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This study aims to investigate Holocene depositional environment of the Bangkok Clay at King Kaew site, Samutprakarn Province (lower central plain) by using diatom analysis and radiocarbon dating. Thirty-eight (38) sediment samples were collected from the exposed King Kaew sand quarry's wall and prepared for identification and analysis.

Diatoms rarely appear in the lower sequence. In the upper sequence (0.09-8.29 m.), diatoms, however, occur abundantly after 4,300 years BP upwards. Thirty two (32) genera (seventy nine (79) species) are found and shown in percentage. These species are classified into eleven (11) ecological groups. Brackish and marine planktonic diatoms, *Cyclotella striata* and *Palaria sulcata,* predominate through stratigraphic sequence. Three diatom zones (Zone A, B and C upward) are distinguished on the basis of diatom assemblage and lithostratigraphy. These zones indicate palaeosalinity gradients and coastal depositional environments. Zones A, B and C suggest salinity gradient as marine, brackish, and marine water, respectively. Depositional environments were formed under marine subtidal in Zone A and C, and tidal in Zone B.

Diatom analysis yields palaeosalinity gradients and diatom stratigraphic units. Palaeosalinity gradients range from marine to brackish. Diatom stratigraphy can be applied as an additional biostratigraphy to the existing Bangkok Clay stratigraphy. Depositional environments suggest that Late Holocene of Bangkok Clay were subtidal and tidal. These results can be applied for further study on Bangkok Clay.