

APPLICATION OF GEOGRAPHIC INFORMATION SYSTEM TO
SOLIDWASTE MANAGEMENT IN PORTHARCOURT CITY

BY

FLORENCE OWOR

B.Sc (Geography) UNIPORT

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ILE- IFE

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ABSTRACT

The study examined the spatial distribution of solid waste generation in Port Harcourt city, mapped out the current location of dumpsites in the city using the Global Positioning System (GPS) and used GIS to indicate the most suitable sites for solid waste disposal within the city. This was with a view to assessing how Geographic Information System (GIS) can be used to improve the management of waste disposal in the city.

Both primary and secondary data were collected for this study. The primary data were obtained through photographs, GPS readings of all the existing dumpsites in the city, while the secondary data were obtained from various maps such as topographic, road network, land use map of the area and from relevant literature. Criteria such as proximity to surface water, distance from transportation routes, access to urban areas, slope, and distance from population centre were also considered in order to arrive at suitable sites for dumping. The various maps listed above were scanned, georeferenced, digitized spatially and were imported into the GIS environment provided by Arcview 3.2a for the analyses. GIS analytical techniques such as buffering, overlay and intersection were used for the analyses to show the existing dumpsites and to arrive at the final suitable sites for dumping.

The result showed the existence of seven dumpsites around the city of Port Harcourt, namely Abuloma 1&11, Ikewere road 1&11, Mile 3, Amadi flat and Ada George Road. The result further indicated that most of the wastes generated were found along Ikewere Road. This is due to high population concentration while the other areas generated varying degree of wastes with the Government Reserved Area (G.R.A) generating the least of these sites, Abuloma 1 was already filled and it was also found out that the existing dumpsites were not properly located due to inadequate technology for siting dumpsites. For example out of the seven locations, mile 3 dumpsite was located very close to the road causing traffic hold up, while Abuloma 1&11 were located at the bank of creeks thereby contaminating the water. Using GIS technique, the following additional suitable sites for dumping were indicated to cover the city namely Kidney Island, Azikiwe Road and Diobu.

The study concluded that Geographic Information Systems (GIS) could be used to locate new dumpsites that will be effective and efficient to serve the entire city and also offer sustenance of the aesthetics of the city as well as make it conducive from the public health point of view.