



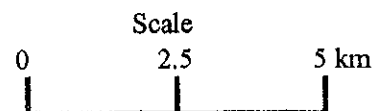


Legend

-  : Diversion Channel Route
-  : Large Scale Road & Railway
-  : Built-up Area
-  : Large Scale Canal

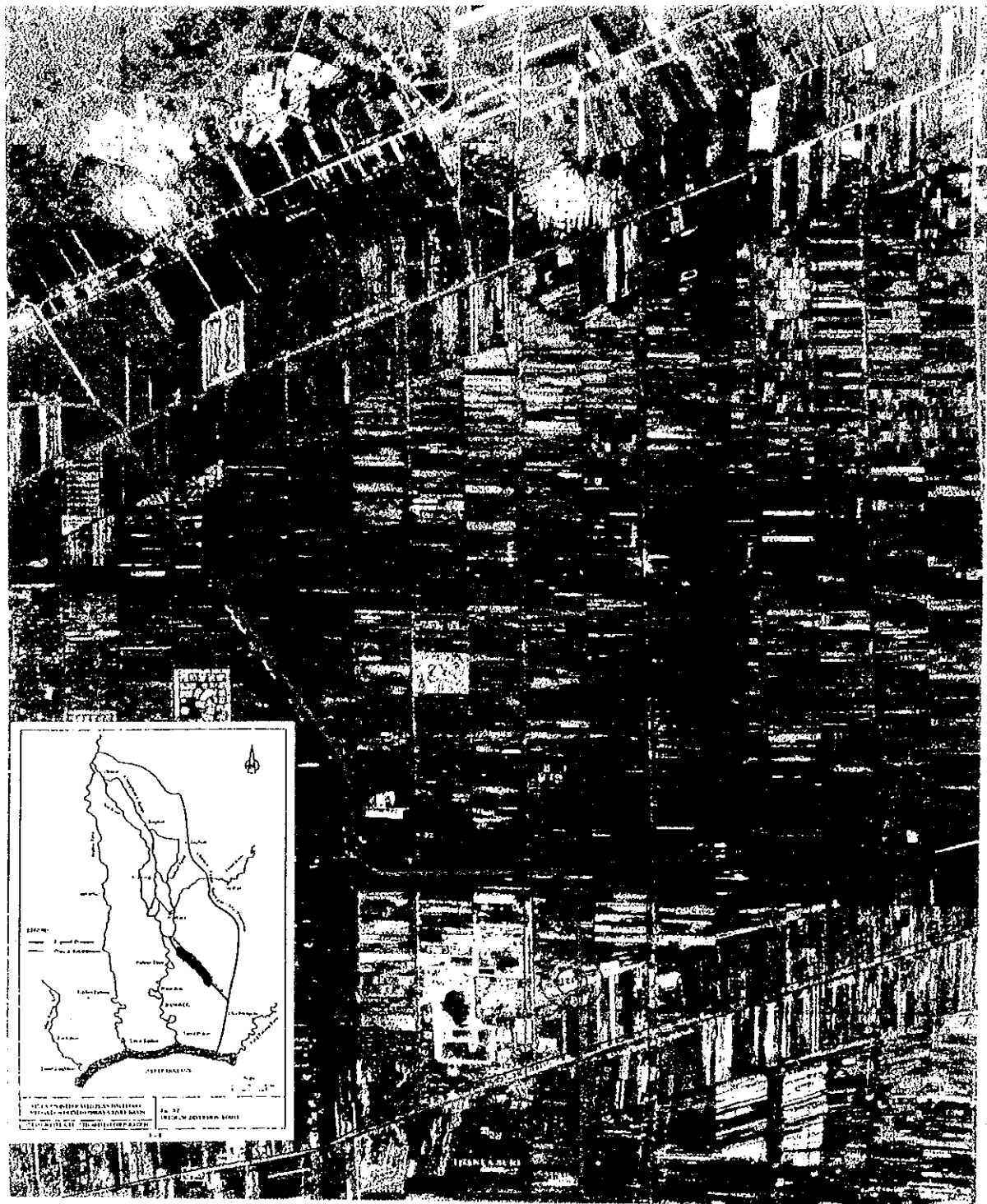


STUDY ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 6.2.6(1/5)

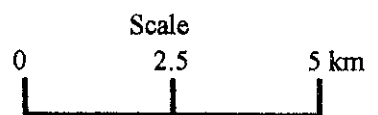
ALIGNMENT OF DIVERSION

CTI ENGINEERING CO., LTD AND INA CORPORATION



Legend

- : Diversion Channel Route
- : Large Scale Road & Railway
- ⊙ : Built-up Area
- : Large Scale Canal

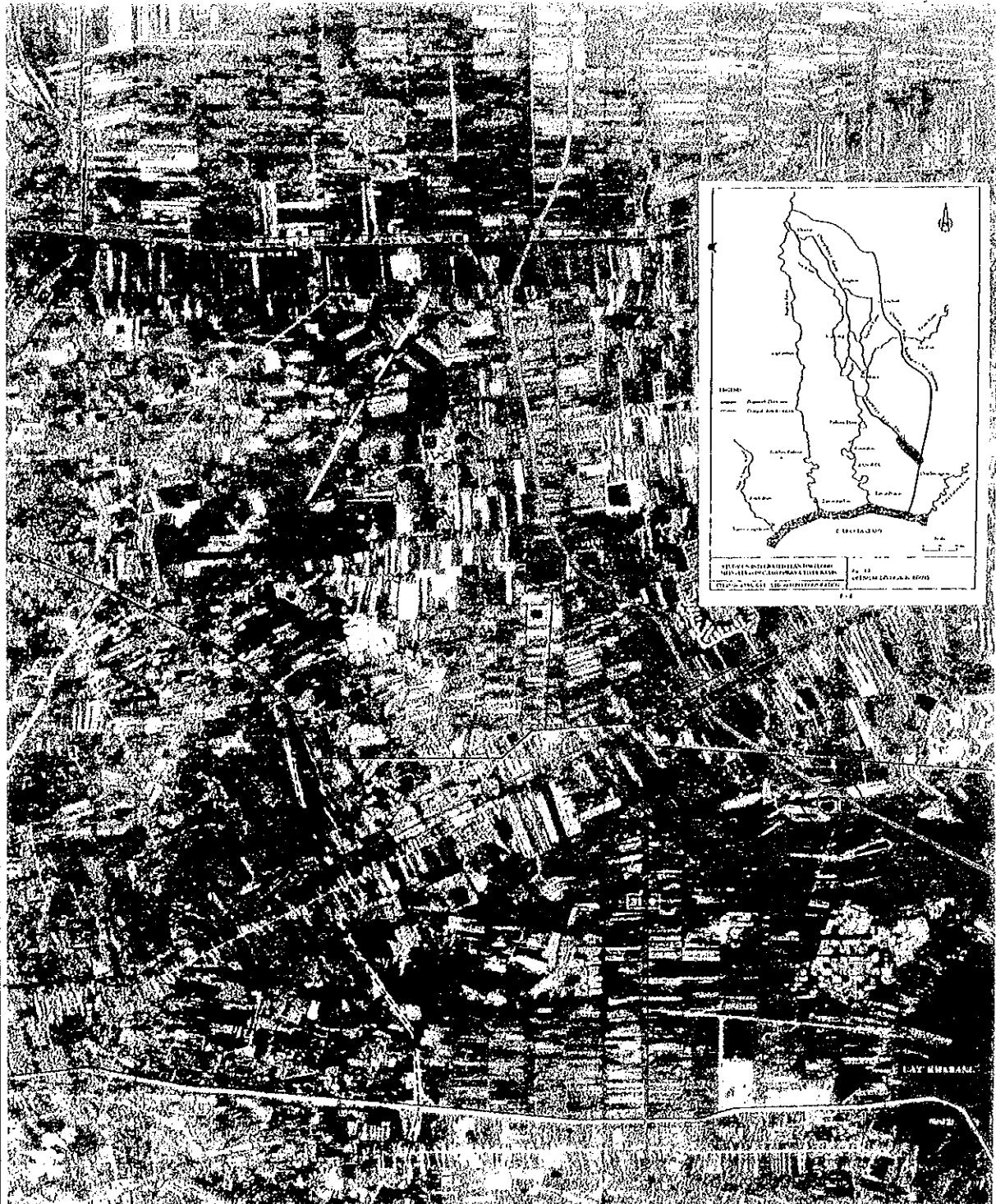


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO., LTD AND INA CORPORATION

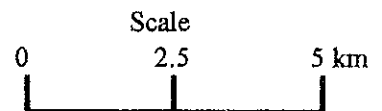
Fig. 6.2.6(2/5)

ALIGNMENT OF DIVERSION



Legend

- - - - - : Diversion Channel Route
- : Large Scale Road & Railway
- ⊙ : Built-up Area
- : Large Scale Canal

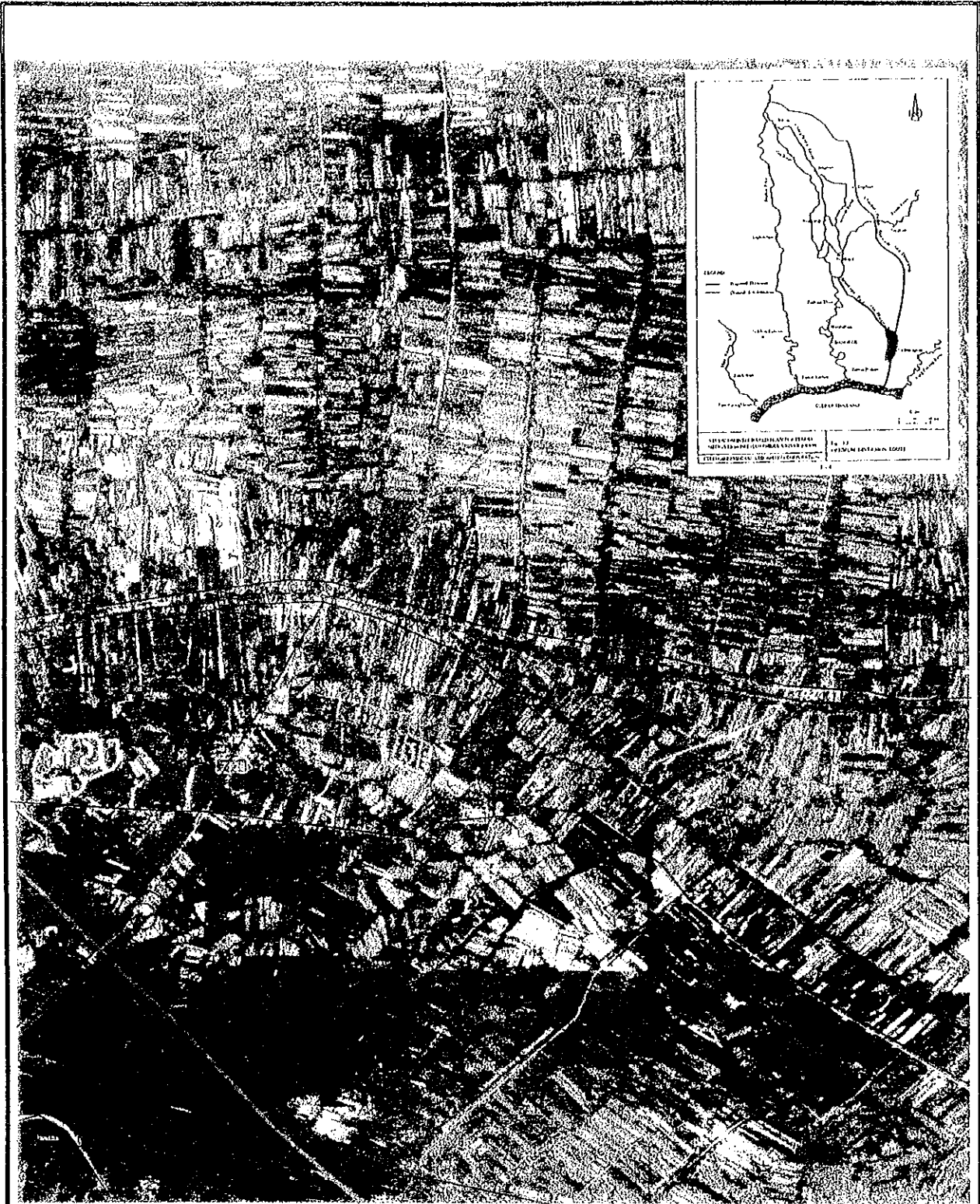


STUDY ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 6.2.6(3/5)

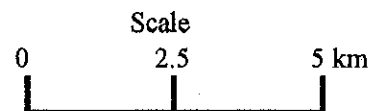
ALIGNMENT OF DIVERSION

CTI ENGINEERING CO., LTD AND INA CORPORATION



Legend

- - - - - : Diversion Channel Route
- : Large Scale Road & Railway
- ⊙ : Built-up Area
- : Large Scale Canal

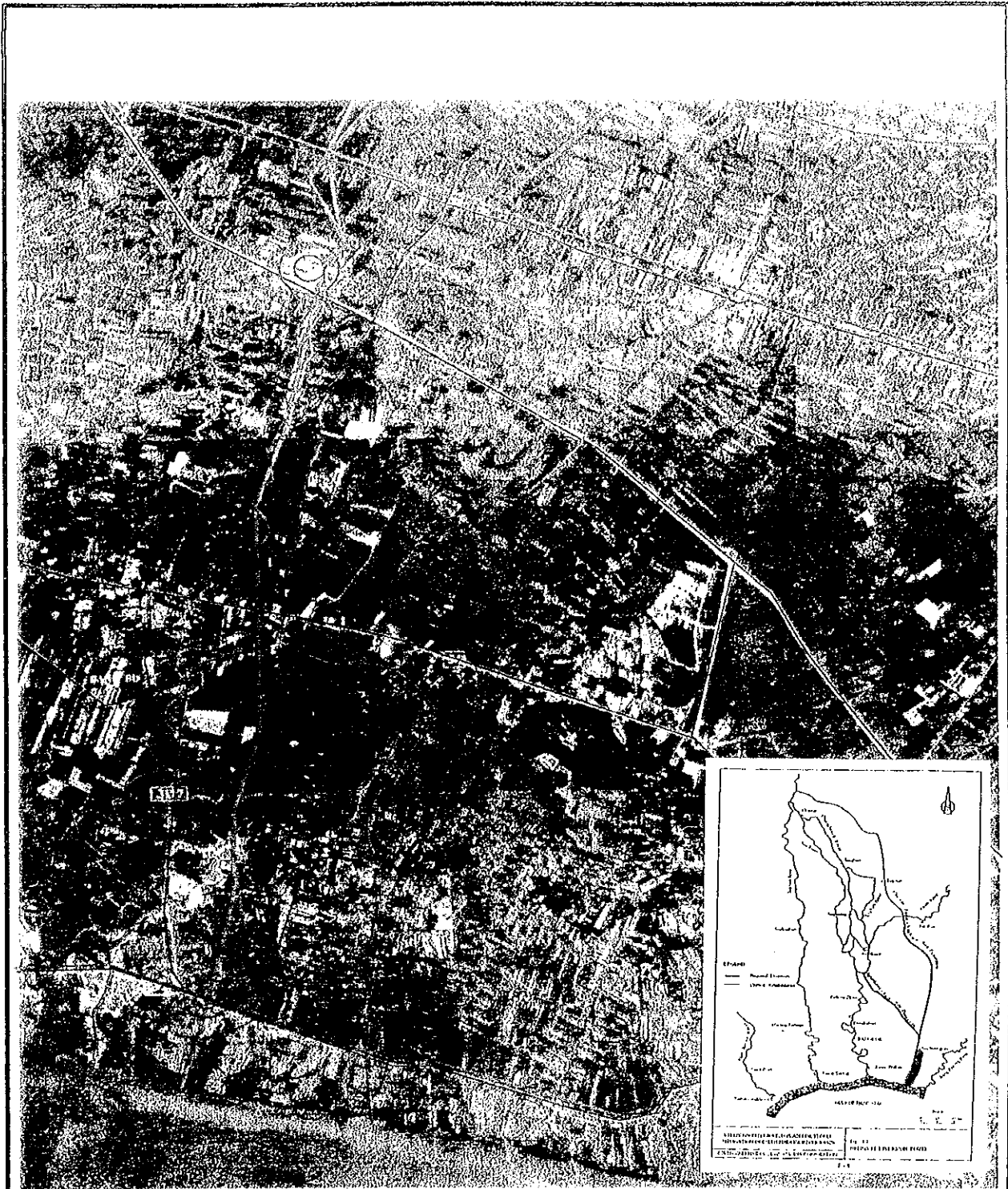


STUDY ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 6.2.6(4/5)

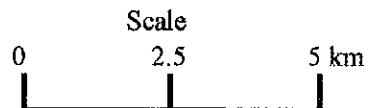
ALIGNMENT OF DIVERSION

CTI ENGINEERING CO., LTD AND INA CORPORATION



Legend

- : Diversion Channel Route
- : Large Scale Road & Railway
- ⊙ : Built-up Area
- : Large Scale Canal

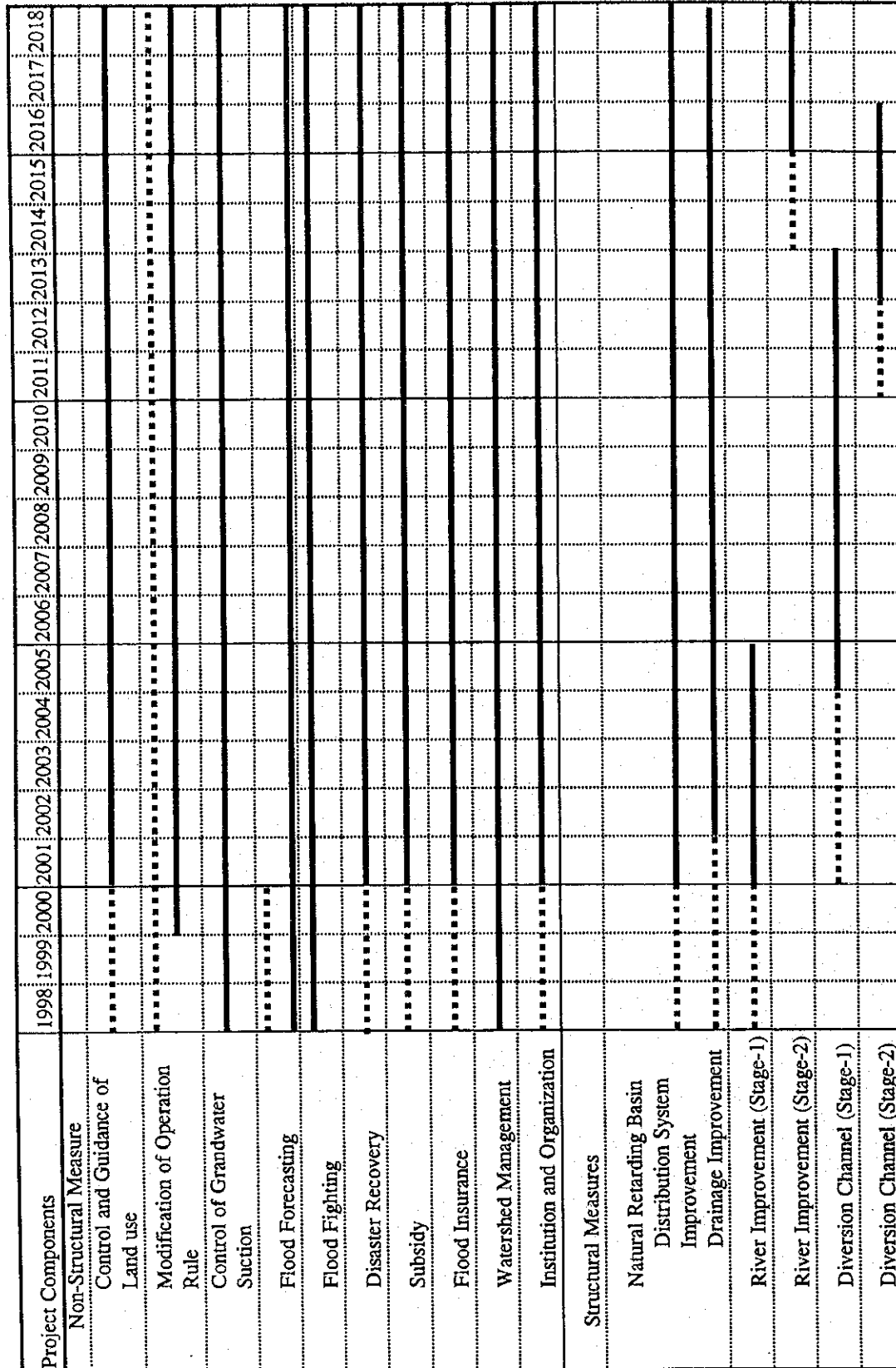


STUDY ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 6.2.6(5/5)

ALIGNMENT OF DIVERSION

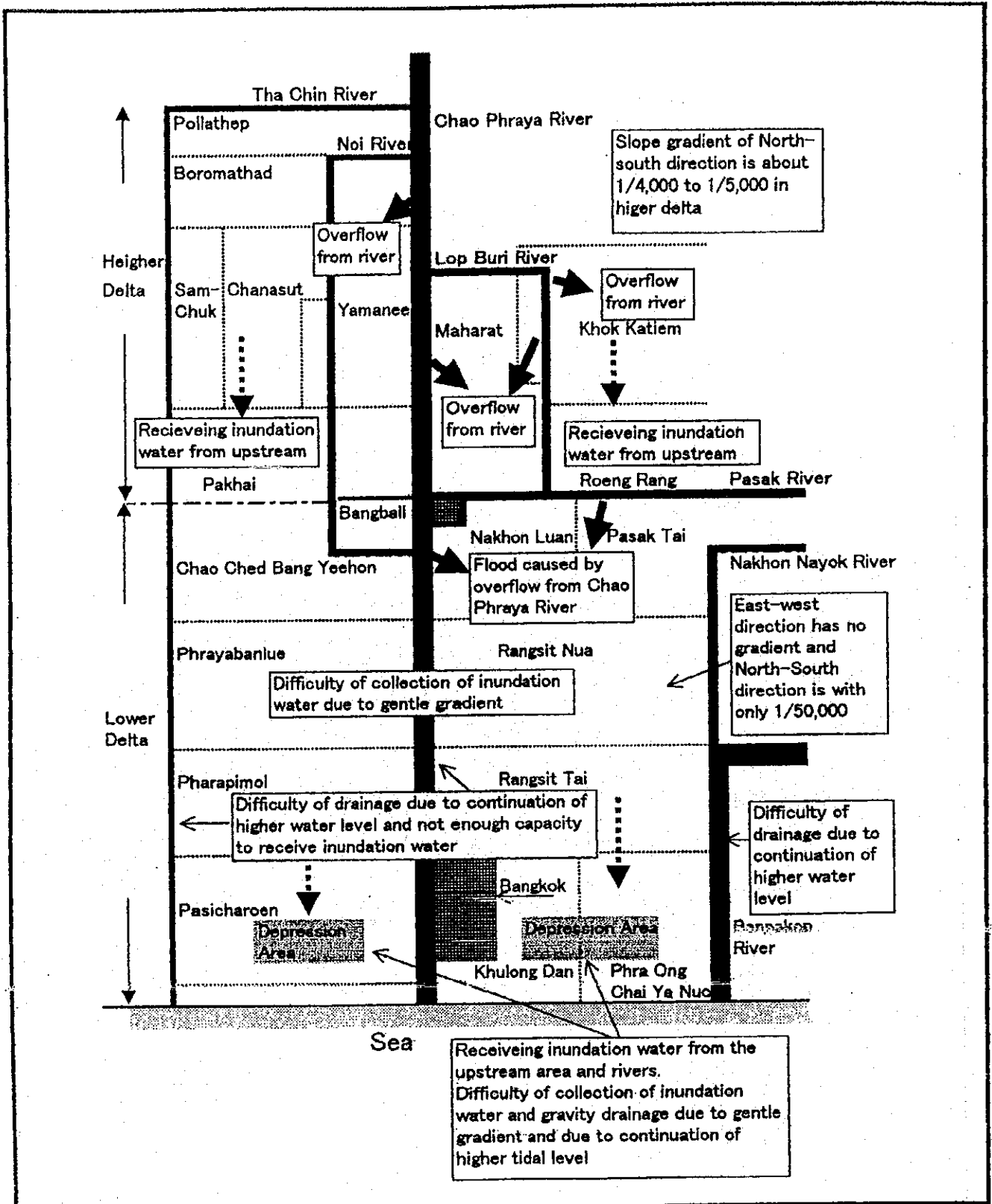
CTI ENGINEERING CO., LTD AND INA CORPORATION



..... : Study Period
 ——— : Implementation Period

STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 6.2.7
 IMPLEMENTATION SCHEDULE OF THE MASTER PLAN (Alternative-2-2)

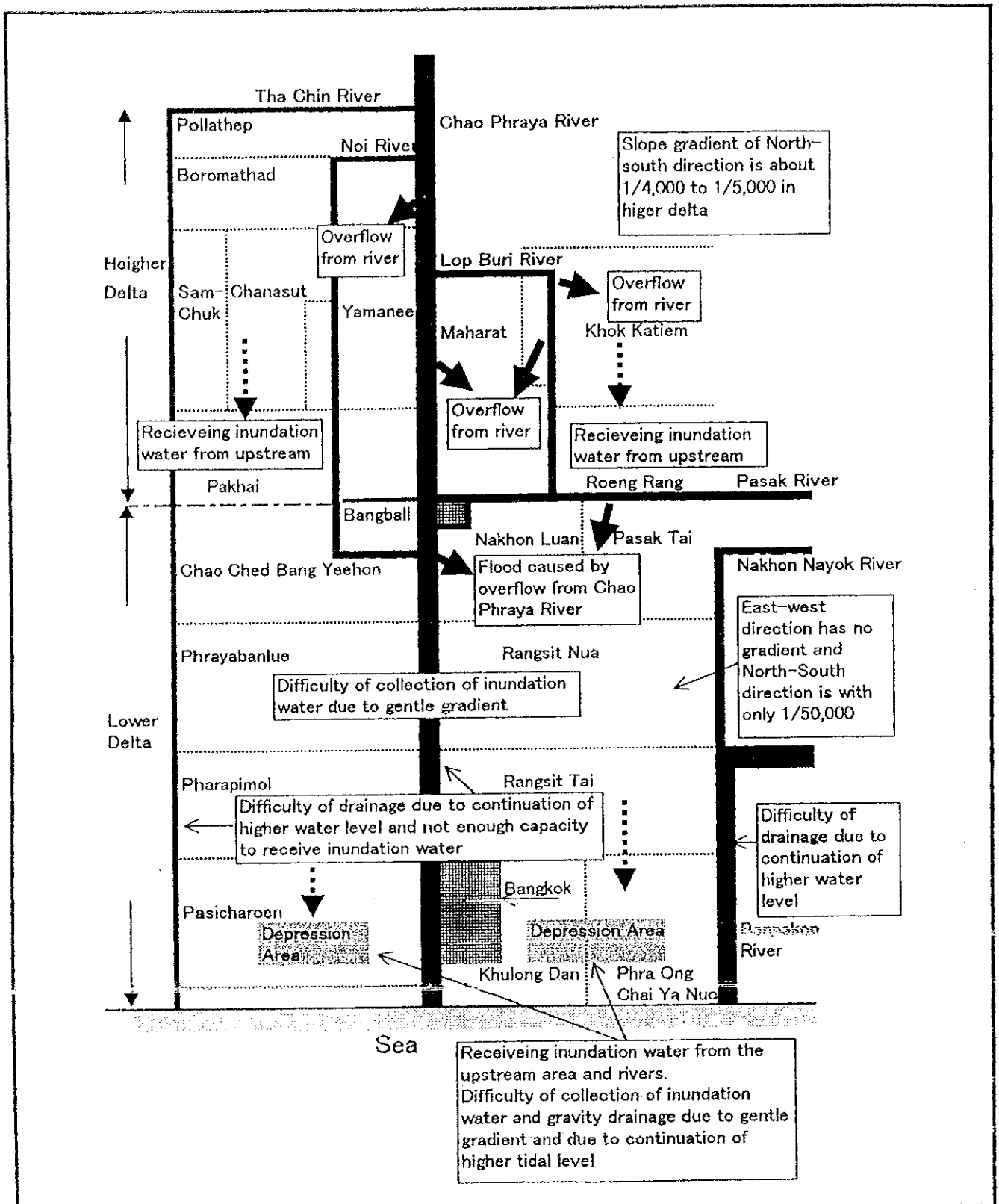


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN

Fig. 6.4.2

MAIN ISSUES ON FARMLAND DRAINAGE

CTI ENGINEERING CO.,LTD AND INA CORPORATION

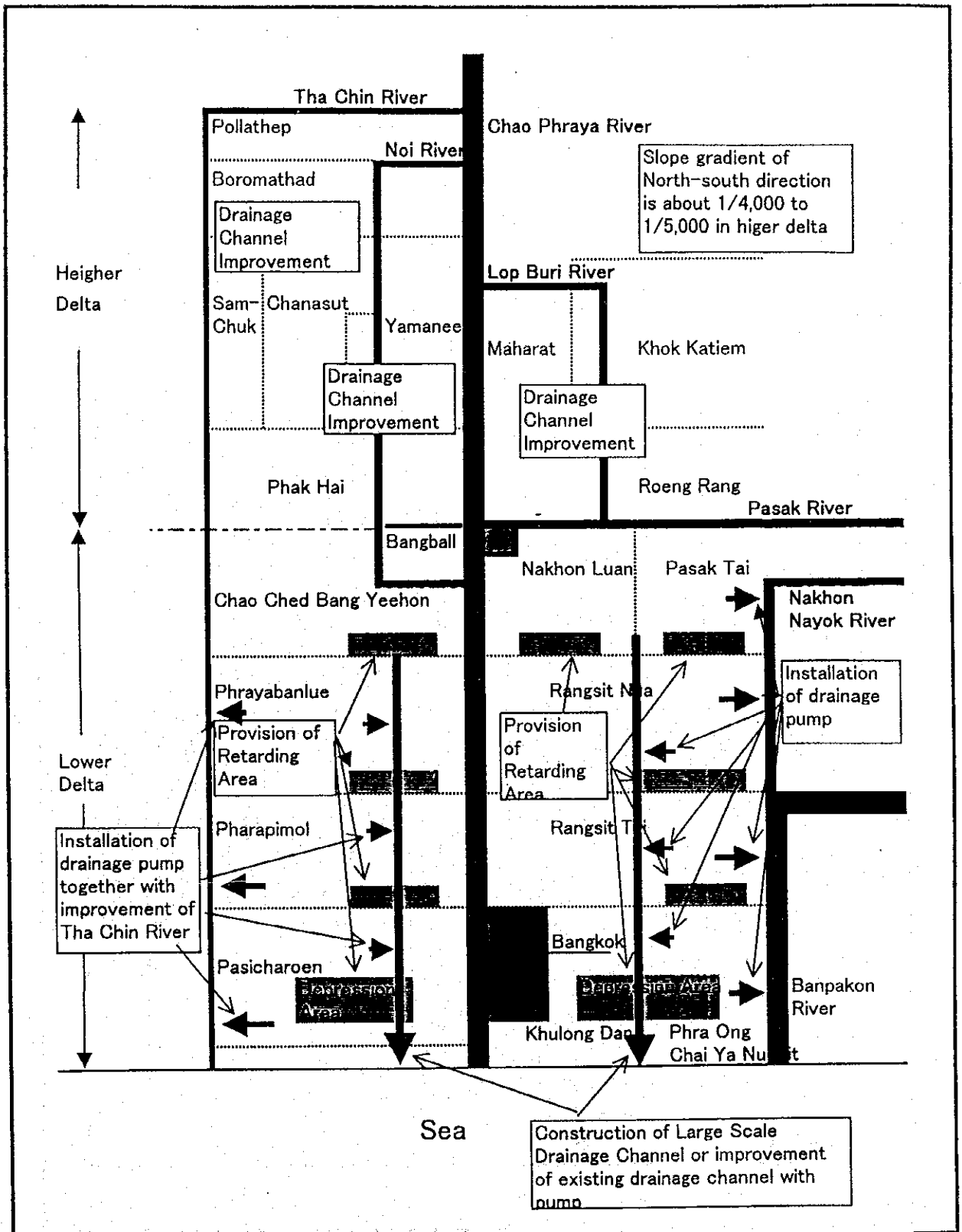


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN

CTI ENGINEERING CO.,LTD AND INA CORPORATION

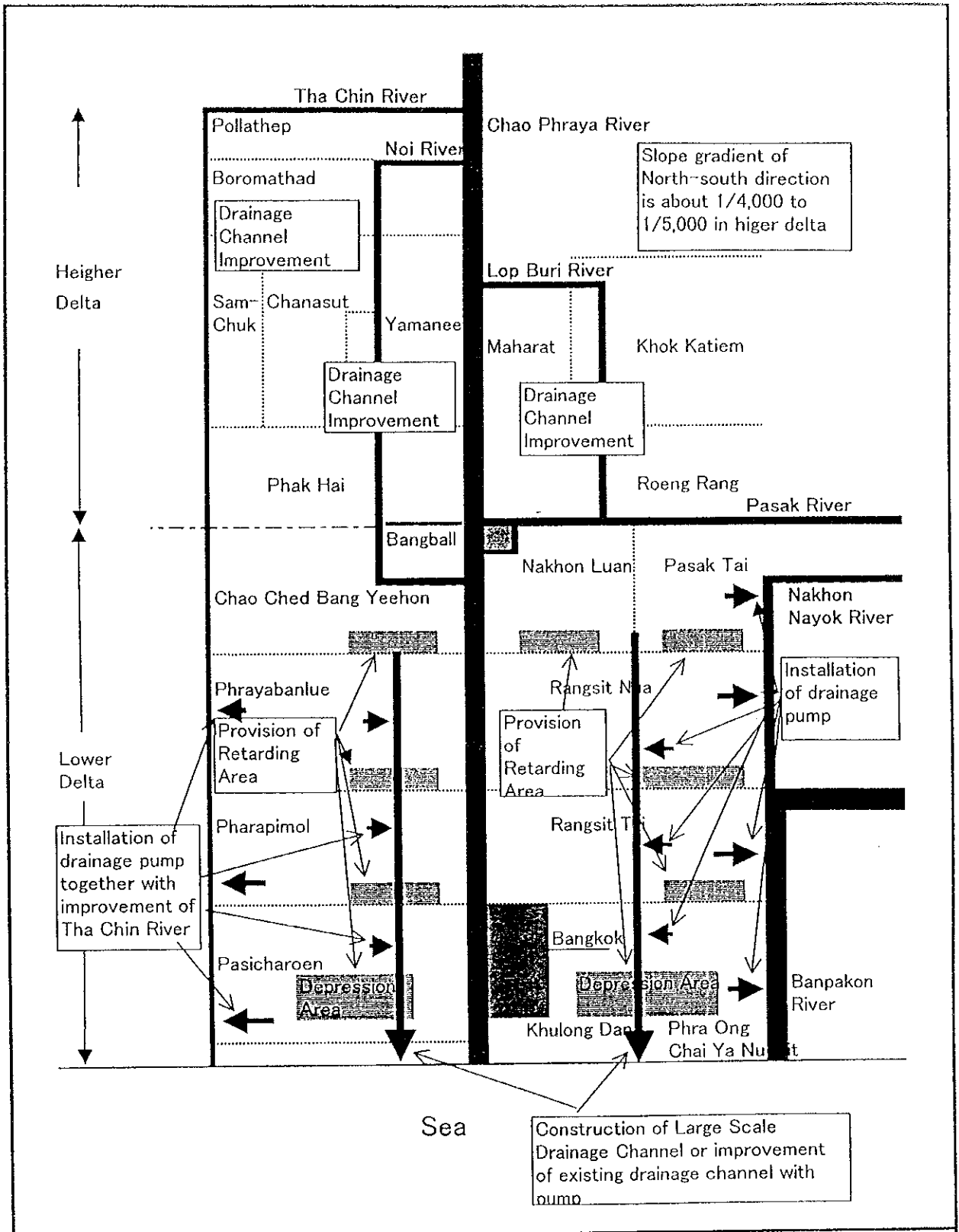
Fig. 6.4.2

MAIN ISSUES ON FARMLAND DRAINAGE



STUDY ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAOPHRAYA RIVER BASIN
CTI ENGINEERING CO.,LTD. AND INA CORPORATION

Fig. 6.4.3
CONCEIVABLE MEASURES FOR DRAINAGE
SYSTEM IMPROVEMENT



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN	Fig. 6.4.3 CONCEIVABLE MEASURES FOR DRAINAGE SYSTEM IMPROVEMENT
CTI ENGINEERING CO.,LTD. AND INA CORPORATION	

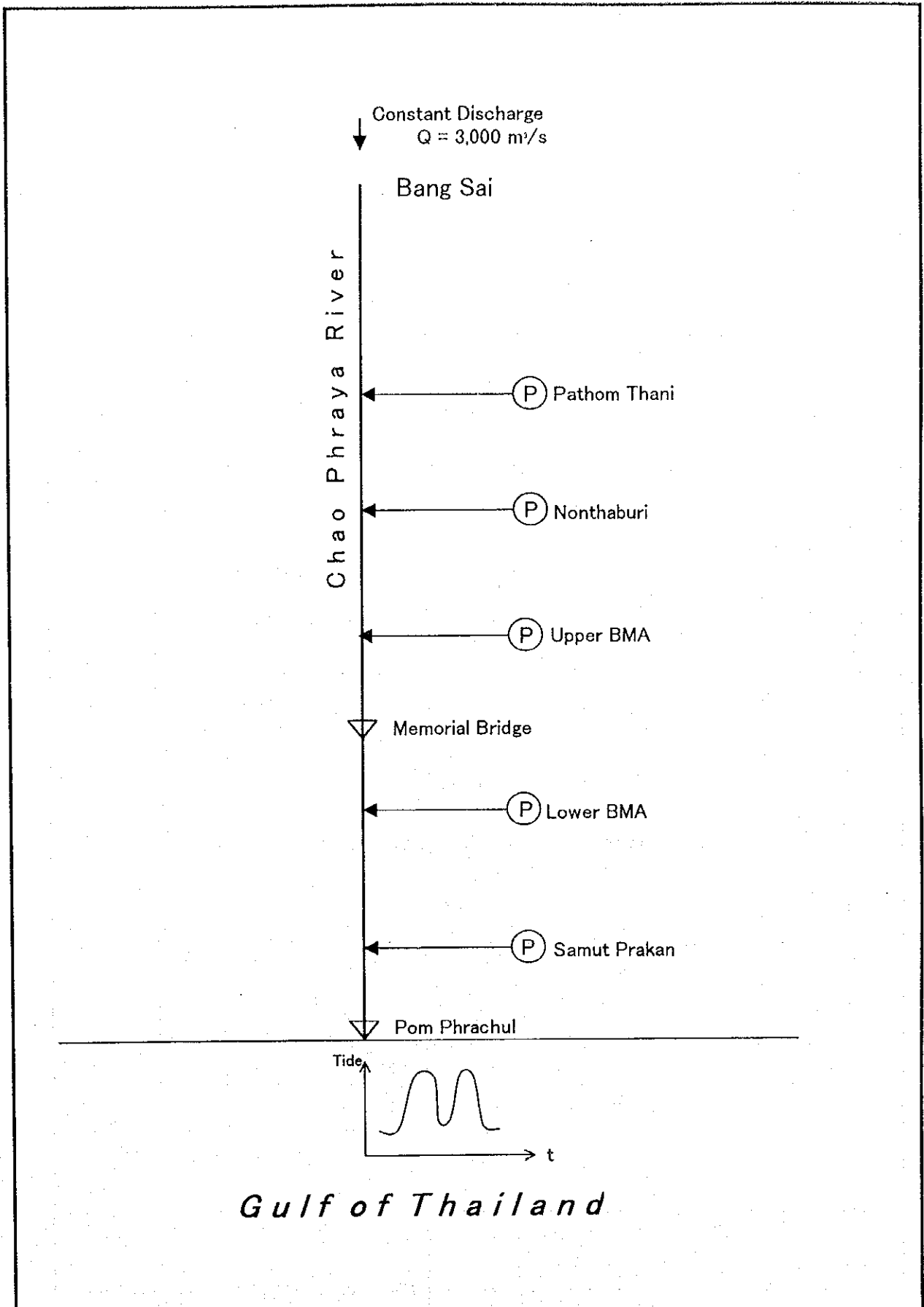
Study Area	Division of Area	Name of Project Area	Priority	Implementation Schedule				
				1998-2000	2001-2005	2006-2010	2011-2015	2016-2018
Higer Delta	Northern Part surrounded by Noi and Chao Phraya Rivers	Boremathad	2-4-4					
		Samdhuk	2-4-3					
		Chanasut	2-4-2					
		Phak Hai	2-4-1					
	Area surrounded by Noi and Chao Phraya Rivers	Boremathad	2-3-4					
		Yamanec	2-3-3					
		Phak Hai	2-3-2					
		Bang Bai	2-3-1					
		Maharat	2-1-2					
		Khok Katiem	2-1-1					
Lower Delta	Area surrounded by Chao Phraya and Lop Buri	Khok Katiem	2-2-2					
		Roeng Rang	2-2-1					
		Nakhon Luang	1-1-5					
		Pasak Tai	1-1-6					
	East Bank Area	Rangsit Nua	1-1-4					
		Rangsit Tai	1-1-3					
		Khlong Dan	1-1-1					
		Phra Ong Chai	1-1-2					
		Ya Nuchit						
		Chao Ched	1-2-4					
West Bank Area	Bang Yeehon							
	Phrayahantue	1-2-3						
	Phrayapimol	1-2-2						
	Pashicharoen	1-2-1						

STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN

CTI ENGINEERING CO.,LTD. AND INA CORPORATION

Fig. 6.4.4

PRIORITY OF DRAINAGE SYSTEM IMPROVEMENT



STUDY ON ON INTEGRATED PLAN FOR FLOOD
 MITIGATION IN CHAOPHRAYA RIVER BASIN

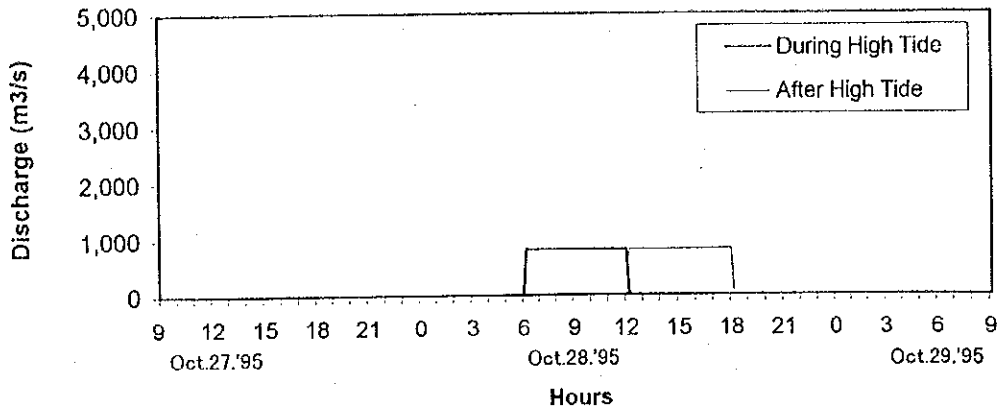
CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 6.6.1

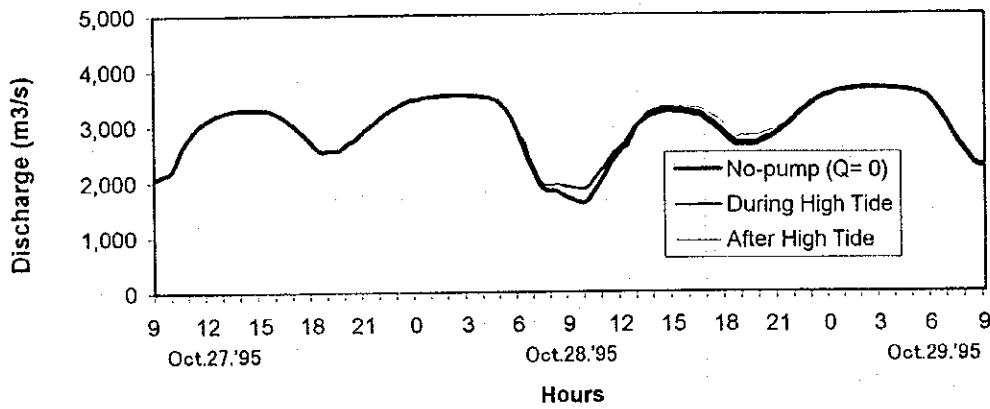
SCHEMATIC DIAGRAM OF

PUMP DRAIN MODEL

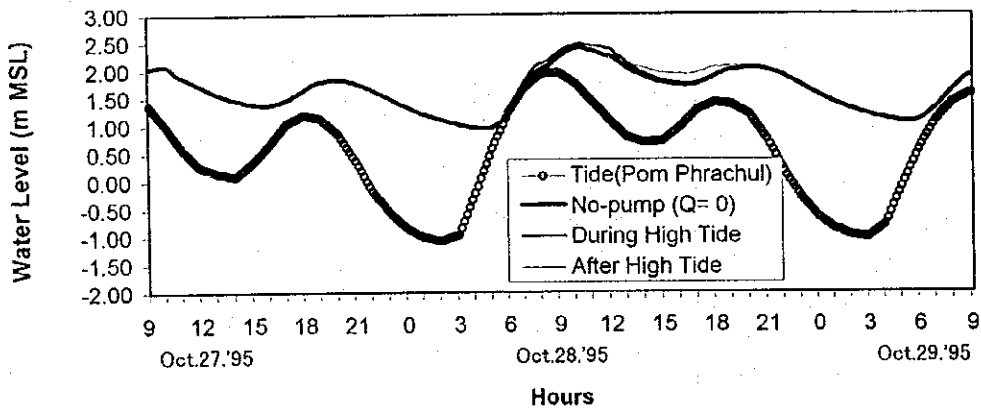
Pump Discharge



Discharge at Memorial Bridge



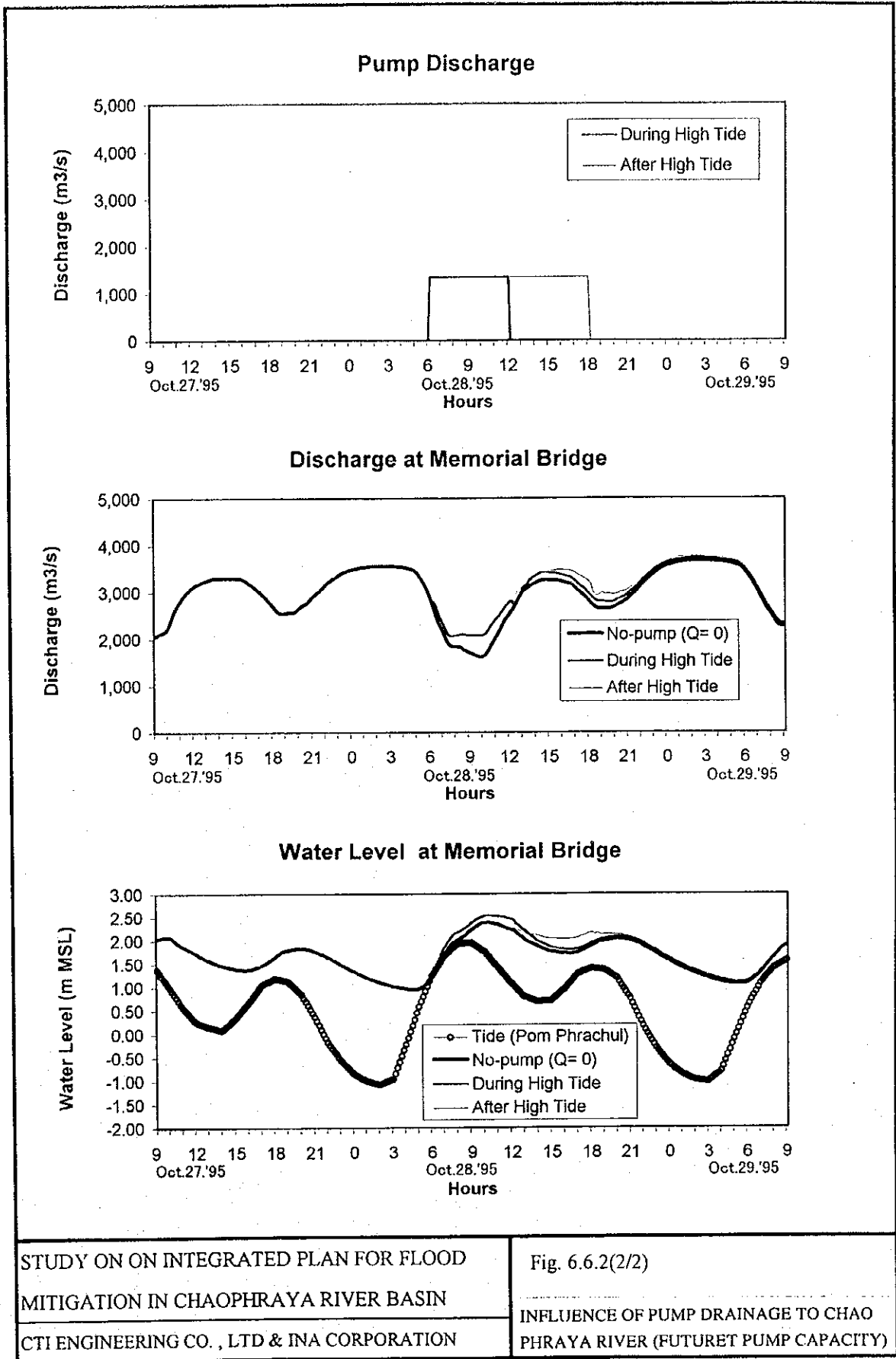
Water Level at Memorial Bridge



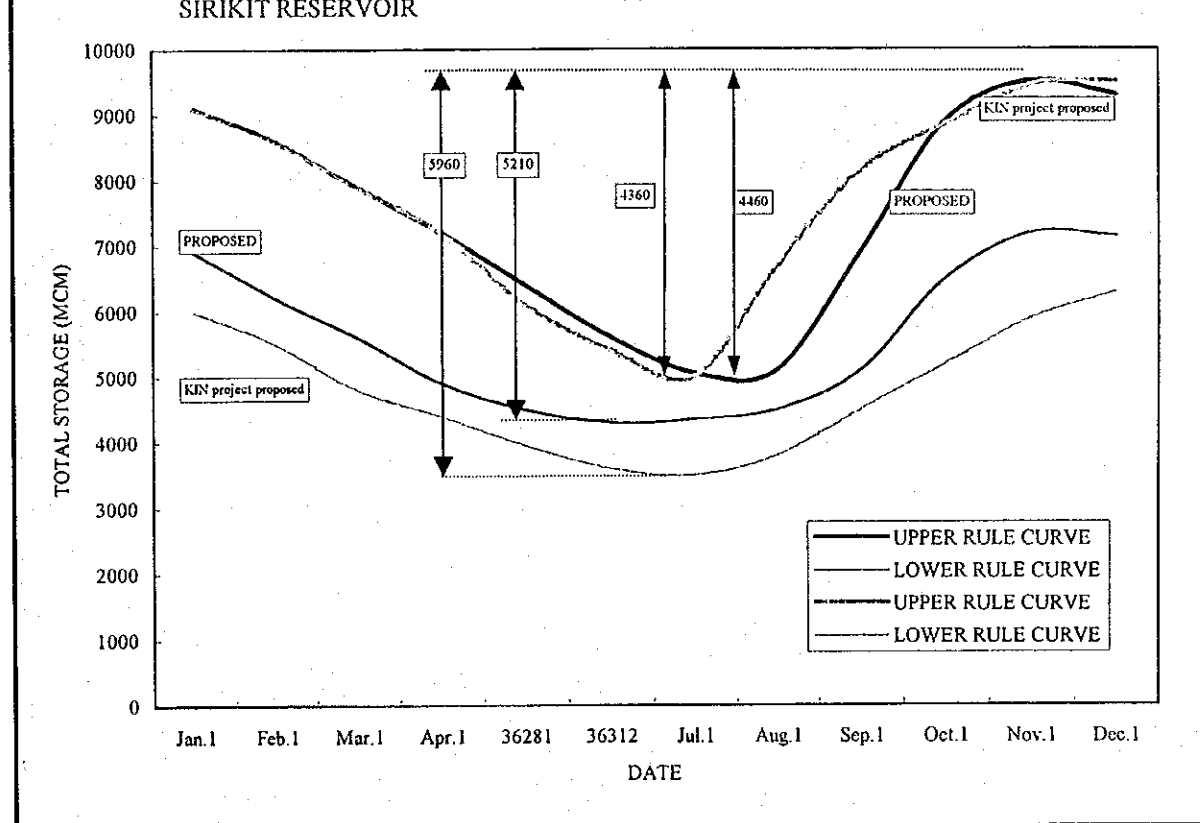
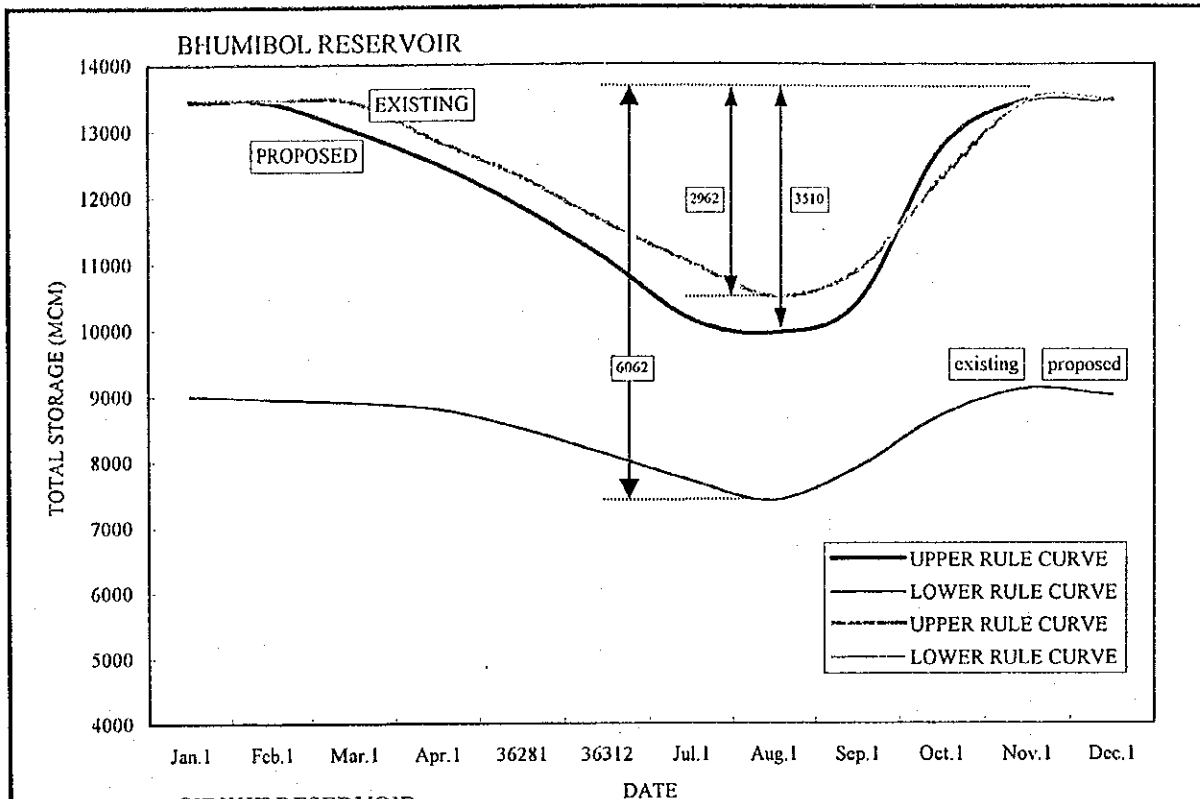
STUDY ON ON INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAOPHRAYA RIVER BASIN
CTI ENGINEERING CO. , LTD & INA CORPORATION

Fig. 6.6.2(1/2)

INFLUENCE OF PUMP DRAINAGE TO CHAO
PHRAYA RIVER (PRESENT PUMP CAPACITY)





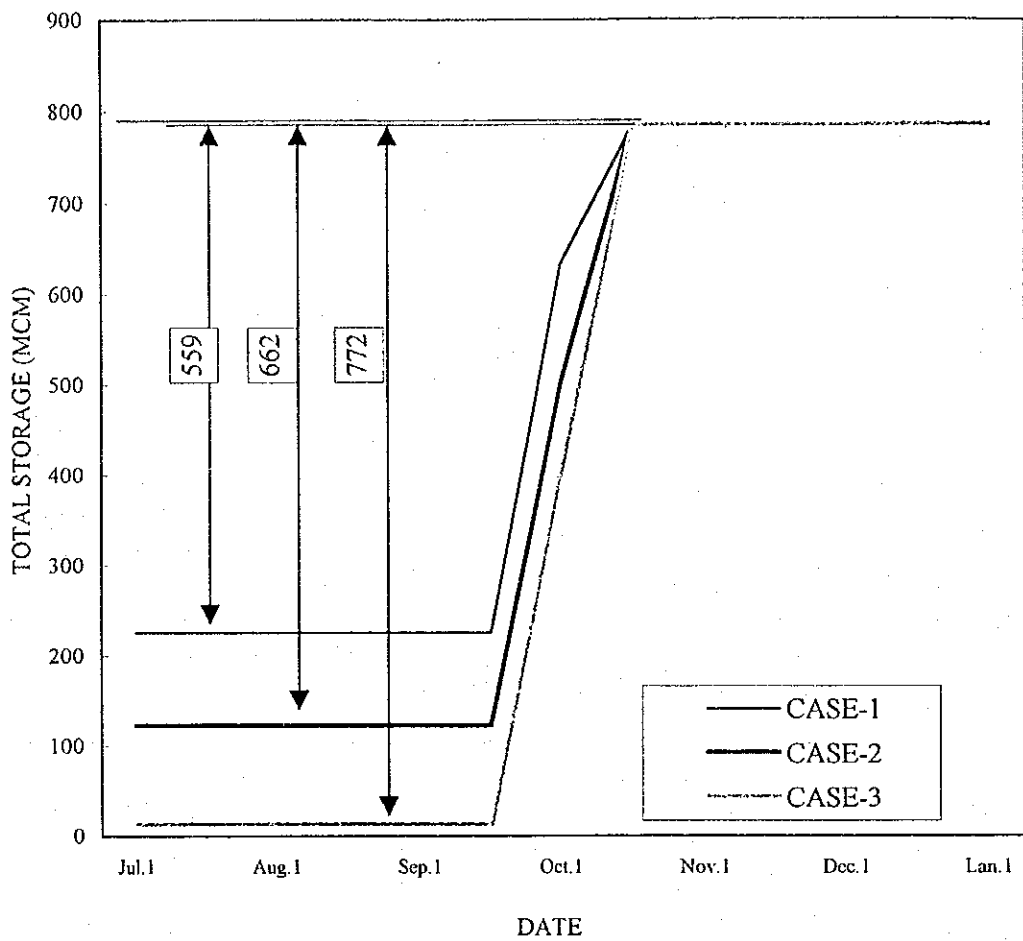


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO, LTD. AND INA CORPORATION

Fig. 7.2.1(1/2)

PROPOSED OPERATION CURVE (SIRIKIT RESERVOIR AND BHUMIBOL RESERVOIR)

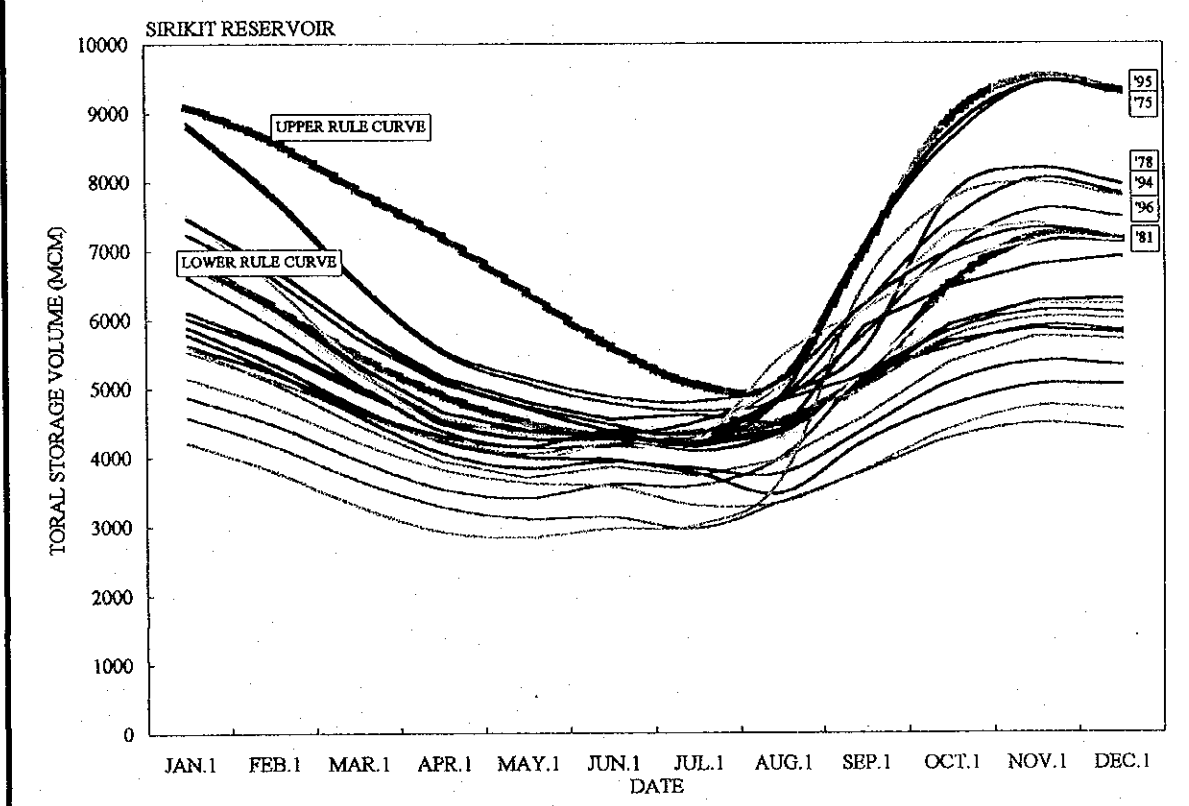
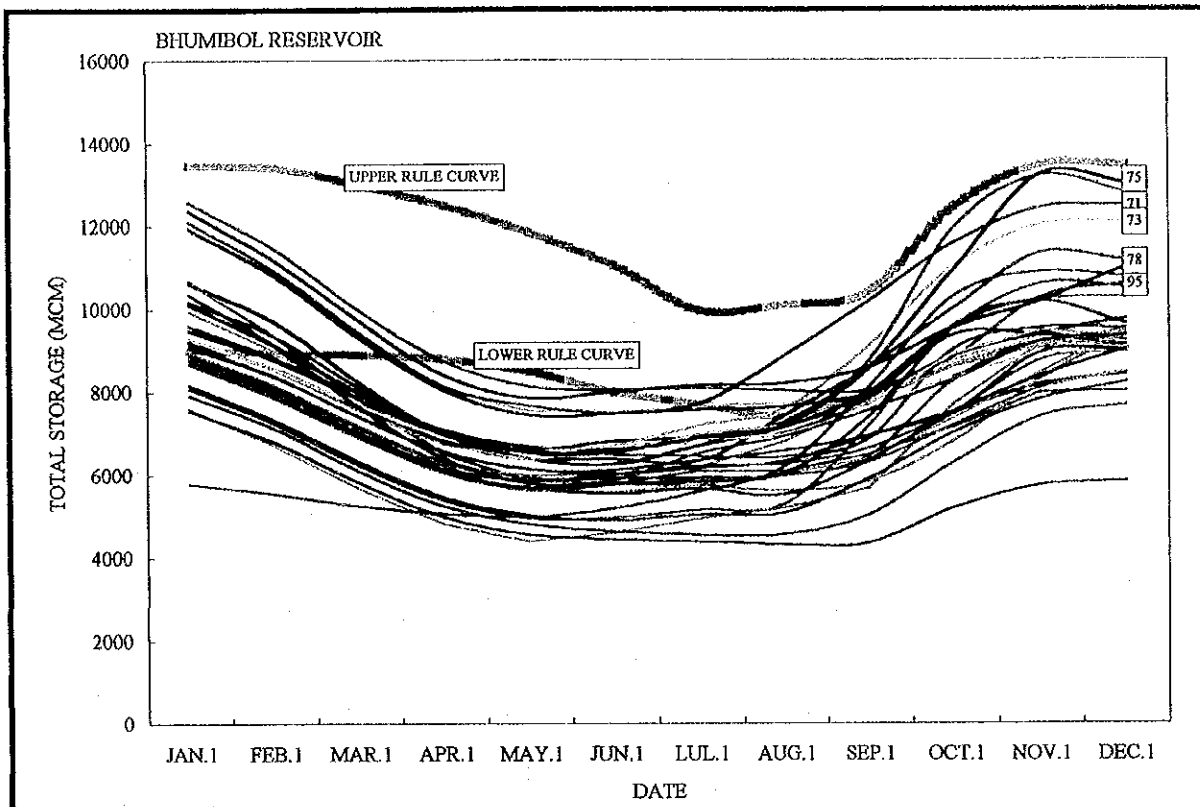


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO, LTD. AND INA CORPORATION

Fig. 7.2.1 (2/2)

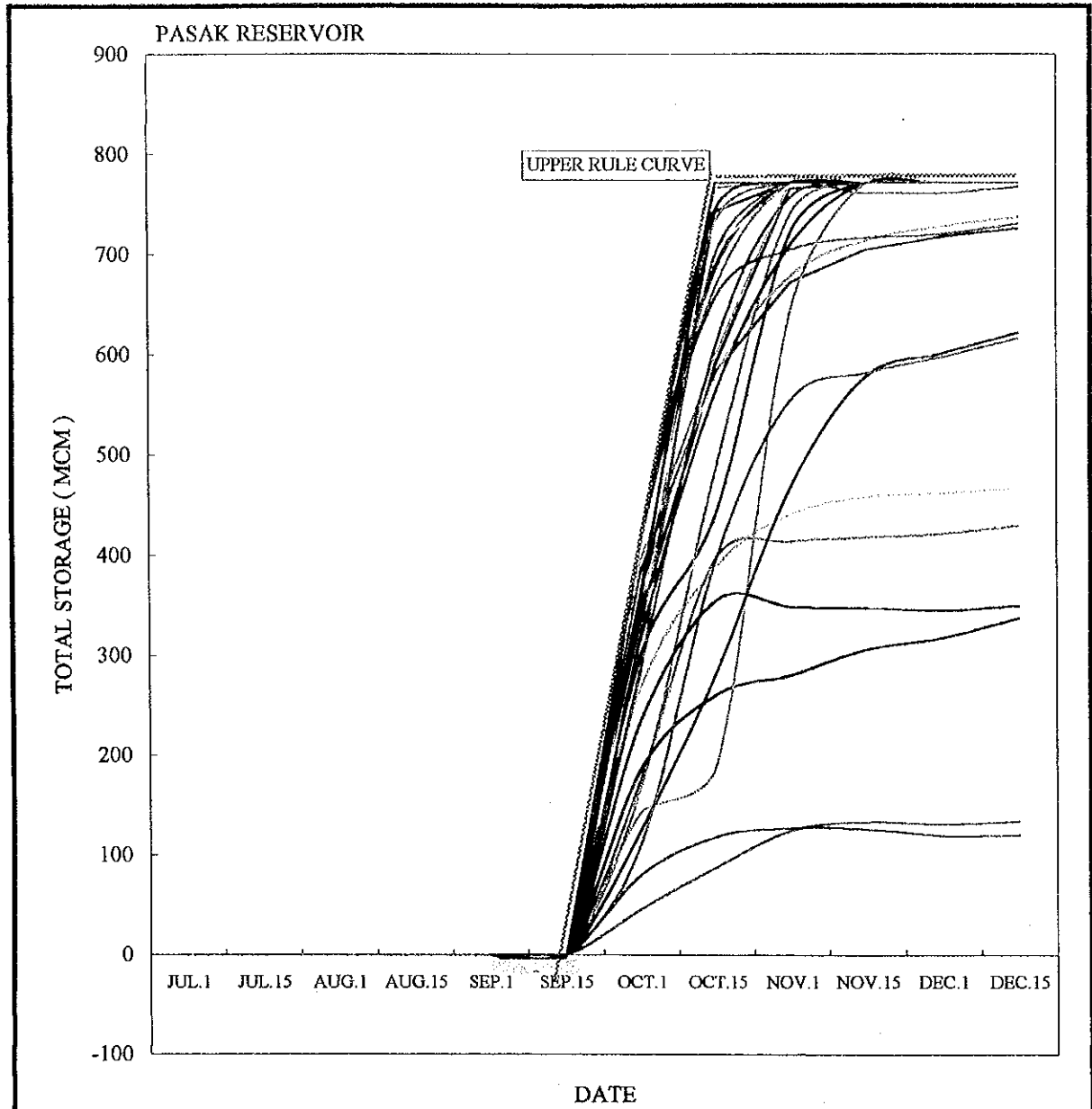
PROPOSED UPPER RULE CURVES (PASAK RESERVOIR)



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 7.2.2 (1/2) RESERVOIR OPERATION

CTI ENGINEERING CO, LTD. AND INA CORPORATION



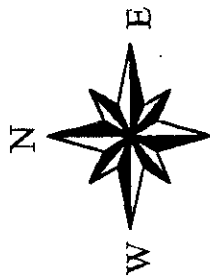
— 1952	— 1953	— 1954	— 1955	— 1956	— 1957	— 1958	— 1959	— 1960
— 1961	— 1962	— 1963	— 1964	— 1965	— 1966	— 1967	— 1968	— 1969
— 1970	— 1971	— 1972	— 1973	— 1974	— 1975	— 1976	— 1977	— 1978
— 1979	— 1980	— 1981	— 1982	— 1983	— 1984	— 1985	— 1986	— 1987
— 1988	— 1989	— 1990	— 1991	— 1992	— 1993	— 1994	— 1995	— 1996

STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig. 7.2.2 (2/2)
RESERVOIR OPERATION

CTI ENGINEERING CO, LTD. AND INA CORPORATION

Note:
 i) The return period(T) was estimated for the inundation volume
 ii) Urban areas to be protected by future ring dikes were excluded from the flood mapping

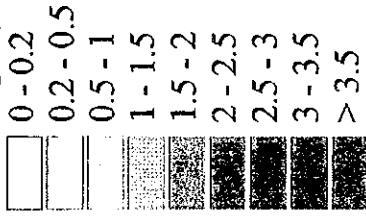


LEGEND



Ring Dike

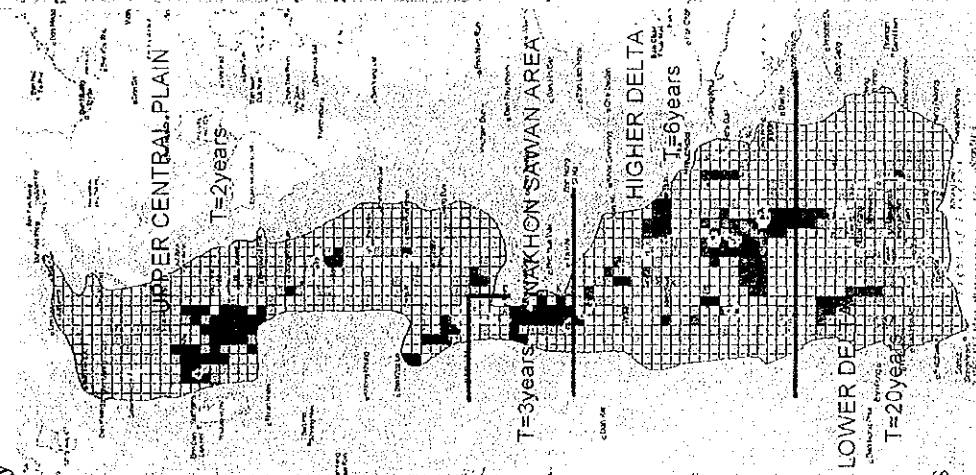
Water Depth(m)



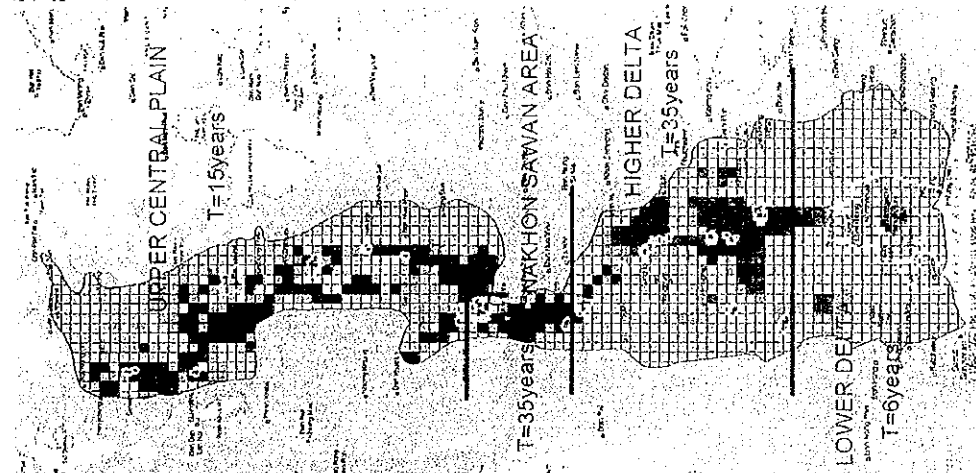
50 0 50 Kilometers



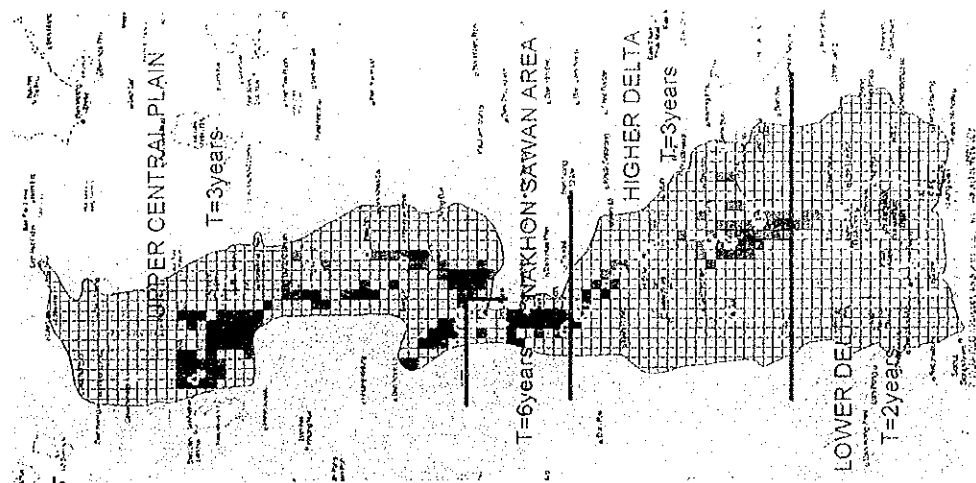
1983



1995

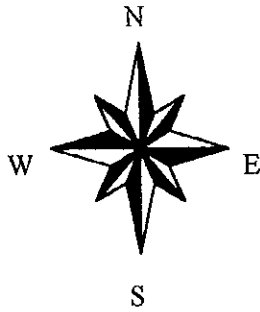


1996

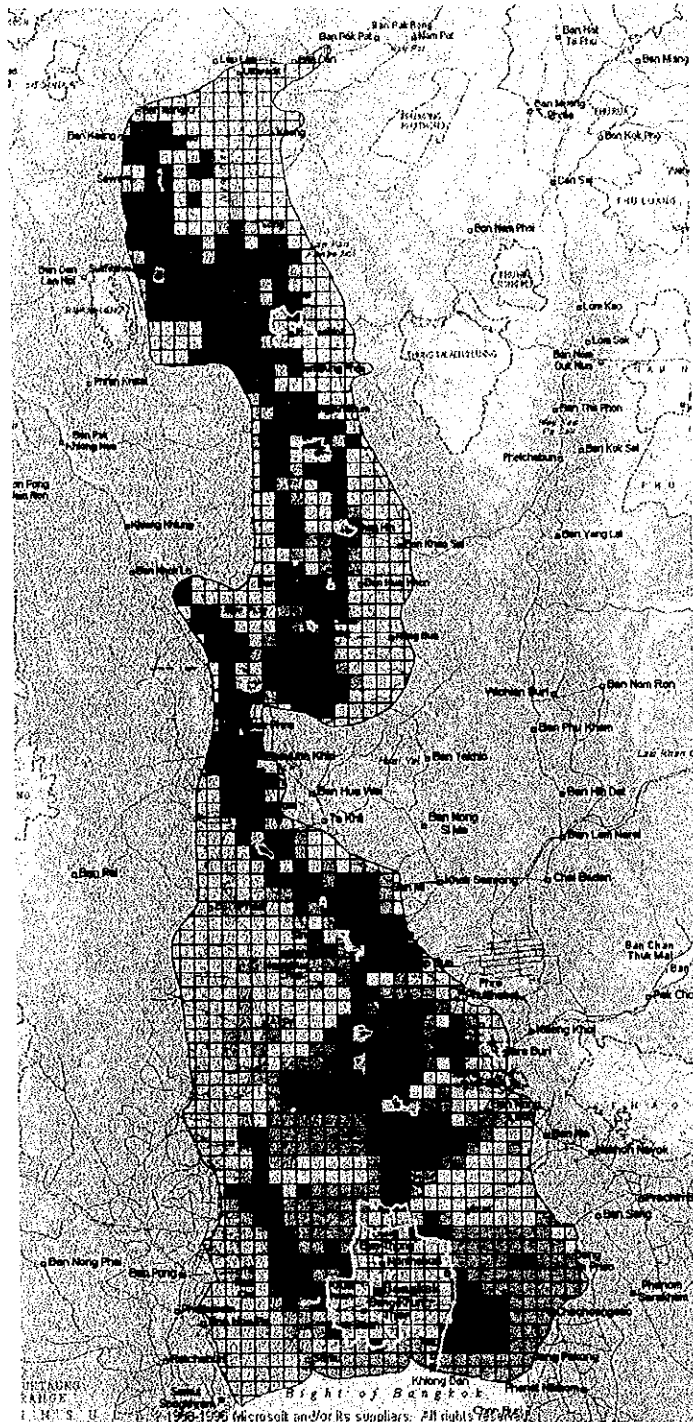


STUDY ON INTEGRATED PLAN FOR FLOOD
 MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.3.1
 FLOOD MAP WITH RETURN PERIOD
 UNDER PRESENT CONDITION



- LEGEND**
- Ring Dike 2005
 - Major Rivers
 - Water Depth (m)**
 - 0 - 0.2
 - 0.2 - 0.5
 - 0.5 - 1
 - 1 - 1.5
 - 1.5 - 2
 - 2 - 2.5
 - 2.5 - 3
 - 3 - 3.5
 - > 3.5

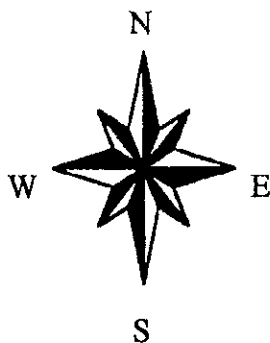


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHYARA RIVER BASIN

CTI ENGINEERING CO LTD., & INA CORPORATION

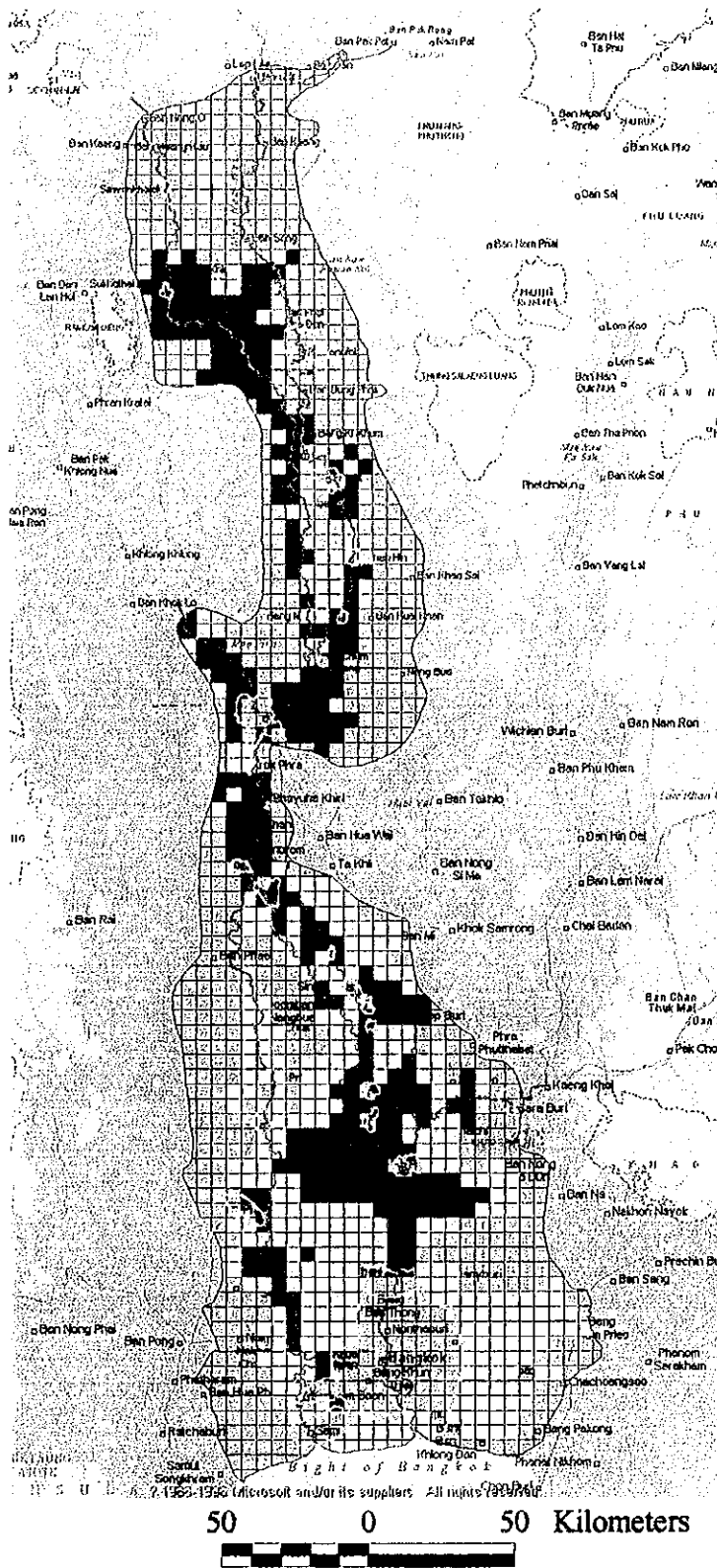
Fig.7.3.2
MAXIMUM INUNDATION DEPTH MAP
IN 1983,1995 AND 1996 FLOOD

Flood Potential Map



LEGEND

- Urban Dike
- Major Rivers
- Flood Potential**
- Low
- Middle
- High

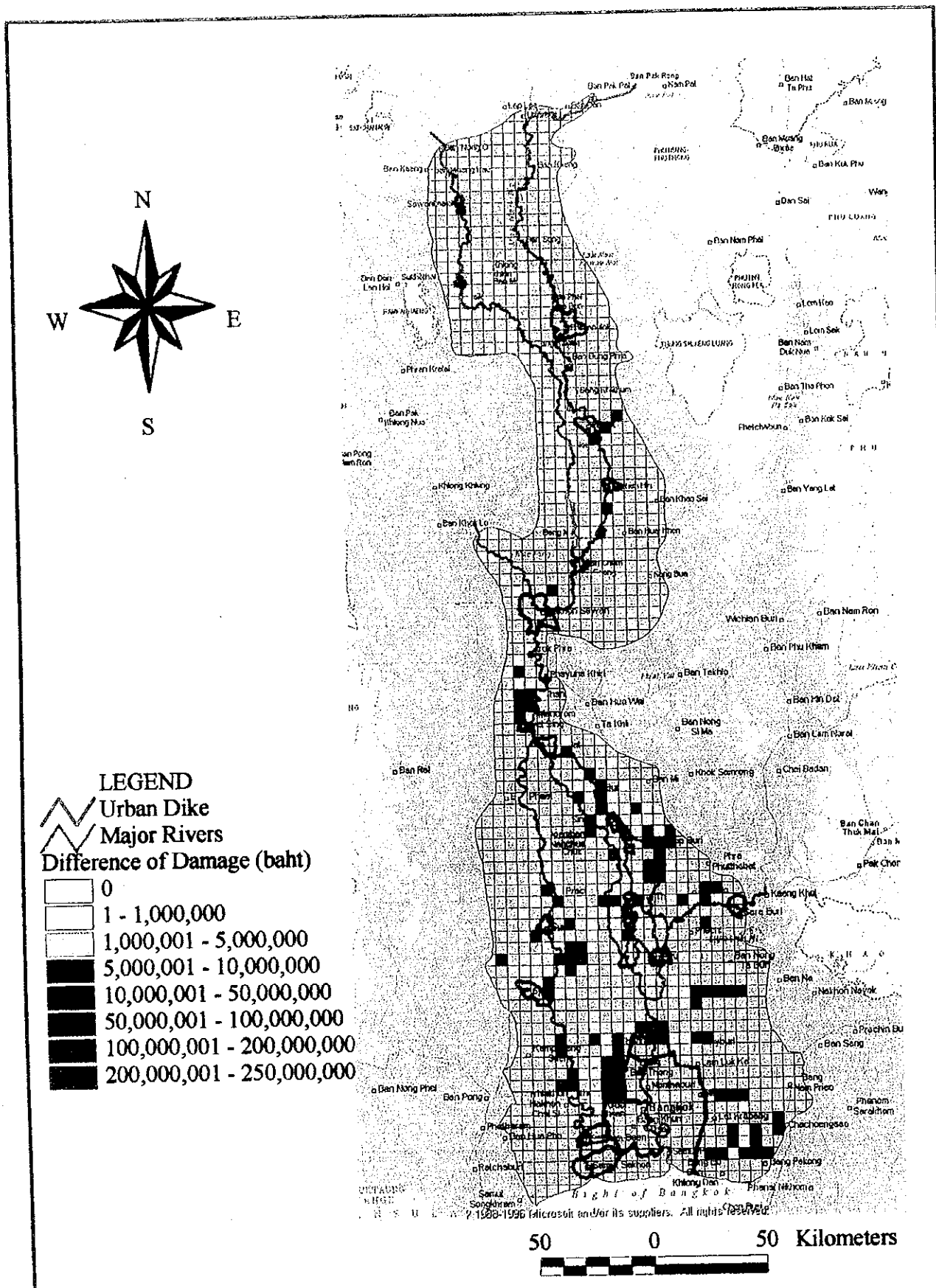


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN

Fig. 7.3.3

FLOOD POTENTIAL MAP

CTI ENGINEERING CO LTD., & INA CORPORATION

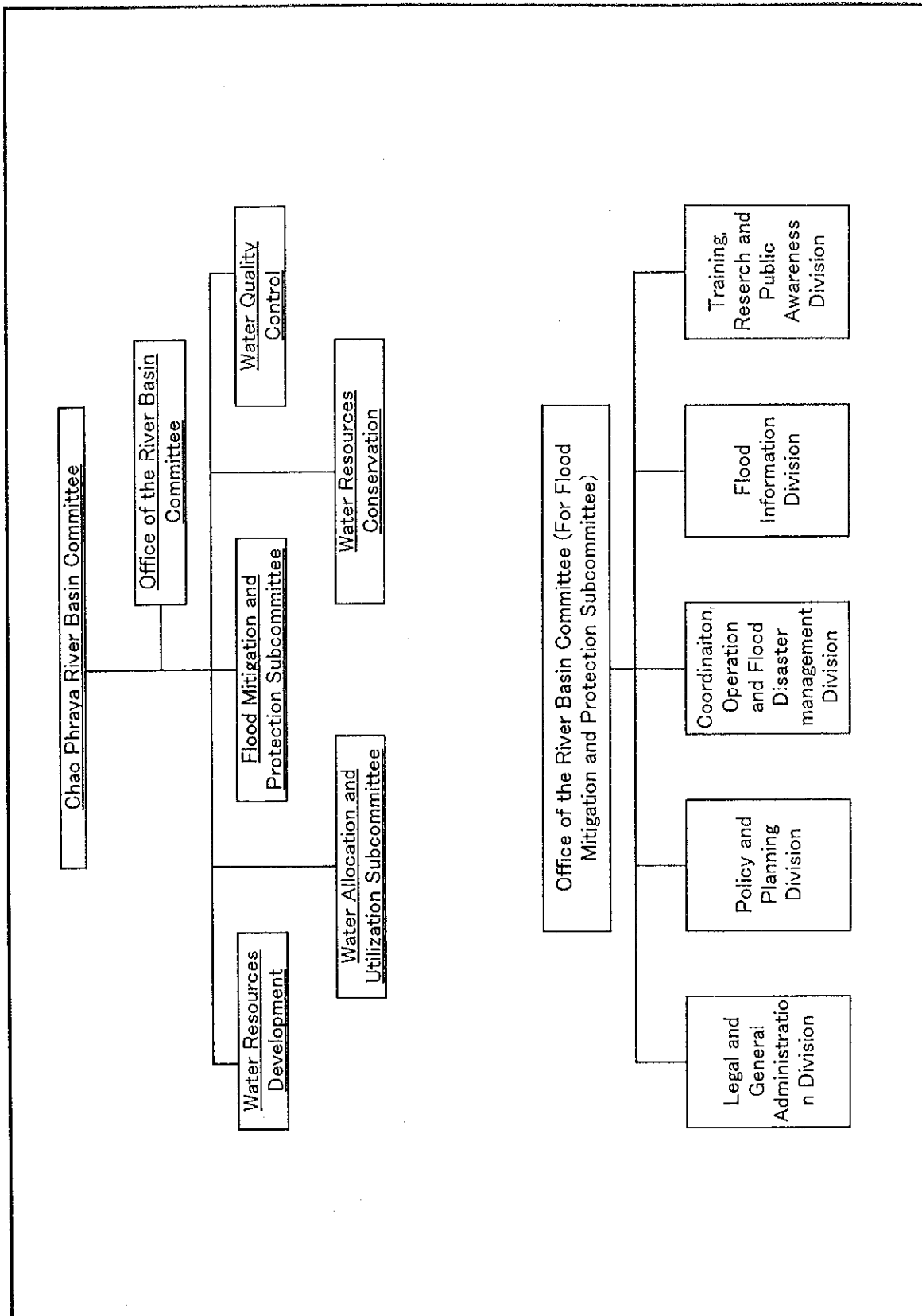


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN

Fig. 7.3.4

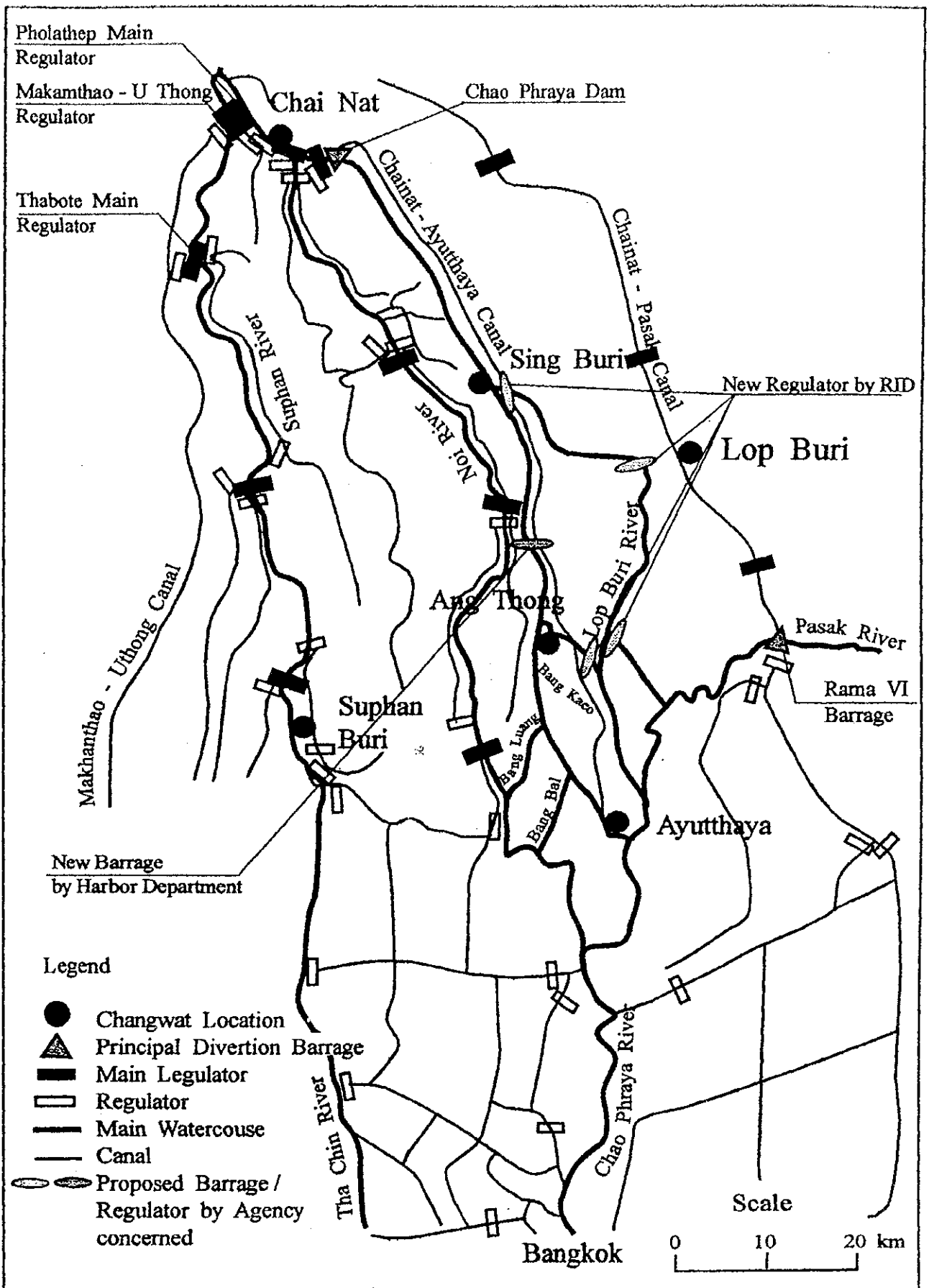
FUTURE FLOOD DAMAGE INCREASE MAP

CTI ENGINEERING CO LTD., & INA CORPORATION



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD. AND INA CORPORATION

Fig. 7.4.1
 PROPOSED ORGANIZATION CHART OF RIVER BASIN COMMITTEE

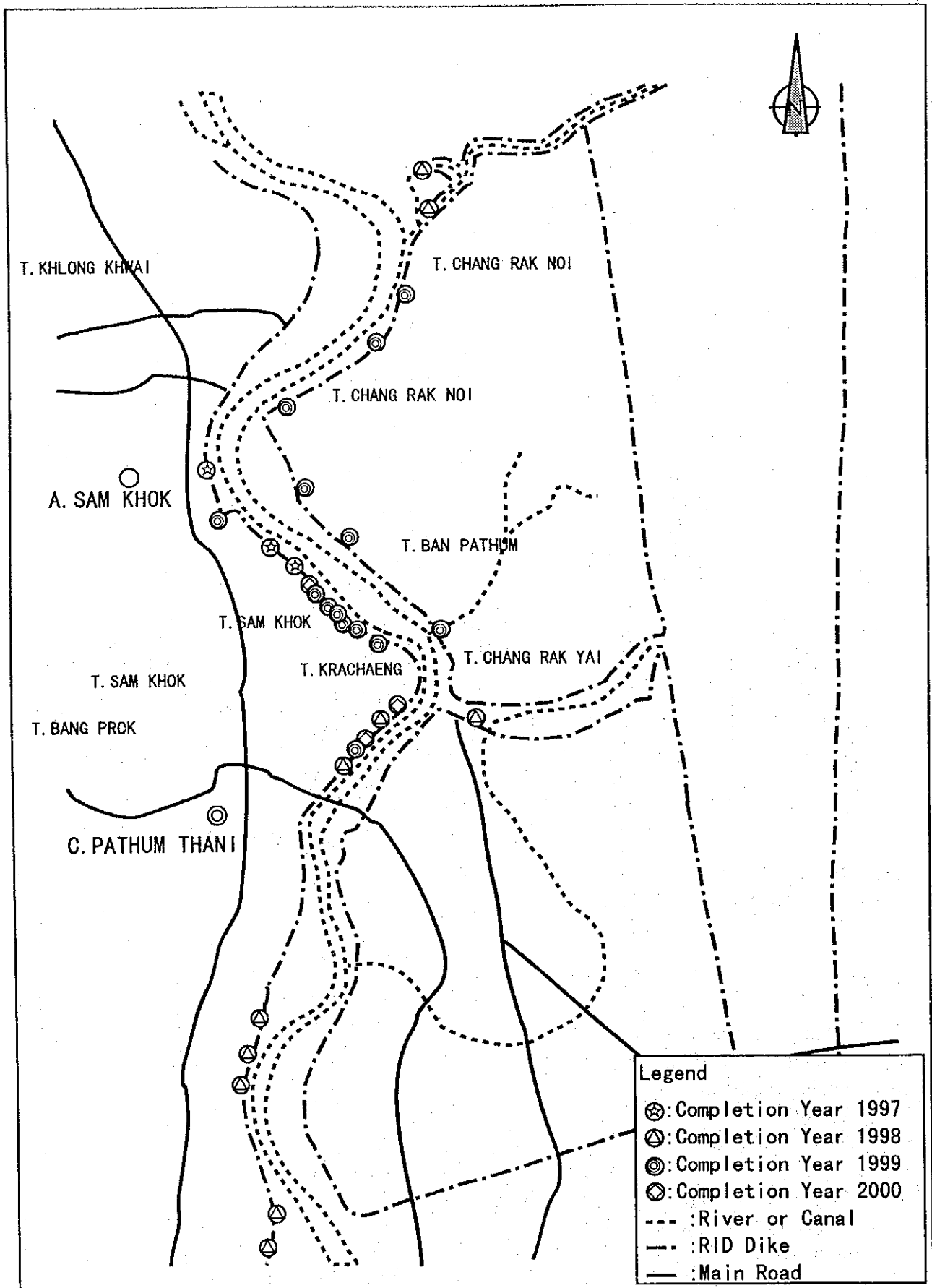


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 7.5.2

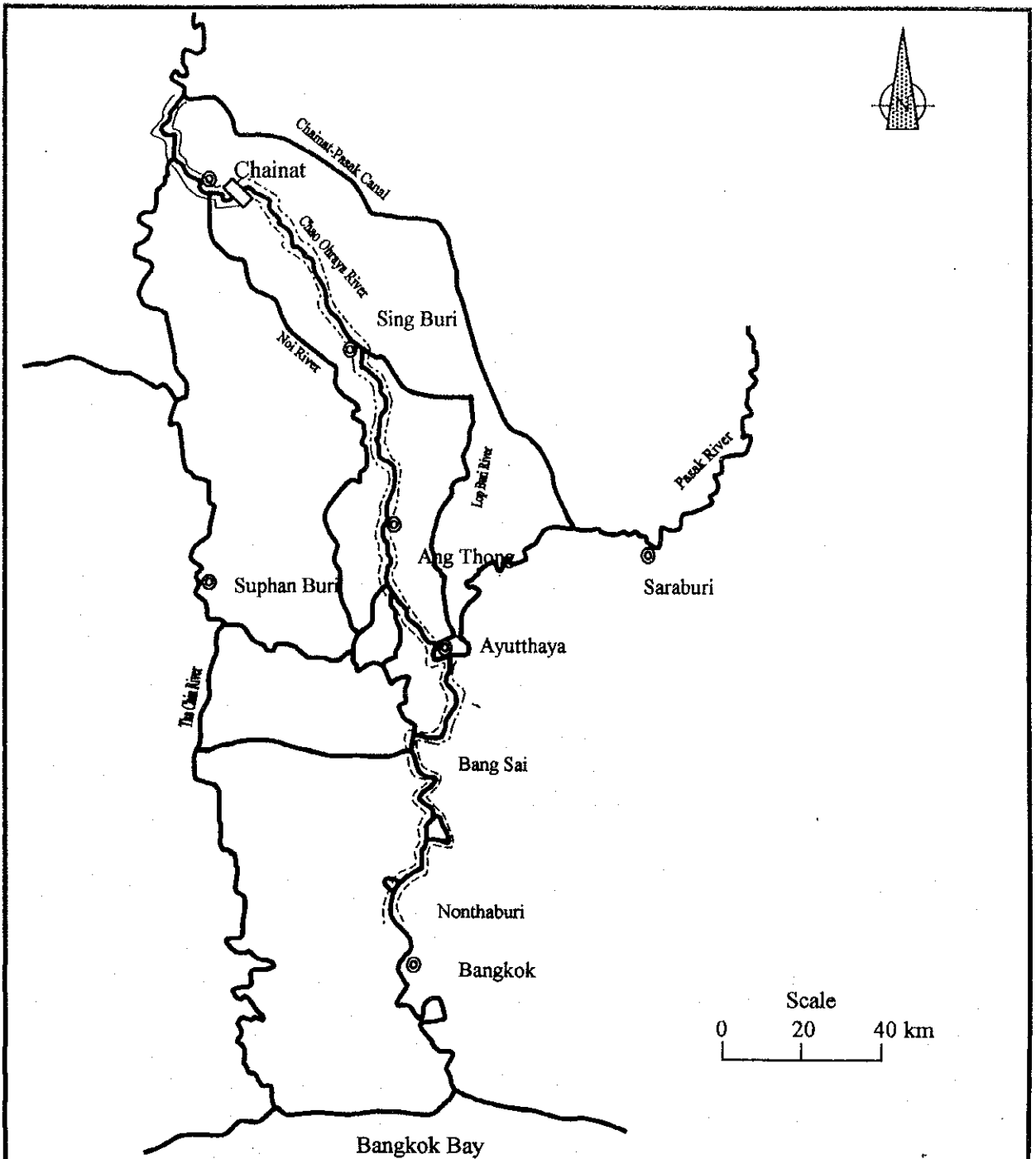
NEW REGULATOR/BARRAGE BY AGENCY CONCERNED



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 7.5.3
LOCATION OF NEW REGULATORS
BY RID IN PATHUM THANI



River Improvement of Chao Phraya River

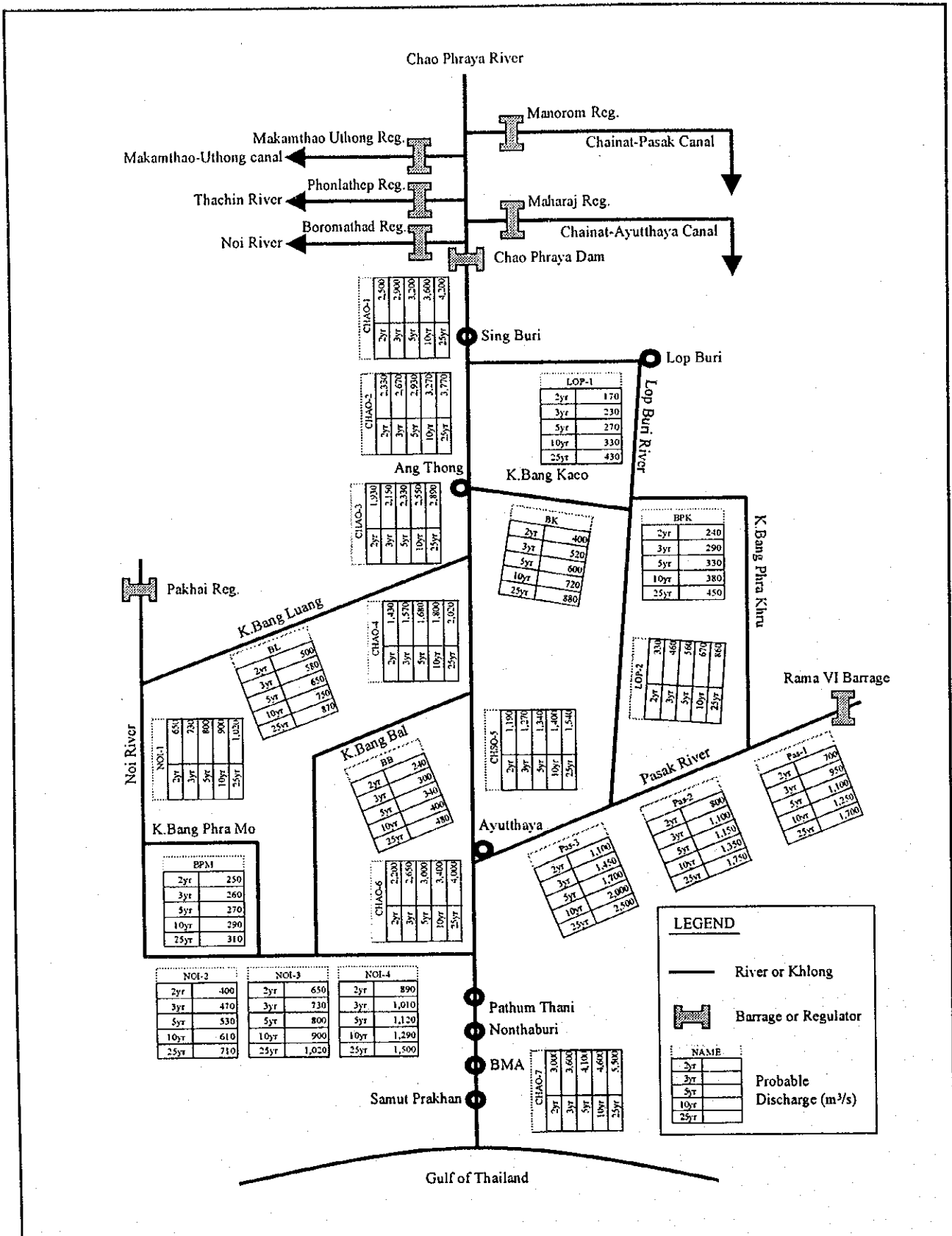
Line	Improvement Section		Provability	Design Crown Level (MSL)	Line	Improvement Section		Provability	Design Crown Level (MSL)
	Downstream	Upstream				Downstream	Upstream		
—	CP. Dam	Manorom	25-year	17.0 - 21.0	—	CP. Dam	Manorom	25-year	17.0 - 21.0
- - - - -	Ayutthaya	CP. Dam	25-year	5.8 - 17.0	- - - - -	Sing Buri	CP. Dam	25-year	12.0 - 17.0
- - - - -	Bang Sai	Ayutthaya	25-year	4.2 - 5.0	- - - - -	Ang Thong	Sing Buri	25-year	7.0 - 12.0
- - - - -	Nonthaburi	Bang Sai	25-year	3.0 - 4.2	- - - - -	Nonthaburi	Ang Thong	25-year	3.0 - 7.0

STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO., LTD AND INA CORPORATION

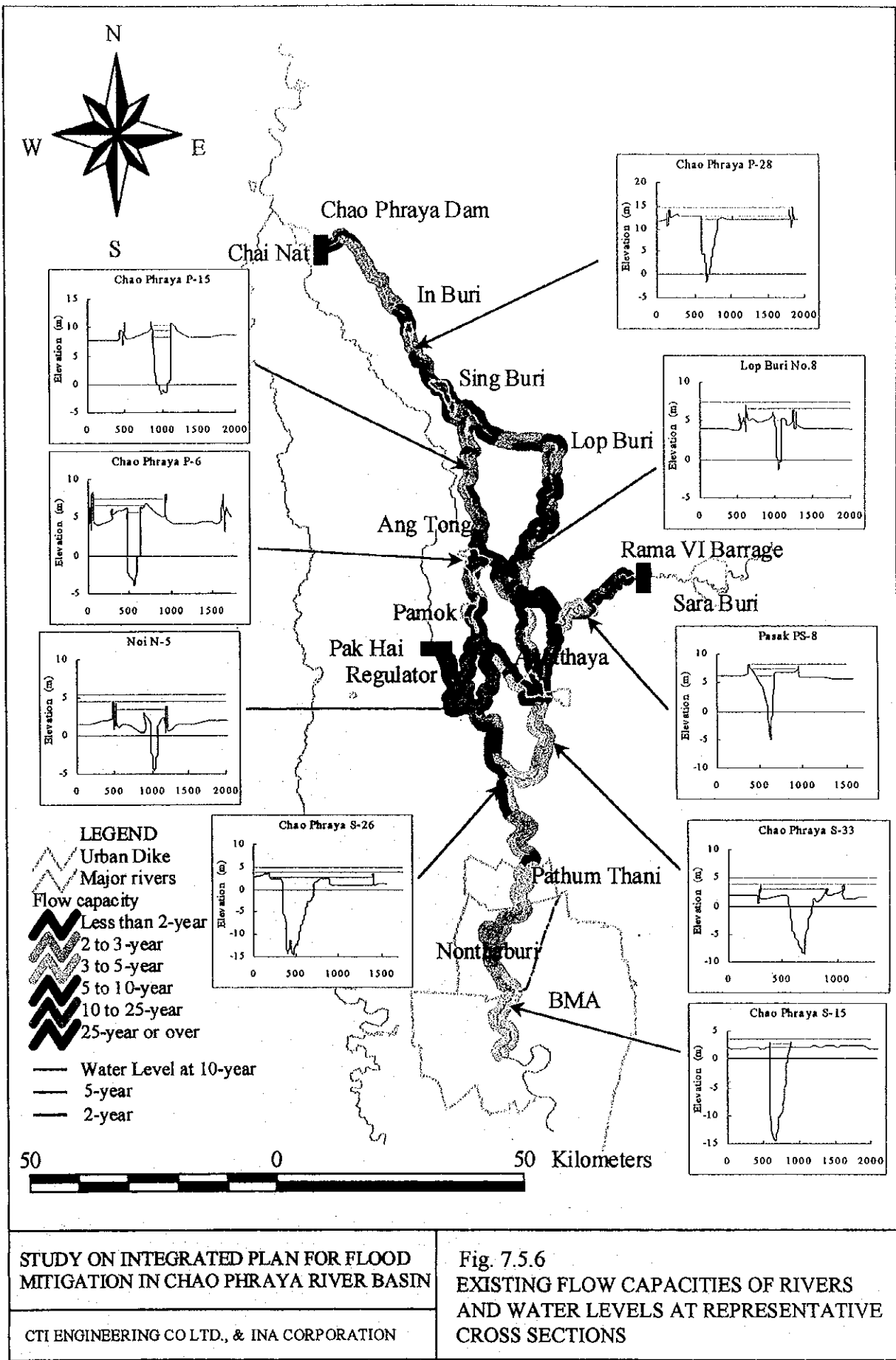
Fig.7.5.4

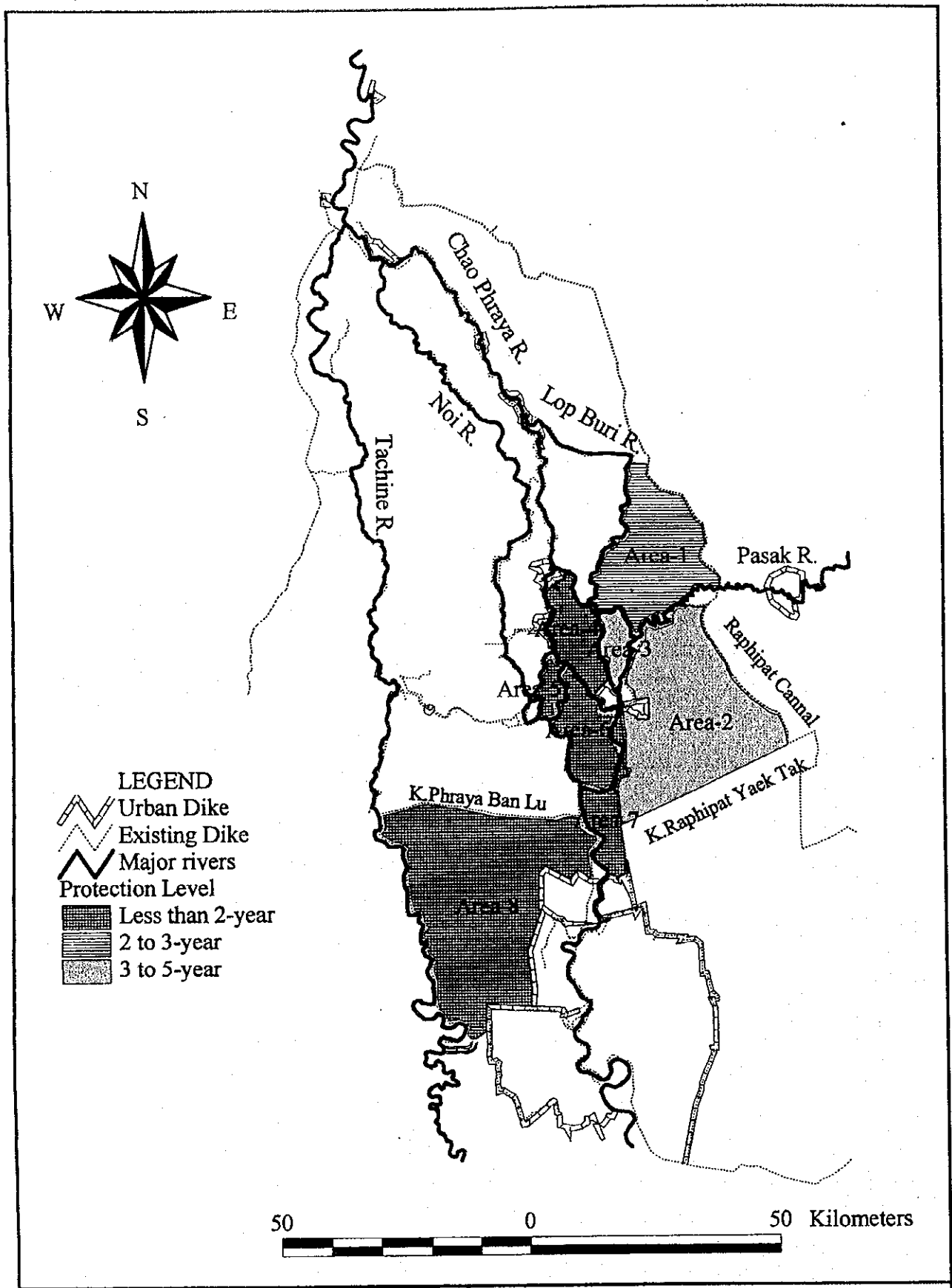
RIVER IMPROVEMENT BY RID



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRA YA RIVER BASIN
 CTI ENGINEERING CO.,LTD & INA CORPORATION

Fig. 7.5.5
 PROBABLE DISCHARGE DISTRIBUTION UNDER FULL CONFINEMENT CONDITION



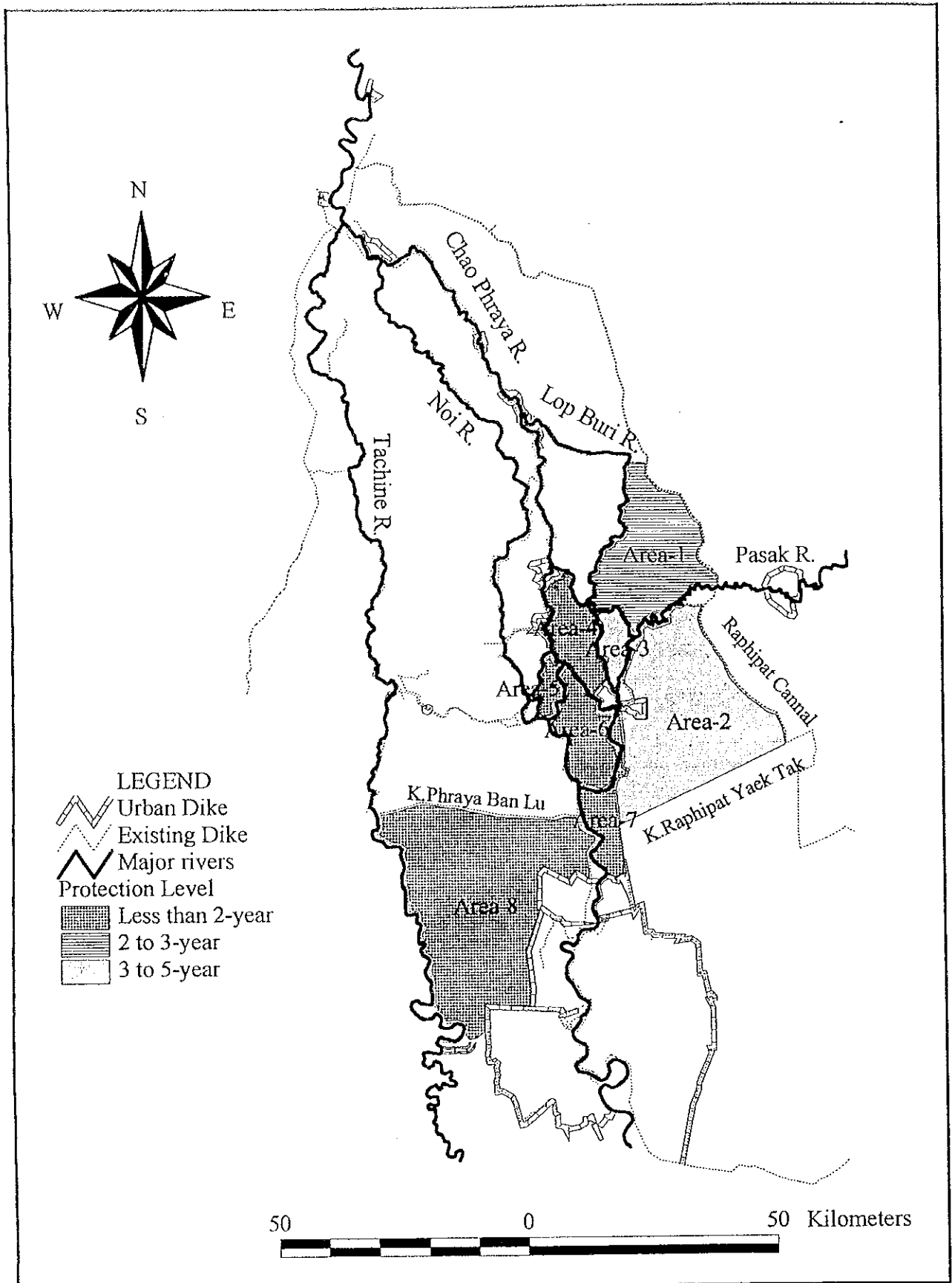


STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO LTD., & INA CORPORATION

Fig.7.5.7

PROBLEM AREA DIVISION



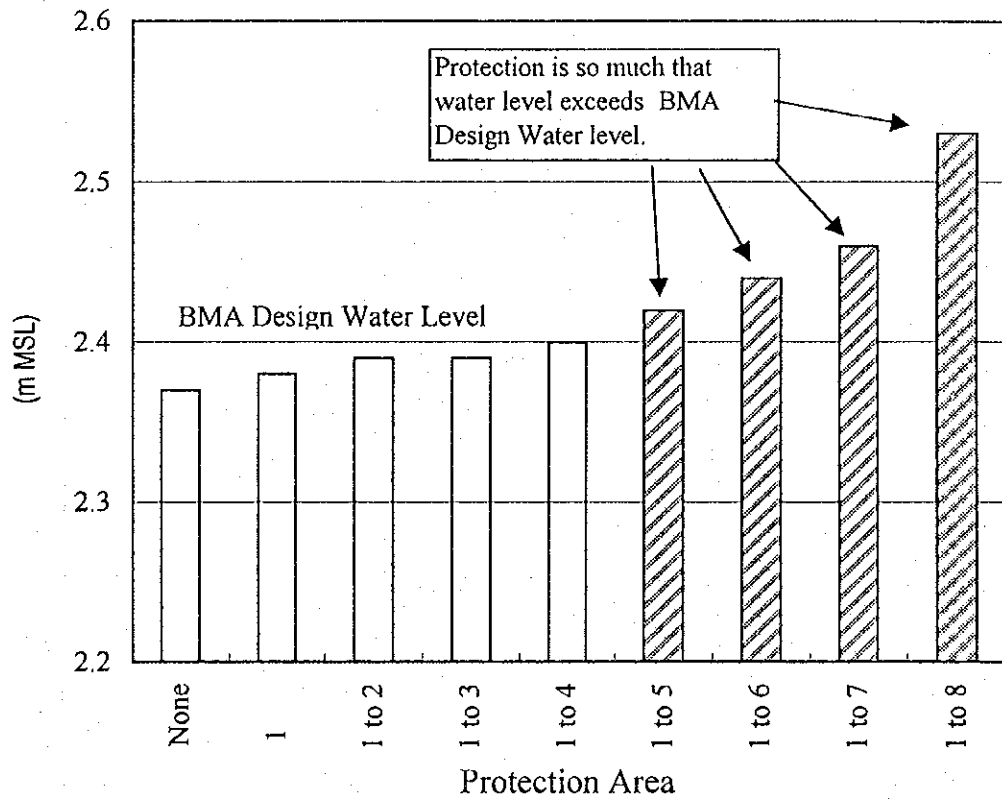
STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

Fig.7.5.7

PROBLEM AREA DIVISION

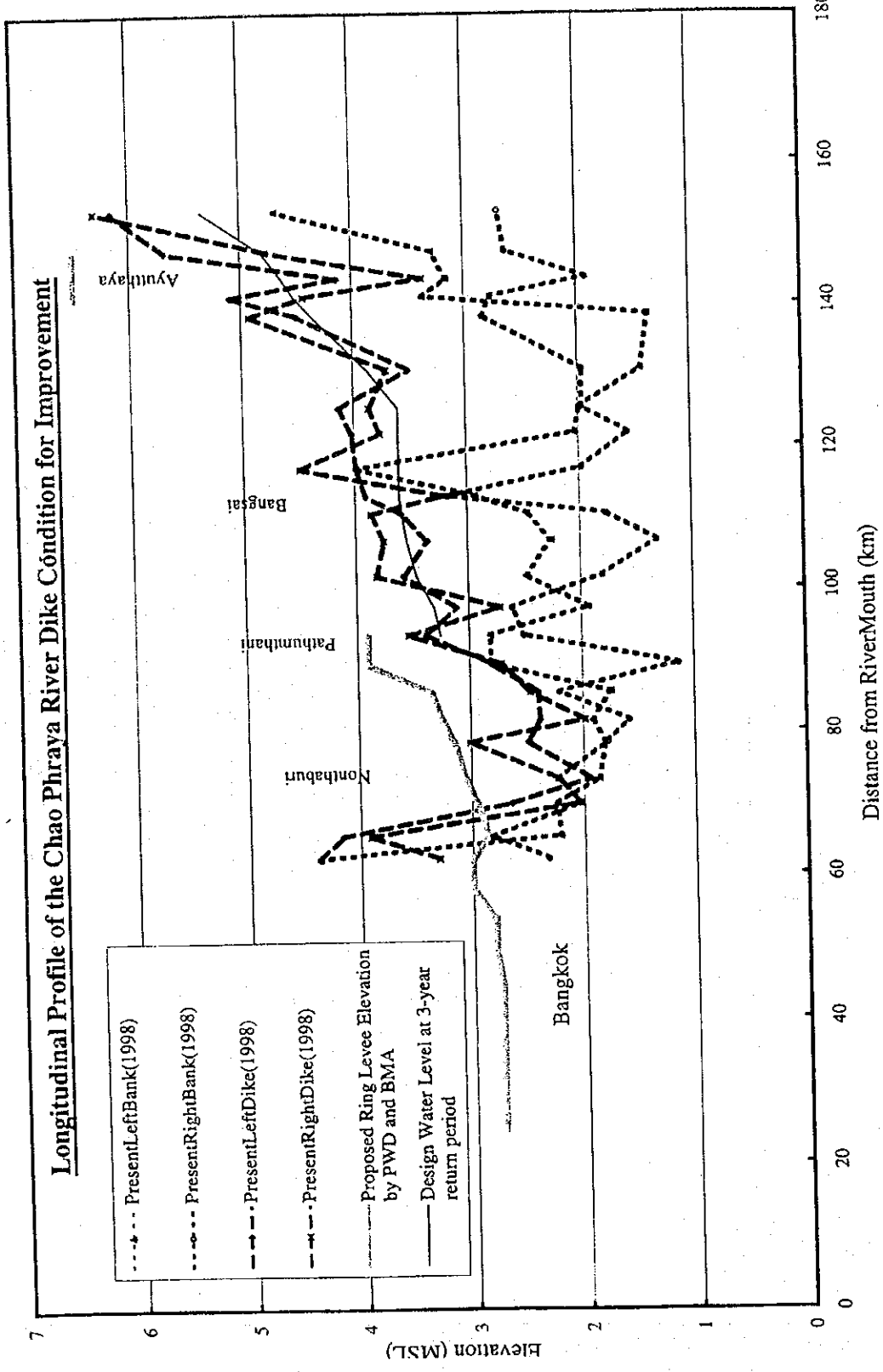
CTI ENGINEERING CO LTD., & INA CORPORATION

Protection Area vs. WL.at Samsen



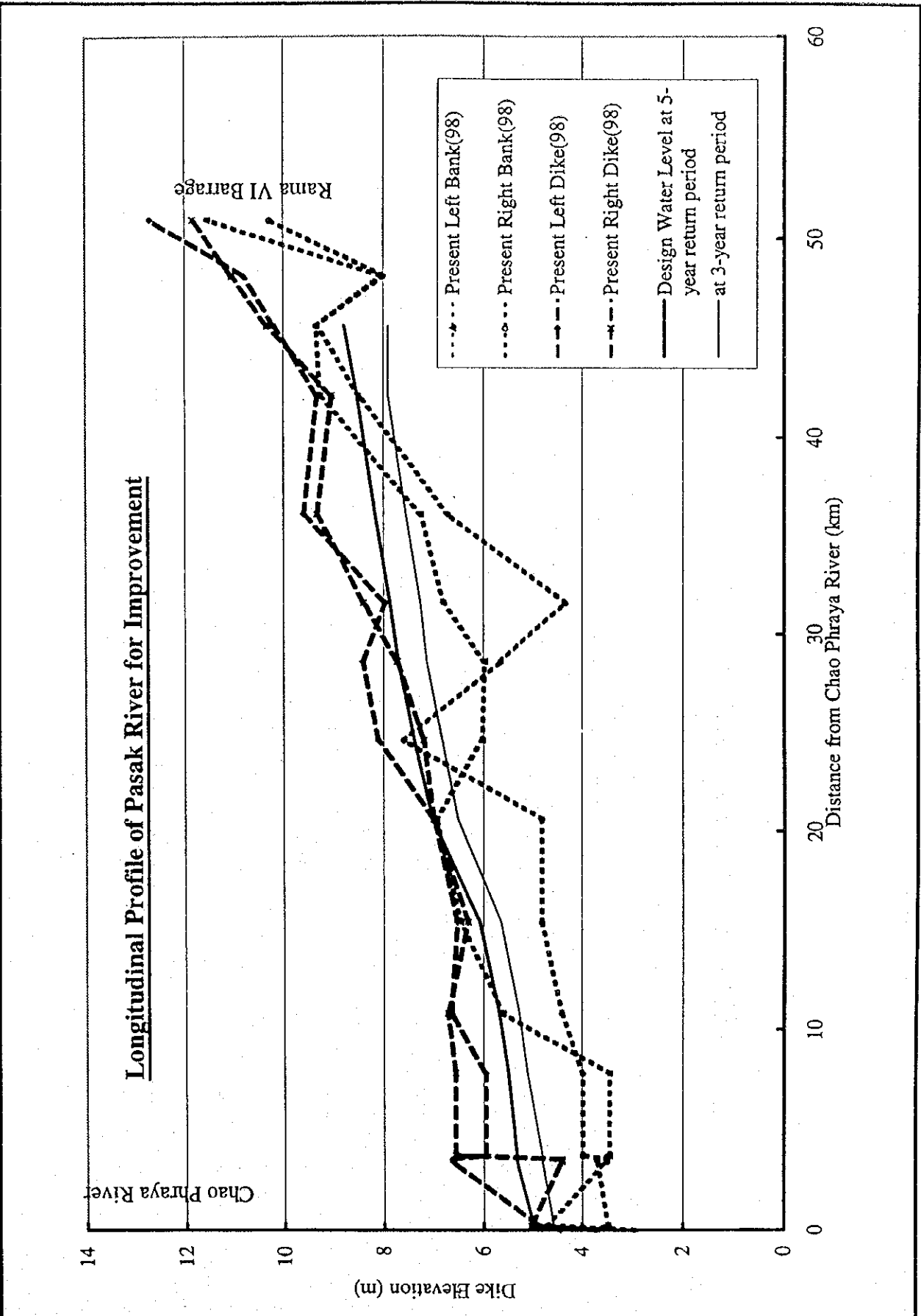
STUDY ON ON INTEGRATED PLAN FOR FLOOD
 MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.8
 INFLUENCE OF 5-YEAR RIVER
 IMPROVEMENT TO BMA



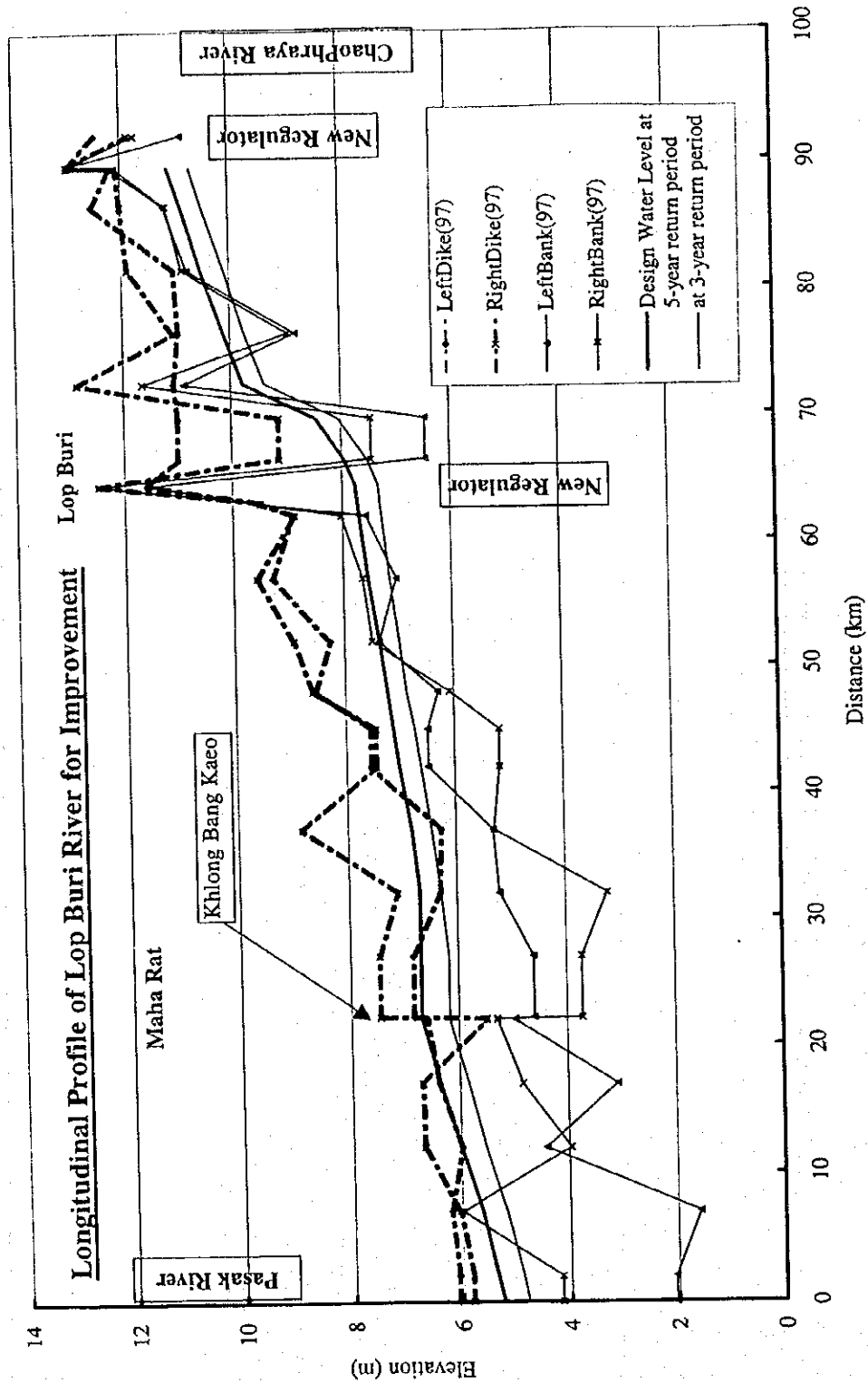
STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(1/6)
 LONGITUDINAL PROFILE OF DESIGN WATER LEVEL



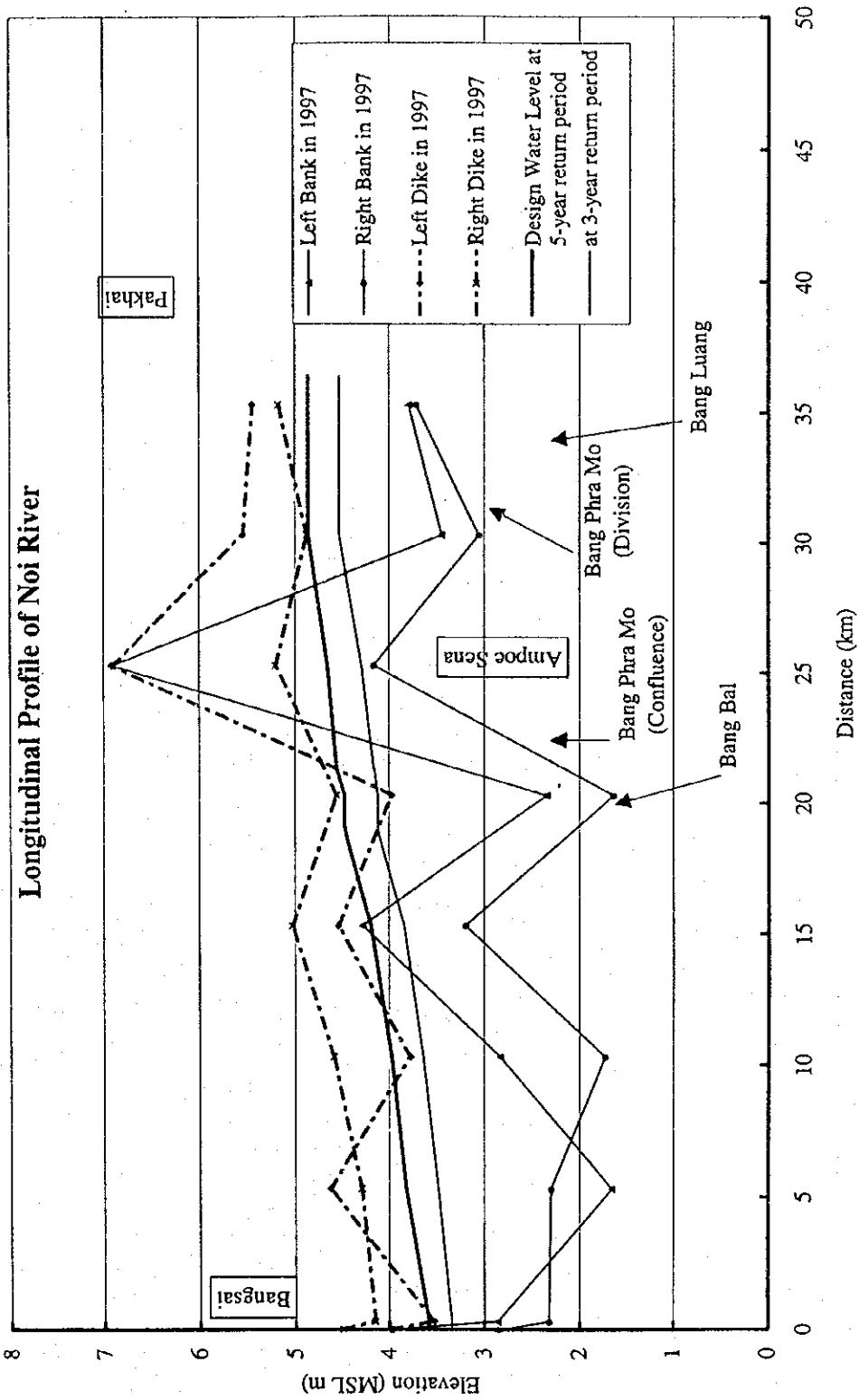
STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(2/6)
 LONGITUDINAL PROFILE OF DESIGN WATER LEVEL



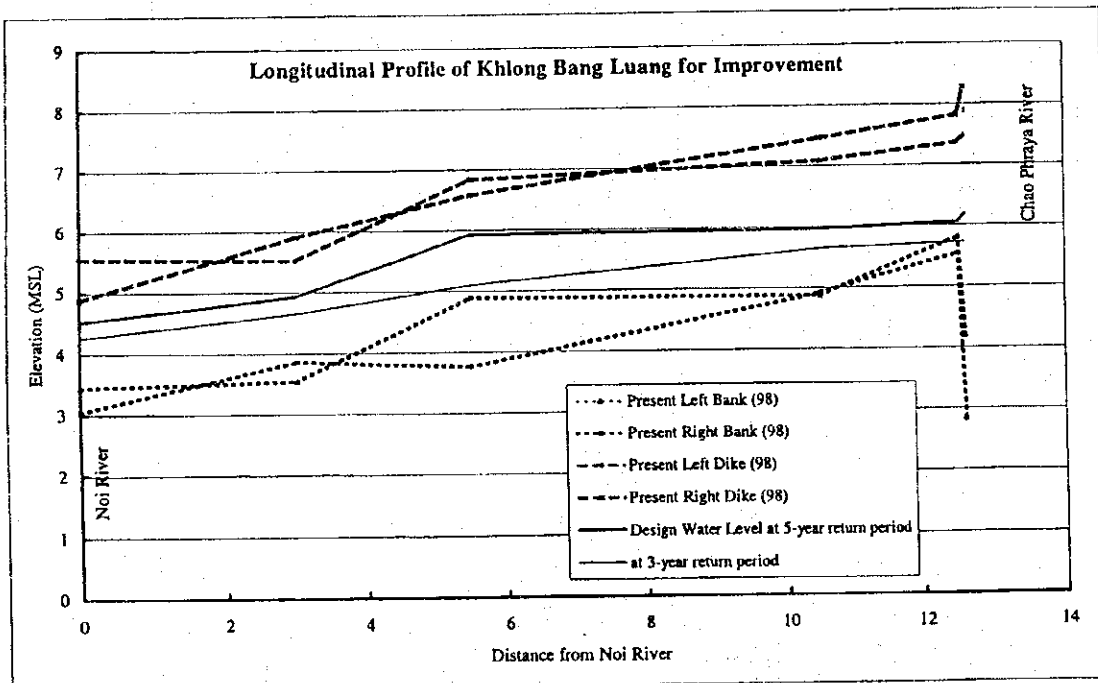
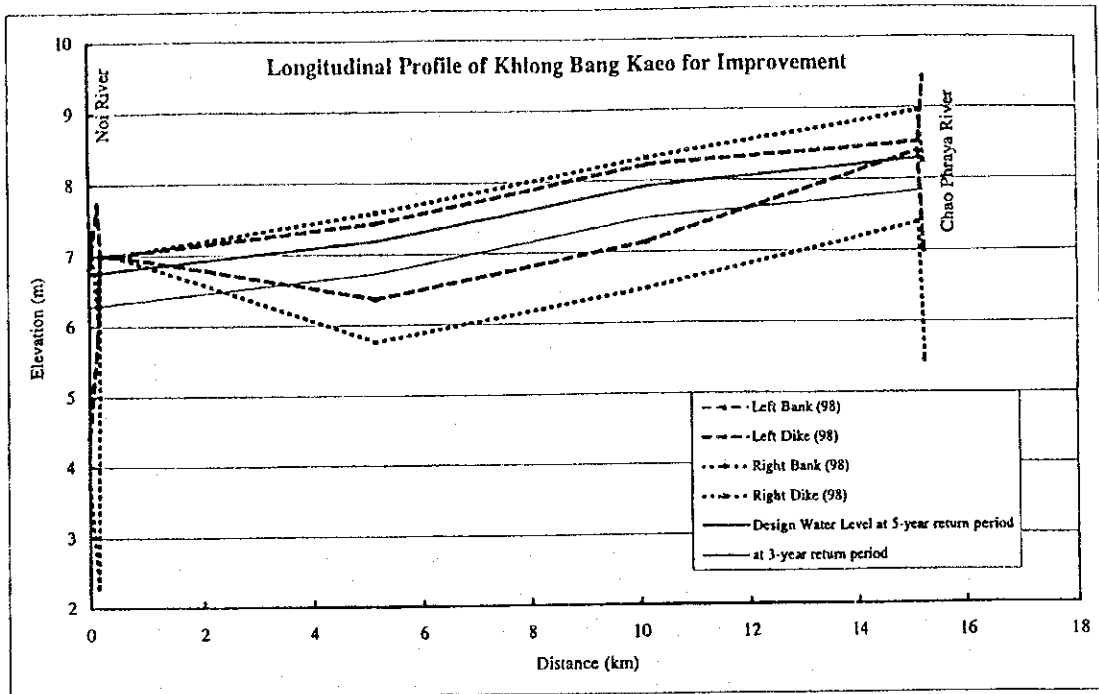
STUDY ON ON INTEGRATED PLAN FOR FLOOD
 MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(3/6)
 LONGITUDINAL PROFILE OF
 DESIGN WATER LEVEL



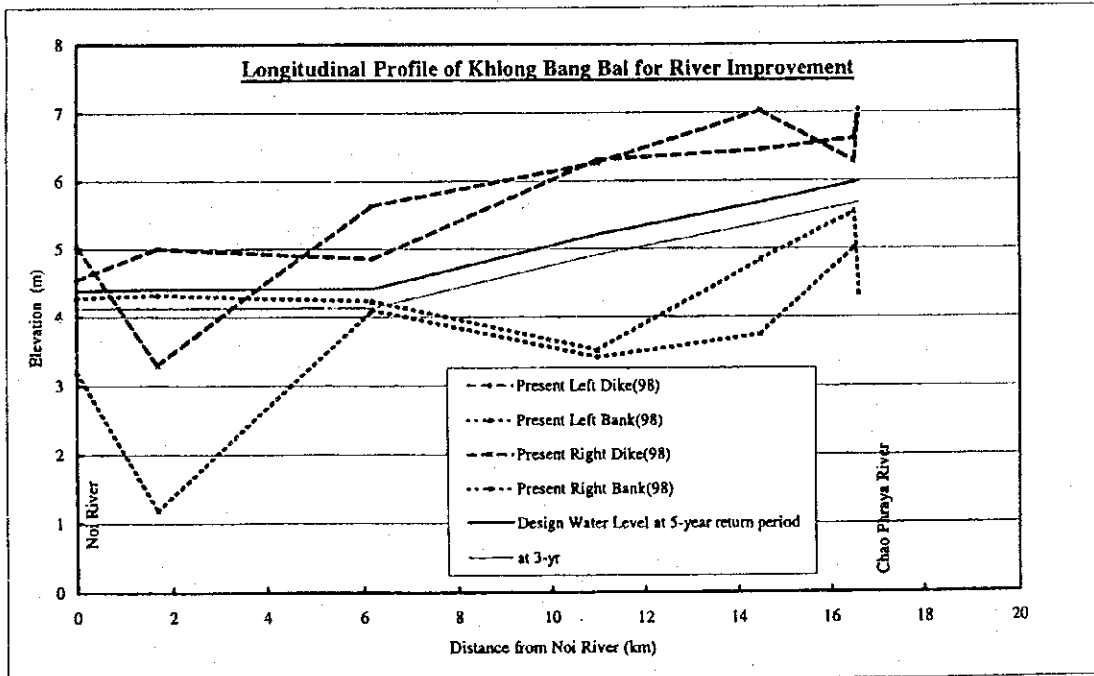
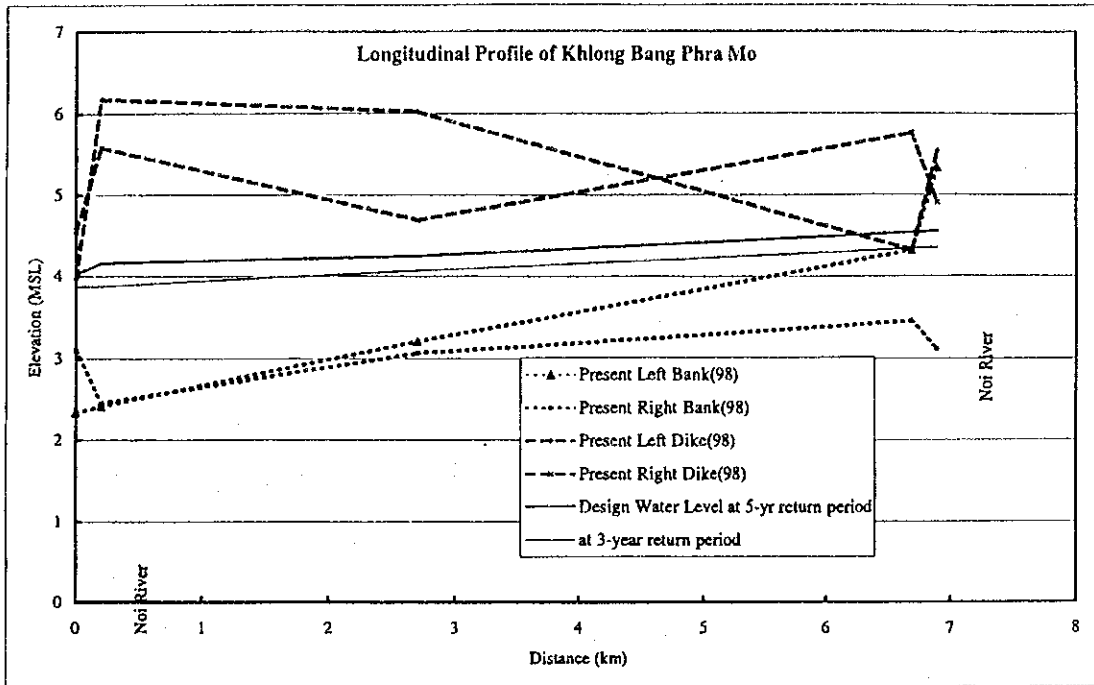
STUDY ON ON INTEGRATED PLAN FOR FLOOD
 MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(4/6)
 LONGITUDINAL PROFILE OF
 DESIGN WATER LEVEL



STUDY ON AN INTEGRATED PLAN FOR FLOOD
MITIGATION IN CHAOPHRAYA RIVER BASIN
CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(5/6)
LONGITUDINAL PROFILE OF
DESIGN WATER LEVEL



STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN
 CTI ENGINEERING CO., LTD & INA CORPORATION

Fig. 7.5.9(6/6)
 LONGITUDINAL PROFILE OF DESIGN WATER LEVEL