



SDI Review Form 1.6

Journal Name:	Current Journal of Applied Science and Technology
Manuscript Number:	Ms_CJAST_48383
Title of the Manuscript:	GIS aided ground water quality mapping of Central Brahmaputra Valley Zone of Assam
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	<ul style="list-style-type: none"> - Materials and methods: specify how many wells used in this study; give their characteristics and their surroundings. - The article should treat the geological, hydrogeological and hydrological aspects of the study area. - Explain the variation of water quality parameters according to the physical characteristics of the area and the anthropogenic activities (agriculture, industry, urban areas...). - Compare the results to the observed values. - Treat the difficulties of the model application. 	<ul style="list-style-type: none"> - The entire district was first divided into grids (2.5 × 2.5 km) and a total of 883 grids were demarcated to represent the whole district. One water sample from the existing well/ tube well/ ponds (726 wells, 122 tube wells & 35 ponds) of each grid was collected as per the standard protocol outlined by WHO (1996). Open wells and filter point wells are feasible in all area of the district. In unconsolidated sediments ring wells were constructed by excavating down to the saturated horizon. Cement or earthen rings from 0.80 to 1.20 placed one above another with weep holes in the bottom rings are likely to hold sufficient quantity of water. Depth ranged from 9 to 22 m depending upon the topographic elevation. Surroundings of all the sampling points generally encompassed with the build-up areas following rice centric agriculture with the cultivation of vegetables, oilseeds, pulses, jute etc. - Geologically the district is underlain by rocks of Precambrian age consisting of granites and gneisses, rocks belonging to Barail and Surma series of Tertiary age and Quaternary alluvium. Hydrogeological study revealed the existence of potential aquifer zones down to the depth of 200m. The thickness of the granular zones which mainly constitute sands of various grades, clay and occasional gravel occurs in the Recent to Sub-recent alluvial formations which spread out the whole district from southern part of the river Brahmaputra to the areas around Lanka on south. Hydrologically, major water bearing formations and pebble aquifer zone found extending down to 300 m depth and weathered and fracture zones up to 100 m depth in consolidated rocks. - No difficulties in model application. It was estimated using Geostatistics through ArcGIS 10.4 software. - Once variation of water quality parameters are depicted spatially using IDW methods across 883 GPS points, it gives information more in detail and one could easily correlate the variations with respect to physical and anthropogenic activities.
Minor REVISION comments	<ul style="list-style-type: none"> - Analyse the relationship between the water quality parameters. - How about heavy metals? 	<ul style="list-style-type: none"> - Included in table - We are planning to make an attempt to study the spatial distribution of heavy metal and pollution indices of the study area
Optional/General comments	<ul style="list-style-type: none"> - Give the recommendations according to the findings of this study. 	Groundwater quality parameters that surpassed the desirable limit recommended by WHO were manganese, electrical conductivity and nitrate which accounted 73.5%, 41.22% and 0.79% of the total samples, respectively indicating thereby to strategize plan accordingly to reduce these important parameters. Total Dissolved Solids, calcium, magnesium, carbonate and bi-carbonate in groundwater were recorded within the desirable limit of WHO and thus could be considered as safe. CLUSTER pattern of spatial autocorrelation for manganese suggested focusing its higher values so as to plan suitable management strategies accordingly.



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PART 2:

	Reviewer's comment	Author's comment <i>(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	Common ethical principles in water use are accepted in all geographies and all categories of community. However, arsenic vulnerable risk zone identification for the district is important to arrive whether any ethical principle arise or not.