

## **Suitability of Interpolation Techniques in Ground Water Analysis Using Geographic Information Systems (GIS): A Case Study Based on Panadura DS Division**

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Even though humans are a part of the environment, possibilism has influenced them to make many changes within the concept of sustainability. This has created many adverse effects on mankind such as climate change. Therefore, correct decisions should be made when interacting with the environment while following the roots of sustainable development. Geographic Information Systems (GIS) are a tool of decision making used in many fields. This study is focused on the application of interpolation techniques when monitoring ground water quality in spatial analysis. This case study is based on the coastal area within 2 km buffer from the coastline to the inland of Panadura DS Division, using 20 selected wells as an access to ground water. pH value and Electric Conductivity (Ec) were used as parameters for the study to determine the most appropriate technique of interpolation. The methodology of the study is a combination of statistical and spatial analysis where extract values for two known points in the study area. Based on five interpolation techniques of Kriging, Inverse Distance Weighted Method (IDW), Natural Neighbour, SP line, Topo to Raster, values have been extracted for two known points separately. Where the technique got exact or the most approximates values was determined as the most suitable for the water quality analysis. According to the analysis out of five interpolation techniques SP line has given the most appropriate values for the known two points where as known pH value of point 03 and 08 is 8.5 and 7.3 respectively and extracted pH values of the same points are 8.33 and 7.42 respectively. Also known Ec values of the two known points are 149 and 681 respectively and extracted Ec values are 148.99 and 681 respectively. All the other techniques have extracted values with high deviation from the known values. Therefore, this study has pointed out that spline can be used as the most appropriate interpolation technique in water quality analysis.

**Keywords:** Interpolation, Spatial Analysis, Ground Water