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Lab 11
Engr 115

Input Parameter	
Surface area lake [m ²]	8000
evaporation [in/s]	0.72
evaporation [m ³ /hr]	3.56

Knowns	
12	in/ft
3.28	ft/m
60	s/m
60	m/hr
100	cm/m
1000	m/km

Velocity Meter							
Inflow Method 1	Depth [m]	Width [m]	Cross Area [m ²]	Meter Value [m/s]	Meter Value [m/hr]	Flowrate [m ³ /s]	Flowrate [m ³ /hr]
run 1	0.051	0.30	0.610	0.180	0.0000500	#####	10.19
run 2	0.051	0.30	0.610	0.270	0.0000750	#####	15.30
run 3	0.051	0.30	0.610	0.240	0.0000667	#####	13.61
average flowrate=							13.03

Float							
Outflow Method 1	Depth [m]	Width [m]	Length [m]	Volume [m ³]	Time [s]	Time [hr]	flowrate [m ³ /hr]
run 1	0.10	0.23	0.76	0.02	9.47	0.003	6.73
run 2	0.10	0.23	0.76	0.02	13.28	0.004	4.80
run 3	0.10	0.23	0.76	0.02	8.6	0.002	7.41
average flowrate=							6.32

Bucket					
Outflow Method 2	Bucket Volume [in ³]	Bucket Volume [m ³]	Time [s]	Time [hr]	Flowrate [m ³ /hr]
run 1	298.05	#####	4.2	0.001	4.18
run 2	298.05	#####	4.4	0.001	4.09
run 3	298.05	#####	4.9	0.001	4.41
average flowrate=					4.23

Results	
Total Inflow	Average (m ³ /hr)
method 1	13.03
inflow	13.03

Total Outflow	value [m ³ /hr]
method 1	6.32
method 2	4.23
evaporation	0.14

average outflow	3.56
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3. Fern Lake is not in a steady state because the inflow rate is higher than the average outflow rate.

Rate of volume change	Inflow [m ³ /hr]	Outflow [m ³ /hr]	Depth Change [m ³ /hr]	
inflow - outflow	13.03	3.56	9.47	increasing

Rate of depth change	Rate of Volume [m ³ /hr]	Surface Area [m ²]	Depth Change [cm/hr]	
Rate of volume change	9.47	8000	0.12	increasing