



PHYSICOCHEMICAL CHARACTERIZATION OF THE WATER IN PAGBANGANAN RIVER, BAYBAY CITY, LEYTE, PHILIPPINES



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INTRODUCTION

Pagbanganan river, is the major river system that traverses Baybay City, Leyte, Philippines. This river provides the food source, irrigation needs, laundry area, and the receiving reservoir for the disposed wastes coming from the agricultural and household sectors. Literature searched shows no data available regarding on the physicochemical properties of water in Pagbanganan river. This study was essential since it will provide baseline data. Results of these study demonstrate significant features of river environments and reveal how human activities on the landscape influenced water quality in both progressive and destructive ways.

ABSTRACT

The result of these study provides the baseline information on the physicochemical properties of Pagbanganan river which could be made available for the community, academe, and the LGU for the environmental mitigation plans on the protection, restoration, and rehabilitation of this environmental resources.

MATERIALS & METHODS

Physicochemical characterizations were evaluated based on the American Public Health Association standard methods (APHA, 2005). Sampling was done in a one-month interval. Significance and differences of physicochemical

quantities were determined using univariate Analysis of Variance (ANOVA) and Tukey's Honesty Significance Difference (HSD) test at 5% level of significance.



pH, TDS and Conductivity



DO, BOD, Total hardness, Total alkalinity, TSS, Temperature and Chlorides



Phosphates and Sulfates

RESULTS & DISCUSSION

Results revealed that the water in Pagbanganan river system had an average pH of 7.4 ± 0.3 , water temperature of $27.8 \pm 0.3^\circ\text{C}$, DO of 5.6 ± 0.4 ppm, BOD of 2.6 ± 1.6 ppm, TSS of 67.7 ± 45.8 mg/L, total hardness (as CaCO_3) of 128.6 ± 5.9 ppm, total alkalinity of 151.1 ± 6.7 ppm, TDS of 25.6 ± 15.2 ppm, water conductivity of 195 ± 2.2 μS , chlorides of 10.4 ± 1.1 mg/L, phosphate (as reactive phosphorous) of 0.04 ± 0.01 ppm, and sulfates of 14.7 ± 5.8 ppm. The statistical analysis revealed that there was no significant difference between the obtained values and the standard limits imposed by the DENR and USEPA.



Figure 1. Anthropogenic activities along the banks of the Pagbanganan River.

CONCLUSIONS

Most of the physicochemical parameters of Pagbanganan river are within the tolerable limit ideal for its intended usage. These served as the baseline data for further assessment of the environmental impacts and other water quality monitoring purposes. This further implies that the water quality of Pagbanganan river is concordant with DENR's Class C Surface water.

REFERENCE(S)

American Public Health Association (APHA). 2005. Standard Methods for Examination of Water and Wastewater. 21st Edition. Washington, DC. pp. 222 – 227, 363 – 366, 239.