Comparison of Evaporation Rates from Mine Lakes to the Transpiration Rates from Previous Plant Life

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The purpose of this experiment is to compare the evaporation rates of aquifer tapped mine lakes to the evapotranspiration rates of plant life. The expectations of this project is to observe if manmade mine lakes are losing more water than plant life would. It is hypothesized that mine lakes will lose more water through evaporation than plant life will lose through evapotranspiration. Two different mine lakes were used to compare the water loss in different climates. The Center Hill, FL site (mine A) is a subtropical climate in contrast to the tropical monsoon climate of the Miami, FL site (mine B). Devices used in this project included Class A Evaporation Pans, Evapotranspiration Gages, Anemometers, Thermometers, and Precipitation Gauges. For six months (June-November) data was collected from both mine sites three days a week. In analysis, two formulas were needed for the evaporation rates. The “proportion of adverted energy utilized for evaporation” formula calculated an “alpha”. The “alpha” was used with instrument data in the lake evaporation formula. This formula calculated the amount of mine lake evaporation which was, on average, 94.7621kL/acre for mine A and 425.551kL/acre for mine B. The data collected on the plant evaporation rates, on average, was 48.0235kL/acre for mine A and 31.351kL/acre for mine B. Overall, mine A lost 197.3% more water than the plant life, while mine B lost 1326.9% more water than the plant life. In conclusion, the hypothesis was supported by both mines in which the evaporation measurement exceeded the evapotranspiration measurement.

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