

GIS Model for Sanitary Landfill Site Selection Based on Geotechnical Parameters

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Abstract : Landfill site selection in an urban area is a critical issue in the planning process. With the growth of the urbanization, it has a mammoth impact on the economy, ecology, and environmental health of the region. Outsized amount of wastes are produced and the problem gets soared every day. Hence, selection of ideal site for sanitary landfill is a challenge for urban planners and solid waste managers. Disposal site is a function of many parameters. Among all, Geotechnical parameters are very vital as the same is related to surrounding open land. Moreover, the accessible safe and acceptable land is also scarce. Therefore, in this paper geotechnical parameters are used to develop a GIS model to identify an ideal location for landfill purpose. Metropolitan city of Surat is highly populated and fastest growing urban area in India. The research objectives are to conduct field experiments to collect data and to transfer the facts in GIS platform to evolve a model, to find ideal location. Planners' preferences were obtained to use analytical hierarchical process (AHP) to find weights of each parameter. Integration of GIS and Multi-Criteria Decision Analysis (MCDA) techniques are applied to improve decision-making. It augments an environment for transformation and combination of geographical data and planners' preferences. GIS performs deterministic overlay and buffer operations. MCDA methods evaluate alternatives based on the decision makers' subjective values and priorities. Research results have shown many alternative locations. Economic analysis of selected site from actual operations point of view is not included in this research.

Keywords : GIS, AHP, MCDA, Geo-technical

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