352	12.27%/340
Potassium - TEC of 0 - 35	150 ppm	150.00	233.00	183.00	141.00
Copper	>0.8 ppm	0.53	0.74	0.89	0.91
Manganese	4 ppm or more	1.00	1.00	1.00	1.00
Zinc	>1 - 2 ppm	1.69	2.03	2.60	2.19



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TEE	Acceptable Range For Saturated Paste Sample	6,15 (avg) 6/9/16	6,16 (avg) 9/22/16
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5
Phosphorus	2 - 10 ppm	4.28	3.46
Potassium	40 - 100 ppm	41.25	44.51
Calcium	60 - 200 ppm	51.59	42.37
Magnesium	20 - 70 ppm	26.91	22.68
Sodium	0 - 30 ppm	126.42	139.64
Soluble Salts	<1,920 ppm	633.00	598.00
Bicarbonate	<60 ppm	335.56	380.71
Chloride	<1,000 ppm	55.50	46.50
SAR	<4%	3.55	4.33

FAIRWAY	Acceptable Range For Saturated Paste Sample	6,15 (avg) 6/9/16	6,16 (avg) 9/22/16
Nitrate - Ryegrass	5 - 10 ppm	<0.5	<0.5
Phosphorus	2 - 10 ppm	5.62	4.42
Potassium	40 - 100 ppm	60.28	56.49
Calcium	60 - 200 ppm	104.43	63.14
Magnesium	20 - 70 ppm	40.03	33.21
Sodium	0 - 30 ppm	218.39	183.06
Soluble Salts	<1,920 ppm	1,058.00	795.00
Bicarbonate	<60 ppm	225.74	409.99
Chloride	<1,000 ppm	196.50	74.50
SAR	<4%	4.62	4.62

GREEN	Acceptable Range For Saturated Paste Sample	6,15 (avg) 6/9/16	6,16 (avg) 9/22/16
Nitrate - Bentgrass	1-3 ppm	<0.5	<0.5
Phosphorus	2 - 7 ppm	3.07	3.07
Potassium	25-40 ppm	29.77	28.97
Calcium	50- 75 ppm	33.31	42.15
Magnesium	15-30 ppm	12.07	18.49
Sodium	0 - 30 ppm	58.39	61.78
Soluble Salts	<1,000 ppm	339.50	393.00
Bicarbonate	<60 ppm	175.71	263.57
Chloride	<200 ppm	27.50	25.50



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TEE	Acceptable Range For Tissue Sample	7,16 (avg) 9/22/16
Nitrogen	3.34%-5.10%	3.68
Phosphorus	0.35% - 0.55%	0.63
Potassium	2.0% - 3.42%	2.45
Calcium	0.25%-0.5%	0.57
Magnesium	0.16%-0.32%	0.32
Sulfur	0.27% - 0.56%	0.51
Boron	5-17 ppm	31.65
Iron	97-934 ppm	116.50
Manganese	30-73 ppm	28.90
Copper	6-38 ppm	13.25
Zinc	16-84ppm	54.00
Aluminum	52-92 ppm	78.80
Sodium	229-1107 ppm	1,465.00

FAIRWAY	Acceptable Range For Tissue Sample	7,16 (avg) 9/22/16
Nitrogen	3.34%-5.10%	3.70
Phosphorus	0.35% - 0.55%	0.59
Potassium	2.0% - 3.42%	2.34
Calcium	0.25%-0.5%	0.45
Magnesium	0.16%-0.32%	0.29
Sulfur	0.27% - 0.56%	0.43
Boron	5-17 ppm	27.10
Iron	97-934 ppm	177.50
Manganese	30-73 ppm	28.10
Copper	6-38 ppm	12.85
Zinc	16-84ppm	55.90
Aluminum	52-92 ppm	56.20
Sodium	229-1107 ppm	1,530.00

GREEN	Acceptable Range For Tissue Sample	7,16 (avg) 9/22/16
Nitrogen	3.0%-6.5%	3.24
Phosphorus	0.2%-0.55%	0.58
Potassium	0.86%-2.55%	2.19
Calcium	0.21%-0.50%	0.54
Magnesium	0.09%-0.22%	0.26
Sulfur	0.23%-0.39%	0.47
Boron	5-24 ppm	28.65
Iron	99-500 ppm	163.00
Manganese	30-160 ppm	58.10
Copper	9-40 ppm	16.65
Zinc	5-60 ppm	65.10
Aluminum	63- 408 ppm	52.55
Sodium	506- 2264 ppm	1,280.00



RECOMMENDATIONS



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Thoughts on the course visit

The course looked very good the day of my visit. The ryegrass was dense and growing and the greens made it through the Summer with no noticeable issues. The drone photo below does show some healed or healing dry spots from the Summer. With sand based fairway construction dry areas will always be there. With as much wind as you get, irrigation coverage, even if heads are properly spaced, can be lacking. Most of them were on mounds. When I was collecting samples in those areas I found the rooting to be as good as anywhere else. So, recovery should not be an issue. Your fertility and amendments program on the ryegrass has been solid over the past 3 years. One thing that can help in these drier areas is aerification. If you can map some of these areas for next season and do 2-3 aerifications on them prior to the Summer stress, that may help in shorten the time the spots are noticeable and speed recovery.

One topic we discussed with Curt was working in the landscaped areas of the golf course to get them back to where they were 10 years ago. In, my opinion, that would really add to the look of the property but it would require a separate crew dedicated to the areas. With housing starting soon, I could imagine potential buyers riding around the golf course. As they see things from the cart path, landscape may be more noticeable to them than something out of place on the playable areas of the course. I understand that you have to factor in your return on investment to clean up the landscape but in this case, you may be able to benefit the golf course aesthetically and help sell houses at the same time.

One final area we looked at was near the Pro shop and lounge. The idea of a new Practice greens was brought up. In the specific area where it is proposed, there will need to be many plants removed. I also think it requires a professional contractor and someone to help you design it. The size of the green would be a maintenance issue in itself so, proper construction of the green will matter greatly. It would need to be very flat and well drained to work properly. I would also add that I wouldn't put actual holes in it. Just use moveable pins that can be easily rotated during the day to help with wear and traffic issues. In my travels I see these sort of small greens quite a bit. In theory, they add a nice "hangout" for tournaments and contests. However, because they are so small they can quickly become more of an eye sore without some planning and good execution. Also, plan on some coordinated help from the Pro Shop staff to keep the green blown off and cleaned during a normal day.



Notes from the visit

- Greens mowing height @ 0.130"
- Recent fertility to greens- Knife, Perk-up, Protesyn.
- Started, this Summer, implementing a verti-cut and grooming program.
- Fairway mowing height @ 0.500"
- No recent fertility to fairways.
- Some "hot spots" on fairways in the heat of Summer-Healed.
- Considering New Practice Green by buildings.
- Need Landscape crew to put landscape "back together".

Fertilizer and Product Recommendations

Tee & Fairways

Nitrogen- 0.5 pounds per 1,000 square feet rate of Nitrogen. (something high in Potassium-No P needed)

*** Continue to use 7-7-7 and any other acidification products on ryegrass areas.**

Greens (Monthly applications)

Nitrogen- Apply as you see clipping yield lower. Your Floratine sprays are probably enough.

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

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

Manganese- 2 pounds of product per 1,000 square feet rate of Techmagnum. (Manganese Sulfate)