



SDI FINAL EVALUATION FORM 1.1

PART 1:

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_12452
Title of the Manuscript:	Assessment of Hydrological Properties and Proximate Impact of Soakaway Leachate on Well-Water Quality in Two Residential Areas of Ibadan, Southwestern Nigeria
Type of the Article	Original Research Article

PART 2:

FINAL EVALUATOR'S comments on revised paper (if any)	Authors' response to final evaluator's comments
There is no description of the geology and hydrogeology of the study area in spite of there being available publications that describe it (Tijani and Onodera 2004; Adelena et al. 2008). The reader needs to understand the geology and aquifer(s) in order to understand the study and data. For example, the consideration of proximity of water wells to soakaways in an area where soakaways are all over the study area with no knowledge of groundwater flow direction makes it impossible to determine the source(s) of contaminants. The authors added chemical data in their appendix and in the manuscript. However, data on well depths and distance of wells from soakaways were not included in the data set. These parameters are key to understanding the effects of the soakaways on the aquifer and groundwater. For example, is all groundwater in the entire study area contaminated? Probably. To what extent? Background concentrations of key parameters such as Cl, NO₃, NH₄, etc. in pristine or near pristine groundwater need to be established in order to interpret the geochemical data. This may be done by reference, by calculations, or by sampling a pristine area and analysing the samples. Otherwise, how would you know what has been contaminated and what is natural? Also, the source of contamination needs to be characterized in order to identify the contaminants within the aquifer adjacent to the source and the degree of contamination. There are numerous analyses of sewage and septic effluent in the literature that might help, but the actual composition of the soakaway discharge water is critically important for interpretation purposes. Figure 1 is not much help when it comes to location of soakaways and groundwater flow direction and their relationships with sampling points. Also, how would one know, based on the figure, what is densely populated and what is not? The maps have streets and well locations and nothing else; this information is not helpful in any way. Overall, the statistical analysis of the microbial and geochemical data without interpreting the data for the reader is of little help. For example, plots of chloride versus depth, and chloride versus distance from soakaways would help to determine recommended well depth and/or recommended distance from a soakaway. The authors need to first define the study area with regard to geology, hydrogeology, background geochemistry, locations of source(s) of contamination, location of wells, etc. Better figures are needed to define the study area. There are a lot of data in this study and potentially useful for setting regulatory standards. However, without putting it into perspective (aquifer characteristics,	The detailed description of the geology and hydrology of the study location was not part of this study, however, the present scope of the study is limited to impact of proximate soak away on well water quality taking into consideration the well distance, depth and seasonal variation that affect particle migration and demography. The publication of Tijani and Omodera (2004) only described the quality assessment of stream water bed sediments and not wellwater. The well depth in wet and dry season and well distance from soakaway is now provided in Table 8. The Water Quality Index in Table 8 provides relative contamination level of the well water in the study area. National Environmental Standard and Regulatory Enforcement Agency (NESREA) provided set standards for the parameters mentioned, this is also referenced in Table 1. Analysis of the actual soak away leachate was not part of the scope of this study, judgement of the leachate characteristic and impact on proximate ground water was based on available literatures. This recommendations are well taken and will be implemented in future studies to define the study area with regard to geology, hydrogeology and background geochemistry; however, the present study form a preliminary evaluation of the impact of proximity soak away on well water quality.



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groundwater flow directions, background chemical composition, proximity to soakaway locations and leachate chemical compositions, well depths, etc.), it is impossible to interpret the data. I gave the manuscript a “4” because of the potential for the usefulness of the data. Once the authors have developed their conceptual model of the study area and potential contamination sources, then they can do their statistical analyses for determining safe distances from soakaways and safe well depths.	Since the study area is exclusively residential the potential contamination source is only the dug soak aways located in each house chosen for this study.
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