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Hydrogeology of The East of Buyukcekmece Basin

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Buyukcekmece is located in the West of Istanbul in Turkey and Buyukcekmece Lake is poured to Sea of Marmara. In this study, we have investigated hydrogeology of The East of Buyukcekmece Basin which is an important source to provide drinking water to Istanbul. Meteorological data and hydrologic measurements have been used to calculate water balance of the east part of the basin. Total flow has been calculated as 54.513 x 10^6 m^3 and total infiltration has been shown as 16.5 x 10^6 m^3. Dropdown measurements have been used to calculate transmissibility (T) and hydraulic conductivity (K) by using both Dupuit method and empirical calculations. In result, K values varied between 10^{-7}m/s and 10^{-8} m/s degrees. Groundwater quality of the study area has been investigated with the help of groundwater samples' chemical analysis results. These results have been used to create Piper, Scholler, Wilcox and USA Salinity Diagram. According to Piper diagram, groundwater from the study area can be classified as type Ca-HCO_3. Due to Schoeller, The anion cation trend of the samples exhibit as Ca>Mg>Na>K and HCO_3 > Cl>SO_4 and they can be classified as Normal Chlorine water and Normal Sulfate water. The KN-5 sample disrupts the 20.41% Cl meq/l value and it is included in the Oligochloride waters. According to USA Salinity Diagram, groundwater of the study area can be classified as C1S3. As a result of this study, according WHO (World Health Organization) groundwater samples from the east of the Buyukcekmece Basin is meeting the drinking water standards except its electric conductivity values where it has been measured for KN-7, KN-8 and KN-9 respectively 7710, 6780 and 6180 μS/cm. Those samples are predicted to be deep circulated water samples with sea water intrusion.