AFGEHANDELD

Switch, a Model for Sediment-Water Exchange of Nutrients

Part 3: Reformulation and recalibration for Lake Veluwe

Research report

March 1994

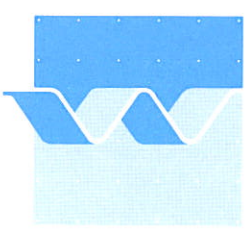
T 584

delft hydraulics

Switch, a Model for Sediment-Water Exchange of Nutrients

Part 3: Reformulation and recalibration for Lake Veluwe

J.G.C. Smits



delft hydraulics

Contents

Preface

The development of the first version of SWITCH was commissioned by the Institute for Inland Water Management and Waste Water Treatment (RIZA) and DELFT HYDRAULICS as a part of the development of the userfriendly eutrophication model DBS. The development started in 1989 and resulted in an operational first version in the summer of 1990. The first application of stand-alone SWITCH, which was carried out in 1991, aimed at calibration of the model. SWITCH and its application were documented (DELFT HYDRAULICS, 1991a) and published (Smits and Van der Molen, 1993).

Several shortcomings of SWITCH were detected during the application of the model for Lake Veluwe, overprediction of the return flux of phosphorus from the sediment to the overlying water in particular. It was decided in 1993 to reformulate SWITCH to take away the most important shortcomings. The new formulations were put to the test by means of recalibration of SWITCH for Lake Veluwe. The activities have been carried out within the framework of the DELFT HYDRAULICS research programme.

The present report is to be considered an extension of and in some respects a replacement of the previous report (DELFT HYDRAULICS, 1991a).

SWITCH was developed and calibrated by J.G.C. Smits. N.M. de Rooij and J.J.G. Zwolsman contributed to the process of reformulation by means of literature research, field data analysis, chemical modelling and discussions. The model was encoded in FORTRAN 77 by A. Hendriks.