

GAP ANALYSIS OF THE FLOOD MANAGEMENT SYSTEM IN METRO MANILA, PHILIPPINES: A CASE STUDY IN THE AFTERMATH OF TYPHOON ONDOY

Romeo Gilbuena, Jr.¹

Kawamura, A.¹, Medina, R.² and Amaguchi, H.¹

1 Department of Civil and Environmental Engineering, Tokyo Metropolitan University, Tokyo Japan, 1-1 Minami-Ohsawa, Hachioji, Japan 192-0397

2 CEO, Woodfields Consultants, Incorporated, 153 Kamias Road Extension, Kamias, Quezon City, Philippines, 1102

For decades, floods caused by heavy rains have repeatedly submerged critical areas in Metro Manila, which prompted the Philippine government to establish a flood management system that consists of both structural and non-structural measures. However, most of the operational flood mitigation infrastructures were proven inadequate during the onslaught of the typhoon Ondoy, as the storm brought in rains that exceeded the rainfall intensities of all the country's previous typhoons on record. The aftermath of typhoon Ondoy paints a bleak scenario for the highly urbanized communities of Metro Manila as the effects of climate change increase the likelihood of storms that will arrive with the same or higher intensities in the years to come. This study deals with the gap analysis of Metro Manila's flood management system using the observations made during the aftermath of typhoon Ondoy, with primary focus on the effectiveness of flood control structures and early warning system in the core areas of Metro Manila. The gaps were determined by assessing the planned objectives of the current flood prevention and control programs as against to the operational flood management system and infrastructural needs determined from the experience with typhoon Ondoy. The rainfall and water levels recorded in EFCOS were also analyzed to investigate the gaps that may be present in the early warning system. The investigation reveals that factors such as inadequacy in the hydraulic design of flood control structures to cope with higher flood return periods, lack of proper maintenance of flood warning infrastructures, constriction of drainage systems that reduced the basin flow capacities, and etc., have contributed to the unprecedented flood events of September 2009. Significant damages occurred in areas where flood mitigation programs were either lacking or inadequate, which is primarily the result of improper land use planning. The study concludes by stressing the need for distributed and enhanced flood mitigation programs in planned and constructed flood control structures, including the upgrading of early warning systems. The initial flood management programs should be reviewed and revised in accordance with a new safety level for flood prevention and control.