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Experimental investigations on the oxygen transfer efficiency at low head hydraulic structures

Agnieszka RAJWA-KULIGIEWICZ¹, Robert J. BIALIK², Paweł M. ROWIŃSKI³

¹ Institute of Geophysics, Polish Academy of Sciences
Ks. Janusza 64, 01-452 Warsaw
e-mail: arajwa@igf.edu.pl

² Institute of Geophysics, Polish Academy of Sciences
Ks. Janusza 64, 01-452 Warsaw
e-mail: rbialik@igf.edu.pl

³ Institute of Geophysics, Polish Academy of Sciences
Ks. Janusza 64, 01-452 Warsaw
e-mail: pawelr@igf.edu.pl

ABSTRACT

The aim of this work was to examine the oxygen transfer efficiency at two hydraulic structures located on the Narew and Wilga rivers in order to assess their impact on downstream oxygen conditions. This has been done through the continuous ‘in situ’ measurements of dissolved oxygen concentrations over 24-hour periods of time above and below the considered structures. Simultaneous measurements have been taken in the river channel downstream of these structures. Gas transfer efficiencies and deficit ratios have been calculated according to the available formulae reported in the literature. The obtained transfer characteristics were compared with the results of shorter measurements carried out at the same structures, however, under different oxygen deficits. Moreover, a brief discussion on the measurement techniques, gas transfer uncertainties and temperature correction factor is given.