

DEVELOP IDF CURVES FOR KOTA KINABALU USING METHOD OF MOMENT (MOM)

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ABSTRACT

IDF Curves, which is, stand for intensity – duration – frequency relationship is the standard for hydrologists in determining the rainfall intensity for any particular site or location. The study of IDF Curves was early carried out in the British Isles, where Lloyd- Davies (1906) was among the first to carry out an analysis of rainfall records for the purposes of stormwater drainage design. That was one of the earliest practiced carried out in developing the IDF Curves.

So, on this study, Kota Kinabalu, which is, comprises 3-rainfall station has been selected as a study area. Kota Kinabalu has been selected as a study area because it is important to develop latest IDF Curves using the latest rainfall data instead of relying on the outdated IDF Curves available. Hence, the purposes of this study are to develop the IDF Curves for Kota Kinabalu in 2, 10, 20, 25 and 50 years of return period by using Method of Moment (MOM).

As stated above, the method that will be used on this study is the Method of Moment (MOM). All the data of rainfall frequency (annually maximum rainfall depth) will be obtained from the DID Department of Kota Kinabalu. The range of the data obtained will be from the year of 1985 until 2004. At the final stage of this study, the IDF curve for Kota Kinabalu which comprises the 3 rainfall station of Inanam, Kiansam and Ulu Moyog will be developed, after the analysis process of all the rainfall data been done. This IDF curve will be useful for any hydrologic structure such as drainage system and so on. So, the necessity to develop the IDF Curves for Kota Kinabalu is important as a fact that Kota Kinabalu nowadays is moving towards rapid development and it may be as an early step to the development of other latest IDF Curves for others area in Sabah.

CHAPTER ONE

INTRODUCTION

1.1 GENERAL

The study of rainfall frequency analysis is not the new thing in our country, Malaysia. It is proved by the sources or information about the rainfall design as Hydrological Procedure No. 26 (HP No. 26) (1983), Hydrological Procedure No. 01 (HP No. 01) (1982), Rainfall and Evaporation Records for Malaysia (1991) and many other book regarding about the rainfall matter that published by the Department of Drainage and Irrigation of Malaysia. From these sources, the development and revised and updated IDF Curves are easier. Basically, the objective of frequency analysis of hydrological data is to relate the magnitude of extreme events to their frequency of occurrence through the use of probability distribution (*Chow et al, 1988*). So, this study focuses at Kota Kinabalu which is comprises 3 rainfall stations, namely; Inanam, Ulu Moyog and Inanam meteorological station.

The rainfall IDF relationship is therefore a transformation of the Depth-Duration-Frequency (DDF) relationship with implicit understanding that the intensity of rainfall is constant during the specified duration. Before the transformation of the Intensity Duration Frequency (IDF) Curves, the evolution of rainfall DDF relationship may be conveniently illustrated in the British Isles for the purposes of