Read Me:

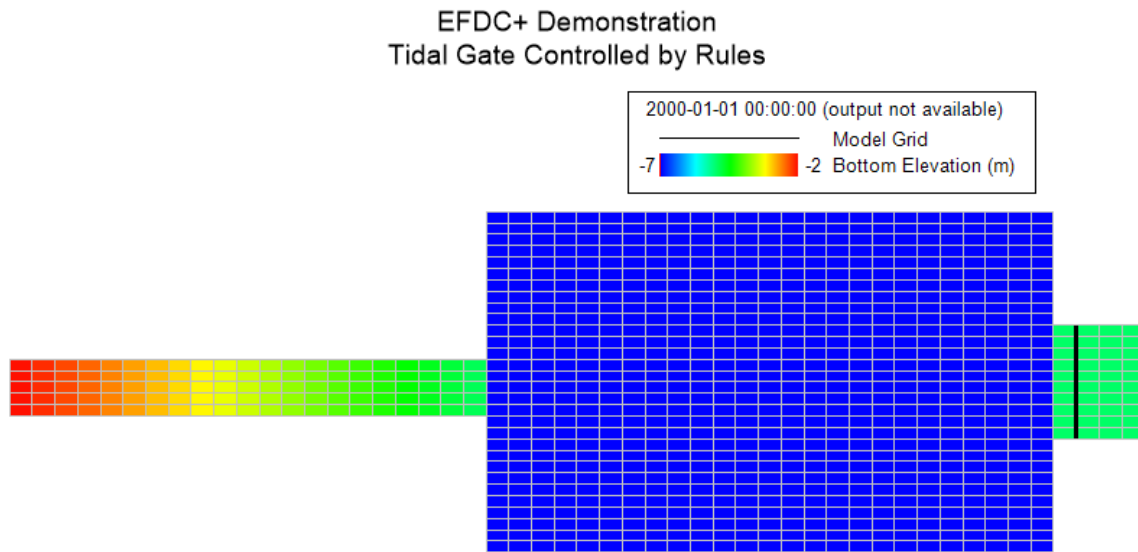**Model Name:** DM-22_Rule Based Structures Model

Objective: Use EFDC+ Explorer (EE) and EFDC+ to simulate hydrodynamics of a waterbody when time or water level controlled sluice gates or pumps are added. There are four models in this folder: 01_Uncontrolled, 02_Sluice_Time_Series, 03_Sluice_Control_Rules, 04_Pump, whose distinctives are described further below.

Model Grid: 895 horizontal grid cells, 1 vertical layer in water column.

Figure 1 Model Domain of DM-22_Rule_Based_Structures.

Folder Structure:

Data: This folder contains data that can be used with the model. These data can be measured data or output from model or derived from analytical equations

Grid

- Grid.cvl

Models: Four EEMS models that can be loaded in EE to pre- and post-process.

01_Uncontrolled	Uses the conventional hydraulic structure approach with a sluice gate hydraulic structure boundary condition configured to be always open.
02_Sluice_Time_Series	Uses a time series to trigger the opening and closing of the sluice gate hydraulic structure boundary condition.
03_Sluice_Control_Rules	Uses control rules based on water level difference between upstream and downstream to trigger the opening and closing of the sluice gate hydraulic structure boundary condition.
04_Pump	Uses the withdrawal/return boundary condition to simulate a pump that operates based on water level difference between upstream and downstream.

Test_record file: This file is just a record file that informs which EFDC+ executable was used to run the model.

Modules Activated: Hydrodynamics

Descriptions: These models are designed to demonstrate hydrodynamics of a waterbody when different types of hydraulic structures added as described above under "Models".

Disclaimer: The model is provided to our users to demonstrate that EFDC_Explorer and EFDC+ can be used to better understand how to build this kind of model. The model is running as expected; however, shouldn't be considered final as the model can be modified / refined to obtain improved results.

Files in Data Folder:

Bathymetry

- Bathymetry.dat

Boundaries

- Gate Opening TS.dat
- River.dat
- Tides.dat

Polyline

- XS01.LDB to XS07.LDB are polylines for location of cross-sections for stations to extract flux lines

Rule_Based_Structure_Control_Summary_(2018-04-17).pdf
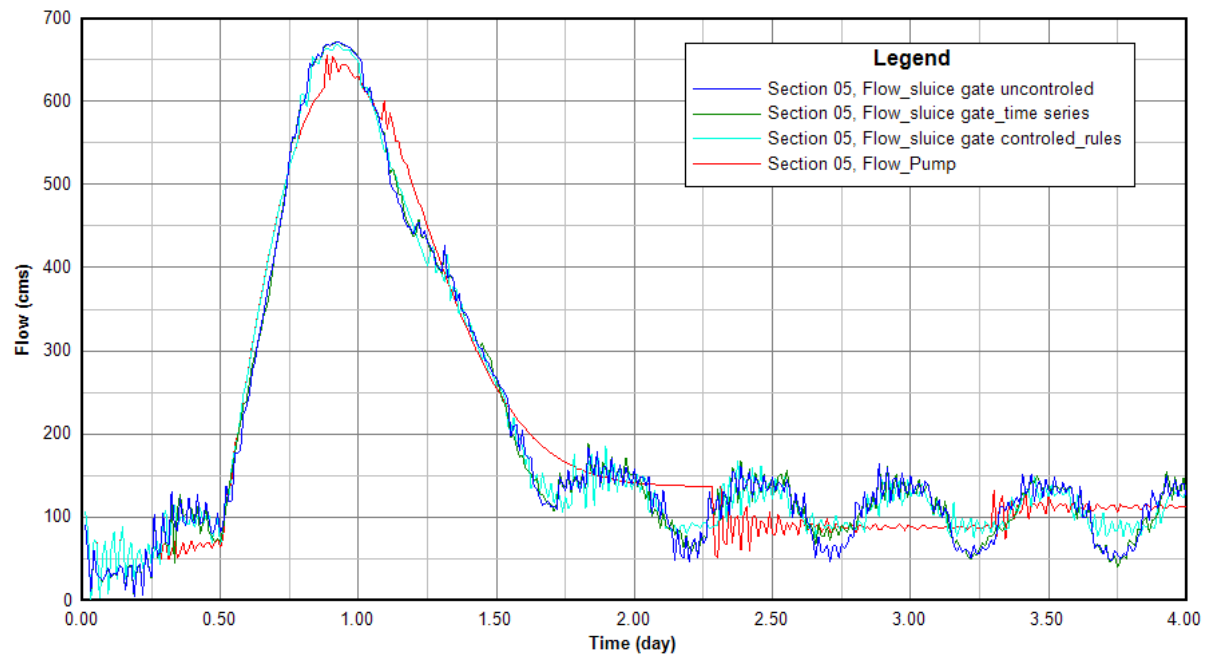
Model Results:

Figure 2 Total flow through cross section 05 comparison from the four models.