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Geology and invert sugar distribution in peatland of modern Karamik Lake-Afyon/Turkey

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Karamik Lake is located in the southeastern part of Suhut Town, around Karamik Lake in the Afyon Province. It has been formed under the influence of neotectonic faults. The Sultandag autochthonous Unit consists of the Sultandede metamorphic rocks, Hacialabaz limestone, Tasevi biomicritic limestone, and Yukaritirlar Lutetian clay-limestone. Beysehir-Hoyran allochthonous Unit consist of Hoyran Ophiolite and Aydogmus limestone in Jurassic age. The Aydogmus and Bulanik faults have affected the Neogene sediment of the Bagkonak Formation, Yarikkaya Formation, and the Karamik Lake. A total of six shallow boreholes were drilled around the lake, five of which have been evaluated in this study. A specially-designed drilling apparatus, which was designed with a PVC casing to protect borehole samples, has been used to collect samples. The analysis, made on the organic-matter rich parts of the samples, indicated the average surface moisture of 58.35%, hygroscopic moisture of 12.89%, organic matter content of 30.96%, and ash content of 69.04%. Average invert sugar contents determined in Karamik Lake sediments using the Emmerich-A method have been measured as 6.67 ppm and 13.66 ppm in air-dried and dry-mineral matter free basis, respectively. Average pH value of the samples has been determined as 8.05. Based on the calculations, the relationship between pH/invert sugar and organic matter is directly proportional, while the relationship between moisture content and invert sugar is inversely proportional. Although the solubility of sugar in water is high, all of the hygroscopic moisture is consumed in the process of inversion in the limited water content case. With respect to the basin geometry, sugar content seems to have increased in the marshland converted parts of the lakes, where rich sapropelitic organic matter

have been deposited. It is also observed that sugar content increases in the NW part of Karamik Lake region, which can be characterized with regular and uniform sediment transportation, whereas it decreases around Kocbeyli-Aydogmus fault region, where the alluvial fan deposits rich in coarse grained sediments are deposited.