

TABLE OF CONTENTS

COVER PAGE.....	i
APPROVAL PAGE	ii
DECLARATION	iii
TRIBUTE PAGE	iv
PREFACE	v
TABLE OF CONTENTS.....	vii
LIST OF FIGURE.....	x
LIST OF TABLE	xii
ABSTRACT.....	xiii
INTISARI	xiv
CHAPTER I. INTRODUCTION	1
I.1 Background.....	1
I.2 Objective of Study	2
I.3 Benefit of Study	2
I.4 Authenticity Research.....	3
I.5 Scope of Work	3
I.6 Research Limitation.....	3
CHAPTER II. LITERATURE REVIEW	5
II.1 Hydrology	5
II.2 Watershed	6
II.3 Hydrograph	6
II.4 Unit Hydrograph.....	7
II.4.1 Observed Unit Hydrograph.....	7
II.4.2 Synthetic Unit Hydrograph.....	7
II.5 ArcGIS	8
II.6 HEC-GeoRAS.....	8
II.7 Previous Study	8
CHAPTER III. THEORETICAL BACKGROUND.....	10
III.1 Hydrology Analysis	10
III.1.1 Catchment Rainfall	10

III.1.2	Frequency Analysis.....	11
III.1.3	Rainfall Distribution	14
III.1.4	Synthetic Unit Hydrograph of Nakayasu	16
III.1.5	Rational Method.....	18
III.2	Hydraulic Analysis	19
III.2.1	Manning Coefficient	19
III.2.2	Saint Venant Equation	20
CHAPTER IV.	METHODOLOGY	22
IV.1	Location of Study	22
IV.2	Research Methodology	22
IV.3	Data Collection	25
IV.4	Simulation Scenario.....	26
CHAPTER V.	ANALYSIS AND DISSCUSSION	27
V.1	Hydrology Analysis	27
V.1.1	Thiessen Polygon	28
V.1.2	Frequency Analysis.....	29
V.1.3	Hourly Rainfall Distribution	29
V.1.4	Synthetic Unit Hydrograph of Nakayasu	30
V.1.5	Uniform Lateral Inflow	33
V.2	Extracting Topography Map on ArcGIS	35
V.3	Geometry Data Development on HEC-GeoRAS	36
V.4	Hydraulic Analysis	37
V.4.1	Input Data on HEC-RAS Version of 4.1.0	38
V.4.2	Manning Coefficient Analysis	43
V.4.3	Channel Modification of Normalization Condition	45
V.4.4	Pump Station.....	49
V.4.5	Running Unsteady Flow Simulation on HEC-RAS Version 4.1.0.	50
V.5	Result and Discussion.....	54
V.5.1	Result	54
V.5.2	Discussion	59
V.6	Flood Mapping.....	68

V.6.1 Floodplain Delineation.....	68
V.6.2 Flow Velocity Distribution	74
CHAPTER VI. CONCLUSION AND SUGGESTION.....	80
VI.1 Conclusion	80
VI.2 Suggestion.....	80
REFERENCES	82
APPENDIX.....	84