Penentuan standar operasi pompa sistem polder Pantai Indah Kapuk Sektor UB-2

Abstrak

Nowadays, most of the large cities in Indonesia are growing along the coastal area with flat topography which tend to be under the mean sea level. The Water Management & Drainage System of Sector UB-2 Pantai Indah Kapuk North Jakarta was designed for the ponder system to eliminate the area from flood. The ponder system is a closed area protected by a ring dyke where the drainage system, pond or long storage and pumping system is used to manage the water level, velocity and discharge. This system has to be managed as one inseparable unit of water management, so that the surface as well as groundwater level in the ponder can be maintained using 25 year recurrence interval of design rainfall. The main function of the pumps is to maintain the water level in the reservoir as well as in the primary canal. The only outlet of the reservoir is through this pump. To ensure that the ponder system shall have a good pumping performance, it is necessary to design the Standard Operation Procedure for the pumps. The Standard Operation Procedure has been designed based on the Hydraulic Simulation Model of the polder system, using XP-SWMM software, passing some stages: Numerical Model setting up, initial estimation of pumping discharge, sensitivity test of pumping performance, Standard Operation Pumping Procedure Decision by taking into account the difficulty and failure possibility in implementation, such as genset (generator set) canonization, travel time of water to the pump station, design criteria of the polder, storage water level increase rate, total on-off event of the pump, and pumping duration.