



# SOIL AND WATER CONSULTING

## Data Collection Report

Spring 2020

Date of Collection: 2/29/20

Client: Tucson Country Club



# Testing Results

|                          | <u>3/3/18</u> | <u>3/4/19</u> | <u>2/29/20</u> |
|--------------------------|---------------|---------------|----------------|
| Humidity/Air Temperature | 8%/80°        | 35%/74°       | 20%/75°        |
| Greens Temperature       | 62°           | 52.15°        | 44°            |
| Fairway Temperature      | 60.7°         | 52.5°         | 45°            |

| <b>WATER</b> | <b>Acceptable Range<br/>For Water Sample</b> | <b>Potable Lake<br/><u>3/3/18</u></b> | <b>Effluent Lake<br/><u>3/3/18</u></b> | <b>Hole #5<br/><u>3/4/19</u></b> | <b>Hole #10<br/><u>2/29/20</u></b> |
|--------------|----------------------------------------------|---------------------------------------|----------------------------------------|----------------------------------|------------------------------------|
| EC           | <2.25 mmhos/cm                               | 0.37                                  | 0.36                                   | 0.41                             | 0.35                               |
| Sodium       |                                              | 45.00                                 | 53.32                                  | 59.34                            | 38.89                              |
| Calcium      | 20 - 60 ppm                                  | 33.89                                 | 22.67                                  | 20.61                            | 29.97                              |
| Magnesium    | 10 - 25 ppm                                  | 1.99                                  | 1.67                                   | 1.50                             | 2.04                               |
| Potassium    | 5 - 20 ppm                                   | 4.31                                  | 2.29                                   | 2.28                             | 2.47                               |
| Sulfur       | 30 - 90 ppm                                  | 26.10                                 | 20.57                                  | 28.10                            | 25.61                              |
| Bicarbonate  | <120 ppm                                     | 151.01                                | 155.37                                 | 138.37                           | 130.63                             |
| Boron        | <0.67 ppm                                    | 0.08                                  | 0.10                                   | 0.08                             | 0.06                               |
| Chloride     | <177 ppm                                     | 16.85                                 | 15.66                                  | 32.00                            | 15.66                              |

| <b>TEE</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>1<br/><u>2/29/20</u></b> |
|------------|-----------------------------------------------|-----------------------------|
| Nitrogen   | 3.34%-5.10%                                   | 3.99                        |
| Phosphorus | 0.35% - 0.55%                                 | 0.42                        |
| Potassium  | 2.0% - 3.42%                                  | 2.61                        |
| Calcium    | 0.25%-0.5%                                    | 0.95                        |
| Magnesium  | 0.16%-0.32%                                   | 0.18                        |
| Sodium     | 229-1107 ppm                                  | 950.00                      |

| <b>FAIRWAY</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>1<br/><u>2/29/20</u></b> |
|----------------|-----------------------------------------------|-----------------------------|
| Nitrogen       | 3.34%-5.10%                                   | 4.67                        |
| Phosphorus     | 0.35% - 0.55%                                 | 0.49                        |
| Potassium      | 2.0% - 3.42%                                  | 3.37                        |
| Calcium        | 0.25%-0.5%                                    | 0.50                        |
| Magnesium      | 0.16%-0.32%                                   | 0.22                        |
| Sodium         | 229-1107 ppm                                  | 956.00                      |

| <b>GREENS</b> | <b>Acceptable Range<br/>For Tissue Sample</b> | <b>1,10(avg)<br/><u>2/29/20</u></b> |
|---------------|-----------------------------------------------|-------------------------------------|
| Nitrogen      | 3.0%-6.5%                                     | 3.76                                |
| Phosphorus    | 0.2%-0.55%                                    | 0.56                                |
| Potassium     | 0.86%-2.55%                                   | 2.65                                |
| Calcium       | 0.21%-0.50%                                   | 0.46                                |
| Magnesium     | 0.09%-0.22%                                   | 0.20                                |
| Sodium        | 506- 2264 ppm                                 | 757.50                              |

| <b>TEES</b>               | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>9,18(avg)<br/>3/3/18</b> | <b>5,14(avg)<br/>3/4/19</b> | <b>1,10(avg)<br/>2/29/20</b> |
|---------------------------|-------------------------------------------------------|-----------------------------|-----------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 3.07                        | 3.31                        | 3.28                         |
| Sulfur                    | 12 - 16 ppm                                           | 23.50                       | 17.50                       | 15.00                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 11.00                       | 11.50                       | 9.50                         |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 4,518.00                    | 4,508.00                    | 3,100.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 6.9%/227                    | 8.51%/286                   | 7.73%/180                    |
| Potassium - TEC of 0 - 35 | 100 ppm                                               | 172.50                      | 183.00                      | 155.00                       |
| Manganese                 | >50 ppm                                               | 50.00                       | 42.50                       | 43.50                        |

| <b>FAIRWAYS</b>           | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>9,18(avg)<br/>3/3/18</b> | <b>5,14(avg)<br/>3/4/19</b> | <b>1,10(avg)<br/>2/29/20</b> |
|---------------------------|-------------------------------------------------------|-----------------------------|-----------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 3.61                        | 4.61                        | 3.26                         |
| Sulfur                    | 12 - 16 ppm                                           | 28.00                       | 14.50                       | 18.00                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 29.00                       | 24.00                       | 30.00                        |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 3,699.00                    | 3,923.00                    | 3,311.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 8.92%/261                   | 9.79%/305                   | 9.43%/250                    |
| Potassium - TEC of 0 - 35 | 100 ppm                                               | 278.00                      | 283.00                      | 288.50                       |
| Manganese                 | >50 ppm                                               | 41.00                       | 21.50                       | 50.00                        |

| <b>GREENS</b>             | <b>Acceptable Range For<br/>Alkaline Soils Sample</b> | <b>9,18(avg)<br/>3/3/18</b> | <b>5,14(avg)<br/>3/4/19</b> | <b>1,10(avg)<br/>2/29/20</b> |
|---------------------------|-------------------------------------------------------|-----------------------------|-----------------------------|------------------------------|
| Organic Matter (Humus)    | 2 - 3%                                                | 0.91                        | 0.79                        | 0.50                         |
| Sulfur                    | 12 - 16 ppm                                           | 4.00                        | 10.00                       | 10.00                        |
| Olsen - Phosphorus        | 13 - 20 ppm                                           | 18.50                       | 17.00                       | 16.00                        |
| Calcium - TEC of 6 - 12   | 1,000 lbs/acre                                        | 2,105.00                    | 2,126.00                    | 2,141.00                     |
| Magnesium                 | >7% base saturation or<br>at least 200 lbs/acre       | 10.33%/179                  | 10.88%/204                  | 10.72%/201                   |
| Potassium - TEC of 0 - 35 | 150 ppm                                               | 276.00                      | 387.50                      | 375.00                       |
| Manganese                 | >50 ppm                                               | 60.50                       | 65.00                       | 91.50                        |

| <b>TEE</b>         | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>5<br/>3/4/19</b> | <b>10<br/>2/29/20</b> |
|--------------------|--------------------------------------------------------|---------------------|-----------------------|
| Nitrate - Ryegrass | 5 - 10 ppm                                             | 13.90               | 8.60                  |
| Phosphorus         | 2 - 10 ppm                                             | 1.03                | 1.29                  |
| Potassium          | 40 - 100 ppm                                           | 11.10               | 16.92                 |
| Calcium            | 60 - 200 ppm                                           | 37.49               | 40.15                 |
| Magnesium          | 20 - 70 ppm                                            | 5.60                | 5.79                  |
| Sodium             | 0 - 30 ppm                                             | 68.29               | 56.84                 |
| Soluble Salts      | <1,920 ppm                                             | 308.00              | 325.00                |
| Bicarbonate        | <60 ppm                                                | 97.62               | 102.29                |
| Chloride           | <1,000 ppm                                             | 23.00               | 46.00                 |
| SAR                | <4%                                                    | 2.75                | 2.22                  |

| <b>FAIRWAY</b>     | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>5<br/>3/4/19</b> | <b>10<br/>2/29/20</b> |
|--------------------|--------------------------------------------------------|---------------------|-----------------------|
| Nitrate - Ryegrass | 5 - 10 ppm                                             | 11.70               | 13.10                 |
| Phosphorus         | 2 - 10 ppm                                             | 2.41                | 2.29                  |
| Potassium          | 40 - 100 ppm                                           | 24.99               | 26.89                 |
| Calcium            | 60 - 200 ppm                                           | 31.80               | 32.13                 |
| Magnesium          | 20 - 70 ppm                                            | 5.98                | 5.83                  |
| Sodium             | 0 - 30 ppm                                             | 66.40               | 59.11                 |
| Soluble Salts      | <1,920 ppm                                             | 277.00              | 336.00                |
| Bicarbonate        | <60 ppm                                                | 109.82              | 91.98                 |
| Chloride           | <1,000 ppm                                             | 22.00               | 37.00                 |
| SAR                | <4%                                                    | 2.83                | 2.52                  |

| <b>GREENS</b>           | <b>Acceptable Range For<br/>Saturated Paste Sample</b> | <b>5,14(avg)<br/>3/4/19</b> | <b>1,10(avg)<br/>3/4/19</b> |
|-------------------------|--------------------------------------------------------|-----------------------------|-----------------------------|
| Nitrate - Bentgrass/Poa | 1-3 ppm                                                | 2.40                        | <1.65                       |
| Phosphorus              | 2 - 7 ppm                                              | 3.84                        | 4.34                        |
| Potassium               | 25-40 ppm                                              | 14.82                       | 22.59                       |
| Calcium                 | 50- 75 ppm                                             | 10.01                       | 25.26                       |
| Magnesium               | 15-30 ppm                                              | 3.05                        | 4.40                        |
| Sodium                  | 0 - 30 ppm                                             | 29.52                       | 37.94                       |
| Soluble Salts           | <1,000 ppm                                             | 131.00                      | 205.00                      |
| Bicarbonate             | <60 ppm                                                | 61.01                       | 90.49                       |
| Chloride                | <200 ppm                                               | 9.00                        | 15.50                       |
| SAR                     | <4%                                                    | 2.12                        | 1.82                        |