The occurrence of the Nile Delta very close to the Suez Canal, the main route for oil transport in the world, makes it prone to pollution from any accidental oil spills in the Mediterranean Sea. The coast of the Nile Delta is generally arcuate and highly exposed to waves and currents. The present study attempted to perform the environmental sensitivity of the shoreline to oil slicks. Six variables were incorporated together in order to determine the environmental sensitivity index (ESI). Data were collected from different resources and from in situ observations. Results showed that the ESI is generally high for the western section of the Nile Delta, particularly along Alexandria region. Low ESI was observed along the shorelines facing the coastal sand dunes at the middle part of the delta coast. The ESI is an effective approach to delineate the vulnerable coastal areas to marine oil pollution.