Root Zone Water Balance Working Model

Project Name: Hollister - Brigantino Park
Project Number: 344738

Designer: Smesrud
Crop: Turf - cool season grasses

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
	Days/Month	31	28	31	30	31	30	31	31	30	31	30	31	365
Water Supply														
Average Precipitation	[in]	2.74	2.79	2.12	0.88	0.34	0.06	0.04	0.05	0.31	0.65	1.65	2.06	13.69
% Effective Precipitation	[%]	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Surface Runoff	[in]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Effective Rainfall	[in]	2.74	2.79	2.12	0.88	0.34	0.06	0.04	0.05	0.31	0.65	1.65	2.06	13.69
Available Water	[in]	0.00	0.00	1.44	4.31	6.59	7.67	8.14	7.44	5.42	3.46	0.15	0.00	44.62
	[MG]	0.0	0.0	1.8	5.3	8.0	9.4	9.9	9.1	6.6	4.2	0.2	0.0	54.5
	[mgd]	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.0	0.0	
	[ac-ft]	0.0	0.0	5.4	16.2	24.7	28.8	30.5	27.9	20.3	13.0	0.6	0.0	167.3
Available Water Flow to Irrigation/Storage?	(Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Irrigation Requirements and Management														
Potential Crop Evapotranspiration	[in]	1.36	1.77	3.27	4.33	5.61	6.20	6.55	6.00	4.65	3.42	1.77	1.30	46.23
Actual Crop Evapotranspiration	[in]	1.36	1.77	3.27	4.33	5.59	5.70	5.94	5.45	4.23	3.14	1.66	1.29	43.71
Net Irrigation Requirement	[in]	0.00	0.00	1.15	3.45	5.27	6.14	6.51	5.95	4.34	2.77	0.12	0.00	35.70
Gross Irrigation Requirement	[in]	0.00	0.00	1.44	4.31	6.59	7.68	8.14	7.44	5.43	3.46	0.15	0.00	44.63
	[MG]	0.0	0.0	1.8	5.3	8.0	9.4	9.9	9.1	6.6	4.2	0.2	0.0	54.5
	[ac-ft]	0.0	0.0	5.4	16.2	24.7	28.8	30.5	27.9	20.3	13.0	0.6	0.0	167.3
Total Irrigation Applied	[in]	0.00	0.00	1.44	4.31	6.59	7.68	8.14	7.44	5.43	3.46	0.15	0.00	44.63
	[MG]	0.0	0.0	1.8	5.3	8.0	9.4	9.9	9.1	6.6	4.2	0.2	0.0	54.5
	[ac-ft]	0.0	0.0	5.4	16.2	24.7	28.8	30.5	27.9	20.3	13.0	0.6	0.0	167.3
Irrigation Losses	[in]	0.00	0.00	0.29	0.86	1.32	1.54	1.63	1.49	1.09	0.69	0.03	0.00	8.93
Soil Profile Water Balance														
Beginning Soil Moisture	[in]	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
Ending Soil Moisture	[in]	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
Deep Percolation	[in]	1.4	1.0	0.0	0.0	0.0	0.5	0.6	0.6	0.4	0.3	0.1	0.8	5.7
Soil Profile Salt Balance														
Beginning Soil Salinity, ECe	[dS/m]	1.5	0.1	0.0	0.6	2.2	4.7	5.5	5.4	5.4	5.4	5.2	4.7	
Ending Soil Salinity, ECe	[dS/m]	0.1	0.0	0.6	2.2	4.7	5.5	5.4	5.4	5.4	5.2	4.7	1.5	

Irrigated Land = 45.0 acres

Soil Water Storage at Field Capacity = 2.20 inches
Soil Water Storage at Permanent Wilting Point = 0.90 inches
Available Water Holding Capacity = 1.30 inches
Soil Water Storage at Minimum Management Allowed Soil Moisture = 1.68 inches

General Design Parameters

Crop Parameters			**Notes:**
Depletion Fraction	[-]	0.40	*Depletion Fraction - Average fraction of total available soil water that can be depleted from the root zone before moisture stress resulting in ET reduction occurs. Yield Response Factor - A slope factor describing the reduction in relative yield according to the reduction in ETc caused by soil water shortage. Salinity Induced Yield Reduction - A slope factor describing the reduction in relative yield according to an incremental increase in ECe for values above the threshold ECe. Threshold ECe - Electrical conductivity of the saturation extract at the threshold of ECe when crop yield first reduces below the maximum yield potential. See " Ref-Yield Response Factors" for typical values of this parameter. See "Ref-Crop Water Parameters" for typical values of the depletion fraction and maximum rooting depth. See "Ref-Crop Salt Tolerance for typical values of the salinity induced yield reduction factor and the threshold ECe.*
Rooting Depth	[ft]	1.5	
Yield Response Factor	[-]	1.00	
Salinity Induced Yield Reduction	[%/(dS/m)]	6.0	
Threshold ECe	[dS/m]	3.9	
Soil Parameters			
Field Capacity	[in/in]	0.12	*Field Capacity - Defined as the water held at a tension of 0.33 Bar. Permanent Wilting Point - Defined as the water held at a tension of 15 Bar. All water content measurements expressed in inches of water per inch of rooting depth. See " Ref-Soil Properties" for typical values of field capacity and permanent wilting point for USDA soil textures.*
Permanent Wilting Point	[in/in]	0.05	
Irrigation System Parameters			
Combined Irrigation Application Efficiency	[-]	0.80	*Combined Irrigation Application Efficiency* - (average depth of water infiltrated and retained in the root zone following irrigation) / (average depth of water applied). *See "Calc-Irrig Applic Efficiency" for guidelines on estimating.*

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