

## Granulomeric and mineralogic investigation of liquefaction induced by the 2011 megaquake at the Watarase flood-retarding

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The 2011 Off Pacific Coast of Tohoku earthquake of Mw9, which recorded a seismic intensity of JMA scale 6 in central Kanto, induced liquefaction at the northwestern part of the Watarase flood-retarding basin in the central part of the Kanto basin. The area is located in a former pond into which floodwater of the Watarase river and a few tributaries flew frequently. We collected boiled sand and carried out boring investigation to loosely-deposited sand and mud alternation at four sites (sites A-D) to identify the layers which caused liquefaction. At site D, we had a 500cm deep core sample. We observed some layers; 0-30cm: artificial ground, 30-70cm: silt, 70-250cm: medium or fine sand, 250-400cm: clay, 400-500cm: medium sand. Ground water level was 200cm deep. Bowling sites A, B and C were almost similar to site D. Grading and mineral analyses carried out by liquefaction deposits and core samples. From the ground water level and grading and mineral analyses, we considered that liquefaction layer was the medium and fine sand of around 200cm deep. In comparison of granulometry and mineral composition of boiled sand with those of borehole-core samples below watertable, we identified the layers which were liquefied as follows: site A- medium and fine sand (134-157cm deep) and medium sand (187-232cm deep), site B-coarse or medium sand (160-195cm deep), site C- fine sand (193-255cm deep), site D-fine sand (210-245cm deep) and fine sand (399-422cm deep). All the liquefied sandy layers are correlated to the uppermost members of the Holocene deposits which were interpreted to have been formed during recent 2000years.

Keywords: The 2011 Off Pacific Coast of Tohoku earthquake, liquefaction, grading analysis, mineral analysis, central part of the Kanto basin, Watarase flood-retarding basin