Bathymetric Mapping to Support Ecological Restoration and Management of the Korle Lagoon

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SUMMARY

One of the most polluted lagoons in the city of Accra is the Korle Lagoon. The Korle lagoon is located between Chokor and James Town in the Accra Metropolitan Assembly (AMA) of the Greater Accra Region, Ghana. The increasing industrial activities and consumption of the population of Accra generate a large amount of waste which is transported through major uncovered drains into the Korle Lagoon. Debris and sediments are also carried by runoff water during the rainy seasons into the lagoon causing flooding in its catchment area. The Hydrological Depart under the Ministry of Works and Housing undertook phase II of the Korle Lagoon Ecological Restoration project in November 2000. One of the main activities was clearing and dredging the Korle Lagoon to remove silts and prevent flooding in the area. A similar project was carried out in April 2022 with funding from the World Bank. This study was conducted to produce a bathymetric map to show the bottom configuration and the depth of the dredged Korle Lagoon for effective management. Data acquisition was performed using a dual frequency echo sounder for depth sounding, positions were determined using Vector sensor GNSS receivers, and tidal observation and reduction were also done using a level instrument and tide gauge. Bathymetric data processing including cleaning, tidal reduction and correction on instantaneous depth was carried out in QPS Qinsy software. Further processing and generation of the Digital Elevation Model (DEM) were performed using surfer 11.0 software and ArcGIS 10.7 software to create maps and the lagoon capacity computation. The processed depths were analysed and presented in form of models and tables. The deepest spot was -4.37m while the shallowest spot was -0.20m respectively. The study determined the Korle lagoon bed topographical pattern and the maximum capacity of the lagoon at the time of the survey was determined to be 800,136.62 m3.
