Geotechnical Events Occurred During 17 August 1999 Kocaeli and 12 November 1999 Duzce Earthquakes, NW Turkey and their Effect on the Environmental Planning.

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Two big seismic events occurred in NW Turkey, caused heavy damages and several thousand victims, in the epicentral area (200 km x 40 km) along the North Anatolian Fault Zone. First event,17August 99 Kocaeli Earthquake, M=7.4, caused about 160 km fault and maximum intensities (I=XI) at Adapazari and Golcuk. Second event,12 Nov 99 Duzce Earthquake, M=7.2, has gene rated 50 km fault and maximum intensity (I=X) at SE of Golyaka.

Various geotechnical features, such as landslides, collapse settlements, faulting, slope failures and liquefactions have been observed, in the epicentral area. These features are mapped in detail and studied for their effects on damage distribution.

Different modifications of liquefaction formed in the epi central area. Sand cones and fissures intensively formed, under dynamic loading on thick deposits of loose sand in Adapazari, Golyaka and Kaynashlı areas. Another type of liquefaction associa ted with faults observed along the southern coastal zone of the Izmit Gulf. Collapse settlements of large coastal areas, occurred particularly in Golcuk area, at several places.

In this work the evolution of sand internal structure under dynamic loading and effect of sand liquefaction on distribution and intensity of structural damage has been studied. The liquefaction of noncohesive Sakarya Sand deposit was the dominant factor which increased intensity of structural destruction. The role of dynamic properties of Sakarya Sand, in dynamic behaviour of the ground, has been interpreted in terms of site effects, for the new environmental planning. Engineering geological maps showing landslides, coastal settlements, slope failures, liquefaction zones are prepared, to be used in environmental planning and selecting new sites for urban areas.