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**Marine sand and gravel extraction for Helsinki harbor – monitoring the impact of the extraction works**

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The city of Helsinki decided in 1992 to move its main harbor to Vuosaari, some 15 km east of the city center. The building works began in 2003 and the new harbor was opened in November 2008. Among others the building works included marine sand and gravel extraction from two designated sites about 10 km south from the harbor. Extraction works took place in 2004-2006 totaling an amount of over 6 million cubic meters of sand and gravel. The material was used as fillings of the harbor constructions. The impact of construction and extraction works on the water system and fishery was monitored in several monitoring programmes approved by authorities. The monitoring included e.g. water and sediment sampling, turbidity surveying, water quality model applications, monitoring of zoobenthos, seabed vegetation surveys, monitoring of contaminants in Baltic clams and fish, monitoring of Baltic herring spawn, monitoring of fish fry with seine net, and monitoring of professional fishing. The main monitoring period was during the construction works from 2003 to 2008. However, large part of the monitoring started already in 2000 and continued until 2011 i.e. three years before and after the construction phase. The most recent action was taken in 2015, as the main sand extraction site was covered with a multibeam investigation.

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