

Haley Isaacson
Lab 11
ENG 115

Input parameters:							
Surface Area Lake (m^2)	8000	Radius of Bucket:	5.625 inches	Hours in a day:	24	Days in November:	30
evaporation:	1.04 inches/nov						
Feet in a meter:	3.28	Meters in a Kilometer:	1000	Inches in a Meter:	39.37	Seconds in a Minute:	60
					Minutes in an Hour:	60	

Inflow: Velocity Meter (method 1)							
Trial Number	Velocity	Depth:	Width:	Cross-Area:	Flowrate:		
1	0.18 m/s	0.05 m	0.30 m	0.02 m^2	0.002832 m^3/s		
2	0.27 m/s	0.05 m	0.30 m	0.02 m^2	0.004249 m^3/s		
3	0.24 m/s	0.05 m	0.30 m	0.02 m^2	0.003777 m^3/s		
						Average Flowrate:	

Outflow: Float (method 2)							
Trial Number	Depth:	Width:	Length Travelled:	Volume:	Time:		
1	0.10 m	0.23 m	0.76 m	0.01770 m^3	9.47 seconds		
2	0.11 m	0.28 m	0.76 m	0.02434 m^3	13.28 seconds		
3	0.09 m	0.30 m	0.76 m	0.02065 m^3	8.60 seconds		

Outflow: Bucket (method 3)							
Trial Number	Bucket Volume	Bucket Volume	Time	Time	Flowrate		
1	298.05469 in^3	0.00488 m^3	4.2 seconds	0.00117 hours	4.18652 m^3/hr		
2	298.05469 in^3	0.00488 m^3	4.4 seconds	0.00122 hours	3.99622 m^3/hr		
3	372.56836 in^3	0.00611 m^3	4.9 seconds	0.00136 hours	4.48555 m^3/hr		
					Average Flowrate:	4.22276 m^3/hr	

Results:		
Total Inflow	Average	
method 1:	13.02914 m^3/hr	
Sum of inflow:	13.02914 m^3/hr	
Total outflow		
method 2:	7.32453 m^3/hr	
method 3:	4.22276 m^3/hr	
Sum of outflow:	11.54729 m^3/hr	
Sum of outflow + evaporation:	11.84080 m^3/hr	

Evaporation:	value (m/nov)	lake surface (m^2)	Evaporation rate (m^3/hr)
	0.02642	8,000	0.293511698

Fern Lake is not in a steady state; the total of the inputs exceed the total of the outputs. More water is entering per hour than is leaving per hour.

Rate of Volume Change:	Inflow (m^3/hr)	Outflow (m^3/hr)	Rate (m^3/hr)	
Inflow-Outflow	13.02914	11.84080	1.18833	Increasing

Rate of Depth Change:	Rate of Volume Change (m^3/h	Surface Area of Lake (m^2)	Rate of Depth Change: (cm/hr)	
Change in Volume/Surface Area	1.18833	8000	0.014854158	Increasing