

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENT	iii
ABSTRACT.....	iv
LIST OF FIGURES	ix
LIST OF TABLES	xiii
CHAPTER 1 INTRODUCTION.....	1
1.1 Background	1
1.2 Polder System.....	2
1.3 Problem formulation.....	3
1.4 Objective of Study.....	3
1.5 Study Area.....	4
1.5.1 Catchment area and river system	4
1.5.2 Soil type	4
1.5.3 Coordinate System	4
1.5.4 Retarding basin	4
1.5.5 Pump Station	4
1.5.6 Tidal gate.....	5
1.5.7 Factors Caused flooding.....	5
1.5.8 Study Boundary.....	7
1.6 Scope of Work.....	8
CHAPTER 2 LITERATURE REVIEW	9
2.1 Pervious Study of Banger Pilot Polder.....	9
2.2 Software Involved	9
2.2.1 ArcGIS	9
2.2.2 HEC-HMS.....	10
2.2.3 HEC-RAS.....	10
2.2.4 AProb_4.1E.....	10
CHAPTER 3 THEORETICAL CONSIDERATION	11
3.1 Review Hydrology.....	11
3.2 Data Quality.....	13

3.3	Frequency analysis	14
3.3.1	Annual Exceedance Probability (AEP)	14
3.3.2	Probability distribution	15
3.3.3	Tests on Suitability of Empirical Distribution Functions	17
3.4	Design Rainfall	18
3.5	Application of Unit Hydrograph	20
3.5.1	Unit Hydrograph	20
3.5.2	Hydrograph	21
3.5.3	The SCS Dimensionless Hydrograph	21
3.5.4	Effective Rainfall	22
3.6	Review Hydraulic	22
3.6.1	Drainage Normalization	22
3.6.2	Manning Equation	22
3.6.3	Type of Canals Cross Section	23
3.6.4	Limitation of Velocity	24
3.6.5	Freeboard	24
3.7	Unsteady Flow Routing	26
CHAPTER 4 METHODOLOGY		28
4.1	Research Flow Chart	28
4.1.1	Data collection	29
4.1.2	Hydrologic Model Setting Up	29
4.1.3	Hydraulic Flood Routing Model	32
4.1.4	Hydraulic Flood Routing Simulation Scenario	33
CHAPTER 5 ANALYSIS AND DISCUSSION		34
5.1	Hydrology Analysis	34
5.1.1	Rainfall Data	34
5.1.2	Check Rainfall Data Consistency	37
5.1.3	Frequency analysis	38
5.2	Hydrology model setup	42
5.3	Hydraulic model setup	47
5.3.1	Catchment River System	47

5.4	Design Geometries	49
5.4.1	Design drainage capacity	49
5.4.2	Selection of River Normalization Cross Section	50
5.4.3	Banger River Cross Section	50
5.4.4	Secondary canal (SC_L)	55
5.4.5	Secondary drainage upstream (SC U)	57
5.4.6	Secondary drainage downstream (SC D)	57
5.4.7	Tertiary drainage (TC)	58
5.4.8	Propose Retarding Basin and Pump Capacity.....	61
5.4.9	Levee	64
5.4.10	Inline Structure of Design Condition	67
5.4.11	Lateral Structure.....	67
5.4.12	Downstream Boundary Condition	67
5.4.13	Boundary Condition	70
5.4.14	Tidal Gate Controlled.....	71
5.4.15	The Initial Flow Condition.....	71
5.4.16	Result Simulation of Existing Scenario	72
5.4.17	Result of Normalization Condition	76
5.5	Evaluation of Design Scenario	82
5.5.1	Case of 2 day rainfall occurring nonstop	82
5.5.2	Case of 3 day rainfall occurring nonstop	84
5.5.3	Case 4 day rainfall occurring nonstop.....	85
5.5.4	Hydraulic Review of Existing Design	85
5.5.5	Rainfall Distribution of Existing Design.....	86
5.5.6	Pump and Retention Basin of Existing Design	86
5.6	Result of Existing Design.....	87
5.7	Discussion this study and the Existing Design.....	87
5.7.1	Design Scenario Vs Existing Scenario.....	89
CHAPTER 6	CONCLUSION AND RECOMMENDATION	91
6.1	Conclusion.....	91
6.2	Noted	92

6.3 Recommendation.....	92
References.....	93
Appendix.....	95