# Assessing the Influence of Swamp Areas on Rangeland Stream Flow Rate at Blair Wallis, Wyoming

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Understanding and quantifying stream flows are crucial for preserving scarce water resources. The purpose of this study was to determine if the presence of adjacent swamp areas affects water flow rate of the Blair-Wallis tributary during the summer runoff season. The findings from this study will provide critical information for water resource management and hydrology research in the region or other similar areas. The tributary region was first studied and surveyed for selecting appropriate measurement locations. Then, a total of three site visits/measurements were conducted. Wading-rod and the salt-dilution methods were used to gather flow rate data. Water quality data were also collected during the second site-visit for water source investigation. It is hypothesized that during the summer runoff season, the amount of change of flow rate for the tributary section passing through the swamp areas will be greater than other comparable sections passing through non-swamp areas. The hypothesis was supported because for the swampy section of the tributary, the average amount of change of flow rate was 0.001871 $m^3/s$, which was 127% greater than the upstream section (0.000826 $m^3/s$), and 82% greater than the downstream section (0.001028 $m^3/s$). The water quality data collected further suggested that the swamp areas might have additional water sources or different flow paths other than the tributary. Additionally, a strong correlation ($R^2$=0.92805) was found between the entry flow rate and the change of flow rate for the tributary section passing through swamp areas.

**Awards Won:**