

UNIVERSITI TEKNOLOGI MARA

**DETERMINE FLOOD EXTENT
USING HECRAS**

SHAHIRAH BINTI NGAH

Thesis submitted in fulfillment
of the requirement for the degree of
**Bachelor of Surveying Science and Geomatics
(Honours)**


Faculty of Architecture, Planning and Surveying

JULY 2018

AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Shahirah binti Ngah
Student I.D. No	:	2015856686
Programme	:	Bachelor of Surveying Science and Geomatics (Honours) – AP220
Faculty	:	Architecture, Planning and Surveying
Thesis Title	:	Determine flood extent using HecRAS
Signature of Student	:	
Date	:	July 2018

ABSTRACT

Flood in Perlis is common issue because Perlis is among the state in Malaysia that received heavy rain throughout the year. However, the most serious flood disaster happen in Perlis are in year 2005, 2010, and 2011. Statistic flood disaster from November 2010 to April in Perlis show total victims are 15 261 and 2921 families and Kangar is the worst affected area of the flood. An exceptional rainfall at that time had caused water levels in the rivers, and water from Timah Tasoh Dam has overflowed. This is the major factor that led to flooding. The coordinate for this study area Tebing Tinggi, Perlis is 6° 26' 0" N, 100° 10' 0" E. In this study, it is aimed to determine the flood extent using HecRAS includes three main objectives; to delineate flood extent using existing Sungai Perlis, to verify processed flood extent using HecRAS with satellite derived water index and to identify the affected area of Timah Tasoh west flood diversion on flood plain. The methodology is applied to know flood extent based on software HecRAS. The result of the research indicate that HecRAS and GIS is an effective tool for flood extent mapping and analysis.

TABLE OF CONTENT

CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
SUPERVISOR'S DECLARATION	iv
ABSTRACT	v
ACKNOWLEDGEMENT	vi
TABLE OF CONTENT	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Research background	1
1.2 Research Gap	3
1.3 Problem Statement	5
1.4 Aim	5
1.5 Objective	5
1.6 Research Question	6
1.7 Methodology	6
1.8 Scope and Limitation	7
1.9 Structure of thesis	7
1.10 Summary	8
CHAPTER TWO: LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Definition of flood	9
2.2.1 Definition of Flood plain	10
2.3 DEM from SRTM	11
2.4 Sentinel image	12
2.5 Geographic information system	13

CHAPTER FOUR: RESULT AND ANALYSIS	33
4.1 Introduction	33
4.2 Flood Extent Using Hecras	33
4.3 Affected Area	35
4.4 Summary	35
CHAPTER FIVE: CONCLUSION AND RECOMMENDATION	36
5.1 Introduction	36
5.2 Conclusion	36
5.3 Recommendation	37
REFERENCES	38
APPENDICES	41