

عنوان مقاله:

Simulation of flow pattern in intake by using a numerical model

محل انتشار:

دو فصلنامه تحقیقات سطوح استحصال آب, دوره 2, شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Reza Babagoli Sefidkoohi - *M.Sc. Graduate, Water Engineering Department, University of Birjand*

Ali Shahidi - *Associate Professor, Water Engineering Department, University of Birjand*

Yousef Ramezani - *Assistant Professor, Water Engineering Department, University of Birjand*

Mehdi Kahe - *Ph.D. Graduate, Hydraulic Structures Department, Shahid Chamran University of Ahvaz*

خلاصه مقاله:

Lateral intake is a structure constructed next to a main channel to divert part of the flow within the channel. The separated area of the flow in the entrance of intake channel has no effect on flow discharge while reduces the effective cross-sectional area of the intake, as well as the bed load, which enters the intake due to low velocity flow deposits in this area. Thus, knowing the dimensions of the separated area at the intake channel entrance is particularly important. In this study, flow separation zone was calculated at the intake entrance of 90 degree in three depths of 3, 6, and 12 cm from the bottom of the channel for discharge ratios of 0.2 and 0.4, 0.6 and 0.8 in five turbulence models using three-dimensional Flow-3D model. In order to determine the accuracy of the model in predicting the dimensions of the separated areas, the obtained results were compared with the results of the physical model. Streamlines were drawn and dimensions of the separated areas were determined. In comparing results between the laboratory observations and the predicted ones by numerical model, Reynolds Normal Group model (RNG) had better predictions, with a correlation coefficient of 0.97, root mean square error of 3.16, and a mean absolute error of 2.3 cm, than other turbulence models.

کلمات کلیدی:

Intake 90°, Flow pattern, Turbulence models, Flow-3D numerical model, Laboratory observations

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/895799>

