Water Management – Bayview Golf Club

Point 4 – Public Safety Management for Irrigation Scheme

The current / future irrigation system involves 2 storage ponds situated adjacent to the current 8th green.

The first pond (capacity 10 ML) acts as a silt collection area whereby water supplied from the Ingleside escarpment via Cahill Creek enters via pipes situated under Cabbage Tree Rd. The pond contains 2 x aerators for oxygenation. Clear surface water is then directed to the second pond for use as course irrigation water. Water harvested from surface fairway puddling in Zones 1 , 8 & 9 will be pumped to silt collection pond for treatment.

The second pond (capacity 50 ML) contains 2 x aerators for oxygenation. Water is then pumped to a 500 000 L holding tank via Toro filtration system to be used as course irrigation water for the next cycle.

Irrigation is carried out via 450 Rainbird E700 gear driven pop up sprinkler heads during the hours of 8.30pm to 5am when golf course is closed. The operation is controlled by a fully automated Rainbird system. Volumes vary from 450 000 to 600 000 litres depending on rainfall and time of year.

Water from Irrigation pond is tested every 24 months (sample provided) with additional visual inspections carried out regularly. Extra testing can occur dependent on extraordinary weather events that may affect water quality.

n WaterNutrient Analysis

Customer: Bayview Golf Club Ltd
Field Ref.: Bayview Golf
Date: 4/03/2019

MY-RESULTS

Parameter	Result	V.Low	Low	Adequate	High	V.High
pH	7.3					
Electrical Conductivity (dS/m)	0.50					
Total Dissolved Salts (ppm)	320.00					
Sodium Absorption Ratio	2.16					
Adjusted SAR	2.59					
pHc	8.20					
Residual Sodium Carbonate (RSC)	-0.40					
Water Hardness (ppm as $CaCO_3$)	93.10					
Cation/Anion Ratio	0.90					

Cations	PPM	Meq/L	%	V.Low	Low	Adequate	High	V.High
Calcium (Ca)	23.00	1.15	28.15					
Magnesium (Mg)	8.70	0.73	17.75					
Potassium (K)	4.32	0.11	2.71					
Sodium (Na)	48.00	2.09	51.08					
Iron (Fe)	0.28	0.01	0.31					
Manganese (Mn)	0.06	0.00	0.00					

Anions	PPM	Meq/L	%	V.Low	Low	Adequate	High	V.High
Carbonate (CO_3)	0.15	0.01	0.11					
Bicarbonate (HCO_3)	89.80	1.47	32.41					
Chloride (Cl)	97.00	2.73	60.15					
Sulphate (S)	16.00	0.33	7.34					

	Cation %	Anion %

Other Nutrients	PPM	Meq/L	Kg/m³	V.Low	Low	Adequate	High	V.High
Nitrogen (N)	0.16	0.01	0.00					
Phosphorus	0.31	0	0.00					
Boron (B)	0.00	0	0.00					
Copper (Cu)	0.00	0	0.00					
Zinc (Zn)	0.07	0	0.00					

Water Remediation Indicators and Calculations	V.Low	Low	Adequate	High	V.High
Possibility to Precipitate Calcium Carbonate					
Possibility to Dissolve Calcium Carbonate					
Potential for Corrosion of Irrigation Equip.					
Potential for Scaling of Irrigation Equip.					

Calculated Gypsum Injection Requirement	21.73 kg of Elemental Gypsum required per Megalitre.
Calculated Acid Injection Requirement (Lower pH to 6.4)	17.21 ml of Sulfuric Acid to 1,000L of H_20
Calculated Acid Injection Requirement (Lower pH to 6.4)	68.85 ml of Terreplex to 1,000L of H_20