CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Malaysia has been a successful developing country in South East Asia which has the rapid of development growth rate. The continuous growth of population and massive development will affect the physical characteristics of an area and change the hydrological practice. Increasing number of impervious and then combined with heavy rain and poor drainage systems have reduce the amount of water to infiltrated into the soil, thus increase surface runoff.

In Malaysia, flood is the most common natural hazard. The peninsula is geographically located in the wet equatorial tropics where seasonal monsoon winds bring forth heavy rain from Siberia spells generating extensive seasonal monsoon floods along the east coast of Kelantan, Terengganu, Pahang and East Johore. This is especially in the peninsula’s East Coast region where the occurrence of such flood is considered a way of life (Chan, 1995).

It is frequent and widespread, often escalating into disaster which cripples the economy, communications, public services and result in property damage and loss of life (Chan, 1996). Therefore, estimation of surface runoff from upstream area is important in establishing flood control in downstream area.
Unplanned development and rapid urbanization process can cause certain area change the originality of earth and can lead to disasters. Flash flood is usual disaster occurring in Kuala Lumpur. As reported through the news, the flash flood cause the road submerged and thousands of road users were stuck in the traffic jam on several areas in Kuala Lumpur. Then, the Northeast Monsoon brought heavy rain through series of extreme and persistent storm causing devastating monsoon flood. In addition, early year 2013, two students became victims of the flood that occurred in Machang, Kelantan. This disaster gives serious impact when there is loss of life.

When the rivers and drainage are not able to endure the sudden water capacity at the catchment area, flash floods happen. This phenomenon has caused serious flash flooding in big cities in Malaysia nowadays. The flash flood occurred in Kuantan, Pahang, on 25 December 2012 is caused several roads and premises, and shopping malls had to close for business. At the end of year 2013, the worst flood occurred at East Coast of Malaysia that left Kuantan, almost paralysed during the end of 2013.

1.2 PROBLEM STATEMENT

In monsoon season 17 December 2014, flooding problem occurred in Kolej Kediaman II, Universiti Malaysia Pahang (UMP), Gambang Campus as a result of development in catchment area and obstruction in waterway flow as shows in Figure 1.1. While natural conditions are shown to foster and create monsoon floods, the incident of flash flood, particularly in Universiti Malaysia Pahang is largely the consequence of human action.

Rainfall will infiltrate more in an undeveloped area (pervious) compare to developed area (impervious). So, the large amount of rainfall in a developed area, only a little amount will infiltrate in soil and the rest of them will flow to the lower level of the ground as a runoff then the water flow to the drain. One of the reason flash floods happen in UMP due to clogging of drain cause by human activities shows in Figure 1.2. The rising student population contributes to high disposal of rubbish and prevent the smooth flow of water. The drain unable to support the amount of water thus an overflow occur causing flash flooding.
Figure 1.1: Flash Flood at Kolej Kediaman II, Gambang Campus.

Figure 1.2: Clogged Drainage System

Before this, drainage systems in UMP were design for the Malaysia Electrical Corporation’s (MEC) factory. Based on “Manual Saliran Mesra Alam” (MASMA) the design of minor drainage is for five years Average Recurrence Interval (ARI). Due to that design, drainage system in UMP is no longer possible to accommodate the capacity of runoff especially in front of Block W. That can caused floods even after a low intensity of rainfall.