



IRRIGATION WATER



LAS VEGAS COUNTRY CLUB

IRRIGATION WATER QUALITY COMPARISON

2025–2026 Average vs. 2015–2023 Average vs. 2010 & 2014 Average

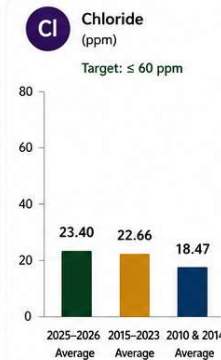
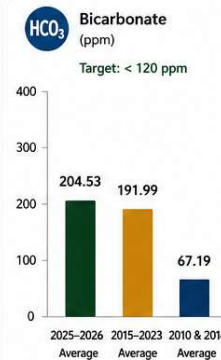
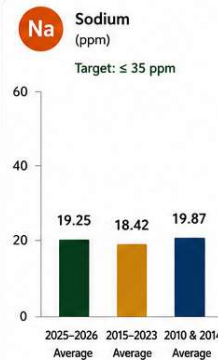
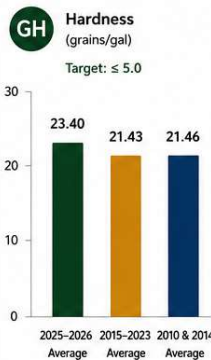
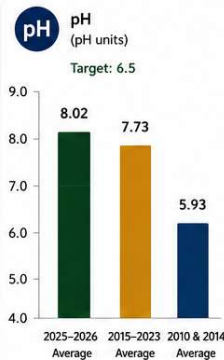


DATE OF VISIT:
June 16, 2026

2025–2026
Average
(2 Samples)

2015–2023
Average
(9 Samples)

2010 & 2014
Average
(2 Samples*)



SUMMARY INSIGHTS

pH Water from 2010 & 2014 was acid-treated, resulting in significantly lower pH compared to later periods.

GH Hardness levels are consistent and well above the 5.0 grains/gal target in all periods.

Na Sodium levels are well below the 35 ppm target in all periods.

HCO₃ Bicarbonate was much lower during acid treatment (2010 & 2014) and increased after treatment ended.

Cl Chloride levels are well below the 60 ppm target in all periods.

TREATMENT BENEFIT NOTE

Water sampled in 2010 & 2014 was acid-treated, resulting in substantially lower pH and bicarbonate levels. Treatment effectively reduced alkalinity and stabilized water quality, which benefits turf performance and irrigation system efficiency.
* 2 Samples (2010 & 2014)

PARAMETER	TARGET / BENCHMARK	2025–2026 AVERAGE (2 Samples)	2015–2023 AVERAGE (9 Samples)	2010 & 2014 AVERAGE (2 Samples*)	CHANGE (25–26 vs. 15–23)	CHANGE (25–26 vs. 10 & 14)	COMPARISON
pH pH (pH units)	6.5	8.02	7.73	5.93	+0.29	+2.09	↑ Higher (Above Target)
GH Hardness (grains/gal)	≤ 5.0	23.40	21.43	21.46	+1.97	+1.94	↑ Higher (Above Target)
Na Sodium (ppm)	≤ 35 ppm	19.25	18.42	19.87	+0.83	-0.62	✓ Within Target
HCO₃ Bicarbonate (ppm)	< 120 ppm	204.53	191.99	67.19	+12.54	+137.34	↑ Higher (Above Target)
Cl Chloride (ppm)	≤ 60 ppm	23.40	22.66	18.47	+0.74	+4.93	✓ Within Target

IRRIGATION WATER QUALITY BENCHMARKS

pH 6.5

GH ≤ 5.0
grains/gal

Na ≤ 35 ppm

HCO₃ < 120 ppm

Cl ≤ 60 ppm

All results are averages of irrigation
water samples for each respective period.

- On this chart, I am comparing the two most recent samples to historical averages, and to a couple of samples I found when the water was treated when the club used a sulfur burner. As you can see by treating the water, you're able to reduce the pH and the bicarbonates to very low levels. Because the rest of your water is so "clean", injection or burning sulfur for your water works well.
- The well water is very stable and predictable but has high bicarbonates that bind the soil together.





TEES



TEE SOIL ANALYSIS SUMMARY

Average Results by Year



Visit Date:
June 16, 2026



Note: Soil test results are from samples collected on the dates shown.
Results represent laboratory analysis of the tee samples.

- This report covers any samples I've collected on hole #4 and #13 over the years. Although we're only focusing on two areas of the course, the soils are consistent, and I think you can use this information to make decisions for the rest of the course.
- Nutrient levels are very good and you've reduced the phosphorus levels to an acceptable range.





FAIRWAYS



FAIRWAY SOIL ANALYSIS SUMMARY

Average Results by Year



Visit Date:
June 16, 2026



Note: Soil test results are from samples collected on the dates shown.
Results represent laboratory analysis of the fairway samples.

- Something to note is that the organic matter in the fairways has stayed at about the same level since 2010. That's a very good sign that your lighter rates of overseeding and aerification practices have been working.
- Although the potassium levels have decreased compared to the last several years, it is still nearly double the target range.
- No applications are necessary at this time.



GREENS

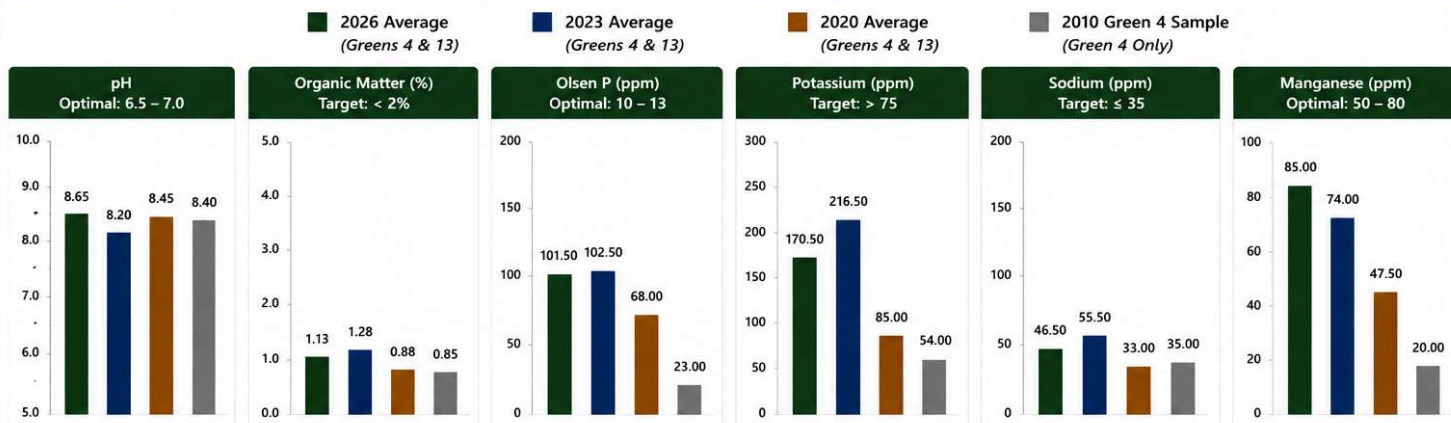


GREEN SOIL ANALYSIS SUMMARY

Average Results by Year



Visit Date:
June 16, 2026



Year / Sample	pH (Optimal: 6.5 - 7.0)	Organic Matter (%) (Target: < 2%)	Olsen P (ppm) (Optimal: 10 - 13)	Potassium (ppm) (Target: > 75)	Sodium (ppm) (Target: ≤ 35)	Manganese (ppm) (Optimal: 50 - 80)
2026 Average (Greens 4 & 13)	8.65	1.13	101.50	170.50	46.50	85.00
2023 Average (Greens 4 & 13)	8.20	1.28	102.50	216.50	55.50	74.00
2020 Average (Greens 4 & 13)	8.45	0.88	68.00	85.00	33.00	47.50
2010 Green 4 Sample (Green 4 Only)	8.40	0.85	23.00	54.00	35.00	20.00

SOIL HEALTH STANDARDS (Benchmarks)

pH 6.5 - 7.0	Organic Matter (Tees & Greens) < 2%	Organic Matter (Fairways) < 5%	Olsen P 10 - 13 ppm	Calcium ≥ 500 ppm	Magnesium ≥ 100 ppm	Potassium ≥ 75 ppm	Sodium ≤ 35 ppm	K : Na Ratio 2 : 1 Ideal	Irrigation Water pH 6.5 Ideal	Irrigation Water Bicarbonate < 120 ppm
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Note: Soil test results are from samples collected on the dates shown.
Results represent laboratory analysis of the green samples.

- When looking at data that goes so many years back, it's interesting to see where things may have started to change. The OM % was mostly unchanged since construction until 2020. After that it began to increase. The current level of organic matter is ok for 17-year-old greens if it is not forming in the top 2". Continue hollow tine aerifications and verti-cutting throughout the Summer.
- All the nutrient levels are more than the optimal and target ranges. Sodium and chloride on the greens remain low, and there is no need for any applications currently.

SUMMARY

- ❑ Overall turf conditions were strong throughout the property, with fairway rooting exceeding 6 inches and a successful ryegrass-to-bermudagrass transition underway. Bermudagrass density and recovery continue to improve as the course moves fully into the summer growing season.
- ❑ Green 4 exhibited a noticeable organic accumulation layer in the upper rootzone profile. Continued emphasis on sand topdressing and organic matter dilution will help preserve infiltration rates, firmness, and summer stress tolerance.
- ❑ Green 13 displayed healthy rooting extending beyond 6 inches; however, rootzone resistance increased substantially at approximately 4 inches, preventing deeper profile sampling. Monitor infiltration and rooting performance in these areas for signs of a developing subsurface restriction layer.
- ❑ The transition program continues to benefit from management decisions that consistently prioritize bermudagrass performance. Conservative overseeding rates and a long-term commitment to bermudagrass remain key contributors to improved summer turf quality and reduced transition stress.
- ❑ Rootzone performance across the golf course reflects a mature and well-managed agronomic program. Despite the age of the greens, surface quality, rooting depth, and overall plant health remain favorable heading into peak summer conditions.
- ❑ August will mark 17 years since the greens were rebuilt. Given the age of the system, continued attention to organic matter management, infiltration testing, and periodic profile evaluation will be important to sustain long-term performance and identify developing physical constraints before they impact playability.

Next Steps: Continue aggressive but measured topdressing and cultivation practices focused on maintaining infiltration, managing organic matter accumulation, and preserving deep rooting through the summer stress period.



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