Hydrologic Monitoring at S-152 for the Decompartmentalization Physical Model (DPM) Flow-Release Test

The natural hydrology for much of the Everglades has been altered and surface-water flow patterns have been obstructed by a system of levees and canals. This levee and canal system was constructed to protect nearby urban and agricultural areas from flooding and to store water for municipal and agricultural use. The DECOMP element of the Comprehensive Everglades Restoration Plan (CERP) is intended to reestablish natural flow patterns through the Everglades by decompartmentalization, which is the removal of flow obstructions such as roads, levees, and canals.

The DECOMP Physical Model (DPM) flow-release test was designed to determine the effects of decompartmentalization on the landscape and ecology within Water Conservation Area 3 (WCA 3), a section of the Everglades located north of the Everglades National Park. WCA 3, which is divided into WCA 3-A and WCA 3-B by Levee-67A (L-67A) and Levee-67C (L-67C), was reconnected by installing water control structure S-152 in the L-67A levee, degrading the L-67C levee, and filling in a section of the L-67C canal.

The U.S. Geological Survey (USGS) monitored continuous water levels on either side of S-152 and measured flows through the structure. Techniques and methods used for data collection and computation of continuous discharge record for the first and second flow test periods, occurring in 2013 and 2014, respectively, are presented. Preliminary results demonstrate the ability to develop accurate ratings for the computation of discharge at this location.

Fifteen-minute time-series data.

The discharge record is computed from the regression equation developed between the mean measurement discharge vs ADVM velocity measured in pipe 6.

Relationship between measured discharge and the square root of the head between the up-gradient and down-gradient water level stations.

To compute discharge record, a rating is developed between easily measured sensor data and discharge measurements. At this station, three relationships were tested to determine the most accurate method for computing discharge: discharge vs head, mean measurement velocity vs ADVM velocity measured in pipe 2, and mean measurement velocity vs ADVM velocity measured in pipe 6. The mean measurement velocity vs ADVM velocity measured in pipe 6 provided the best relationship.

Rating development to compute fifteen-minute time-series discharge record.

For more information please contact:
Mark Dickman
mdickman@usgs.gov
U.S. Geological Survey
Caribbean-Florida Water Science Center
Davie Office

For more information please contact:
Mark Dickman
mdickman@usgs.gov
U.S. Geological Survey
Caribbean-Florida Water Science Center
Davie Office