## Table 4.2.6 RESULT OF FLOOD SIMULATION FOR DRAINAGE CHANNEL IMPROVEMENT

| Year | Case | West Bank | | | | | | | | | | East Bank | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Phak Hai | | C. C. Bang Yeehon | | Phrayabanlue | | West of Bangkok | | Inundation Volume (mil. m3) | Flood Damage (mil. Baht) | Nakhon Luang | | Rangsit Tai | | East of Bangkok | | Inundation Volume (mil. m3) | Flood Damage (mil. Baht) |
| | | Max. Depth (m) | Duration (days) | Max. Depth (m) | Duration (days) | Max. Depth (m) | Duration (days) | Max. Depth (m) | Duration (days) | | | Max. Depth (m) | Duration (days) | Max. Depth (m) | Duration (days) | Max. Depth (m) | Duration (days) | | |
| 1983 | Future Basin Condition | 1.8 | Over 150 | 1.4 | Over 150 | 1 | Over 150 | 0.9 | Over 120 | 968 | 10,635 | 1.8 | Over 150 | 0.95 | Over 150 | 1 | Over 150 | 1,103 | 16,018 |
| | Case A-1 | 0.8 | 60 | 1 | 80 | 0.7 | 70 | 0.7 | 90 | 537 | 5,331 | 1.0 | 120 | 0.95 | 120 | 0.9 | 150 | 835 | 12,943 |
| | Case A-2 | 0.6 | 50 | 0.7 | 50 | 0.5 | 50 | 0.4 | 50 | 352 | 3,477 | 0.8 | 75 | 0.9 | 75 | 0.85 | 135 | 714 | 10,103 |
| | Case A-3 | 0.4 | 20 | 0.6 | 30 | 0.4 | 30 | 0.3 | 35 | 274 | 2,217 | 0.7 | 50 | 0.85 | | 0.8 | 120 | 603 | 7,611 |
| | Case B-1 | 1.8 | Over 150 | 1.4 | Over 150 | 0.4 | 60 | 0.4 | 60 | 712 | 8,110 | 1.8 | Over 150 | 0.85 | 90 | 0.9 | 135 | 962 | 12,297 |
| | Case B-2 | 1.8 | Over 150 | 1.4 | Over 150 | 0.3 | 45 | 0.4 | 50 | 642 | 7,100 | 1.8 | Over 150 | 0.8 | 75 | 0.9 | 125 | 930 | 10,806 |
| | Case B-3 | 1.8 | Over 150 | 1.4 | Over 150 | 0.2 | 30 | 0.25 | 35 | 600 | 5,765 | 1.8 | Over 150 | 0.7 | 50 | 0.9 | 100 | 901 | 10,217 |
| 1995 | Future Basin Condition | 1.9 | Over 150 | 1.1 | Over 150 | 0.7 | 130 | 0.35 | 75 | 823 | 8,369 | 1.2 | Over 150 | 0.6 | 120 | 0.6 | 180 | 559 | 3,586 |
| | Case A-1 | 0.6 | 70 | 0.8 | 70 | 0.5 | 70 | 0.35 | 70 | 274 | 2,827 | 0.5 | 60 | 0.5 | 60 | 0.55 | 100 | 347 | 2,251 |
| | Case A-2 | 0.3 | 30 | 0.6 | 40 | 0.3 | 35 | 0.2 | 40 | 159 | 1,357 | 0.2 | 30 | 0.2 | 40 | 0.5 | 60 | 233 | 809 |
| | Case A-3 | 0 | 0 | 0.3 | 15 | 0.1 | 15 | 0.15 | 15 | 113 | 1,110 | 0.05 | 5 | 0 | 0 | 0.4 | 50 | 203 | 469 |
| | Case B-1 | 1.9 | Over 150 | 1.1 | Over 150 | 0.1 | 15 | 0.15 | 20 | 521 | 5,500 | 1.2 | Over 150 | 0.6 | 120 | 0.5 | 70 | 474 | 2,435 |
| | Case B-2 | 1.9 | Over 150 | 1.1 | Over 150 | 0.05 | 5 | 0.1 | 10 | 498 | 4,876 | 1.2 | Over 150 | 0.6 | 120 | 0.45 | 60 | 452 | 2,066 |
| | Case B-3 | 1.9 | Over 150 | 1.1 | Over 150 | 0 | 0 | 0 | 0 | 467 | 4,243 | 1.2 | Over 150 | 0.6 | 120 | 0.4 | 55 | 437 | 1,874 |
| 1996 | Future Basin Condition | 1.1 | 120 | 0.8 | 110 | 0.5 | 80 | 0.2 | 45 | 387 | 3,305 | 0.7 | 120 | 0.3 | 70 | 0.45 | 110 | 327 | 1,626 |
| | Case A-1 | 0.1 | 10 | 0.4 | 40 | 0.15 | 25 | 0.15 | 20 | 97 | 978 | 0.3 | 15 | 0.25 | 20 | 0.4 | 45 | 221 | 966 |
| | Case A-2 | 0 | 0 | 0.05 | 2 | 0 | 0 | 0.05 | 3 | 79 | 941 | 0.15 | 5 | 0.1 | 5 | 0.3 | 20 | 192 | 518 |
| | Case A-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 55 | 745 | 0 | 0 | 0 | 0 | 0.2 | 15 | 174 | 376 |
| | Case B-1 | 1.1 | 120 | 0.8 | 110 | 0.05 | 2 | 0.1 | 5 | 188 | 1,933 | 0.7 | 120 | 0 | 0 | 0.25 | 25 | 271 | 1,001 |
| | Case B-2 | 1.1 | 120 | 0.8 | 110 | 0 | 0 | 0.05 | 3 | 185 | 1,833 | 0.7 | 120 | 0 | 0 | 0.2 | 20 | 267 | 923 |
| | Case B-3 | 1.1 | 120 | 0.8 | 110 | 0 | 0 | 0 | 0 | 171 | 1,717 | 0.7 | 120 | 0 | 0 | 0.15 | 15 | 263 | 916 |

Max Depth : Maximum Inundation Depth

Duration : Inundation Duration

## Table 4.2.7 SUMMARY OF SIMULATION RESULTS FOR MASTER PLAN

(1) Simulated Maximum Water Level

(m MSL)

| Case | Year | Sukhothai Y.4 | Sam Ngam Y.17 | Phitsanulok N.5A | Pichit N.7 | Bung Boraphet C.2 | Nakhon Sawan C.13 | Chainat C.7A | Ang Thong C.34 | Ayutthaya | Bangsai C.22 | Pak Kret C.12 | Sam Sen C.4 | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alernative2-1 | 1995 | 50.22 | 38.28 | 45.04 | 36.70 | 26.75 | 25.54 | 16.65 | 7.85 | 5.50 | 3.99 | 2.86 | 2.57 | 2.41 |
| Alernative2-2 | 1995 | 50.22 | 38.28 | 45.04 | 36.70 | 26.75 | 25.54 | 16.72 | 8.18 | 5.58 | 3.56 | 2.56 | 2.32 | 2.16 |
| Alernative2-1 | 1983 | 50.12 | 37.09 | 41.96 | 34.25 | 25.64 | 24.75 | 16.24 | 7.65 | 5.36 | 3.92 | 2.82 | 2.52 | 2.31 |
| Alernative2-2 | 1983 | 50.12 | 37.09 | 41.96 | 34.25 | 25.64 | 24.75 | 16.25 | 7.73 | 5.00 | 3.05 | 2.29 | 2.16 | 2.06 |
| Alernative2-1 | 1996 | 50.07 | 37.04 | 45.01 | 36.40 | 26.13 | 25.08 | 16.31 | 7.66 | 5.21 | 3.69 | 2.62 | 2.39 | 2.21 |
| Alernative2-2 | 1996 | 50.07 | 37.04 | 45.01 | 36.40 | 26.13 | 25.08 | 16.32 | 7.75 | 4.88 | 2.77 | 2.15 | 2.06 | 1.97 |

(2) Simulated Maximum Discharge

($m^3/s$)

| Case | Year | Sukhotahi Y.4 | Sam Ngam Y.17 | Phitsanulok N.5A | Pichit N.7 | Nakhon Sawan C.2 | Chainat C.13 | Ang Thong C.7A | Ayutthaya C.34 | Bangsai | Pak Kret C.22 | Sam Sen C.12 | Mem. Bridge C.4 | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alernative2-1 | 1995 | 280 | 970 | 1,570 | 1,790 | 3,820 | 3,720 | 2,540 | 1,390 | 3,920 | 4,280 | 4,370 | 4,410 | 1,290 |
| Alernative2-2 | 1995 | 280 | 970 | 1,570 | 1,790 | 3,820 | 3,720 | 2,780 | 1,640 | 3,490 | 3,890 | 3,990 | 4,040 | 1,550 |
| Alernative2-1 | 1983 | 280 | 630 | 900 | 1,050 | 2,800 | 3,120 | 2,090 | 1,230 | 3,750 | 4,190 | 4,300 | 4,360 | 1,230 |
| Alernative2-2 | 1983 | 280 | 630 | 900 | 1,050 | 2,800 | 3,120 | 2,130 | 1,340 | 2,880 | 3,500 | 3,610 | 3,680 | 1,300 |
| Alernative2-1 | 1996 | 270 | 610 | 1,570 | 1,680 | 3,230 | 3,200 | 2,150 | 1,250 | 3,710 | 3,980 | 4,080 | 4,120 | 1,090 |
| Alernative2-2 | 1996 | 270 | 610 | 1,570 | 1,680 | 3,230 | 3,200 | 2,200 | 1,350 | 2,860 | 3,270 | 3,370 | 3,410 | 1,090 |

(3) Simulated Inundation Area

($km^2$)

| Case | Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | | Higher Delta | Lower Delta | | | |
| | | | | | BMA Area | Others | Sub-total | |
| Alernative2-1 | 1995 | 3,245 | 446 | 7,367 | 0 | 1,854 | 1,854 | 12,912 |
| Alernative2-2 | 1995 | 3,245 | 446 | 7,367 | 0 | 1,250 | 1,250 | 12,308 |
| Alernative2-1 | 1983 | 2,223 | 329 | 7,367 | 0 | 2,875 | 2,875 | 12,794 |
| Alernative2-2 | 1983 | 2,223 | 329 | 7,367 | 0 | 2,221 | 2,221 | 12,140 |
| Alernative2-1 | 1996 | 2,587 | 381 | 7,367 | 0 | 1,086 | 1,086 | 11,421 |
| Alernative2-2 | 1996 | 2,587 | 381 | 7,367 | 0 | 853 | 853 | 11,188 |

* : BMA Area to be protected by ring dikes (East Bank = 650 km2, West Bank = 240 km2)

(4) Simulated Inundation Volume

(million $m^3$)

| Case | Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | | Higher Delta | Lower Delta | | | |
| | | | | | BMA Area | Others | Sub-total | |
| Alernative2-1 | 1995 | 4,403 | 1,149 | 6,153 | 0 | 945 | 945 | 12,650 |
| Alernative2-2 | 1995 | 4,403 | 1,149 | 5,301 | 0 | 698 | 698 | 11,551 |
| Alernative2-1 | 1983 | 2,767 | 750 | 4,823 | 0 | 1,304 | 1,304 | 9,644 |
| Alernative2-2 | 1983 | 2,767 | 750 | 4,028 | 0 | 1,109 | 1,109 | 8,654 |
| Alernative2-1 | 1996 | 3,372 | 962 | 3,623 | 0 | 495 | 495 | 8,452 |
| Alernative2-2 | 1996 | 3,372 | 962 | 2,788 | 0 | 412 | 412 | 7,534 |

* : BMA Area to be protected by ring dikes (East Bank = 650 km2, West Bank = 240 km2)

## Table 4.2.8 (1/2) SUMMARY OF 45 YEAR RUN IN ALTERNATIVE 2-2

(1) Simulated Maximum Water Level

| Year | Sukhotahi | Sam Ngam | Phitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1952 | 50.42 | 37.33 | 43.18 | 34.56 | 25.09 | 23.79 | 14.88 | 6.96 | 3.76 | 1.93 | 1.92 | 1.94 | 1.90 |
| 1953 | 50.10 | 36.41 | 41.20 | 33.83 | 25.06 | 24.21 | 14.24 | 6.67 | 3.42 | 1.67 | 1.61 | 1.63 | 1.58 |
| 1954 | 50.37 | 37.71 | 43.91 | 36.59 | 26.61 | 25.42 | 16.38 | 7.67 | 4.75 | 2.85 | 2.12 | 2.03 | 1.93 |
| 1955 | 50.13 | 37.02 | 42.36 | 34.54 | 25.36 | 24.49 | 14.72 | 6.90 | 3.64 | 1.84 | 1.67 | 1.67 | 1.61 |
| 1956 | 50.39 | 38.21 | 43.15 | 35.65 | 25.29 | 24.40 | 15.30 | 7.16 | 3.83 | 2.00 | 1.79 | 1.75 | 1.71 |
| 1957 | 50.13 | 37.30 | 42.69 | 35.12 | 25.13 | 24.13 | 15.46 | 7.29 | 4.40 | 2.64 | 2.00 | 1.96 | 1.87 |
| 1958 | 49.88 | 36.03 | 43.52 | 35.79 | 25.31 | 24.15 | 14.70 | 6.87 | 3.69 | 1.79 | 1.55 | 1.58 | 1.55 |
| 1959 | 50.26 | 37.77 | 44.64 | 36.06 | 26.00 | 25.00 | 16.02 | 7.54 | 4.69 | 2.80 | 2.08 | 1.93 | 1.83 |
| 1960 | 49.95 | 36.75 | 42.95 | 34.26 | 25.01 | 23.29 | 13.79 | 6.43 | 3.32 | 1.65 | 1.65 | 1.66 | 1.65 |
| 1961 | 50.34 | 38.10 | 45.81 | 36.66 | 25.51 | 24.63 | 14.86 | 6.99 | 3.73 | 1.94 | 1.77 | 1.78 | 1.74 |
| 1962 | 50.30 | 38.15 | 42.60 | 35.65 | 26.46 | 25.32 | 16.38 | 7.69 | 4.61 | 2.71 | 2.10 | 1.99 | 1.88 |
| 1963 | 50.15 | 36.85 | 40.09 | 33.55 | 25.77 | 24.83 | 15.37 | 7.22 | 4.33 | 2.55 | 2.05 | 1.99 | 1.86 |
| 1964 | 50.55 | 37.99 | 43.86 | 36.48 | 26.82 | 25.58 | 16.75 | 7.80 | 4.89 | 2.94 | 2.11 | 1.99 | 1.88 |
| 1965 | 49.49 | 35.69 | 41.50 | 33.05 | 25.01 | 23.08 | 12.90 | 6.00 | 2.98 | 1.65 | 1.62 | 1.64 | 1.58 |
| 1966 | 49.87 | 36.80 | 41.42 | 35.02 | 25.63 | 24.71 | 15.15 | 7.16 | 3.83 | 2.00 | 1.77 | 1.78 | 1.73 |
| 1967 | 50.42 | 37.87 | 42.96 | 35.77 | 25.52 | 24.64 | 14.31 | 6.74 | 3.46 | 1.71 | 1.70 | 1.71 | 1.69 |
| 1968 | 47.24 | 33.83 | 40.19 | 33.13 | 25.01 | 22.61 | 12.15 | 5.35 | 2.41 | 1.40 | 1.39 | 1.36 | 1.41 |
| 1969 | 50.06 | 36.84 | 40.26 | 34.94 | 25.82 | 24.87 | 15.47 | 7.31 | 4.18 | 2.24 | 1.80 | 1.79 | 1.74 |
| 1970 | 50.48 | 38.78 | 43.70 | 36.18 | 26.25 | 25.18 | 16.01 | 7.50 | 4.17 | 2.28 | 1.85 | 1.79 | 1.77 |
| 1971 | 50.26 | 37.78 | 41.61 | 33.65 | 25.38 | 24.52 | 14.50 | 6.76 | 3.49 | 1.69 | 1.64 | 1.64 | 1.64 |
| 1972 | 49.43 | 35.43 | 39.28 | 31.01 | 25.01 | 23.18 | 13.72 | 6.53 | 3.48 | 1.80 | 1.77 | 1.77 | 1.78 |
| 1973 | 50.55 | 38.79 | 41.39 | 34.41 | 25.83 | 24.87 | 15.00 | 7.06 | 3.71 | 1.91 | 1.83 | 1.83 | 1.79 |
| 1974 | 50.29 | 37.52 | 40.84 | 32.02 | 25.01 | 23.63 | 14.57 | 6.83 | 3.56 | 1.90 | 1.85 | 1.89 | 1.86 |
| 1975 | 50.53 | 38.82 | 45.94 | 37.03 | 26.60 | 25.42 | 16.32 | 7.70 | 4.77 | 2.80 | 2.09 | 2.08 | 2.04 |
| 1976 | 50.28 | 38.14 | 43.14 | 35.58 | 25.96 | 24.96 | 15.06 | 7.15 | 4.03 | 2.16 | 1.85 | 1.83 | 1.80 |
| 1977 | 50.08 | 36.77 | 43.64 | 35.52 | 25.11 | 24.28 | 14.34 | 6.70 | 3.64 | 1.94 | 1.81 | 1.81 | 1.78 |
| 1978 | 50.41 | 38.01 | 44.65 | 36.75 | 26.77 | 25.55 | 16.56 | 7.80 | 5.21 | 3.31 | 2.35 | 2.22 | 2.10 |
| 1979 | 49.04 | 34.50 | 40.00 | 31.65 | 25.01 | 23.23 | 13.51 | 6.31 | 3.03 | 1.66 | 1.65 | 1.63 | 1.65 |
| 1980 | 50.57 | 38.76 | 45.63 | 36.78 | 26.74 | 25.53 | 16.50 | 7.78 | 4.91 | 2.99 | 2.11 | 1.92 | 1.84 |
| 1981 | 50.19 | 37.64 | 43.32 | 35.38 | 25.01 | 23.78 | 13.70 | 6.38 | 3.30 | 1.78 | 1.70 | 1.70 | 1.65 |
| 1982 | 49.48 | 35.78 | 40.66 | 34.26 | 25.01 | 23.60 | 13.48 | 6.33 | 3.49 | 1.71 | 1.69 | 1.62 | 1.62 |
| 1983 | 50.12 | 37.09 | 41.96 | 34.25 | 25.64 | 24.75 | 16.24 | 7.63 | 4.98 | 3.19 | 2.36 | 2.20 | 2.09 |
| 1984 | 50.09 | 36.43 | 41.53 | 32.78 | 25.01 | 22.91 | 11.80 | 5.36 | 3.01 | 1.66 | 1.66 | 1.66 | 1.66 |
| 1985 | 50.31 | 36.71 | 44.51 | 36.44 | 25.56 | 24.66 | 14.37 | 6.84 | 3.88 | 2.16 | 1.91 | 1.90 | 1.87 |
| 1986 | 49.93 | 35.52 | 40.50 | 32.75 | 25.01 | 22.95 | 12.79 | 5.82 | 2.69 | 1.45 | 1.45 | 1.45 | 1.51 |
| 1987 | 50.40 | 38.03 | 41.19 | 33.79 | 25.06 | 24.22 | 14.78 | 6.95 | 4.35 | 2.57 | 2.06 | 1.97 | 1.87 |
| 1988 | 49.95 | 35.82 | 41.27 | 32.43 | 25.28 | 24.45 | 15.75 | 7.32 | 3.84 | 1.99 | 1.87 | 1.89 | 1.85 |
| 1989 | 49.69 | 36.09 | 39.05 | 30.91 | 24.61 | 23.42 | 13.43 | 6.29 | 2.98 | 1.66 | 1.60 | 1.59 | 1.62 |
| 1990 | 48.78 | 34.70 | 38.83 | 31.56 | 25.01 | 23.22 | 14.06 | 6.58 | 3.56 | 1.90 | 1.86 | 1.81 | 1.80 |
| 1991 | 49.50 | 35.37 | 40.09 | 34.13 | 25.01 | 23.26 | 12.94 | 5.96 | 3.28 | 1.70 | 1.66 | 1.66 | 1.64 |
| 1992 | 50.11 | 36.34 | 40.63 | 32.69 | 24.62 | 23.24 | 13.94 | 6.51 | 3.10 | 1.63 | 1.54 | 1.52 | 1.56 |
| 1993 | 49.74 | 35.50 | 38.12 | 30.94 | 25.01 | 23.05 | 13.01 | 5.88 | 2.66 | 1.38 | 1.35 | 1.30 | 1.33 |
| 1994 | 50.28 | 37.76 | 44.55 | 36.65 | 25.64 | 24.72 | 14.85 | 6.99 | 3.80 | 2.01 | 1.84 | 1.85 | 1.80 |
| 1995 | 50.22 | 38.28 | 45.04 | 36.70 | 26.75 | 25.53 | 16.65 | 7.82 | 5.15 | 3.29 | 2.41 | 2.26 | 2.19 |
| 1996 | 50.07 | 37.03 | 45.01 | 36.40 | 26.13 | 25.08 | 16.30 | 7.63 | 4.81 | 2.87 | 2.20 | 2.08 | 2.03 |
| MAX. | 50.57 | 38.82 | 45.94 | 37.03 | 26.82 | 25.58 | 16.75 | 7.82 | 5.21 | 3.31 | 2.41 | 2.26 | 2.19 |
| AVE. | 50.02 | 36.98 | 42.27 | 34.52 | 25.52 | 24.27 | 14.73 | 6.89 | 3.84 | 2.13 | 1.84 | 1.80 | 1.76 |
| MIN. | 47.24 | 33.83 | 38.12 | 30.91 | 24.61 | 22.61 | 11.80 | 5.35 | 2.41 | 1.38 | 1.35 | 1.30 | 1.33 |

Table 4.2.8 (2/2) SUMMARY OF 45 YEAR RUN IN ALTERNATIVE 2-2

(2) Simulated Maximum Discharge

| Year | Sukhotahi | Sam Ngam | Phitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1952 | 300 | 690 | 1,140 | 1,160 | 2,120 | 2,320 | 1,860 | 1,080 | 2,030 | 2,540 | 2,690 | 2,790 | 590 |
| 1953 | 290 | 470 | 770 | 930 | 2,380 | 2,030 | 1,660 | 1,010 | 1,800 | 2,430 | 2,560 | 2,630 | 530 |
| 1954 | 290 | 800 | 1,290 | 1,850 | 3,700 | 3,290 | 2,430 | 1,330 | 2,910 | 3,410 | 3,510 | 3,550 | 1,210 |
| 1955 | 290 | 600 | 960 | 1,130 | 2,580 | 2,240 | 1,820 | 1,070 | 1,990 | 2,570 | 2,690 | 2,750 | 820 |
| 1956 | 300 | 960 | 1,120 | 1,400 | 2,510 | 2,530 | 2,010 | 1,150 | 2,060 | 2,660 | 2,780 | 2,830 | 600 |
| 1957 | 290 | 680 | 1,020 | 1,200 | 2,280 | 2,600 | 2,090 | 1,170 | 2,500 | 3,180 | 3,310 | 3,430 | 1,170 |
| 1958 | 260 | 390 | 1,200 | 1,600 | 2,340 | 2,230 | 1,790 | 1,060 | 2,010 | 2,510 | 2,630 | 2,680 | 750 |
| 1959 | 290 | 810 | 1,470 | 1,570 | 3,120 | 2,950 | 2,280 | 1,250 | 2,890 | 3,320 | 3,430 | 3,510 | 1,220 |
| 1960 | 270 | 540 | 1,100 | 1,070 | 1,920 | 1,840 | 1,500 | 940 | 1,680 | 2,440 | 2,580 | 2,650 | 500 |
| 1961 | 300 | 930 | 1,850 | 1,820 | 2,690 | 2,310 | 1,850 | 1,100 | 2,050 | 2,620 | 2,730 | 2,790 | 530 |
| 1962 | 290 | 930 | 980 | 1,430 | 3,550 | 3,300 | 2,430 | 1,340 | 2,700 | 3,250 | 3,360 | 3,440 | 740 |
| 1963 | 280 | 560 | 580 | 830 | 2,920 | 2,550 | 2,030 | 1,150 | 2,550 | 3,150 | 3,250 | 3,310 | 1,120 |
| 1964 | 300 | 880 | 1,250 | 1,870 | 3,890 | 3,860 | 2,590 | 1,390 | 3,050 | 3,390 | 3,480 | 3,530 | 1,140 |
| 1965 | 230 | 330 | 830 | 830 | 1,860 | 1,480 | 1,230 | 860 | 1,460 | 2,270 | 2,430 | 2,530 | 740 |
| 1966 | 260 | 550 | 770 | 1,190 | 2,770 | 2,450 | 1,950 | 1,170 | 2,120 | 2,700 | 2,810 | 2,880 | 630 |
| 1967 | 290 | 840 | 1,060 | 1,550 | 2,700 | 2,060 | 1,660 | 1,040 | 1,800 | 2,460 | 2,580 | 2,640 | 340 |
| 1968 | 80 | 130 | 590 | 820 | 1,680 | 1,220 | 1,010 | 720 | 1,150 | 1,890 | 2,150 | 2,280 | 200 |
| 1969 | 280 | 560 | 600 | 1,160 | 2,960 | 2,610 | 2,050 | 1,200 | 2,400 | 2,870 | 2,970 | 3,020 | 1,050 |
| 1970 | 300 | 1,170 | 1,210 | 1,660 | 3,350 | 2,940 | 2,250 | 1,270 | 2,330 | 2,890 | 2,990 | 3,040 | 750 |
| 1971 | 290 | 810 | 840 | 920 | 2,610 | 2,140 | 1,730 | 1,050 | 1,870 | 2,440 | 2,570 | 2,630 | 430 |
| 1972 | 220 | 290 | 470 | 500 | 1,890 | 1,800 | 1,510 | 970 | 1,840 | 2,560 | 2,680 | 2,750 | 780 |
| 1973 | 300 | 1,180 | 790 | 1,020 | 2,970 | 2,370 | 1,890 | 1,140 | 2,000 | 2,620 | 2,740 | 2,830 | 370 |
| 1974 | 290 | 740 | 720 | 680 | 2,060 | 2,170 | 1,760 | 1,060 | 1,810 | 2,590 | 2,740 | 2,810 | 350 |
| 1975 | 300 | 1,180 | 1,870 | 2,000 | 3,680 | 3,250 | 2,390 | 1,350 | 2,950 | 3,300 | 3,390 | 3,430 | 840 |
| 1976 | 290 | 930 | 1,100 | 1,350 | 3,090 | 2,400 | 1,920 | 1,140 | 2,290 | 2,810 | 2,910 | 2,960 | 630 |
| 1977 | 280 | 550 | 1,230 | 1,400 | 2,430 | 2,070 | 1,670 | 1,000 | 2,000 | 2,630 | 2,800 | 2,890 | 610 |
| 1978 | 300 | 890 | 1,450 | 1,820 | 3,840 | 3,600 | 2,510 | 1,380 | 3,350 | 3,700 | 3,790 | 3,840 | 1,590 |
| 1979 | 190 | 190 | 580 | 580 | 1,900 | 1,720 | 1,410 | 930 | 1,440 | 2,220 | 2,420 | 2,510 | 220 |
| 1980 | 300 | 1,160 | 1,790 | 1,910 | 3,810 | 3,500 | 2,480 | 1,380 | 3,060 | 3,410 | 3,510 | 3,580 | 1,050 |
| 1981 | 280 | 770 | 1,140 | 1,260 | 2,170 | 1,800 | 1,470 | 930 | 1,740 | 2,360 | 2,500 | 2,570 | 510 |
| 1982 | 220 | 340 | 650 | 1,040 | 2,080 | 1,710 | 1,390 | 900 | 1,960 | 2,400 | 2,500 | 2,560 | 810 |
| 1983 | 280 | 620 | 900 | 1,050 | 2,800 | 3,170 | 2,350 | 1,270 | 3,030 | 3,590 | 3,690 | 3,760 | 1,230 |
| 1984 | 280 | 470 | 840 | 800 | 1,800 | 1,100 | 920 | 700 | 1,590 | 2,310 | 2,470 | 2,730 | 940 |
| 1985 | 290 | 540 | 1,440 | 1,820 | 2,720 | 2,080 | 1,670 | 1,060 | 2,210 | 2,770 | 2,890 | 3,150 | 980 |
| 1986 | 270 | 310 | 650 | 740 | 1,810 | 1,450 | 1,190 | 820 | 1,260 | 1,990 | 2,180 | 2,460 | 470 |
| 1987 | 290 | 890 | 750 | 900 | 2,380 | 2,270 | 1,830 | 1,080 | 2,600 | 3,100 | 3,210 | 3,460 | 1,230 |
| 1988 | 260 | 350 | 790 | 750 | 2,530 | 2,770 | 2,160 | 1,210 | 2,010 | 2,690 | 2,810 | 3,070 | 390 |
| 1989 | 230 | 390 | 440 | 500 | 1,990 | 1,690 | 1,380 | 930 | 1,410 | 2,180 | 2,350 | 2,610 | 200 |
| 1990 | 170 | 210 | 410 | 540 | 1,890 | 1,950 | 1,600 | 970 | 1,940 | 2,680 | 2,820 | 3,090 | 780 |
| 1991 | 220 | 280 | 560 | 970 | 1,940 | 1,500 | 1,230 | 820 | 1,840 | 2,360 | 2,510 | 2,780 | 810 |
| 1992 | 280 | 450 | 670 | 730 | 1,900 | 1,900 | 1,540 | 980 | 1,500 | 2,160 | 2,330 | 2,620 | 210 |
| 1993 | 250 | 300 | 320 | 450 | 1,850 | 1,530 | 1,270 | 830 | 1,200 | 1,920 | 2,130 | 2,420 | 120 |
| 1994 | 290 | 810 | 1,430 | 1,760 | 2,790 | 2,300 | 1,840 | 1,100 | 2,100 | 2,690 | 2,820 | 3,070 | 570 |
| 1995 | 280 | 970 | 1,570 | 1,790 | 3,820 | 3,720 | 2,540 | 1,420 | 3,230 | 3,670 | 3,770 | 3,830 | 1,300 |
| 1996 | 270 | 600 | 1,570 | 1,680 | 3,230 | 3,200 | 2,390 | 1,270 | 2,970 | 3,350 | 3,440 | 3,490 | 1,090 |
| MAX. | 300 | 1,180 | 1,890 | 2,020 | 4,110 | 3,890 | 2,580 | 1,400 | 4,080 | 4,330 | 4,420 | 4,460 | 1,730 |
| AVE. | 270 | 650 | 1,000 | 1,220 | 2,650 | 2,390 | 1,850 | 1,080 | 2,960 | 3,380 | 3,470 | 3,520 | 830 |
| MIN. | 60 | 130 | 320 | 450 | 1,600 | 1,140 | 950 | 680 | 1,640 | 2,210 | 2,340 | 2,410 | 120 |

Table 4.2.9 PLOBABLE WATER LEVEL UNDER MASTER PLAN

| Station | Probable Water Level by Return Period ( m MSL ) | | | | | |
|---|---|---|---|---|---|---|
| | 2-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| Y.4 | 50.10 | 50.30 | 50.40 | 50.60 | 50.70 | 50.90 |
| Y.17 | 57.20 | 58.00 | 58.30 | 58.70 | 59.00 | 59.30 |
| N.5A | 42.00 | 44.50 | 45.00 | 45.80 | 46.40 | 46.80 |
| N.7 | 54.60 | 56.40 | 56.60 | 56.80 | 57.00 | 57.20 |
| C.2 | 24.50 | 25.20 | 25.40 | 25.50 | 25.60 | 25.90 |
| C.13 | 14.80 | 16.20 | 16.50 | 16.70 | 16.90 | 17.60 |
| C.7A | 7.00 | 7.70 | 7.90 | 8.10 | 8.25 | 8.50 |
| C.34 | 3.80 | 4.50 | 5.00 | 5.60 | 6.00 | 6.40 |
| BANG SAI | 1.80 | 2.40 | 2.80 | 3.50 | 3.90 | 4.30 |
| C.22 | 1.70 | 2.00 | 2.20 | 2.44 | 2.62 | 2.80 |
| C.12 | 1.68 | 1.86 | 2.00 | 2.16 | 2.30 | 2.40 |
| C.4 | 1.66 | 1.82 | 1.94 | 2.10 | 2.20 | 2.30 |

Table 4.2.10 COMPARISON OF WATER LEVELS AT MAJOR URBAN AREAS

| Design Level by Current PWD and BMA Plan (m MSL) | | | 100-year Water Levels by this Study (m MSL) | | | |
|---|---|---|---|---|---|---|
| Urban Area | Dike Crest | Water Level | Station | Alt.1* | Alt. 2-1* | Alt. 2-2 |
| Sukhothai | n.a. | n.a. | Y.4 | 50.9 | 50.9 | 50.9 |
| Phitsanulok | n.a. | n.a. | N.5A | 46.8 | 46.8 | 46.8 |
| Pichit | n.a. | n.a. | N.7 | 57.2 | 57.2 | 57.2 |
| Nakhon Sawan | 28.0 to 29.0 | 27.6 to 28.6 | C.2 | 25.9 | 25.9 | 25.9 |
| Chainat | 18.7 to 19.0 | 18.2 to 18.5 | C.13 | 17.5 | 17.5 | 17.6 |
| Ang Thong | 9.0 | 8.8 | C.7A | 8.2 | 8.2 | 8.5 |
| Ayutthaya | 6.0 to 6.5 | 6.0 | C.34 | 6.3 | 6.3 | 6.4 |
| Nonthaburi | 2.85 to 3.15 | 2.35 to 2.65 | C.22 | 2.8 | 3.1 | 2.8 |
| Samsen, BMA | 3.0 | 2.4 | C.12 | 2.4 | 2.7 | 2.4 |
| Mem. Bridge, BMA | 2.8 | 2.3 | C.4 | 2.3 | 2.6 | 2.3 |

* : Water levels in Alternative 1, 2-1 are guessed from the 100-year water levels in Alt.2-2.

Table 5.2.1 SIMULATION RESULT FOR DEVELOPMENT UNTIL 2005

| No. | Case | Nakhon Sawan Discharge (m3/s) | Bang Sai Discharge (m3/s)* | Pak Kret Water Level (m MSL) | Samsen Water Level (m MSL) | Memorial Bridge Water Level (m MSL) | Return Period of Safety Level in BMA** (year) |
|---|---|---|---|---|---|---|---|
| 1 | Reproduction of 1995 Situation | 4,700 | 3,980 | 2.54 | 2.32 | 2.20 | 100 |
| 2 | 2 + Dike Rehabilitation and Heightening after 1995 Flood | 4,700 | 4,320 | 2.73 | 2.44 | 2.30 | 50 |
| 3 | 2 + Additional Installation of Generator after 1995 Flood | 4,620 | 4,250 | 2.66 | 2.40 | 2.26 | 70 |
| 4 | 3 + Pasak Dam (Conventional Operation) + Sirikit Dam (JICA KIN Study Rule) | 4,600 | 4,240 | 2.63 | 2.38 | 2.24 | 80 |
| 5 | 4 + Loop Cut | 4,600 | 4,240 | 2.58 | 2.29 | 2.18 | 120 |
| 6 | 5 + Urban Area Protection | 4,600 | 4,380 | 2.99 | 2.66 | 2.48 | 10 |

* : Maximum Daily Mean Discharge

** : Design Water Levels of 2.3 m MSL at Memorial Bridge and 2.4 m MSL at Samsen were evaluated for each development stage in a form of return period.

## Table 5.3.1 (1/4) SIMULATION RESULT FOR DAM OPERATION BEFORE MODIFICATION

(1) Simulated Maximum Water Level

| Year | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1964 | 50.43 | 38.35 | 43.86 | 36.67 | 26.55 | 25.82 | 16.87 | 8.20 | 5.14 | 3.80 | 2.77 | 2.38 | 2.17 |
| 1965 | 49.95 | 36.58 | 42.05 | 34.43 | 25.01 | 23.17 | 12.73 | 5.14 | 3.05 | 2.13 | 1.80 | 1.72 | 1.67 |
| 1966 | 50.05 | 37.54 | 41.07 | 35.08 | 25.35 | 24.72 | 14.79 | 6.79 | 4.41 | 3.19 | 2.29 | 2.02 | 1.89 |
| 1967 | 50.29 | 38.37 | 43.61 | 36.45 | 25.43 | 24.80 | 14.75 | 6.63 | 3.95 | 2.79 | 2.06 | 1.91 | 1.84 |
| 1968 | 49.67 | 34.58 | 39.26 | 33.10 | 25.01 | 22.61 | 11.90 | 4.29 | 2.17 | 1.51 | 1.37 | 1.48 | 1.54 |
| 1969 | 50.03 | 37.25 | 40.24 | 34.95 | 25.62 | 24.97 | 15.44 | 7.23 | 4.73 | 3.44 | 2.42 | 2.09 | 1.91 |
| 1970 | 50.37 | 39.19 | 45.20 | 36.91 | 26.39 | 25.67 | 16.57 | 8.05 | 4.96 | 3.69 | 2.69 | 2.31 | 2.10 |
| 1971 | 50.21 | 38.16 | 42.31 | 34.86 | 25.35 | 24.76 | 14.63 | 6.53 | 3.97 | 2.80 | 2.01 | 1.86 | 1.82 |
| 1972 | 49.64 | 35.80 | 38.61 | 30.52 | 25.01 | 23.21 | 13.47 | 5.71 | 3.37 | 2.36 | 1.99 | 1.94 | 1.90 |
| 1973 | 50.41 | 39.35 | 40.89 | 34.61 | 25.70 | 25.06 | 15.36 | 7.04 | 4.42 | 3.22 | 2.38 | 2.14 | 2.01 |
| 1974 | 50.18 | 37.77 | 40.99 | 33.03 | 25.01 | 23.61 | 14.37 | 6.33 | 3.68 | 2.59 | 2.11 | 2.00 | 1.93 |
| 1975 | 50.40 | 39.22 | 45.81 | 37.16 | 26.70 | 25.95 | 16.78 | 8.17 | 5.10 | 3.79 | 2.79 | 2.41 | 2.20 |
| 1976 | 50.20 | 38.44 | 42.98 | 35.83 | 25.68 | 25.03 | 15.17 | 7.07 | 4.65 | 3.40 | 2.44 | 2.12 | 1.96 |
| 1977 | 50.05 | 37.30 | 44.00 | 36.08 | 25.06 | 24.38 | 14.37 | 6.31 | 3.88 | 2.65 | 2.02 | 1.91 | 1.84 |
| 1978 | 50.29 | 38.42 | 44.55 | 36.86 | 26.60 | 25.87 | 16.91 | 8.19 | 5.20 | 3.86 | 2.92 | 2.56 | 2.36 |
| 1979 | 49.17 | 34.72 | 39.91 | 32.03 | 25.01 | 23.18 | 13.25 | 5.48 | 3.02 | 2.07 | 1.86 | 1.81 | 1.77 |
| 1980 | 50.43 | 39.11 | 45.46 | 36.89 | 26.50 | 25.77 | 16.80 | 8.17 | 5.09 | 3.79 | 2.73 | 2.30 | 2.11 |
| 1981 | 50.14 | 37.79 | 42.77 | 35.10 | 25.01 | 23.61 | 13.17 | 5.42 | 3.22 | 2.20 | 1.87 | 1.81 | 1.77 |
| 1982 | 49.74 | 36.05 | 43.41 | 36.11 | 25.09 | 23.95 | 13.65 | 5.79 | 3.76 | 2.68 | 2.02 | 1.86 | 1.79 |
| 1983 | 50.02 | 37.37 | 42.52 | 35.53 | 25.45 | 24.85 | 16.43 | 7.96 | 5.03 | 3.74 | 2.79 | 2.44 | 2.24 |
| 1984 | 50.04 | 36.80 | 40.71 | 33.80 | 25.01 | 23.14 | 11.85 | 4.80 | 3.25 | 2.33 | 1.92 | 1.84 | 1.80 |
| 1985 | 50.19 | 36.88 | 43.91 | 36.56 | 25.37 | 24.75 | 14.73 | 6.74 | 4.44 | 3.25 | 2.45 | 2.20 | 2.07 |
| 1986 | 49.97 | 35.94 | 40.90 | 33.68 | 25.01 | 23.18 | 12.78 | 5.11 | 2.79 | 1.84 | 1.65 | 1.66 | 1.65 |
| 1987 | 50.29 | 38.27 | 42.29 | 34.67 | 25.01 | 24.38 | 14.91 | 6.95 | 4.69 | 3.40 | 2.50 | 2.21 | 2.06 |
| 1988 | 49.93 | 36.04 | 41.15 | 33.27 | 25.08 | 24.53 | 15.86 | 7.33 | 4.52 | 3.29 | 2.45 | 2.19 | 2.06 |
| 1989 | 49.73 | 36.43 | 39.24 | 31.05 | 25.01 | 23.45 | 13.24 | 5.47 | 3.07 | 2.15 | 1.90 | 1.83 | 1.79 |
| 1990 | 49.34 | 35.02 | 39.35 | 31.79 | 25.01 | 23.32 | 13.85 | 6.13 | 3.97 | 2.77 | 2.06 | 1.89 | 1.84 |
| 1991 | 49.66 | 35.79 | 39.53 | 34.47 | 25.01 | 23.43 | 12.86 | 5.14 | 3.30 | 2.29 | 1.88 | 1.85 | 1.81 |
| 1992 | 50.05 | 36.60 | 40.34 | 33.01 | 25.01 | 23.25 | 13.42 | 5.66 | 3.28 | 2.15 | 1.79 | 1.78 | 1.77 |
| 1993 | 49.73 | 35.69 | 38.76 | 31.78 | 25.01 | 23.24 | 12.95 | 5.19 | 2.69 | 1.73 | 1.49 | 1.52 | 1.51 |
| 1994 | 50.22 | 38.70 | 45.32 | 37.07 | 25.85 | 25.16 | 15.77 | 7.42 | 4.76 | 3.48 | 2.54 | 2.22 | 2.06 |
| 1995 | 50.16 | 39.22 | 45.16 | 37.17 | 26.86 | 26.09 | 17.26 | 8.25 | 5.21 | 3.96 | 2.99 | 2.66 | 2.48 |
| 1996 | 50.02 | 37.79 | 45.00 | 36.64 | 25.81 | 25.13 | 16.36 | 7.83 | 5.00 | 3.73 | 2.78 | 2.37 | 2.23 |
| MAX. | 50.43 | 39.35 | 45.81 | 37.17 | 26.86 | 26.09 | 17.26 | 8.25 | 5.21 | 3.96 | 2.99 | 2.66 | 2.48 |
| AVE. | 50.03 | 37.29 | 42.16 | 34.76 | 25.47 | 24.36 | 14.64 | 6.56 | 4.05 | 2.91 | 2.23 | 2.04 | 1.94 |
| MIN. | 49.17 | 34.58 | 38.61 | 30.52 | 25.01 | 22.61 | 11.85 | 4.29 | 2.17 | 1.51 | 1.37 | 1.48 | 1.51 |

## Table 5.3.1 (2/4) SIMULATION RESULT FOR DAM OPERATION BEFORE MODIFICATION

(2) Simulated Maximum Discharge

| Year | B.Phasai | Sukhothai | Sam Ngam | Phitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem, Bridge | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P.17 | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1964 | 1,790 | 300 | 1,000 | 1,250 | 1,780 | 4,160 | 4,070 | 2,730 | 1,360 | 4,310 | 4,120 | 4,180 | 4,210 | 1,230 |
| 1965 | 1,000 | 290 | 510 | 910 | 930 | 1,890 | 1,530 | 1,230 | 850 | 2,300 | 2,760 | 2,830 | 2,890 | 730 |
| 1966 | 960 | 280 | 740 | 710 | 1,090 | 2,850 | 2,400 | 1,850 | 1,110 | 3,330 | 3,560 | 3,600 | 3,630 | 820 |
| 1967 | 1,470 | 300 | 1,020 | 1,190 | 1,650 | 2,930 | 2,390 | 1,830 | 1,130 | 2,940 | 3,310 | 3,380 | 3,430 | 400 |
| 1968 | 550 | 260 | 200 | 460 | 690 | 1,690 | 1,230 | 1,000 | 730 | 1,720 | 2,220 | 2,310 | 2,370 | 130 |
| 1969 | 1,670 | 280 | 660 | 600 | 1,020 | 3,140 | 2,720 | 2,060 | 1,180 | 3,610 | 3,850 | 3,900 | 3,940 | 970 |
| 1970 | 1,520 | 310 | 1,380 | 1,630 | 1,790 | 3,980 | 3,680 | 2,610 | 1,370 | 4,000 | 4,050 | 4,110 | 4,140 | 810 |
| 1971 | 2,080 | 300 | 940 | 950 | 1,060 | 2,890 | 2,330 | 1,800 | 1,110 | 2,980 | 3,300 | 3,360 | 3,400 | 460 |
| 1972 | 1,180 | 240 | 350 | 380 | 380 | 1,910 | 1,820 | 1,450 | 940 | 2,490 | 2,970 | 3,040 | 3,090 | 740 |
| 1973 | 2,070 | 310 | 1,470 | 710 | 940 | 3,240 | 2,680 | 2,030 | 1,230 | 3,300 | 3,680 | 3,740 | 3,790 | 420 |
| 1974 | 1,040 | 300 | 820 | 730 | 710 | 2,050 | 2,210 | 1,720 | 1,070 | 2,680 | 3,120 | 3,210 | 3,260 | 390 |
| 1975 | 1,470 | 310 | 1,380 | 1,850 | 1,900 | 4,350 | 3,950 | 2,710 | 1,360 | 4,280 | 4,170 | 4,220 | 4,250 | 990 |
| 1976 | 1,600 | 300 | 1,040 | 1,060 | 1,300 | 3,210 | 2,580 | 1,980 | 1,140 | 3,520 | 3,800 | 3,860 | 3,890 | 770 |
| 1977 | 1,260 | 290 | 680 | 1,310 | 1,460 | 2,530 | 2,210 | 1,720 | 1,070 | 2,900 | 3,220 | 3,280 | 3,320 | 760 |
| 1978 | 1,660 | 300 | 1,030 | 1,420 | 1,760 | 4,220 | 4,140 | 2,730 | 1,350 | 4,420 | 4,190 | 4,260 | 4,290 | 1,890 |
| 1979 | 1,070 | 200 | 210 | 560 | 570 | 1,880 | 1,730 | 1,380 | 920 | 2,270 | 2,660 | 2,760 | 2,850 | 210 |
| 1980 | 1,670 | 310 | 1,320 | 1,740 | 1,810 | 4,100 | 3,970 | 2,710 | 1,340 | 4,270 | 4,130 | 4,190 | 4,220 | 1,180 |
| 1981 | 1,080 | 290 | 820 | 1,030 | 1,120 | 2,100 | 1,700 | 1,360 | 890 | 2,460 | 2,820 | 2,890 | 2,940 | 640 |
| 1982 | 730 | 250 | 390 | 1,160 | 1,530 | 2,250 | 1,890 | 1,500 | 980 | 2,850 | 3,220 | 3,280 | 3,330 | 890 |
| 1983 | 1,700 | 290 | 690 | 970 | 1,240 | 2,960 | 3,450 | 2,520 | 1,300 | 4,130 | 4,100 | 4,160 | 4,200 | 1,280 |
| 1984 | 640 | 290 | 560 | 680 | 800 | 1,900 | 1,210 | 1,040 | 690 | 2,460 | 2,900 | 2,980 | 3,040 | 940 |
| 1985 | 1,120 | 300 | 580 | 1,260 | 1,710 | 2,880 | 2,370 | 1,830 | 1,080 | 3,330 | 3,670 | 3,740 | 3,770 | 1,150 |
| 1986 | 800 | 280 | 380 | 720 | 780 | 1,910 | 1,550 | 1,240 | 840 | 2,090 | 2,530 | 2,590 | 2,650 | 450 |
| 1987 | 1,580 | 300 | 970 | 950 | 980 | 2,530 | 2,460 | 1,920 | 1,070 | 3,510 | 3,830 | 3,890 | 3,930 | 1,300 |
| 1988 | 2,510 | 270 | 390 | 750 | 740 | 2,640 | 2,980 | 2,200 | 1,300 | 3,400 | 3,730 | 3,790 | 3,830 | 660 |
| 1989 | 1,670 | 250 | 460 | 470 | 450 | 2,000 | 1,730 | 1,370 | 920 | 2,320 | 2,760 | 2,840 | 2,900 | 250 |
| 1990 | 1,010 | 220 | 240 | 480 | 520 | 1,940 | 1,970 | 1,580 | 950 | 2,920 | 3,330 | 3,400 | 3,450 | 1,280 |
| 1991 | 640 | 250 | 350 | 500 | 900 | 2,020 | 1,580 | 1,270 | 860 | 2,500 | 2,870 | 2,950 | 3,010 | 790 |
| 1992 | 1,270 | 290 | 510 | 620 | 680 | 1,940 | 1,800 | 1,430 | 920 | 2,470 | 2,830 | 2,900 | 2,940 | 430 |
| 1993 | 770 | 260 | 330 | 400 | 520 | 1,930 | 1,610 | 1,300 | 860 | 1,980 | 2,430 | 2,500 | 2,580 | 120 |
| 1994 | 480 | 300 | 1,150 | 1,640 | 1,850 | 3,370 | 2,900 | 2,180 | 1,230 | 3,630 | 3,860 | 3,930 | 3,970 | 760 |
| 1995 | 1,280 | 300 | 1,380 | 1,600 | 1,950 | 4,600 | 4,300 | 2,770 | 1,360 | 4,510 | 4,280 | 4,330 | 4,360 | 1,350 |
| 1996 | 1,910 | 280 | 810 | 1,570 | 1,650 | 3,330 | 3,300 | 2,420 | 1,270 | 4,070 | 4,100 | 4,150 | 4,190 | 1,190 |
| MAX. | 2,510 | 310 | 1,470 | 1,850 | 1,950 | 4,600 | 4,300 | 2,770 | 1,370 | 4,510 | 4,280 | 4,330 | 4,360 | 1,890 |
| AVE. | 1,311 | 282 | 750 | 978 | 1,159 | 2,767 | 2,498 | 1,863 | 1,084 | 3,150 | 3,405 | 3,471 | 3,517 | 799 |
| MIN. | 480 | 200 | 200 | 380 | 380 | 1,690 | 1,210 | 1,000 | 690 | 1,720 | 2,220 | 2,310 | 2,370 | 120 |

## Table 5.3.1 (3/4) SIMULATION RESULT FOR DAM OPERATION BEFORE MODIFICATION

(3) Simulated Inundation Area (km²)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area* | Others | Sub-Total | |
| 1964 | 3,293 | 432 | 3,950 | | 2,369 | 2,369 | 10,044 |
| 1965 | 1,652 | 189 | 2,558 | | 2,887 | 2,887 | 7,286 |
| 1966 | 2,386 | 276 | 3,033 | | 2,732 | 2,732 | 8,426 |
| 1967 | 2,865 | 302 | 2,167 | | 1,269 | 1,269 | 6,603 |
| 1968 | 1,105 | 166 | 1,797 | | 1,221 | 1,221 | 4,288 |
| 1969 | 2,270 | 321 | 3,091 | | 3,100 | 3,100 | 8,782 |
| 1970 | 3,617 | 420 | 3,358 | | 3,161 | 3,161 | 10,556 |
| 1971 | 2,629 | 295 | 2,546 | | 1,992 | 1,992 | 7,462 |
| 1972 | 1,242 | 202 | 3,076 | | 3,143 | 3,143 | 7,664 |
| 1973 | 3,139 | 331 | 2,526 | | 1,739 | 1,739 | 7,736 |
| 1974 | 2,284 | 211 | 3,129 | | 3,235 | 3,235 | 8,859 |
| 1975 | 3,820 | 437 | 3,799 | | 2,524 | 2,524 | 10,580 |
| 1976 | 2,862 | 321 | 3,024 | | 3,061 | 3,061 | 9,270 |
| 1977 | 2,264 | 259 | 2,050 | | 1,006 | 1,006 | 5,580 |
| 1978 | 3,318 | 436 | 4,403 | 57 | 2,519 | 2,576 | 10,733 |
| 1979 | 1,172 | 190 | 1,874 | | 984 | 984 | 4,220 |
| 1980 | 3,717 | 428 | 3,860 | | 3,320 | 3,320 | 11,325 |
| 1981 | 2,152 | 193 | 2,326 | | 1,204 | 1,204 | 5,875 |
| 1982 | 1,639 | 203 | 2,032 | | 945 | 945 | 4,818 |
| 1983 | 2,392 | 321 | 4,026 | 20 | 3,723 | 3,743 | 10,482 |
| 1984 | 1,651 | 173 | 2,018 | | 1,314 | 1,314 | 5,155 |
| 1985 | 2,322 | 278 | 2,326 | | 1,398 | 1,398 | 6,324 |
| 1986 | 1,475 | 180 | 2,417 | | 2,628 | 2,628 | 6,701 |
| 1987 | 2,590 | 267 | 2,622 | | 1,404 | 1,404 | 6,883 |
| 1988 | 1,670 | 275 | 3,076 | | 3,262 | 3,262 | 8,283 |
| 1989 | 1,556 | 217 | 1,971 | | 1,296 | 1,296 | 5,041 |
| 1990 | 1,191 | 193 | 3,114 | | 3,190 | 3,190 | 7,689 |
| 1991 | 1,267 | 173 | 1,858 | | 1,029 | 1,029 | 4,327 |
| 1992 | 1,694 | 198 | 2,404 | | 2,062 | 2,062 | 6,357 |
| 1993 | 1,322 | 179 | 1,772 | | 975 | 975 | 4,248 |
| 1994 | 3,207 | 299 | 2,478 | | 1,392 | 1,392 | 7,376 |
| 1995 | 3,756 | 458 | 4,336 | 67 | 3,658 | 3,725 | 12,275 |
| 1996 | 2,723 | 341 | 3,305 | | 1,943 | 1,943 | 8,312 |
| MAX. | 3,820 | 458 | 4,403 | 67 | 3,723 | 3,743 | 12,275 |
| AVE. | 2,310 | 278 | 2,798 | 48 | 2,172 | 2,177 | 7,562 |
| MIN. | 1,105 | 166 | 1,772 | 20 | 945 | 945 | 4,220 |

*:BMA Area to be protected by ring dikes (East Bank=650km2,West Bank=240km2)

## Table 5.3.1 (4/4) SIMULATION RESULT FOR DAM OPERATION BEFORE MODIFICATION

(4) Simulated Inundation Volume (Million $m^3$)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area* | Others | Sub-Total | |
| 1964 | 4,578 | 1,108 | 4,398 | - | 1,015 | 1,015 | 11,099 |
| 1965 | 1,734 | 372 | 1,127 | - | 758 | 758 | 3,991 |
| 1966 | 2,772 | 540 | 1,541 | - | 793 | 793 | 5,646 |
| 1967 | 3,705 | 659 | 906 | - | 437 | 437 | 5,707 |
| 1968 | 934 | 295 | 581 | - | 340 | 340 | 2,151 |
| 1969 | 2,731 | 723 | 1,868 | - | 1,000 | 1,000 | 6,322 |
| 1970 | 5,580 | 1,096 | 2,822 | - | 1,125 | 1,125 | 10,624 |
| 1971 | 3,409 | 688 | 1,134 | - | 574 | 574 | 5,805 |
| 1972 | 1,087 | 393 | 1,482 | - | 1,069 | 1,069 | 4,031 |
| 1973 | 4,795 | 796 | 1,171 | - | 619 | 619 | 7,382 |
| 1974 | 2,746 | 407 | 1,421 | - | 1,137 | 1,137 | 5,711 |
| 1975 | 5,603 | 1,126 | 4,174 | - | 1,331 | 1,331 | 12,234 |
| 1976 | 3,768 | 733 | 1,702 | - | 934 | 934 | 7,137 |
| 1977 | 2,567 | 534 | 993 | - | 353 | 353 | 4,447 |
| 1978 | 4,612 | 1,125 | 5,442 | 30 | 1,131 | 1,161 | 12,341 |
| 1979 | 1,036 | 368 | 645 | - | 274 | 274 | 2,323 |
| 1980 | 5,670 | 1,129 | 3,933 | - | 1,315 | 1,315 | 12,047 |
| 1981 | 2,572 | 399 | 1,717 | - | 437 | 437 | 5,124 |
| 1982 | 1,675 | 373 | 997 | - | 372 | 372 | 3,417 |
| 1983 | 2,839 | 722 | 3,667 | 8 | 2,126 | 2,133 | 9,362 |
| 1984 | 1,789 | 326 | 985 | - | 429 | 429 | 3,529 |
| 1985 | 2,606 | 561 | 1,301 | - | 495 | 495 | 4,963 |
| 1986 | 1,491 | 342 | 911 | - | 616 | 616 | 3,359 |
| 1987 | 3,330 | 578 | 1,580 | - | 476 | 476 | 5,963 |
| 1988 | 1,997 | 653 | 1,715 | - | 1,160 | 1,160 | 5,526 |
| 1989 | 1,729 | 477 | 694 | - | 353 | 353 | 3,253 |
| 1990 | 1,048 | 368 | 1,700 | - | 1,146 | 1,146 | 4,262 |
| 1991 | 1,119 | 327 | 915 | - | 353 | 353 | 2,713 |
| 1992 | 1,819 | 405 | 937 | - | 583 | 583 | 3,744 |
| 1993 | 1,369 | 336 | 579 | - | 273 | 273 | 2,557 |
| 1994 | 4,650 | 646 | 1,662 | - | 453 | 453 | 7,411 |
| 1995 | 5,401 | 1,171 | 5,476 | 53 | 1,903 | 1,956 | 14,004 |
| 1996 | 3,411 | 816 | 2,648 | 0 | 708 | 708 | 7,582 |
| MAX. | 5,670 | 1,171 | 5,476 | 53 | 2,126 | 2,133 | 14,004 |
| AVE. | 2,914 | 624 | 1,904 | 3 | 790 | 793 | 6,235 |
| MIN. | 934 | 295 | 579 | 0 | 273 | 273 | 2,151 |

*:BMA Area to be protected by ring dikes (East Bank=650km2,West Bank=240km2)

## Table 5.3.2 (1/5) SIMULATION RESULT FOR DAM OPERATION AFTER MODIFICATION

**(a) Bhumibol Dam Operation**

(1) Simulated Maximum Water Level

| Year | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1972 | 49.64 | 35.80 | 38.61 | 30.52 | 25.01 | 23.13 | 13.38 | 5.66 | 3.33 | 2.31 | 1.95 | 1.92 | 1.88 |
| 1978 | 50.29 | 38.42 | 44.55 | 36.86 | 26.58 | 25.84 | 16.90 | 8.19 | 5.20 | 3.86 | 2.92 | 2.55 | 2.35 |
| 1979 | 49.17 | 34.72 | 39.91 | 32.03 | 25.01 | 23.18 | 13.21 | 5.45 | 3.00 | 2.05 | 1.85 | 1.81 | 1.77 |
| 1983 | 50.02 | 37.37 | 42.52 | 35.53 | 25.45 | 24.85 | 16.43 | 7.96 | 5.03 | 3.74 | 2.79 | 2.44 | 2.24 |
| 1984 | 50.04 | 36.80 | 40.71 | 33.80 | 25.01 | 23.12 | 11.83 | 4.79 | 3.24 | 2.32 | 1.92 | 1.84 | 1.80 |
| 1985 | 50.19 | 36.88 | 43.91 | 36.56 | 25.37 | 24.75 | 14.72 | 6.74 | 4.44 | 3.25 | 2.45 | 2.20 | 2.07 |
| 1987 | 50.29 | 38.27 | 42.29 | 34.67 | 25.01 | 24.38 | 14.91 | 6.95 | 4.68 | 3.40 | 2.50 | 2.21 | 2.06 |
| 1992 | 50.05 | 36.60 | 40.34 | 33.01 | 25.01 | 23.25 | 13.42 | 5.66 | 3.28 | 2.15 | 1.79 | 1.78 | 1.77 |
| 1995 | 50.16 | 39.22 | 45.16 | 37.17 | 26.85 | 26.08 | 17.26 | 8.25 | 5.21 | 3.96 | 2.98 | 2.66 | 2.48 |
| 1996 | 50.02 | 37.79 | 45.00 | 36.64 | 25.81 | 25.13 | 16.36 | 7.83 | 5.00 | 3.73 | 2.78 | 2.37 | 2.23 |
| MAX. | 50.29 | 39.22 | 45.16 | 37.17 | 26.85 | 26.08 | 17.26 | 8.25 | 5.21 | 3.96 | 2.98 | 2.66 | 2.48 |
| AVE. | 49.99 | 37.19 | 42.30 | 34.68 | 25.51 | 24.37 | 14.84 | 6.75 | 4.24 | 3.08 | 2.39 | 2.18 | 2.07 |
| MIN. | 49.17 | 34.72 | 38.61 | 30.52 | 25.01 | 23.12 | 11.83 | 4.79 | 3.00 | 2.05 | 1.79 | 1.78 | 1.77 |

(2) Simulated Maximum Discharge

| Year | B.Phasai | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Klet | Sam Sen | Mem. Bridge | Rama IV Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P.17 | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1972 | 1,060 | 240 | 350 | 380 | 380 | 1,880 | 1,780 | 1,420 | 920 | 2,480 | 2,940 | 3,010 | 3,060 | 740 |
| 1978 | 1,590 | 300 | 1,030 | 1,420 | 1,760 | 4,190 | 4,130 | 2,730 | 1,350 | 4,420 | 4,180 | 4,250 | 4,290 | 1,890 |
| 1979 | 1,010 | 200 | 210 | 560 | 570 | 1,880 | 1,720 | 1,370 | 910 | 2,250 | 2,640 | 2,740 | 2,830 | 210 |
| 1983 | 1,700 | 290 | 690 | 970 | 1,240 | 2,960 | 3,450 | 2,520 | 1,300 | 4,130 | 4,100 | 4,160 | 4,200 | 1,280 |
| 1984 | 620 | 290 | 560 | 680 | 800 | 1,890 | 1,200 | 1,040 | 690 | 2,460 | 2,900 | 2,980 | 3,040 | 940 |
| 1985 | 1,120 | 300 | 580 | 1,260 | 1,710 | 2,880 | 2,370 | 1,830 | 1,080 | 3,330 | 3,670 | 3,740 | 3,770 | 1,150 |
| 1987 | 1,580 | 300 | 970 | 950 | 980 | 2,530 | 2,450 | 1,910 | 1,070 | 3,500 | 3,830 | 3,890 | 3,930 | 1,300 |
| 1992 | 1,270 | 290 | 510 | 620 | 680 | 1,940 | 1,800 | 1,430 | 920 | 2,470 | 2,830 | 2,900 | 2,940 | 430 |
| 1995 | 1,280 | 300 | 1,380 | 1,600 | 1,950 | 4,590 | 4,300 | 2,770 | 1,360 | 4,510 | 4,280 | 4,330 | 4,360 | 1,350 |
| 1996 | 1,670 | 280 | 810 | 1,570 | 1,650 | 3,330 | 3,300 | 2,420 | 1,270 | 4,070 | 4,100 | 4,150 | 4,190 | 1,190 |
| MAX. | 1,700 | 300 | 1,380 | 1,600 | 1,950 | 4,590 | 4,300 | 2,770 | 1,360 | 4,510 | 4,280 | 4,330 | 4,360 | 1,890 |
| AVE. | 1,290 | 279 | 709 | 1,001 | 1,172 | 2,807 | 2,650 | 1,944 | 1,087 | 3,362 | 3,547 | 3,615 | 3,661 | 1,048 |
| MIN. | 620 | 200 | 210 | 380 | 380 | 1,880 | 1,200 | 1,040 | 690 | 2,250 | 2,640 | 2,740 | 2,830 | 210 |

(3) Simulated Inundation Area (km²)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area* | Others | Sub-total | |
| 1972 | 1,227 | 196 | 3,062 | | 3,143 | 3,143 | 7,627 |
| 1978 | 3,312 | 434 | 4,396 | 56 | 2,429 | 2,485 | 10,628 |
| 1979 | 1,166 | 187 | 1,870 | | 983 | 983 | 4,206 |
| 1983 | 2,392 | 321 | 4,028 | 20 | 3,728 | 3,747 | 10,488 |
| 1984 | 1,648 | 171 | 2,016 | | 1,317 | 1,317 | 5,152 |
| 1985 | 2,323 | 278 | 2,326 | | 1,398 | 1,398 | 6,326 |
| 1987 | 2,591 | 268 | 2,622 | | 1,404 | 1,404 | 6,884 |
| 1992 | 1,695 | 198 | 2,404 | | 2,062 | 2,062 | 6,358 |
| 1995 | 3,754 | 457 | 4,336 | 67 | 3,658 | 3,725 | 12,271 |
| 1996 | 2,733 | 346 | 3,311 | | 1,951 | 1,951 | 8,341 |
| MAX. | 3,754 | 457 | 4,396 | 67 | 3,728 | 3,747 | 12,271 |
| AVE. | 2,284 | 286 | 3,037 | 48 | 2,207 | 2,221 | 7,828 |
| MIN. | 1,166 | 171 | 1,870 | 20 | 983 | 983 | 4,206 |

*:BMA Area to be protected by ring dikes (East Bank=650km², West Bank=240km²)

(4) Simulated Inundation Volume (Million m³)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area | Others | Sub-total | |
| 1972 | 1,060 | 375 | 1,463 | | 1,066 | 1,066 | 3,963 |
| 1978 | 4,591 | 1,111 | 5,365 | 30 | 1,110 | 1,139 | 12,206 |
| 1979 | 1,024 | 360 | 642 | | 273 | 273 | 2,298 |
| 1983 | 2,838 | 722 | 3,667 | 8 | 2,126 | 2,134 | 9,361 |
| 1984 | 1,786 | 323 | 984 | | 429 | 429 | 3,522 |
| 1985 | 2,605 | 561 | 1,301 | | 495 | 495 | 4,962 |
| 1987 | 3,330 | 578 | 1,580 | | 476 | 476 | 5,964 |
| 1992 | 1,819 | 405 | 937 | | 583 | 583 | 3,744 |
| 1995 | 5,397 | 1,168 | 5,469 | 53 | 1,898 | 1,951 | 13,986 |
| 1996 | 3,410 | 816 | 2,648 | | 707 | 707 | 7,581 |
| MAX. | 5,397 | 1,168 | 5,469 | 53 | 2,126 | 2,134 | 13,986 |
| AVE. | 2,786 | 642 | 2,406 | 30 | 916 | 925 | 6,759 |
| MIN. | 1,024 | 323 | 642 | 8 | 273 | 273 | 2,298 |

## Table 5.3.2 (2/5) SIMULATION RESULT FOR DAM OPERATION AFTER MODIFICATION

**(b) Pasak Dam Operation**

(1) Simulated Maximum Water Level

| Year | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1972 | 49.64 | 35.80 | 38.61 | 30.52 | 25.01 | 23.21 | 13.47 | 5.71 | 3.37 | 2.36 | 1.99 | 1.93 | 1.90 |
| 1978 | 50.29 | 38.42 | 44.55 | 36.86 | 26.60 | 25.87 | 16.91 | 8.19 | 5.15 | 3.83 | 2.90 | 2.54 | 2.35 |
| 1979 | 49.17 | 34.72 | 39.91 | 32.03 | 25.01 | 23.18 | 13.25 | 5.48 | 3.02 | 2.07 | 1.86 | 1.81 | 1.77 |
| 1983 | 50.02 | 37.37 | 42.52 | 35.53 | 25.45 | 24.84 | 16.42 | 7.96 | 5.03 | 3.74 | 2.79 | 2.44 | 2.24 |
| 1984 | 50.04 | 36.80 | 40.71 | 33.80 | 25.01 | 23.14 | 11.85 | 4.79 | 3.25 | 2.32 | 1.92 | 1.84 | 1.80 |
| 1985 | 50.19 | 36.88 | 43.91 | 36.56 | 25.37 | 24.75 | 14.73 | 6.74 | 4.44 | 3.25 | 2.45 | 2.20 | 2.07 |
| 1987 | 50.29 | 38.27 | 42.29 | 34.67 | 25.01 | 24.38 | 14.91 | 6.93 | 4.66 | 3.38 | 2.49 | 2.20 | 2.06 |
| 1992 | 50.05 | 36.60 | 40.34 | 33.01 | 25.01 | 23.25 | 13.42 | 5.59 | 3.04 | 1.98 | 1.69 | 1.68 | 1.69 |
| 1995 | 50.16 | 39.22 | 45.16 | 37.17 | 26.86 | 26.09 | 17.26 | 8.24 | 5.13 | 3.89 | 2.97 | 2.64 | 2.47 |
| 1996 | 50.02 | 37.79 | 45.00 | 36.64 | 25.81 | 25.13 | 16.36 | 7.81 | 4.95 | 3.69 | 2.74 | 2.37 | 2.21 |
| MAX. | 50.29 | 39.22 | 45.16 | 37.17 | 26.86 | 26.09 | 17.26 | 8.24 | 5.15 | 3.89 | 2.97 | 2.64 | 2.47 |
| AVE. | 49.99 | 37.19 | 42.30 | 34.68 | 25.51 | 24.38 | 14.86 | 6.74 | 4.20 | 3.05 | 2.38 | 2.17 | 2.06 |
| MIN. | 49.17 | 34.72 | 38.61 | 30.52 | 25.01 | 23.14 | 11.85 | 4.79 | 3.02 | 1.98 | 1.69 | 1.68 | 1.69 |

(2) Simulated Maximum Discharge

| Year | B.Phasai | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Klet | Sam Sen | Mem. Bridge | Rama IV Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P.17 | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1972 | 1,180 | 240 | 350 | 380 | 380 | 1,910 | 1,820 | 1,450 | 930 | 2,490 | 2,970 | 3,040 | 3,090 | 740 |
| 1978 | 1,660 | 300 | 1,030 | 1,420 | 1,760 | 4,220 | 4,140 | 2,730 | 1,350 | 4,330 | 4,160 | 4,230 | 4,270 | 1,830 |
| 1979 | 1,070 | 200 | 210 | 560 | 570 | 1,880 | 1,730 | 1,380 | 920 | 2,270 | 2,660 | 2,760 | 2,850 | 210 |
| 1983 | 1,700 | 290 | 690 | 970 | 1,240 | 2,960 | 3,450 | 2,520 | 1,300 | 4,120 | 4,090 | 4,150 | 4,200 | 1,220 |
| 1984 | 640 | 290 | 560 | 680 | 800 | 1,900 | 1,210 | 1,040 | 690 | 2,460 | 2,900 | 2,980 | 3,040 | 940 |
| 1985 | 1,120 | 300 | 580 | 1,260 | 1,710 | 2,880 | 2,370 | 1,830 | 1,080 | 3,330 | 3,670 | 3,740 | 3,770 | 880 |
| 1987 | 1,580 | 300 | 970 | 950 | 980 | 2,530 | 2,460 | 1,910 | 1,070 | 3,440 | 3,790 | 3,850 | 3,890 | 1,160 |
| 1992 | 1,270 | 290 | 510 | 620 | 680 | 1,940 | 1,800 | 1,430 | 920 | 2,290 | 2,680 | 2,750 | 2,800 | 290 |
| 1995 | 1,280 | 300 | 1,380 | 1,600 | 1,950 | 4,600 | 4,300 | 2,770 | 1,360 | 4,340 | 4,220 | 4,290 | 4,330 | 1,260 |
| 1996 | 1,910 | 280 | 810 | 1,570 | 1,650 | 3,330 | 3,300 | 2,410 | 1,270 | 4,010 | 4,070 | 4,120 | 4,160 | 980 |
| MAX. | 1,910 | 300 | 1,380 | 1,600 | 1,950 | 4,600 | 4,300 | 2,770 | 1,360 | 4,340 | 4,220 | 4,290 | 4,330 | 1,830 |
| AVE. | 1,341 | 279 | 709 | 1,001 | 1,172 | 2,815 | 2,658 | 1,947 | 1,089 | 3,308 | 3,521 | 3,591 | 3,640 | 951 |
| MIN. | 640 | 200 | 210 | 380 | 380 | 1,880 | 1,210 | 1,040 | 690 | 2,270 | 2,660 | 2,750 | 2,800 | 210 |

(3) Simulated Inundation Area (km²)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area* | Others | Sub-total | |
| 1972 | 1,242 | 202 | 3,033 | | 3,143 | 3,143 | 7,621 |
| 1978 | 3,318 | 436 | 4,272 | 55 | 2,384 | 2,439 | 10,465 |
| 1979 | 1,172 | 190 | 1,876 | | 984 | 984 | 4,221 |
| 1983 | 2,392 | 321 | 4,006 | 20 | 3,723 | 3,743 | 10,461 |
| 1984 | 1,651 | 173 | 2,002 | | 1,312 | 1,312 | 5,138 |
| 1985 | 2,322 | 278 | 2,262 | | 1,390 | 1,390 | 6,251 |
| 1987 | 2,590 | 267 | 2,543 | | 1,289 | 1,289 | 6,690 |
| 1992 | 1,694 | 198 | 2,378 | | 2,060 | 2,060 | 6,330 |
| 1995 | 3,756 | 458 | 4,189 | 67 | 3,659 | 3,726 | 12,129 |
| 1996 | 2,725 | 342 | 3,192 | | 1,900 | 1,900 | 8,159 |
| MAX. | 3,756 | 458 | 4,272 | 67 | 3,723 | 3,743 | 12,129 |
| AVE. | 2,286 | 286 | 2,975 | 47 | 2,184 | 2,198 | 7,747 |
| MIN. | 1,172 | 173 | 1,876 | 20 | 984 | 984 | 4,221 |

*:BMA Area to be protected by ring dikes (East Bank=650km², West Bank=240km²)

(4) Simulated Inundation Volume (Million m³)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area | Others | Sub-total | |
| 1972 | 1,087 | 393 | 1,477 | | 1,069 | 1,069 | 4,026 |
| 1978 | 4,612 | 1,125 | 4,972 | 29 | 1,057 | 1,086 | 11,795 |
| 1979 | 1,036 | 368 | 645 | | 274 | 274 | 2,322 |
| 1983 | 2,838 | 722 | 3,575 | 8 | 2,119 | 2,127 | 9,263 |
| 1984 | 1,789 | 326 | 975 | | 429 | 429 | 3,519 |
| 1985 | 2,606 | 561 | 1,180 | | 493 | 493 | 4,840 |
| 1987 | 3,330 | 578 | 1,420 | | 462 | 462 | 5,790 |
| 1992 | 1,819 | 405 | 846 | | 571 | 571 | 3,641 |
| 1995 | 5,401 | 1,171 | 5,133 | 50 | 1,789 | 1,840 | 13,544 |
| 1996 | 3,411 | 815 | 2,372 | | 670 | 670 | 7,268 |
| MAX. | 5,401 | 1,171 | 5,133 | 50 | 2,119 | 2,127 | 13,544 |
| AVE. | 2,793 | 646 | 2,259 | 29 | 893 | 902 | 6,601 |
| MIN. | 1,036 | 326 | 645 | 8 | 274 | 274 | 2,322 |

## Table 5.3.2 (3/5) SIMULATION RESULT FOR DAM OPERATION AFTER MODIFICATION

**(c) Sirikit Dam Operation**

(1) Simulated Maximum Water Level

| Year | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1972 | 49.64 | 35.80 | 38.61 | 30.51 | 25.01 | 23.21 | 13.47 | 5.71 | 3.37 | 2.36 | 1.99 | 1.94 | 1.90 |
| 1978 | 50.29 | 38.42 | 44.55 | 36.86 | 26.60 | 25.87 | 16.91 | 8.19 | 5.20 | 3.86 | 2.92 | 2.55 | 2.35 |
| 1979 | 49.17 | 34.72 | 39.91 | 32.03 | 25.01 | 23.18 | 13.25 | 5.48 | 3.02 | 2.07 | 1.86 | 1.81 | 1.77 |
| 1983 | 50.02 | 37.37 | 42.52 | 35.53 | 25.45 | 24.84 | 16.42 | 7.96 | 5.03 | 3.74 | 2.79 | 2.44 | 2.24 |
| 1984 | 50.04 | 36.80 | 40.71 | 33.80 | 25.01 | 23.14 | 11.85 | 4.79 | 3.25 | 2.33 | 1.92 | 1.84 | 1.80 |
| 1985 | 50.19 | 36.88 | 43.90 | 36.56 | 25.37 | 24.75 | 14.73 | 6.74 | 4.44 | 3.25 | 2.45 | 2.20 | 2.07 |
| 1987 | 50.29 | 38.27 | 42.29 | 34.67 | 25.01 | 24.38 | 14.91 | 6.95 | 4.69 | 3.40 | 2.50 | 2.21 | 2.06 |
| 1992 | 50.05 | 36.60 | 40.34 | 33.01 | 25.01 | 23.25 | 13.42 | 5.65 | 3.28 | 2.15 | 1.78 | 1.78 | 1.77 |
| 1995 | 50.16 | 39.22 | 44.14 | 36.45 | 26.49 | 25.76 | 16.87 | 8.19 | 5.16 | 3.83 | 2.86 | 2.53 | 2.39 |
| 1996 | 50.02 | 37.79 | 45.00 | 36.64 | 25.81 | 25.13 | 16.36 | 7.83 | 5.00 | 3.73 | 2.78 | 2.37 | 2.23 |
| MAX. | 50.29 | 39.22 | 45.00 | 36.86 | 26.60 | 25.87 | 16.91 | 8.19 | 5.20 | 3.86 | 2.92 | 2.55 | 2.39 |
| AVE. | 49.99 | 37.19 | 42.20 | 34.61 | 25.48 | 24.35 | 14.82 | 6.75 | 4.24 | 3.07 | 2.39 | 2.17 | 2.06 |
| MIN. | 49.17 | 34.72 | 38.61 | 30.51 | 25.01 | 23.14 | 11.85 | 4.79 | 3.02 | 2.07 | 1.78 | 1.78 | 1.77 |

(2) Simulated Maximum Discharge

| Year | B.Phasai | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Klet | Sam Sen | Mem. Bridge | Rama IV Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P.17 | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1972 | 1,180 | 240 | 350 | 380 | 380 | 1,910 | 1,820 | 1,440 | 940 | 2,490 | 2,970 | 3,040 | 3,090 | 740 |
| 1978 | 1,660 | 300 | 1,030 | 1,420 | 1,760 | 4,220 | 4,140 | 2,730 | 1,350 | 4,420 | 4,180 | 4,250 | 4,290 | 1,890 |
| 1979 | 1,070 | 200 | 210 | 560 | 570 | 1,880 | 1,730 | 1,380 | 920 | 2,270 | 2,660 | 2,760 | 2,850 | 210 |
| 1983 | 1,700 | 290 | 690 | 970 | 1,240 | 2,960 | 3,450 | 2,520 | 1,300 | 4,130 | 4,100 | 4,160 | 4,200 | 1,280 |
| 1984 | 640 | 290 | 560 | 680 | 800 | 1,890 | 1,200 | 1,040 | 690 | 2,460 | 2,900 | 2,980 | 3,040 | 940 |
| 1985 | 1,120 | 300 | 580 | 1,260 | 1,710 | 2,880 | 2,370 | 1,830 | 1,080 | 3,330 | 3,670 | 3,740 | 3,770 | 1,150 |
| 1987 | 1,580 | 300 | 970 | 950 | 980 | 2,530 | 2,460 | 1,920 | 1,070 | 3,510 | 3,830 | 3,890 | 3,930 | 1,300 |
| 1992 | 1,270 | 290 | 510 | 620 | 680 | 1,940 | 1,800 | 1,430 | 920 | 2,470 | 2,830 | 2,900 | 2,940 | 430 |
| 1995 | 1,280 | 300 | 1,380 | 1,320 | 1,640 | 4,090 | 4,070 | 2,730 | 1,350 | 4,350 | 4,160 | 4,220 | 4,260 | 1,350 |
| 1996 | 1,910 | 280 | 810 | 1,570 | 1,650 | 3,330 | 3,300 | 2,420 | 1,270 | 4,070 | 4,100 | 4,150 | 4,190 | 1,190 |
| MAX. | 1,910 | 300 | 1,380 | 1,570 | 1,760 | 4,220 | 4,140 | 2,730 | 1,350 | 4,420 | 4,180 | 4,250 | 4,290 | 1,890 |
| AVE. | 1,341 | 279 | 709 | 973 | 1,141 | 2,763 | 2,634 | 1,944 | 1,089 | 3,350 | 3,540 | 3,609 | 3,656 | 1,048 |
| MIN. | 640 | 200 | 210 | 380 | 380 | 1,880 | 1,200 | 1,040 | 690 | 2,270 | 2,660 | 2,760 | 2,850 | 210 |

(3) Simulated Inundation Area ($km^2$)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area* | Others | Sub-total | |
| 1972 | 1,242 | 202 | 3,076 | | 3,143 | 3,143 | 7,664 |
| 1978 | 3,320 | 437 | 4,406 | 56 | 2,429 | 2,485 | 10,648 |
| 1979 | 1,172 | 190 | 1,874 | | 984 | 984 | 4,220 |
| 1983 | 2,392 | 321 | 4,026 | 20 | 3,723 | 3,743 | 10,482 |
| 1984 | 1,671 | 173 | 2,018 | | 1,317 | 1,317 | 5,179 |
| 1985 | 2,322 | 278 | 2,326 | | 1,398 | 1,398 | 6,324 |
| 1987 | 2,590 | 267 | 2,622 | | 1,403 | 1,403 | 6,882 |
| 1992 | 1,694 | 198 | 2,404 | | 2,062 | 2,062 | 6,357 |
| 1995 | 3,490 | 422 | 4,122 | 67 | 3,645 | 3,711 | 11,745 |
| 1996 | 2,724 | 342 | 3,308 | | 1,943 | 1,943 | 8,317 |
| MAX. | 3,490 | 437 | 4,406 | 67 | 3,723 | 3,743 | 11,745 |
| AVE. | 2,262 | 283 | 3,018 | 48 | 2,205 | 2,219 | 7,782 |
| MIN. | 1,172 | 173 | 1,874 | 20 | 984 | 984 | 4,220 |

*:BMA Area to be protected by ring dikes (East Bank=650$km^2$, West Bank=240$km^2$)

(4) Simulated Inundation Volume (Million $m^3$)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area | Others | Sub-total | |
| 1972 | 1,087 | 393 | 1,482 | | 1,069 | 1,069 | 4,031 |
| 1978 | 4,578 | 1,116 | 5,394 | 30 | 1,101 | 1,130 | 12,218 |
| 1979 | 1,036 | 368 | 645 | | 274 | 274 | 2,323 |
| 1983 | 2,838 | 722 | 3,664 | 8 | 2,125 | 2,133 | 9,358 |
| 1984 | 1,789 | 326 | 985 | | 430 | 430 | 3,529 |
| 1985 | 2,606 | 561 | 1,301 | | 495 | 495 | 4,963 |
| 1987 | 3,330 | 578 | 1,580 | | 475 | 475 | 5,963 |
| 1992 | 1,819 | 405 | 937 | | 583 | 583 | 3,744 |
| 1995 | 5,036 | 1,047 | 4,763 | 46 | 1,655 | 1,702 | 12,548 |
| 1996 | 3,411 | 815 | 2,647 | | 708 | 708 | 7,581 |
| MAX. | 5,036 | 1,116 | 5,394 | 46 | 2,125 | 2,133 | 12,548 |
| AVE. | 2,753 | 633 | 2,340 | 28 | 892 | 900 | 6,626 |
| MIN. | 1,036 | 326 | 645 | 8 | 274 | 274 | 2,323 |

## Table 5.3.2 (4/5) SIMULATION RESULT FOR DAM OPERATION AFTER MODIFICATION

**(d) Combination of Three Dams**

(1) Simulated Maximum Water Level

| YEAR | Sukhothai | Sam Ngam | Pitsanulok | Pichit | Bung Boraphet | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| 1964 | 50.43 | 38.35 | 43.78 | 36.66 | 26.48 | 25.75 | 16.80 | 8.17 | 5.06 | 3.74 | 2.73 | 2.36 | 2.15 |
| 1965 | 49.95 | 36.58 | 42.05 | 34.43 | 25.01 | 23.12 | 12.66 | 5.08 | 2.99 | 2.09 | 1.78 | 1.71 | 1.66 |
| 1966 | 50.05 | 37.54 | 41.07 | 35.08 | 25.26 | 24.62 | 14.57 | 6.55 | 3.97 | 2.78 | 2.05 | 1.90 | 1.83 |
| 1967 | 50.29 | 38.37 | 43.61 | 36.45 | 25.33 | 24.68 | 14.48 | 6.45 | 3.83 | 2.69 | 2.04 | 1.90 | 1.84 |
| 1968 | 49.67 | 34.58 | 39.26 | 33.10 | 25.01 | 22.21 | 11.46 | 3.95 | 2.08 | 1.48 | 1.34 | 1.42 | 1.50 |
| 1969 | 50.03 | 37.25 | 40.24 | 34.95 | 25.61 | 24.97 | 15.41 | 7.17 | 4.59 | 3.34 | 2.33 | 1.99 | 1.83 |
| 1970 | 50.37 | 39.19 | 44.52 | 36.79 | 26.02 | 25.33 | 16.06 | 7.58 | 4.66 | 3.37 | 2.44 | 2.13 | 2.01 |
| 1971 | 50.21 | 38.16 | 42.31 | 34.86 | 25.35 | 24.76 | 14.63 | 6.53 | 3.97 | 2.80 | 2.01 | 1.86 | 1.81 |
| 1972 | 49.64 | 35.80 | 38.61 | 30.50 | 25.01 | 23.13 | 13.37 | 5.66 | 3.34 | 2.32 | 1.95 | 1.91 | 1.88 |
| 1973 | 50.41 | 39.35 | 40.89 | 34.61 | 25.58 | 24.95 | 15.12 | 6.87 | 4.08 | 2.93 | 2.24 | 2.05 | 1.95 |
| 1974 | 50.18 | 37.77 | 40.99 | 33.03 | 25.01 | 23.61 | 14.37 | 6.32 | 3.68 | 2.59 | 2.11 | 1.99 | 1.93 |
| 1975 | 50.40 | 39.22 | 45.64 | 37.07 | 26.40 | 25.67 | 16.52 | 8.03 | 4.94 | 3.67 | 2.71 | 2.36 | 2.17 |
| 1976 | 50.20 | 38.44 | 42.98 | 35.83 | 25.61 | 24.97 | 15.01 | 6.88 | 4.37 | 3.16 | 2.29 | 2.01 | 1.87 |
| 1977 | 50.05 | 37.30 | 44.00 | 36.08 | 25.06 | 24.29 | 14.21 | 6.27 | 3.86 | 2.65 | 2.02 | 1.91 | 1.84 |
| 1978 | 50.29 | 38.42 | 44.55 | 36.86 | 26.58 | 25.85 | 16.91 | 8.19 | 5.14 | 3.82 | 2.90 | 2.54 | 2.34 |
| 1979 | 49.17 | 34.72 | 39.91 | 32.03 | 25.01 | 23.18 | 13.21 | 5.45 | 3.01 | 2.05 | 1.85 | 1.81 | 1.77 |
| 1980 | 50.43 | 39.11 | 45.46 | 36.88 | 26.41 | 25.69 | 16.72 | 8.14 | 5.06 | 3.76 | 2.71 | 2.28 | 2.08 |
| 1981 | 50.14 | 37.79 | 42.77 | 35.10 | 25.01 | 23.61 | 13.17 | 5.42 | 3.22 | 2.20 | 1.87 | 1.81 | 1.77 |
| 1982 | 49.74 | 36.05 | 43.41 | 36.11 | 25.08 | 23.94 | 13.65 | 5.79 | 3.76 | 2.68 | 1.92 | 1.82 | 1.77 |
| 1983 | 50.02 | 37.37 | 42.52 | 35.53 | 25.45 | 24.85 | 16.43 | 7.96 | 5.03 | 3.74 | 2.79 | 2.44 | 2.24 |
| 1984 | 50.04 | 36.80 | 40.71 | 33.80 | 25.01 | 23.12 | 11.83 | 4.78 | 3.24 | 2.32 | 1.92 | 1.84 | 1.80 |
| 1985 | 50.19 | 36.88 | 43.90 | 36.56 | 25.37 | 24.75 | 14.72 | 6.74 | 4.44 | 3.25 | 2.45 | 2.20 | 2.07 |
| 1986 | 49.97 | 35.94 | 40.90 | 33.68 | 25.01 | 23.13 | 12.72 | 5.09 | 2.79 | 1.84 | 1.64 | 1.66 | 1.64 |
| 1987 | 50.29 | 38.27 | 42.29 | 34.67 | 25.01 | 24.38 | 14.91 | 6.93 | 4.66 | 3.38 | 2.49 | 2.20 | 2.06 |
| 1988 | 49.93 | 36.04 | 41.15 | 33.27 | 25.08 | 24.53 | 15.86 | 7.33 | 4.35 | 3.08 | 2.34 | 2.13 | 2.01 |
| 1989 | 49.73 | 36.43 | 39.24 | 31.05 | 25.01 | 23.45 | 13.23 | 5.47 | 2.99 | 2.08 | 1.86 | 1.81 | 1.78 |
| 1990 | 49.34 | 35.02 | 39.35 | 31.78 | 25.01 | 23.25 | 13.75 | 5.94 | 3.57 | 2.46 | 1.90 | 1.86 | 1.83 |
| 1991 | 49.66 | 35.79 | 39.53 | 34.47 | 25.01 | 23.43 | 12.86 | 5.14 | 3.30 | 2.29 | 1.88 | 1.80 | 1.80 |
| 1992 | 50.05 | 36.60 | 40.34 | 33.01 | 25.01 | 23.25 | 13.42 | 5.60 | 3.05 | 1.99 | 1.70 | 1.69 | 1.70 |
| 1993 | 49.73 | 35.69 | 38.76 | 31.78 | 25.01 | 23.24 | 12.95 | 5.19 | 2.69 | 1.73 | 1.49 | 1.52 | 1.51 |
| 1994 | 50.22 | 38.70 | 44.36 | 36.71 | 25.85 | 25.16 | 15.73 | 7.36 | 4.60 | 3.30 | 2.33 | 2.04 | 1.94 |
| 1995 | 50.16 | 39.22 | 44.14 | 36.45 | 26.49 | 25.76 | 16.87 | 8.19 | 5.10 | 3.79 | 2.83 | 2.48 | 2.36 |
| 1996 | 50.02 | 37.79 | 45.00 | 36.64 | 25.81 | 25.13 | 16.31 | 7.83 | 4.96 | 3.70 | 2.74 | 2.37 | 2.21 |
| MAX. | 50.43 | 39.35 | 45.64 | 37.07 | 26.58 | 25.85 | 16.91 | 8.19 | 5.14 | 3.82 | 2.90 | 2.54 | 2.36 |
| AVE. | 50.03 | 37.29 | 42.07 | 34.72 | 25.42 | 24.30 | 14.54 | 6.49 | 3.95 | 2.82 | 2.17 | 1.99 | 1.91 |
| MIN. | 49.17 | 34.58 | 38.61 | 30.50 | 25.01 | 22.21 | 11.46 | 3.95 | 2.08 | 1.48 | 1.34 | 1.42 | 1.50 |

(2) Simulated Maximum Discharge

| YEAR | B.Phasai | Sukhothai | Sam Ngam | Phitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Klet | Sam Sen | Mem. Bridge | Rama IV Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P.17 | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1964 | 1,680 | 300 | 1,000 | 1,230 | 1,780 | 4,080 | 3,970 | 2,710 | 1,360 | 4,160 | 4,100 | 4,160 | 4,190 | 1,030 |
| 1965 | 910 | 290 | 510 | 910 | 930 | 1,880 | 1,500 | 1,210 | 830 | 2,260 | 2,720 | 2,800 | 2,860 | 730 |
| 1966 | 830 | 280 | 740 | 710 | 1,090 | 2,750 | 2,300 | 1,780 | 1,110 | 2,980 | 3,250 | 3,310 | 3,350 | 740 |
| 1967 | 1,280 | 300 | 1,020 | 1,190 | 1,650 | 2,810 | 2,260 | 1,750 | 1,090 | 2,850 | 3,250 | 3,310 | 3,360 | 340 |
| 1968 | 380 | 260 | 200 | 460 | 690 | 1,530 | 1,080 | 890 | 670 | 1,680 | 2,180 | 2,280 | 2,340 | 130 |
| 1969 | 1,530 | 280 | 660 | 600 | 1,020 | 3,130 | 2,710 | 2,050 | 1,180 | 3,490 | 3,760 | 3,810 | 3,850 | 930 |
| 1970 | 1,390 | 310 | 1,380 | 1,410 | 1,750 | 3,570 | 3,250 | 2,290 | 1,330 | 3,500 | 3,770 | 3,830 | 3,860 | 810 |
| 1971 | 2,080 | 300 | 940 | 950 | 1,060 | 2,890 | 2,330 | 1,800 | 1,110 | 2,980 | 3,300 | 3,360 | 3,400 | 460 |
| 1972 | 1,060 | 240 | 350 | 380 | 380 | 1,880 | 1,780 | 1,420 | 920 | 2,480 | 2,950 | 3,020 | 3,070 | 740 |
| 1973 | 1,880 | 310 | 1,470 | 710 | 940 | 3,120 | 2,560 | 1,950 | 1,190 | 3,020 | 3,410 | 3,480 | 3,520 | 340 |
| 1974 | 1,040 | 300 | 820 | 730 | 710 | 2,050 | 2,210 | 1,710 | 1,060 | 2,680 | 3,120 | 3,210 | 3,260 | 320 |
| 1975 | 1,070 | 310 | 1,380 | 1,790 | 1,900 | 3,990 | 3,600 | 2,600 | 1,360 | 3,920 | 4,040 | 4,100 | 4,140 | 890 |
| 1976 | 1,440 | 300 | 1,040 | 1,060 | 1,300 | 3,140 | 2,510 | 1,920 | 1,140 | 3,270 | 3,590 | 3,650 | 3,690 | 710 |
| 1977 | 1,220 | 290 | 680 | 1,310 | 1,460 | 2,460 | 2,130 | 1,670 | 1,030 | 2,810 | 3,220 | 3,280 | 3,320 | 510 |
| 1978 | 1,590 | 300 | 1,030 | 1,420 | 1,760 | 4,200 | 4,140 | 2,730 | 1,350 | 4,330 | 4,160 | 4,220 | 4,260 | 1,830 |
| 1979 | 1,010 | 200 | 210 | 560 | 570 | 1,880 | 1,720 | 1,370 | 910 | 2,260 | 2,650 | 2,750 | 2,840 | 210 |
| 1980 | 1,670 | 310 | 1,320 | 1,740 | 1,800 | 3,990 | 3,860 | 2,680 | 1,340 | 4,190 | 4,090 | 4,150 | 4,190 | 940 |
| 1981 | 950 | 290 | 820 | 1,030 | 1,120 | 2,100 | 1,700 | 1,360 | 890 | 2,460 | 2,820 | 2,890 | 2,940 | 580 |
| 1982 | 710 | 250 | 390 | 1,160 | 1,530 | 2,250 | 1,890 | 1,500 | 930 | 2,850 | 3,200 | 3,260 | 3,300 | 880 |
| 1983 | 1,700 | 290 | 690 | 970 | 1,240 | 2,960 | 3,450 | 2,520 | 1,300 | 4,130 | 4,090 | 4,150 | 4,200 | 1,220 |
| 1984 | 620 | 290 | 560 | 680 | 800 | 1,890 | 1,200 | 1,040 | 690 | 2,460 | 2,900 | 2,980 | 3,040 | 940 |
| 1985 | 1,120 | 300 | 580 | 1,260 | 1,710 | 2,880 | 2,370 | 1,830 | 1,080 | 3,330 | 3,670 | 3,740 | 3,770 | 880 |
| 1986 | 750 | 280 | 380 | 720 | 780 | 1,890 | 1,520 | 1,230 | 830 | 2,090 | 2,530 | 2,590 | 2,650 | 450 |
| 1987 | 1,580 | 300 | 970 | 950 | 980 | 2,530 | 2,450 | 1,910 | 1,070 | 3,440 | 3,790 | 3,850 | 3,890 | 1,160 |
| 1988 | 2,510 | 270 | 390 | 750 | 740 | 2,640 | 2,980 | 2,200 | 1,300 | 3,170 | 3,540 | 3,610 | 3,650 | 320 |
| 1989 | 1,670 | 250 | 460 | 470 | 450 | 2,000 | 1,720 | 1,370 | 920 | 2,250 | 2,690 | 2,770 | 2,830 | 220 |
| 1990 | 910 | 220 | 240 | 480 | 520 | 1,910 | 1,940 | 1,540 | 950 | 2,600 | 3,060 | 3,130 | 3,180 | 770 |
| 1991 | 640 | 250 | 350 | 500 | 900 | 2,020 | 1,580 | 1,270 | 810 | 2,500 | 2,870 | 2,950 | 3,010 | 790 |
| 1992 | 1,270 | 290 | 510 | 620 | 680 | 1,940 | 1,800 | 1,430 | 920 | 2,300 | 2,680 | 2,750 | 2,800 | 290 |
| 1993 | 770 | 260 | 330 | 400 | 520 | 1,930 | 1,610 | 1,300 | 860 | 1,980 | 2,430 | 2,500 | 2,580 | 120 |
| 1994 | 480 | 300 | 1,150 | 1,370 | 1,680 | 3,370 | 2,880 | 2,160 | 1,230 | 3,440 | 3,730 | 3,790 | 3,820 | 680 |
| 1995 | 1,270 | 300 | 1,380 | 1,320 | 1,640 | 4,090 | 4,080 | 2,730 | 1,360 | 4,210 | 4,150 | 4,210 | 4,260 | 1,260 |
| 1996 | 1,670 | 280 | 810 | 1,570 | 1,650 | 3,330 | 3,300 | 2,420 | 1,270 | 4,030 | 4,070 | 4,130 | 4,160 | 980 |
| MAX. | 2,510 | 310 | 1,470 | 1,790 | 1,900 | 4,200 | 4,140 | 2,730 | 1,360 | 4,330 | 4,160 | 4,220 | 4,260 | 1,830 |
| AVE. | 1,233 | 282 | 750 | 952 | 1,143 | 2,699 | 2,436 | 1,828 | 1,072 | 3,033 | 3,327 | 3,395 | 3,442 | 703 |
| MIN. | 380 | 200 | 200 | 380 | 380 | 1,530 | 1,080 | 890 | 670 | 1,680 | 2,180 | 2,280 | 2,340 | 120 |

## Table 5.3.2 (5/5) SIMULATION RESULT FOR DAM OPERATION AFTER MODIFICATION

**(d) Combination of Three Dams**

(3) Simulated Inundation Area (km²)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area | Others | Sub-total | |
| 1964 | 3,280 | 428 | 3,844 | | 2,313 | 2,313 | 9,865 |
| 1965 | 1,643 | 185 | 2,550 | | 2,887 | 2,887 | 7,265 |
| 1966 | 2,357 | 263 | 2,968 | | 2,728 | 2,728 | 8,316 |
| 1967 | 2,818 | 282 | 2,139 | | 1,266 | 1,266 | 6,506 |
| 1968 | 1,077 | 154 | 1,817 | | 1,209 | 1,209 | 4,258 |
| 1969 | 2,256 | 315 | 3,029 | | 3,091 | 3,091 | 8,690 |
| 1970 | 3,395 | 357 | 3,029 | | 3,013 | 3,013 | 9,794 |
| 1971 | 2,665 | 309 | 2,608 | | 1,992 | 1,992 | 7,574 |
| 1972 | 1,227 | 196 | 3,016 | | 3,143 | 3,143 | 7,581 |
| 1973 | 3,116 | 320 | 2,513 | | 1,713 | 1,713 | 7,663 |
| 1974 | 2,291 | 214 | 3,019 | | 3,235 | 3,235 | 8,760 |
| 1975 | 3,625 | 390 | 3,335 | | 2,169 | 2,169 | 9,519 |
| 1976 | 2,843 | 313 | 2,934 | | 3,033 | 3,033 | 9,123 |
| 1977 | 2,236 | 247 | 2,032 | | 1,001 | 1,001 | 5,516 |
| 1978 | 3,313 | 435 | 4,252 | 55 | 2,377 | 2,432 | 10,431 |
| 1979 | 1,166 | 187 | 1,872 | | 983 | 983 | 4,209 |
| 1980 | 3,820 | 424 | 3,554 | | 3,259 | 3,259 | 11,056 |
| 1981 | 2,209 | 205 | 2,325 | | 1,211 | 1,211 | 5,950 |
| 1982 | 1,634 | 200 | 2,015 | | 945 | 945 | 4,794 |
| 1983 | 2,392 | 321 | 4,006 | 20 | 3,723 | 3,743 | 10,462 |
| 1984 | 1,668 | 171 | 2,002 | | 1,312 | 1,312 | 5,153 |
| 1985 | 2,323 | 278 | 2,262 | | 1,390 | 1,390 | 6,253 |
| 1986 | 1,490 | 179 | 2,428 | | 2,631 | 2,631 | 6,728 |
| 1987 | 2,591 | 268 | 2,542 | | 1,288 | 1,288 | 6,688 |
| 1988 | 1,672 | 276 | 3,051 | | 3,262 | 3,262 | 8,261 |
| 1989 | 1,556 | 217 | 1,964 | | 1,297 | 1,297 | 5,034 |
| 1990 | 1,182 | 189 | 3,014 | | 3,188 | 3,188 | 7,574 |
| 1991 | 1,267 | 173 | 1,847 | | 1,027 | 1,027 | 4,314 |
| 1992 | 1,695 | 198 | 2,379 | | 2,060 | 2,060 | 6,332 |
| 1993 | 1,325 | 180 | 1,812 | | 973 | 973 | 4,291 |
| 1994 | 3,111 | 312 | 2,287 | | 1,126 | 1,126 | 6,835 |
| 1995 | 3,490 | 422 | 3,996 | 66 | 3,593 | 3,659 | 11,567 |
| 1996 | 2,732 | 345 | 3,219 | | 1,930 | 1,930 | 8,226 |
| MAX. | 3,820 | 435 | 4,252 | 66 | 3,723 | 3,743 | 11,567 |
| AVE. | 2,287 | 271 | 2,717 | 47 | 2,132 | 2,137 | 7,412 |
| MIN. | 1,077 | 154 | 1,812 | 20 | 945 | 945 | 4,209 |

*:BMA Area to be protected by ring dikes (East Bank=650km2,West Bank=240km2)

(4) Simulated Inundation Volume (Million m³)

| Year | Upper Central Plain | Nakhon Sawan Area | Lower Central Plain | | | | Total |
|---|---|---|---|---|---|---|---|
| | | | Higher Delta | Lower Delta | | | |
| | | | | BMA Area | Others | Sub-total | |
| 1964 | 4,529 | 1,078 | 3,847 | 0 | 912 | 912 | 10,366 |
| 1965 | 1,714 | 359 | 1,125 | 0 | 756 | 756 | 3,954 |
| 1966 | 2,717 | 504 | 1,437 | 0 | 766 | 766 | 5,425 |
| 1967 | 3,611 | 596 | 840 | 0 | 431 | 431 | 5,477 |
| 1968 | 868 | 252 | 581 | 0 | 339 | 339 | 2,040 |
| 1969 | 2,694 | 699 | 1,714 | 0 | 984 | 984 | 6,092 |
| 1970 | 5,103 | 860 | 2,054 | 0 | 960 | 960 | 8,977 |
| 1971 | 3,409 | 687 | 1,134 | 0 | 574 | 574 | 5,804 |
| 1972 | 1,060 | 375 | 1,461 | 0 | 1,065 | 1,065 | 3,960 |
| 1973 | 4,724 | 749 | 1,071 | 0 | 596 | 596 | 7,141 |
| 1974 | 2,746 | 407 | 1,362 | 0 | 1,136 | 1,136 | 5,651 |
| 1975 | 5,184 | 925 | 2,850 | 0 | 896 | 896 | 9,856 |
| 1976 | 3,713 | 697 | 1,495 | 0 | 901 | 901 | 6,805 |
| 1977 | 2,502 | 491 | 882 | 0 | 353 | 353 | 4,228 |
| 1978 | 4,590 | 1,111 | 4,866 | 28 | 1,035 | 1,064 | 11,632 |
| 1979 | 1,024 | 360 | 645 | 0 | 273 | 273 | 2,302 |
| 1980 | 5,670 | 1,103 | 3,382 | 0 | 1,202 | 1,202 | 11,357 |
| 1981 | 2,572 | 399 | 1,698 | 0 | 437 | 437 | 5,106 |
| 1982 | 1,667 | 368 | 989 | 0 | 372 | 372 | 3,395 |
| 1983 | 2,838 | 722 | 3,583 | 8 | 2,120 | 2,127 | 9,271 |
| 1984 | 1,789 | 323 | 975 | 0 | 429 | 429 | 3,515 |
| 1985 | 2,606 | 561 | 1,179 | 0 | 492 | 492 | 4,838 |
| 1986 | 1,486 | 336 | 911 | 0 | 615 | 615 | 3,348 |
| 1987 | 3,330 | 578 | 1,418 | 0 | 461 | 461 | 5,788 |
| 1988 | 1,997 | 653 | 1,518 | 0 | 1,150 | 1,150 | 5,318 |
| 1989 | 1,729 | 477 | 681 | 0 | 351 | 351 | 3,238 |
| 1990 | 1,027 | 354 | 1,474 | 0 | 1,126 | 1,126 | 3,981 |
| 1991 | 1,119 | 326 | 914 | 0 | 353 | 353 | 2,712 |
| 1992 | 1,819 | 405 | 847 | 0 | 572 | 572 | 3,643 |
| 1993 | 1,369 | 336 | 579 | 0 | 274 | 274 | 2,558 |
| 1994 | 4,514 | 646 | 1,404 | 0 | 401 | 401 | 6,965 |
| 1995 | 4,928 | 1,025 | 4,257 | 44 | 1,486 | 1,530 | 11,740 |
| 1996 | 3,409 | 814 | 2,420 | 0 | 684 | 684 | 7,326 |
| MAX. | 5,670 | 1,111 | 4,866 | 44 | 2,120 | 2,127 | 11,740 |
| AVE. | 2,850 | 593 | 1,685 | 2 | 742 | 745 | 5,873 |
| MIN. | 868 | 252 | 579 | 0 | 273 | 273 | 2,040 |

## Table 5.3.3 SELECTION OF REPRESENTATIVE TEN FLOODS

| Magnitude of Inundation / Spatial Distribution of Rainfall | less than 7 (bil.$m^3$) | | | | 7 - 11 (bil.$m^3$) | | | | grater than 11 (bil.$m^3$) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Uniform overall the Area | 1968 | 1979 | 1981 | 1984 | 1976 | 1985 | | | 1964 | 1970 | 1980 | 1995 |
| | 1989 | 1992 | 1993 | | | | | | | | | |
| Heavy in Upper Central Plain | 1977 | | | | 1967 | 1971 | 1973 | 1994 | 1975 | 1978 | | |
| Heavy in Lower Delta | 1965 | 1972 | 1986 | 1990 | 1966 | 1974 | 1983 | 1988 | | | | |
| Heavy in Pasak River Basin | 1982 | 1987 | 1991 | | 1969 | 1996 | | | | | | |

* refer to Table 4.1.4

: Selected Representative Floods

## Table 5.4.1 SUMMARY OF 45 YEAR RUN UNDER FULL CONFINEMENT

Simulated Maximum Discharge (m³/s)

| YEAR | Sukhotahi | Sam Ngam | Phitsanulok | Pichit | Nakhon Sawan | Chainat | Ang Thong | Ayutthaya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Y.4 | Y.17 | N.5A | N.7 | C.2 | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| 1952 | 2,040 | 2,100 | 1,410 | 1,410 | 3,250 | 2,890 | 2,180 | 1,330 | 3,030 | 3,320 | 3,400 | 3,440 | 590 |
| 1953 | 810 | 730 | 830 | 1,030 | 2,750 | 2,500 | 1,950 | 1,190 | 3,250 | 3,460 | 3,560 | 3,610 | 810 |
| 1954 | 1,420 | 1,540 | 1,680 | 1,840 | 4,750 | 4,570 | 3,190 | 2,040 | 5,580 | 5,690 | 5,730 | 5,750 | 1,450 |
| 1955 | 790 | 830 | 1,100 | 1,250 | 2,980 | 2,670 | 2,050 | 1,270 | 3,370 | 3,690 | 3,760 | 3,790 | 880 |
| 1956 | 2,330 | 2,520 | 1,640 | 2,140 | 4,490 | 4,450 | 3,020 | 1,890 | 4,770 | 4,930 | 4,980 | 5,020 | 770 |
| 1957 | 1,110 | 1,080 | 1,160 | 1,330 | 2,840 | 3,250 | 2,420 | 1,490 | 4,160 | 4,560 | 4,690 | 4,790 | 970 |
| 1958 | 520 | 550 | 1,300 | 1,670 | 3,060 | 2,980 | 2,240 | 1,380 | 3,620 | 3,850 | 3,960 | 4,000 | 860 |
| 1959 | 1,130 | 1,230 | 1,750 | 1,890 | 3,920 | 4,070 | 2,840 | 1,780 | 5,150 | 5,310 | 5,420 | 5,490 | 1,490 |
| 1960 | 530 | 660 | 1,270 | 1,230 | 2,100 | 1,800 | 1,460 | 920 | 2,430 | 3,080 | 3,190 | 3,270 | 500 |
| 1961 | 1,380 | 1,470 | 2,700 | 2,760 | 3,890 | 3,520 | 2,570 | 1,590 | 3,590 | 3,800 | 3,890 | 3,930 | 720 |
| 1962 | 1,010 | 1,310 | 1,040 | 1,560 | 4,010 | 3,870 | 2,770 | 1,750 | 4,760 | 5,060 | 5,150 | 5,210 | 940 |
| 1963 | 880 | 980 | 600 | 870 | 3,520 | 3,270 | 2,410 | 1,510 | 4,500 | 4,840 | 4,890 | 4,940 | 1,310 |
| 1964 | 1,910 | 2,370 | 1,590 | 2,130 | 5,550 | 5,360 | 3,670 | 2,410 | 6,440 | 6,560 | 6,580 | 6,610 | 1,340 |
| 1965 | 300 | 350 | 910 | 910 | 1,850 | 1,480 | 1,210 | 860 | 2,270 | 2,880 | 2,970 | 3,050 | 740 |
| 1966 | 460 | 700 | 810 | 1,250 | 2,950 | 2,470 | 1,910 | 1,250 | 3,440 | 3,800 | 3,890 | 3,940 | 830 |
| 1967 | 1,410 | 1,740 | 1,190 | 1,710 | 4,470 | 4,150 | 2,820 | 1,850 | 4,290 | 4,380 | 4,500 | 4,540 | 400 |
| 1968 | 60 | 160 | 500 | 740 | 1,740 | 1,330 | 1,080 | 730 | 1,760 | 2,240 | 2,380 | 2,490 | 130 |
| 1969 | 680 | 820 | 620 | 1,190 | 3,730 | 3,560 | 2,400 | 1,590 | 4,330 | 4,550 | 4,630 | 4,660 | 980 |
| 1970 | 1,880 | 2,050 | 1,930 | 2,420 | 4,410 | 3,900 | 2,790 | 1,810 | 4,390 | 4,610 | 4,680 | 4,730 | 820 |
| 1971 | 1,060 | 1,200 | 930 | 1,020 | 3,580 | 3,360 | 2,490 | 1,550 | 3,530 | 3,790 | 3,880 | 3,920 | 460 |
| 1972 | 270 | 470 | 480 | 520 | 2,220 | 1,940 | 1,580 | 1,050 | 2,670 | 3,280 | 3,370 | 3,410 | 780 |
| 1973 | 2,080 | 2,360 | 860 | 1,080 | 4,890 | 4,430 | 2,990 | 2,000 | 4,700 | 4,810 | 4,880 | 4,920 | 430 |
| 1974 | 1,250 | 1,300 | 770 | 740 | 2,290 | 2,100 | 1,680 | 1,070 | 2,640 | 3,190 | 3,310 | 3,360 | 390 |
| 1975 | 1,850 | 2,210 | 2,160 | 2,680 | 4,880 | 4,500 | 3,130 | 2,020 | 4,630 | 4,760 | 4,800 | 4,820 | 990 |
| 1976 | 980 | 1,210 | 1,240 | 1,520 | 3,830 | 3,720 | 2,530 | 1,630 | 3,940 | 4,130 | 4,220 | 4,250 | 770 |
| 1977 | 700 | 910 | 1,030 | 1,190 | 3,180 | 2,560 | 1,980 | 1,280 | 2,980 | 3,330 | 3,470 | 3,530 | 760 |
| 1978 | 1,430 | 1,680 | 1,900 | 2,400 | 5,000 | 5,110 | 3,580 | 2,290 | 8,580 | 8,370 | 8,400 | 8,410 | 4,000 |
| 1979 | 210 | 250 | 600 | 600 | 2,100 | 1,940 | 1,540 | 1,020 | 2,380 | 2,750 | 2,890 | 2,940 | 220 |
| 1980 | 2,080 | 2,340 | 2,600 | 2,740 | 4,820 | 4,450 | 3,070 | 2,030 | 4,570 | 4,830 | 4,890 | 4,940 | 1,240 |
| 1981 | 790 | 1,070 | 950 | 1,050 | 2,780 | 2,420 | 1,890 | 1,170 | 2,710 | 3,110 | 3,240 | 3,290 | 650 |
| 1982 | 260 | 480 | 680 | 1,110 | 2,410 | 2,100 | 1,650 | 1,090 | 2,840 | 3,280 | 3,360 | 3,410 | 890 |
| 1983 | 740 | 880 | 1,020 | 1,180 | 3,420 | 3,900 | 2,840 | 1,840 | 5,230 | 5,580 | 5,650 | 5,700 | 1,470 |
| 1984 | 670 | 790 | 720 | 850 | 2,160 | 1,470 | 1,190 | 840 | 2,600 | 3,110 | 3,190 | 3,240 | 940 |
| 1985 | 1,100 | 1,280 | 1,940 | 2,460 | 3,980 | 3,750 | 2,650 | 1,750 | 4,550 | 4,640 | 4,760 | 4,800 | 1,190 |
| 1986 | 540 | 580 | 580 | 690 | 2,060 | 1,720 | 1,390 | 920 | 2,180 | 2,630 | 2,730 | 2,760 | 470 |
| 1987 | 1,410 | 1,670 | 790 | 960 | 3,760 | 3,720 | 2,670 | 1,640 | 4,970 | 5,150 | 5,220 | 5,250 | 1,490 |
| 1988 | 540 | 700 | 740 | 720 | 3,340 | 3,520 | 2,560 | 1,620 | 3,880 | 4,280 | 4,390 | 4,430 | 670 |
| 1989 | 340 | 620 | 470 | 520 | 2,700 | 2,340 | 1,820 | 1,220 | 2,820 | 3,260 | 3,350 | 3,380 | 250 |
| 1990 | 180 | 240 | 430 | 640 | 2,000 | 1,990 | 1,620 | 1,000 | 2,900 | 3,410 | 3,520 | 3,570 | 1,390 |
| 1991 | 280 | 470 | 450 | 920 | 2,230 | 1,810 | 1,450 | 950 | 2,510 | 2,900 | 3,020 | 3,080 | 790 |
| 1992 | 770 | 850 | 690 | 760 | 2,280 | 1,950 | 1,550 | 1,010 | 2,450 | 2,880 | 2,970 | 3,030 | 440 |
| 1993 | 400 | 480 | 320 | 460 | 6,640 | 5,880 | 3,880 | 2,210 | 4,470 | 4,210 | 4,260 | 4,290 | 120 |
| 1994 | 1,150 | 1,280 | 1,730 | 2,120 | 4,050 | 3,520 | 2,570 | 1,630 | 3,970 | 4,230 | 4,300 | 4,350 | 760 |
| 1995 | 950 | 1,280 | 1,870 | 2,280 | 4,850 | 4,880 | 3,400 | 2,170 | 6,420 | 6,510 | 6,560 | 6,590 | 1,750 |
| 1996 | 620 | 840 | 1,820 | 2,040 | 4,660 | 4,550 | 3,170 | 2,040 | 5,450 | 5,530 | 5,600 | 5,620 | 1,280 |
| MAX. | 2,330 | 2,520 | 2,700 | 2,760 | 6,640 | 5,880 | 3,880 | 2,410 | 8,580 | 8,370 | 8,400 | 8,410 | 4,000 |
| AVE. | 960 | 1,120 | 1,150 | 1,390 | 3,470 | 3,240 | 2,350 | 1,500 | 3,900 | 4,190 | 4,280 | 4,320 | 910 |
| MIN. | 60 | 160 | 320 | 460 | 1,740 | 1,330 | 1,080 | 730 | 1,760 | 2,240 | 2,380 | 2,490 | 120 |

Table 5.4.2 PROBABLE DISCHARGE IN FULL CONFINEMENT

| River | Station | Probable Discharge($m^3/s$) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2yr | 5yr | 10yr | 25yr | 50yr | 100yr |
| Ping | P.17(B.Phisai) | 1,230 | 1,830 | 2,150 | 2,650 | 3,000 | 3,350 |
| Yom | Y.4(Sukhothai) | 870 | 1,400 | 1,750 | 2,490 | 2,550 | 2,880 |
| | Y.17(Sam Ngam) | 1,080 | 1,620 | 2,000 | 2,520 | 2,870 | 3,220 |
| Nan | N.5A(Pitsanulok) | 1,080 | 1,640 | 2,010 | 2,530 | 2,870 | 3,200 |
| | N.7(Pichit) | 1,270 | 1,900 | 2,320 | 2,860 | 3,230 | 3,610 |
| Chao Phraya | C.2(Nakhon Sawan) | 3,400 | 4,600 | 4,900 | 5,150 | 5,350 | 5,500 |
| | C.13(Chainat) | 3,250 | 4,350 | 4,680 | 5,100 | 5,400 | 5,700 |
| | C.7A(Ang Thong) | 1,900 | 2,450 | 2,680 | 2,900 | 3,080 | 3,200 |
| | C.34(Ayutthaya) | 1,120 | 1,400 | 1,500 | 1,610 | 1,680 | 1,730 |
| | Bang Sai | 3,250 | 4,180 | 4,700 | 5,500 | 6,100 | 6,600 |
| Pasak | RamaIV Barrage | 700 | 1,050 | 1,300 | 1,620 | 1,850 | 2,050 |

# Table 5.4.3 SIMULATION RESULT FOR RIVER IMPROVEMENT

**(1) Simulated Maximum Water Level**

(a)1957 ( m MSL )

| Case | Chainat | Ang Thong | Ayuttha ya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|
| | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| WOP* | 15.92 | 7.48 | 4.67 | 3.35 | 2.38 | 2.14 | 2.02 |
| Case5-1 | 15.92 | 7.49 | 4.69 | 3.37 | 2.40 | 2.15 | 2.03 |
| Case5-2 | 15.92 | 7.49 | 4.69 | 3.37 | 2.40 | 2.15 | 2.03 |
| Case5-3 | 15.92 | 7.49 | 4.69 | 3.37 | 2.40 | 2.15 | 2.03 |
| Case5-4 | 15.92 | 7.49 | 4.70 | 3.38 | 2.40 | 2.15 | 2.03 |
| Case3 | 15.92 | 7.51 | 4.76 | 3.46 | 2.45 | 2.15 | 2.03 |

(b)1996

| Case | Chainat | Ang Thong | Ayuttha ya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge |
|---|---|---|---|---|---|---|---|
| | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 |
| WOP* | 16.31 | 7.84 | 4.96 | 3.70 | 2.74 | 2.37 | 2.21 |
| Case5-1 | 16.31 | 7.86 | 5.00 | 3.73 | 2.77 | 2.38 | 2.23 |
| Case5-2 | 16.31 | 7.86 | 5.00 | 3.73 | 2.77 | 2.39 | 2.23 |
| Case5-3 | 16.31 | 7.87 | 5.01 | 3.73 | 2.78 | 2.39 | 2.23 |
| Case5-4 | 16.31 | 7.91 | 5.05 | 3.77 | 2.80 | 2.40 | 2.24 |

**(2) Simulated Maximum Discharge**

(a)1957 ( $m^3/s$ )

| Case | Chainat | Ang Thong | Ayuttha ya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|
| | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| WOP* | 3,000 | 2,230 | 1,280 | 3,440 | 3,740 | 3,800 | 3,840 | 940 |
| Case5-1 | 3,000 | 2,240 | 1,270 | 3,460 | 3,760 | 3,810 | 3,850 | 940 |
| Case5-2 | 3,000 | 2,240 | 1,270 | 3,460 | 3,760 | 3,810 | 3,850 | 940 |
| Case5-3 | 3,000 | 2,240 | 1,270 | 3,460 | 3,760 | 3,810 | 3,850 | 940 |
| Case5-4 | 3,000 | 2,240 | 1,270 | 3,470 | 3,760 | 3,820 | 3,850 | 940 |
| Case3 | 3,000 | 2,230 | 1,290 | 3,550 | 3,840 | 3,890 | 3,930 | 940 |

(b)1996

| Case | Chainat | Ang Thong | Ayuttha ya | Bang Sai | Pak Kret | Sam Sen | Mem. Bridge | Rama VI Barrage |
|---|---|---|---|---|---|---|---|---|
| | C.13 | C.7A | C.34 | | C.22 | C.12 | C.4 | |
| WOP* | 3,590 | 2,440 | 1,300 | 4,030 | 4,070 | 4,130 | 4,160 | 980 |
| Case5-1 | 3,590 | 2,450 | 1,280 | 4,110 | 4,100 | 4,160 | 4,190 | 980 |
| Case5-2 | 3,590 | 2,450 | 1,280 | 4,110 | 4,100 | 4,160 | 4,190 | 980 |
| Case5-3 | 3,590 | 2,450 | 1,280 | 4,120 | 4,110 | 4,160 | 4,190 | 980 |
| Case5-4 | 3,590 | 2,450 | 1,270 | 4,200 | 4,130 | 4,190 | 4,220 | 980 |

**(3) Simulated Inundation Volume**

(a) 1957 ( mil. $m^3$ )

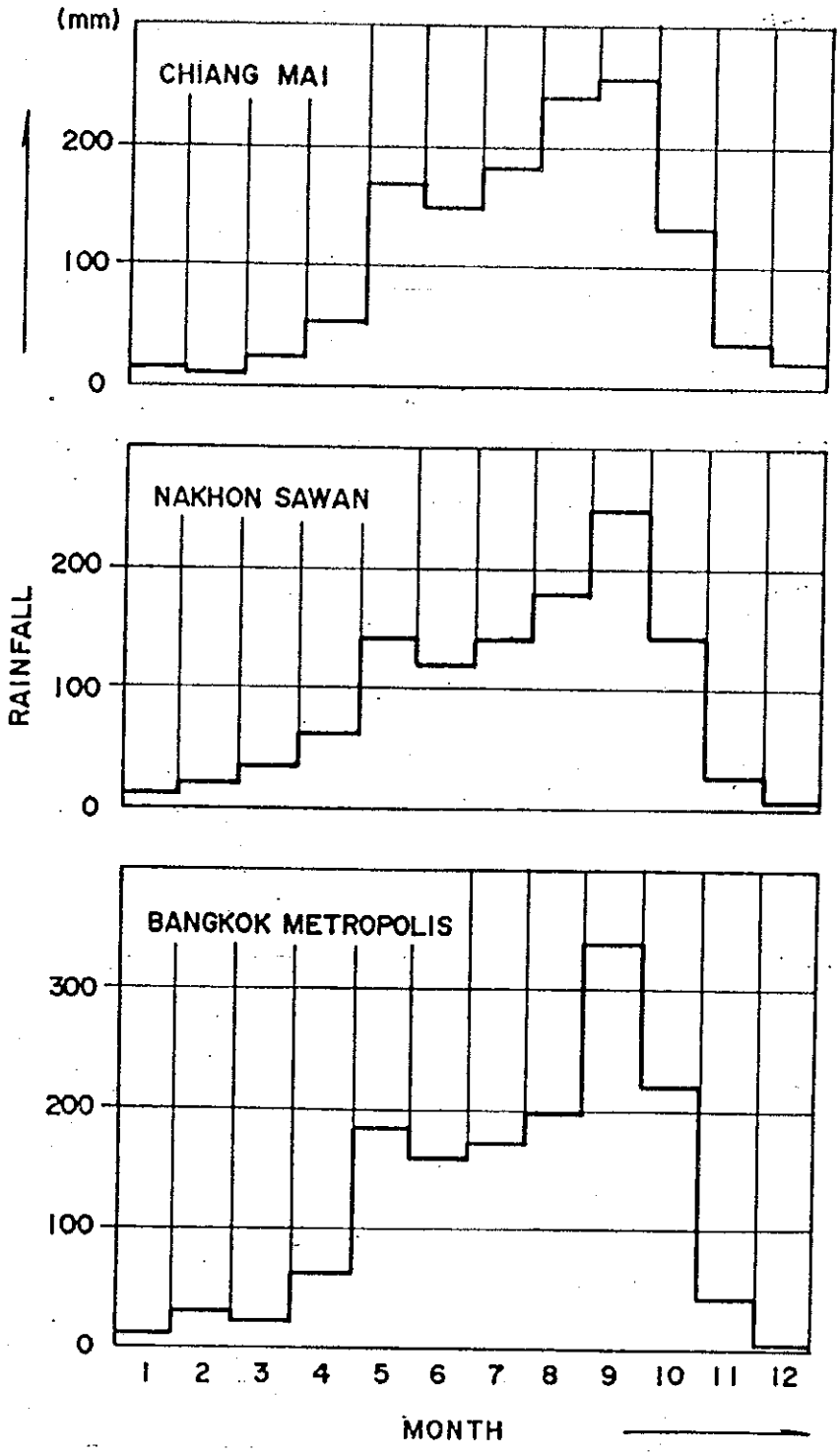
| Case | Area-1 | Area-2 | Area-3 | Area-4 | Area-5 | Area-6 | Area-7 | Area-8 | Total |
|---|---|---|---|---|---|---|---|---|---|
| WOP* | 187 | 674 | 30 | 114 | 137 | 225 | 87 | 275 | 1,729 |
| Case5-1 | 111 | 677 | 30 | 136 | 138 | 243 | 88 | 286 | 1,708 |
| Case5-2 | 111 | 623 | 30 | 143 | 141 | 249 | 90 | 287 | 1,674 |
| Csae5-3 | 111 | 623 | 30 | 143 | 141 | 249 | 90 | 287 | 1,674 |
| Csae5-4 | 111 | 623 | 30 | 102 | 154 | 283 | 101 | 290 | 1,695 |
| Case3 | 112 | 674 | 30 | 104 | 90 | 172 | 82 | 209 | 1,472 |

(b) 1996 ( mil. $m^3$ )

| Case | Area-1 | Area-2 | Area-3 | Area-4 | Area-5 | Area-6 | Area-7 | Area-8 | Total |
|---|---|---|---|---|---|---|---|---|---|
| WOP* | 209 | 316 | 45 | 95 | 73 | 323 | 96 | 134 | 1,291 |
| Case5-1 | 22 | 321 | 80 | 228 | 74 | 329 | 98 | 136 | 1,288 |
| Case5-2 | 22 | 266 | 92 | 245 | 74 | 338 | 98 | 144 | 1,280 |
| Csae5-3 | 22 | 266 | 28 | 263 | 74 | 348 | 99 | 152 | 1,251 |
| Csae5-4 | 22 | 267 | 28 | 46 | 102 | 391 | 142 | 228 | 1,226 |

* : Witout Project

# *Figures*

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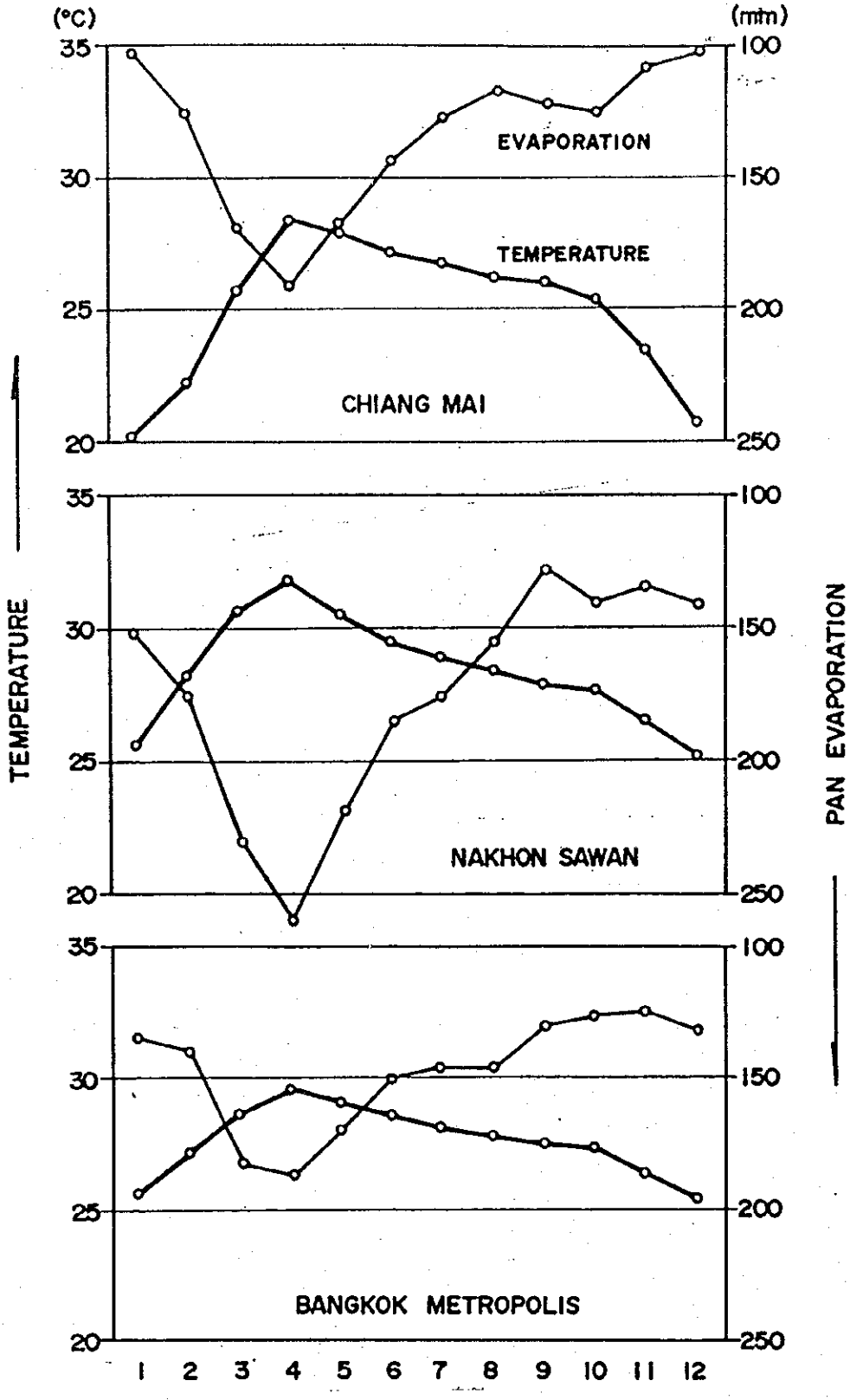
|---|---|
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 1.1.1 MONTHLY VARIATION OF AVERAGE RAINFALL (1951 - 1980) |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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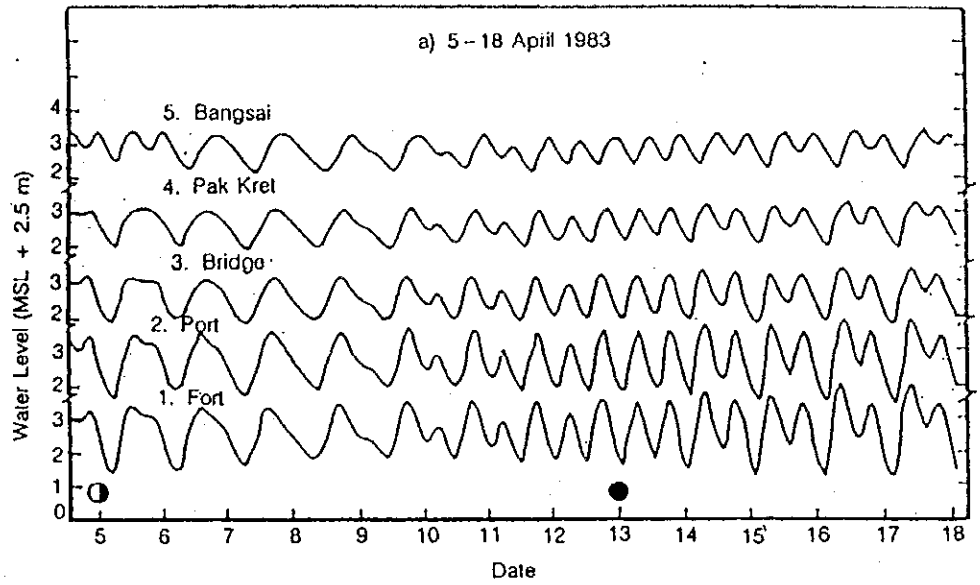
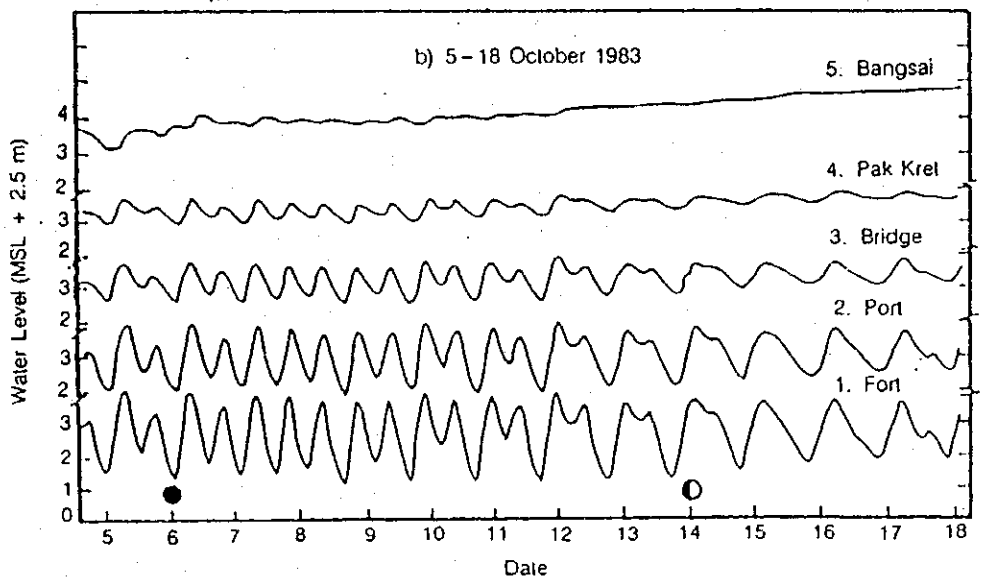
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 1.1.2 MONTHLY VARIATION OF AVERAGE TEMPERATURE AND EVAPORATION (1951 - 1980) |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

## DRY SEASON




## RAINY SEASON




Data Source: "Lecture Note on Tidal hydraulics and Pollution Analysis in Estuaries by Prof. Suphat Vongvisessomjai, AIT"

| | |
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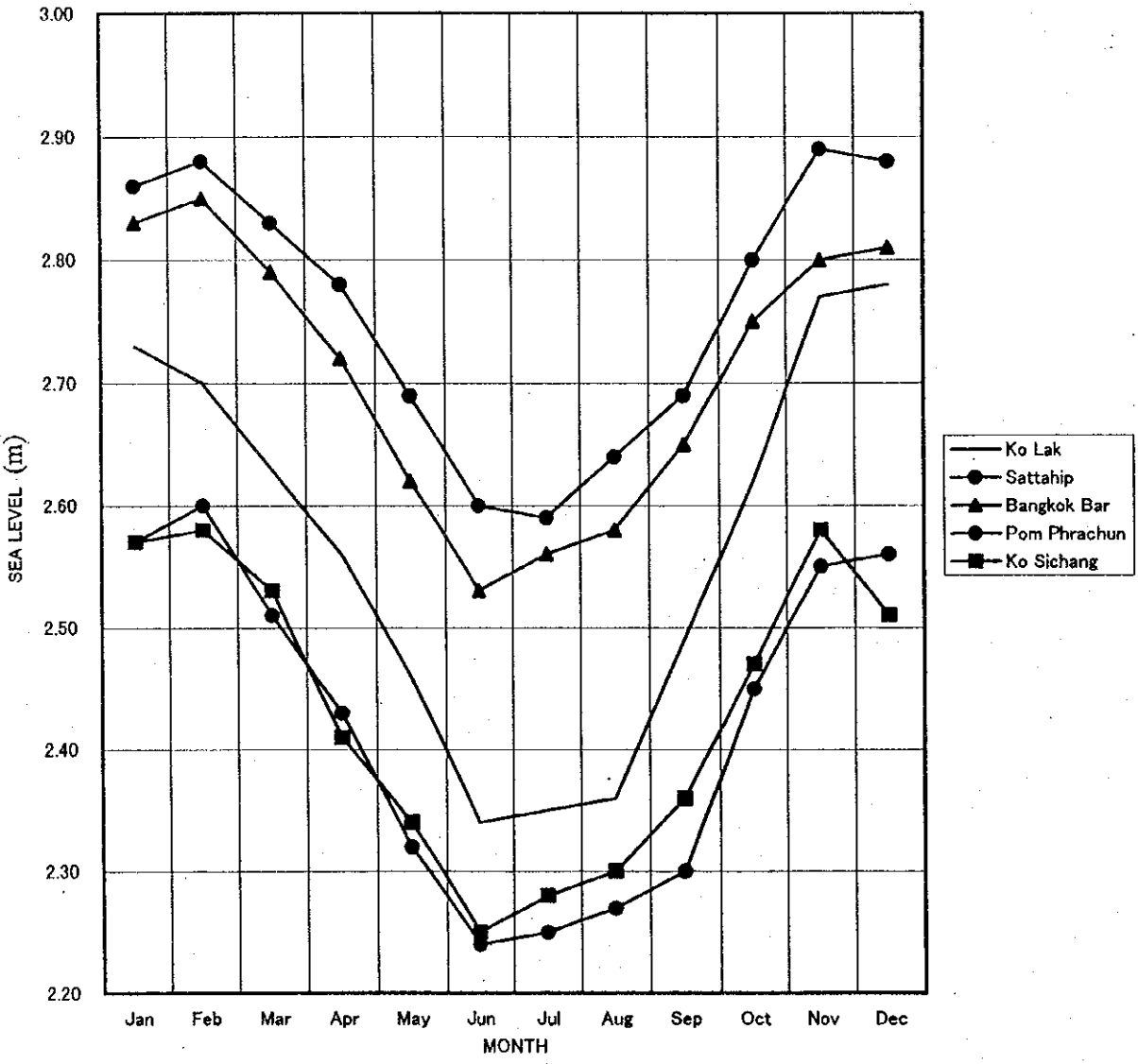
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.2.1 OBSERVED TIDAL WAVE IN LOWER CHAO PHRAYA RIVER |




Data Source: Hydrographic Dept., Royal Thai Navy

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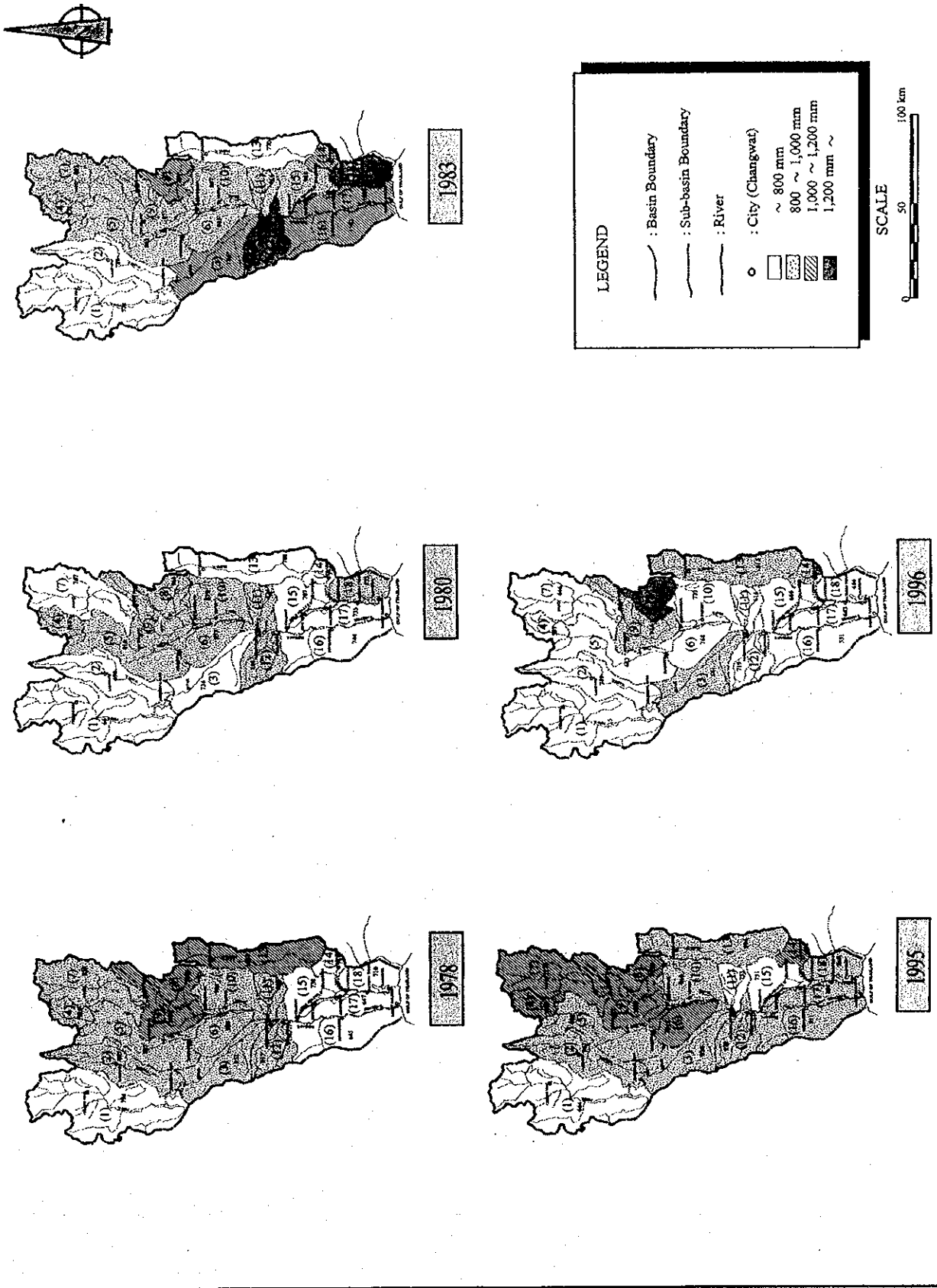
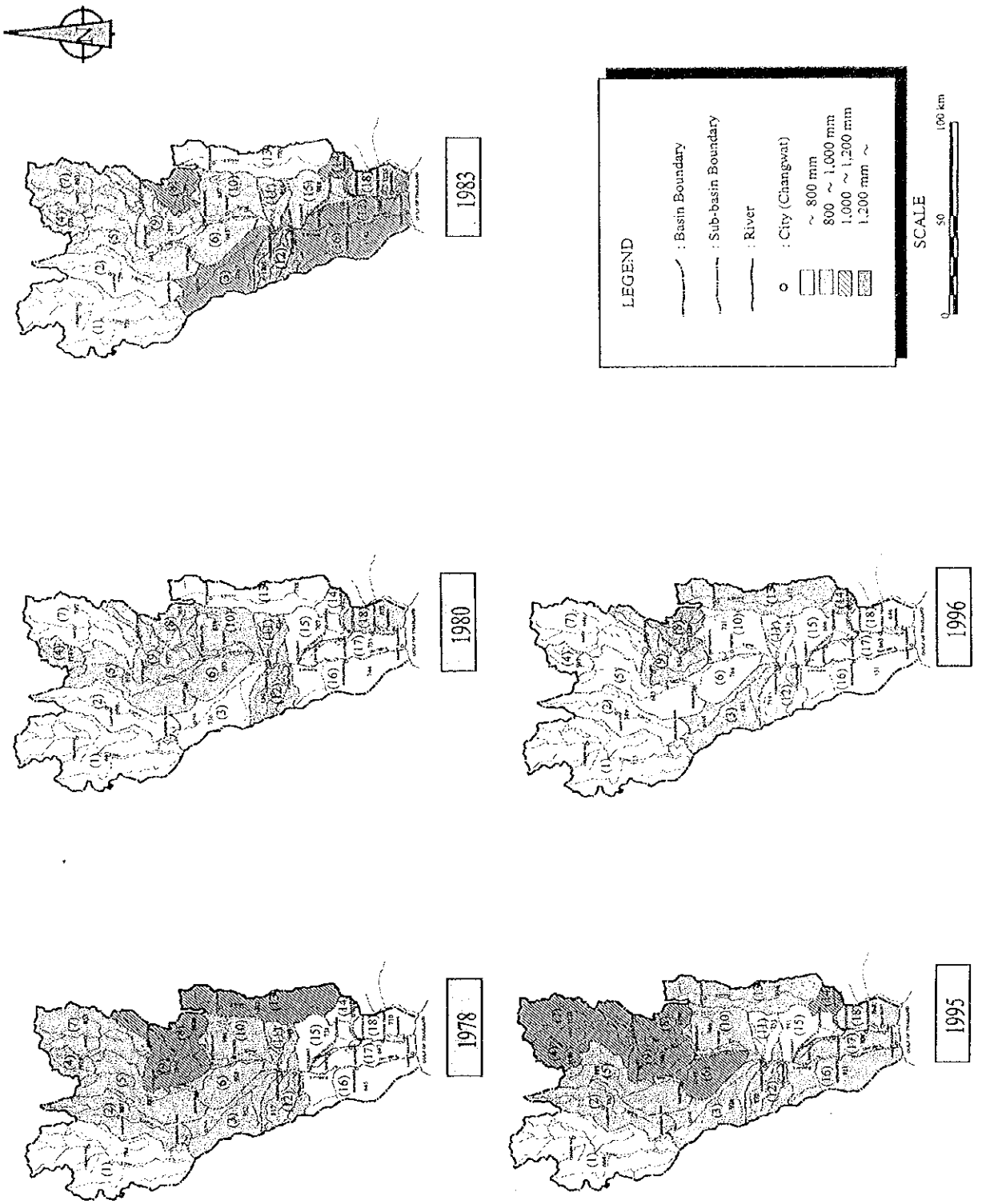
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.2.2 SEASONAL VARIATION OF SEA LEVEL |




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

CTI ENGINEERING CO., LTD AND INA CORPORATION

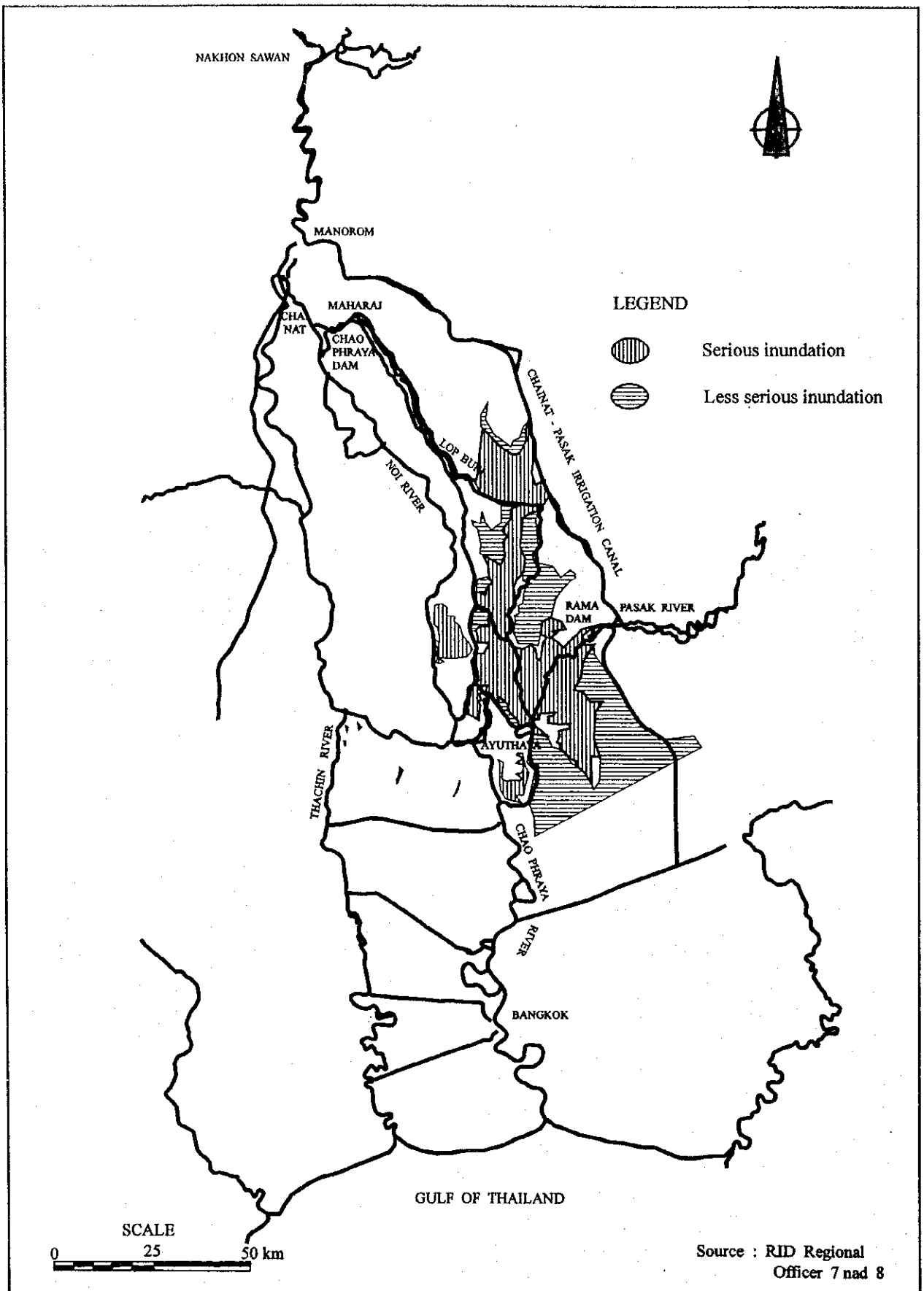
Fig. 1.3.1
SPATIAL DISTRIBUTION OF JULY - DECEMBER RAINFALL




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

CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 1.3.1
SPATIAL DISTRIBUTION OF JULY - DECEMBER RAINFALL

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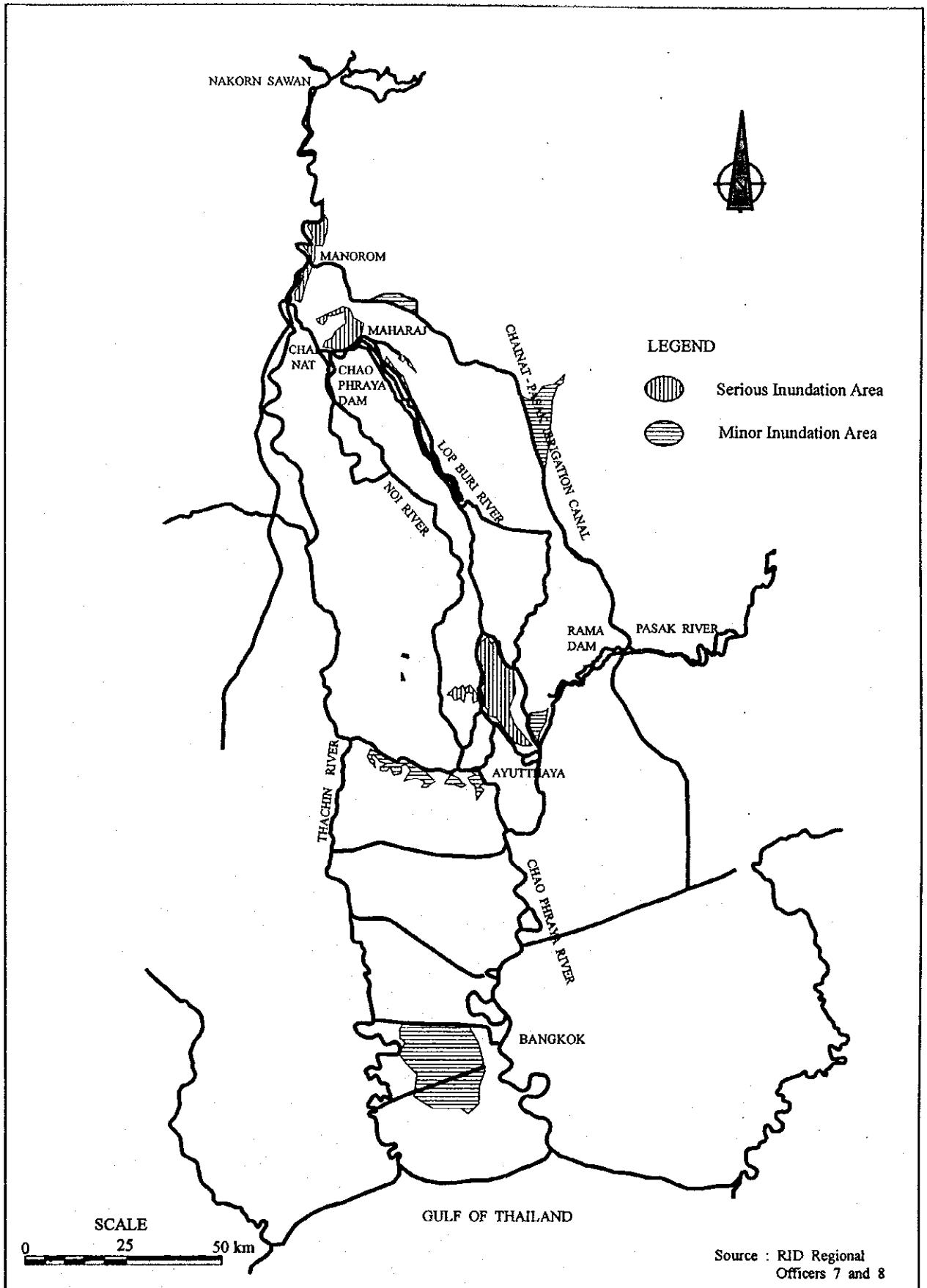
|---|---|
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 1.3.2(1/5) Inundation Map of Recent Flood (1978) |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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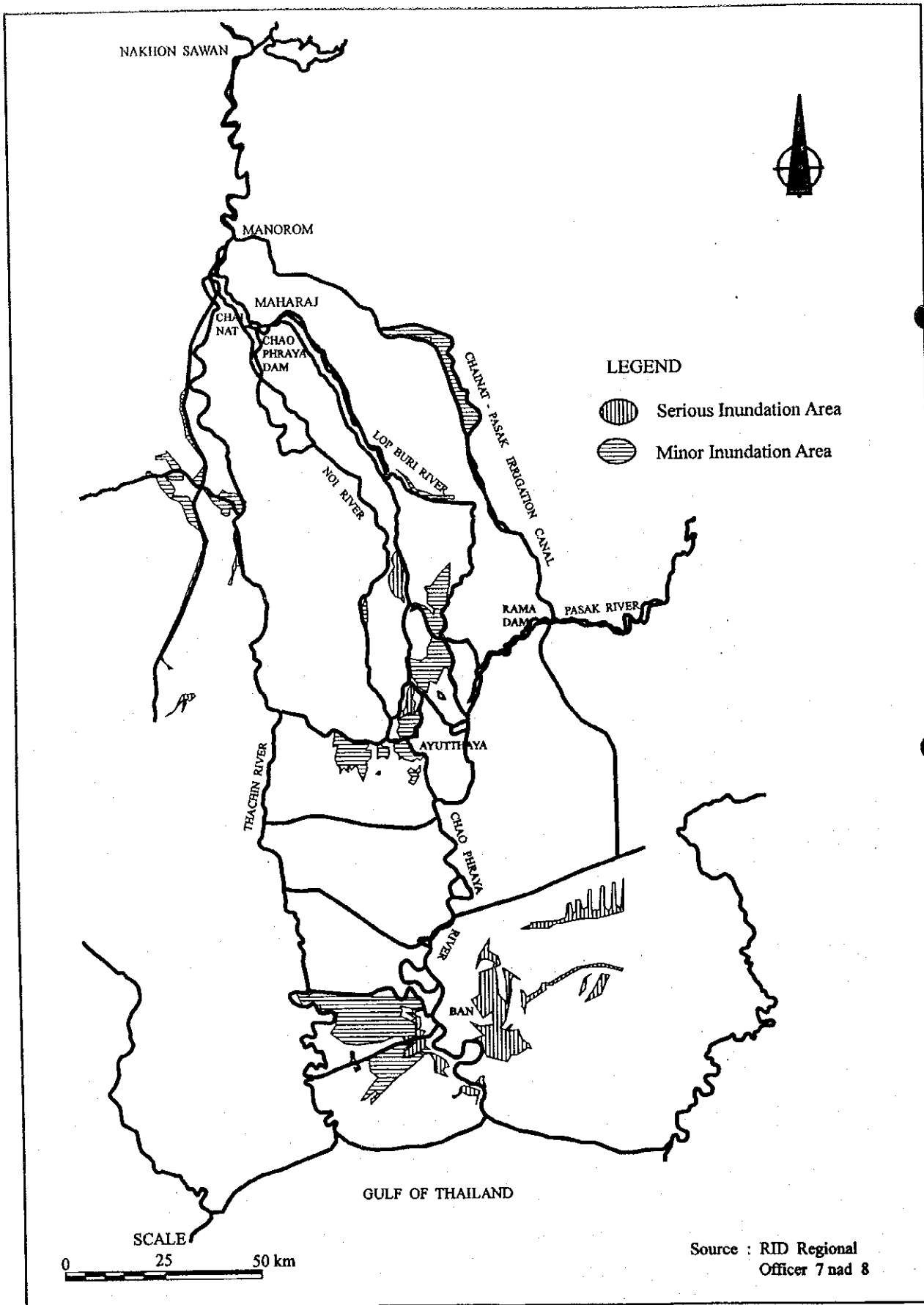
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 1.3.2(2/5) |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | Inundation Map of Recent Flood (1980) |

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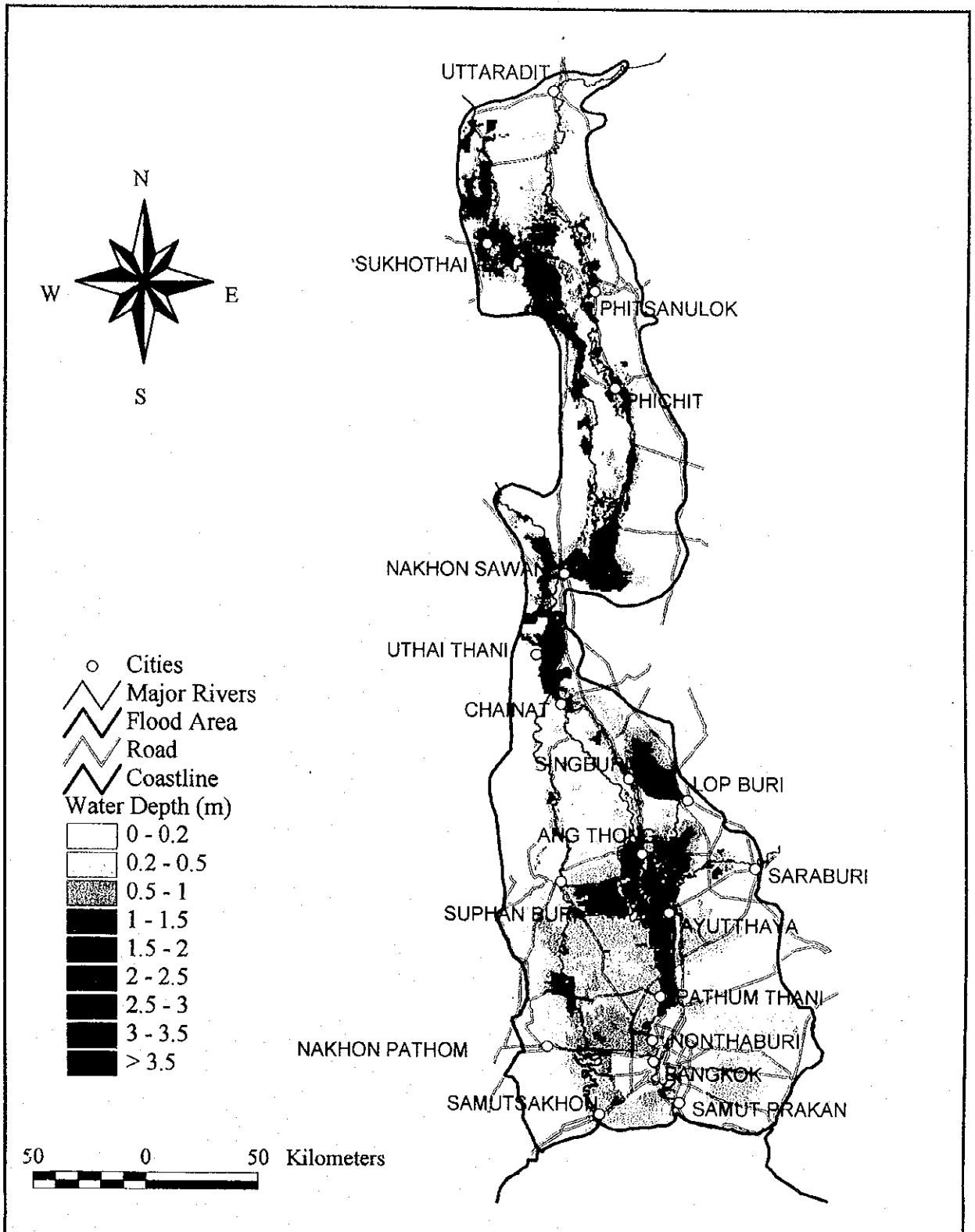
|---|---|
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 1.3.2(3/5) Inundation Map of Recent Flood ( 1983 ) |
| CTI ENGINEERING CO., LTD. AND INA CORPORATION | |

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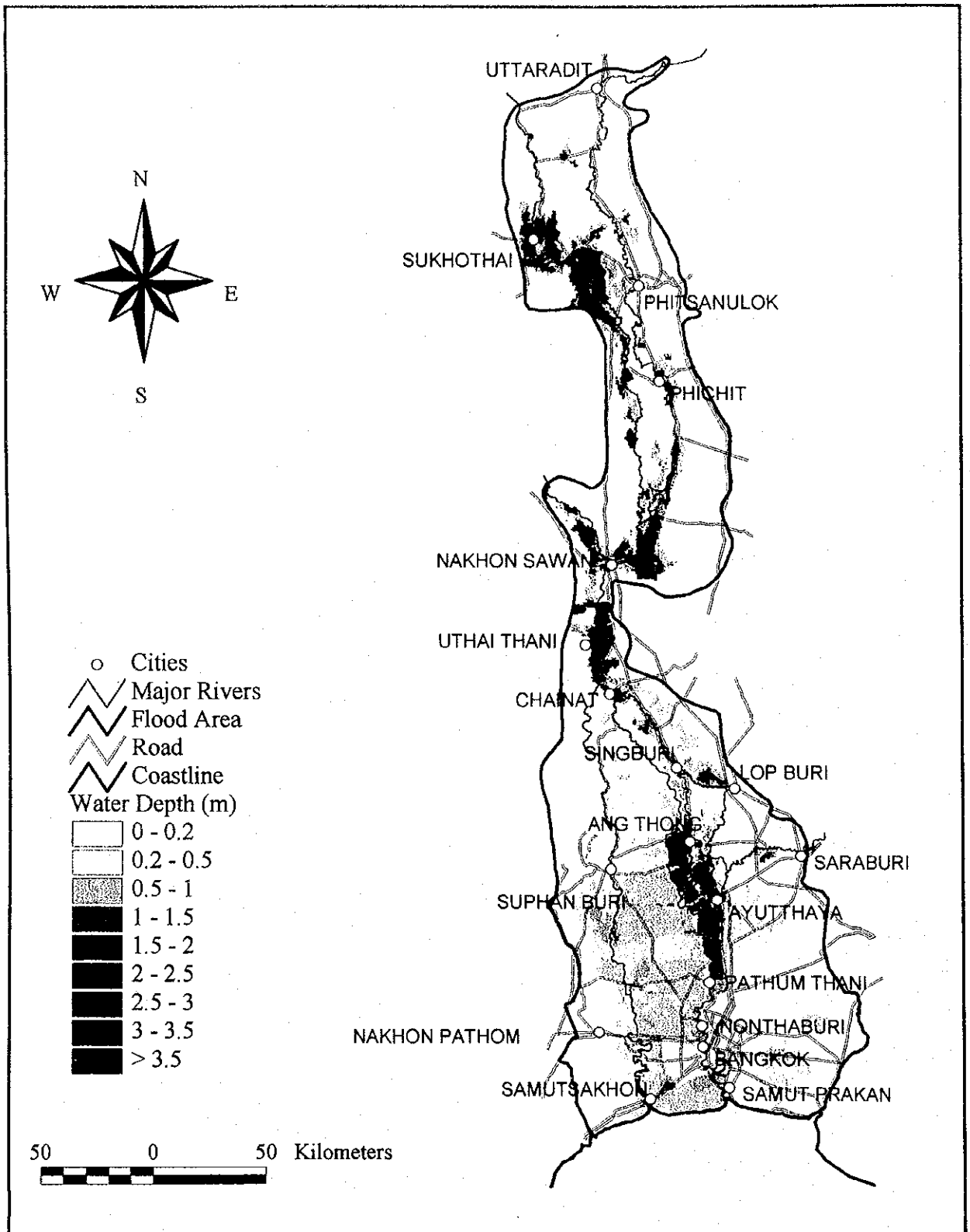
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN | Fig. 1.3.2(4/5) |
| CTI ENGINEERING CO LTD., & INA CORPORATION | INUNDATION MAP OF RECENT FLOOD (1995) |

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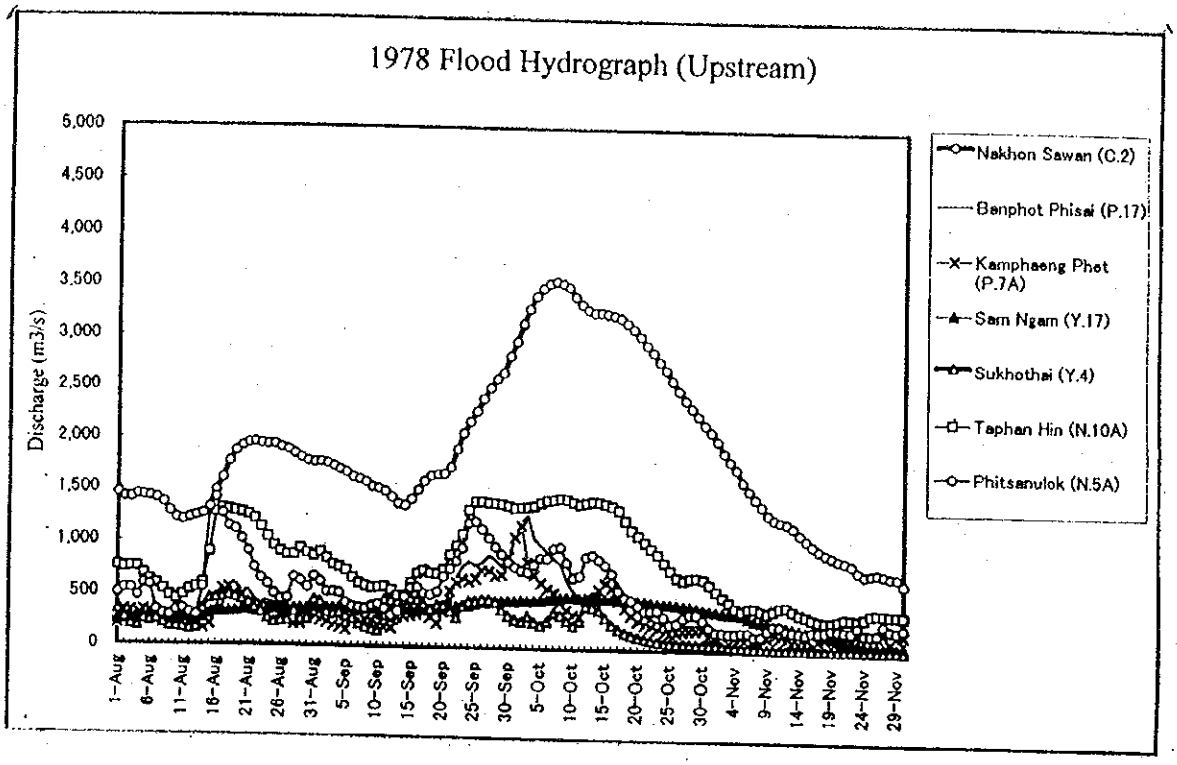
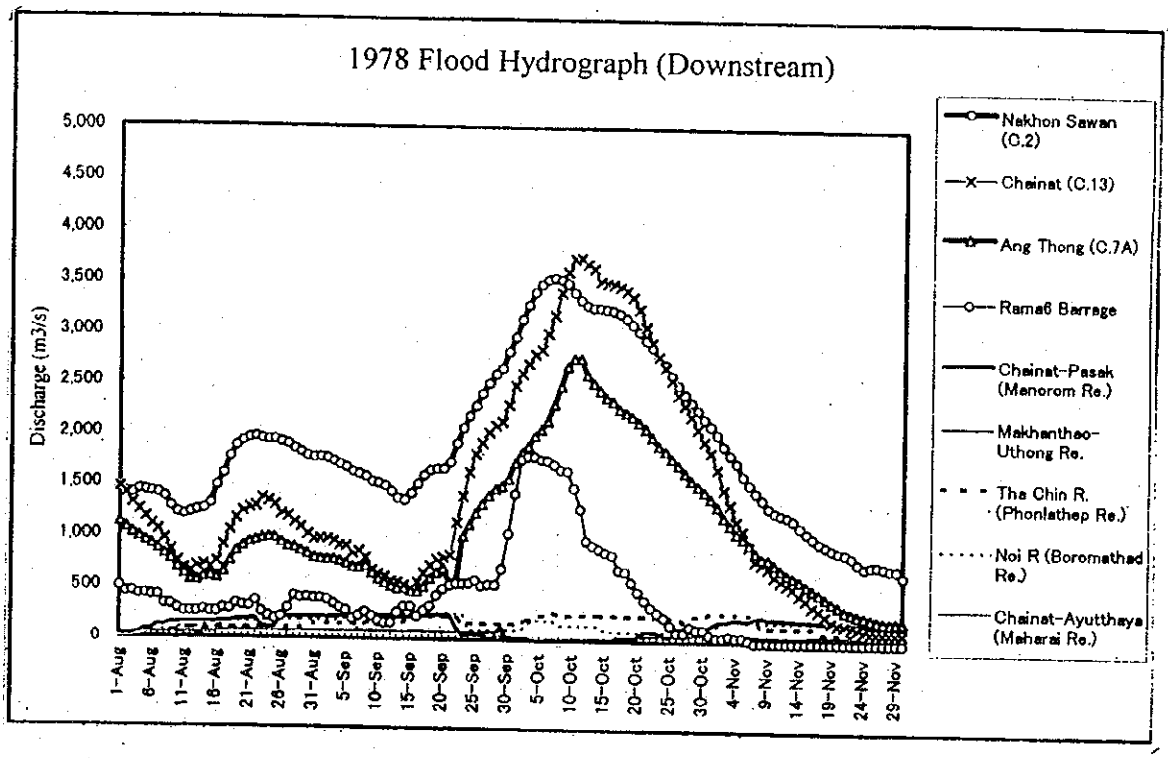
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN | Fig. 1.3.2(5/5) |
| CTI ENGINEERING CO LTD., & INA CORPORATION | INUNDATION MAP OF RECENT FLOOD (1996) |

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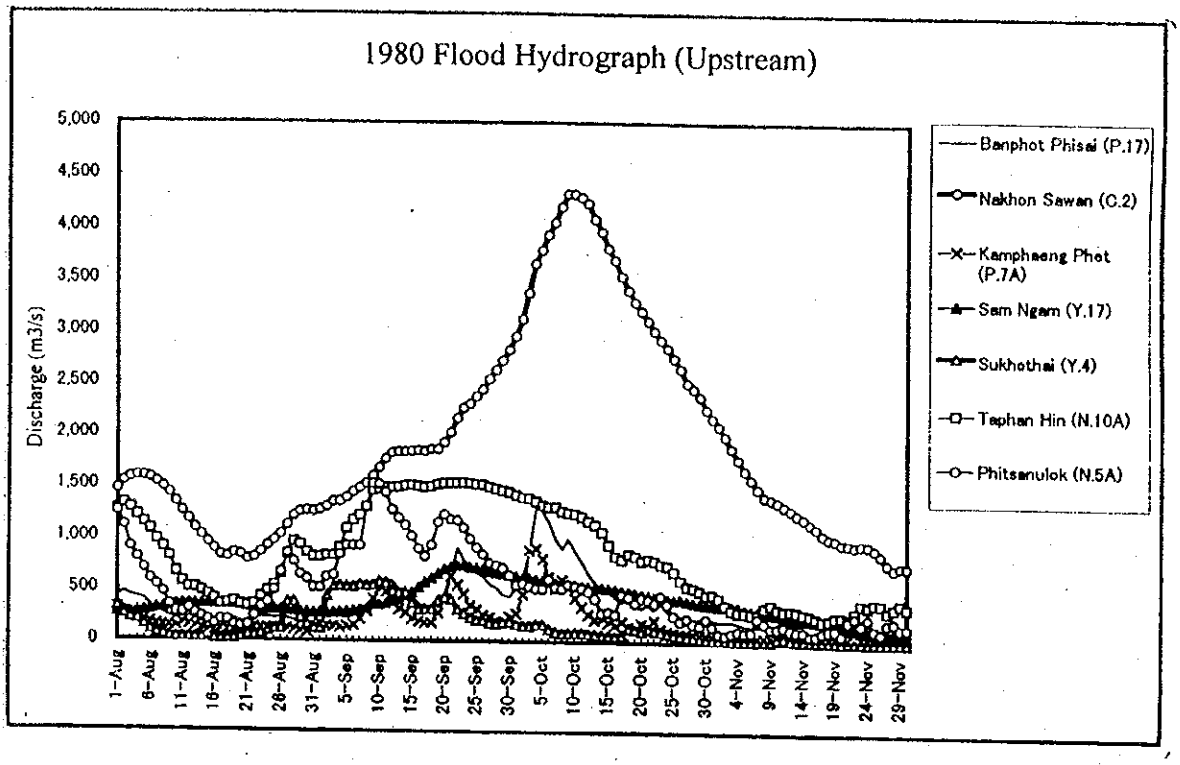
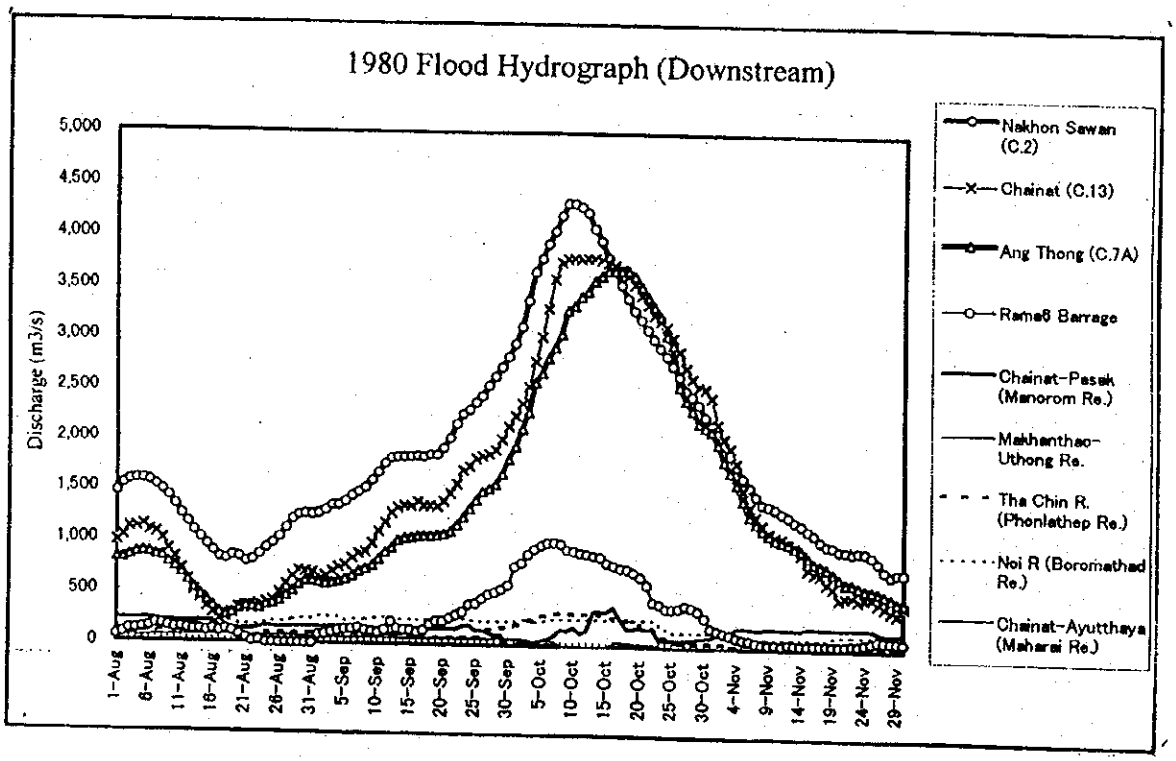
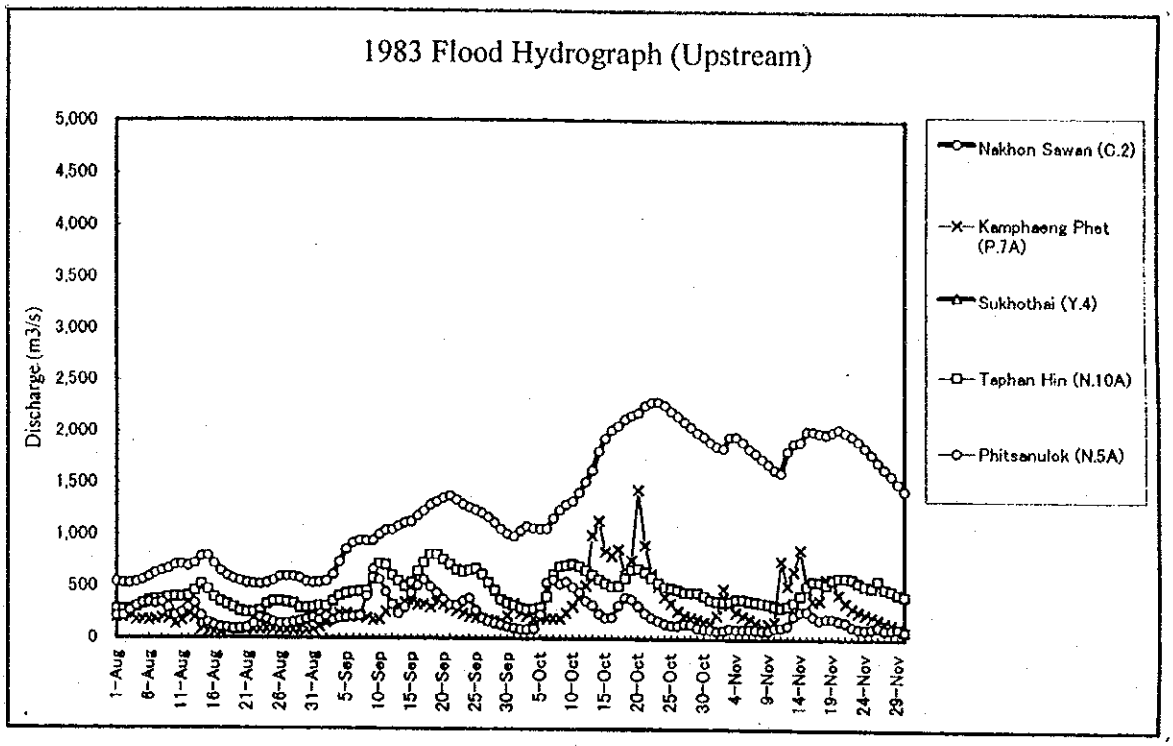
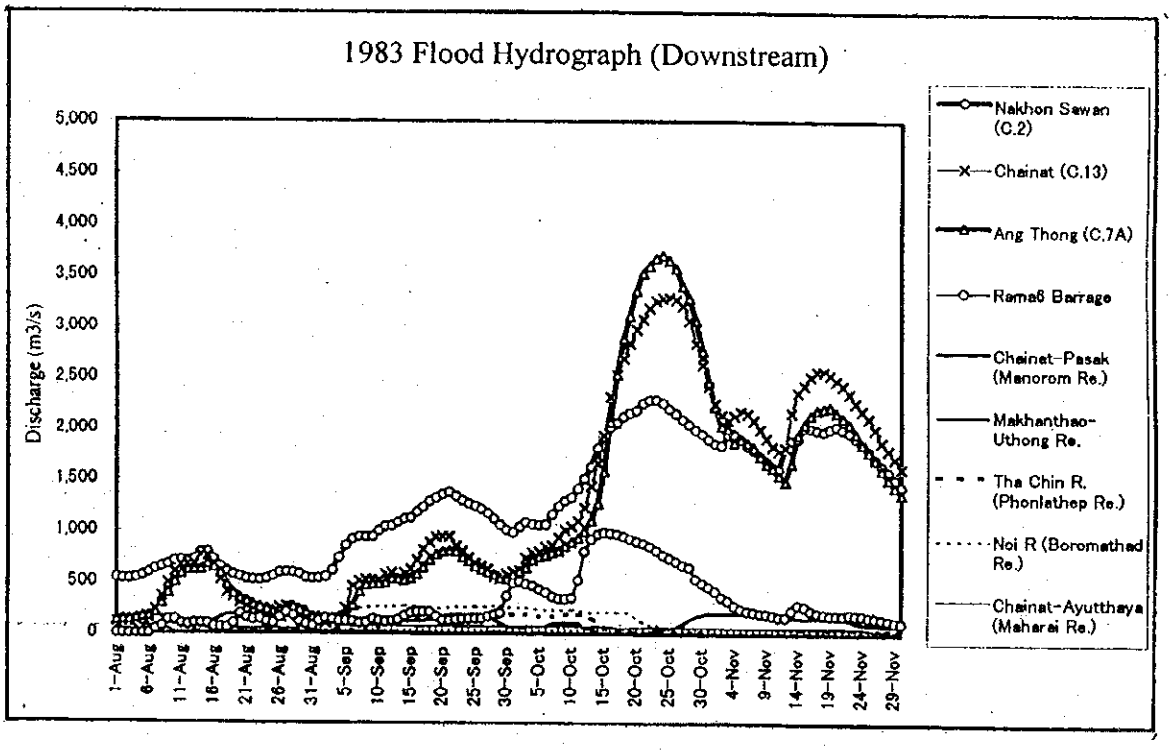
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.3.3(1/5) FLOOD HYDROGRAPHS FOR RECENT FLOOD (1978) |




| | |
|---|---|
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.3.3(2/5) FLOOD HYDROGRAPHS FOR RECENT FLOOD (1980) |

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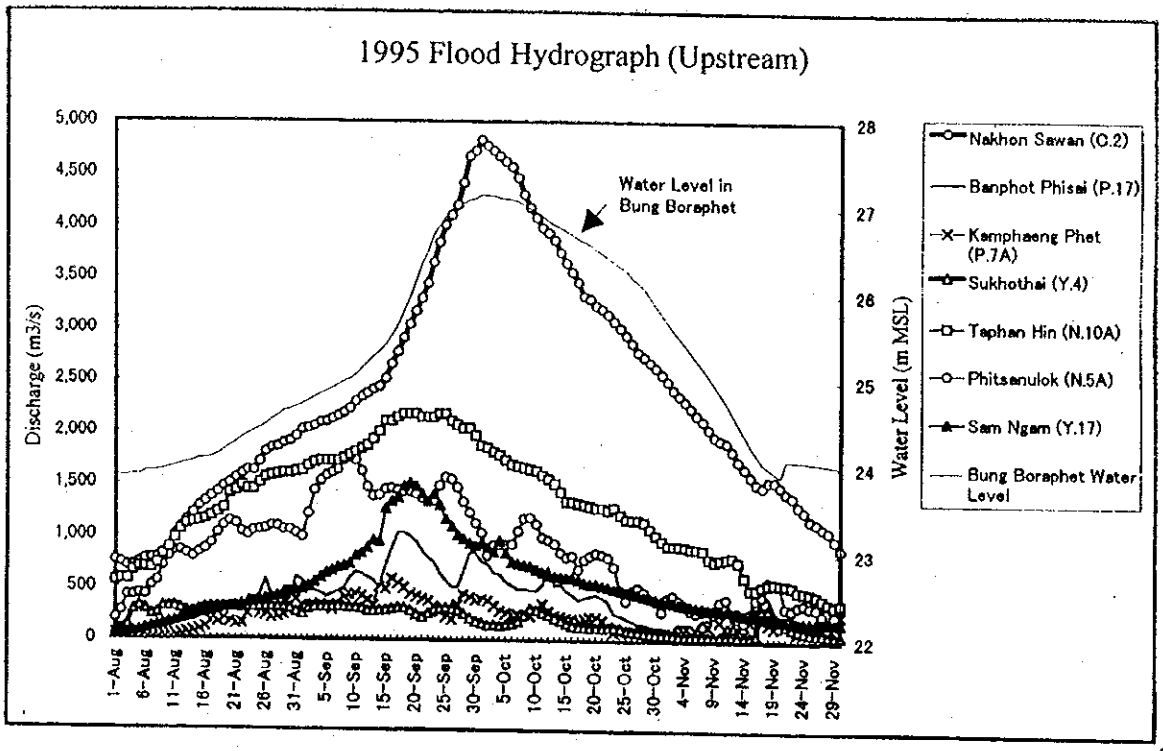
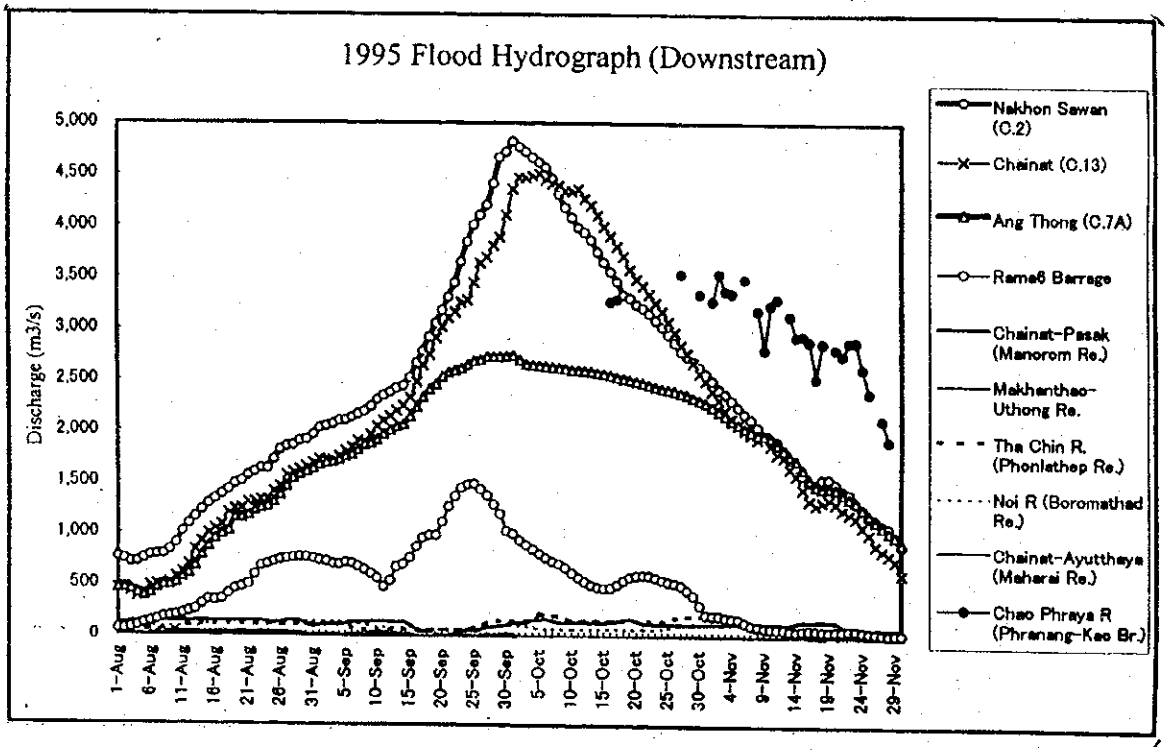
|---|---|
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.3.3(3/5) FLOOD HYDROGRAPHS FOR RECENT FLOOD (1983) |

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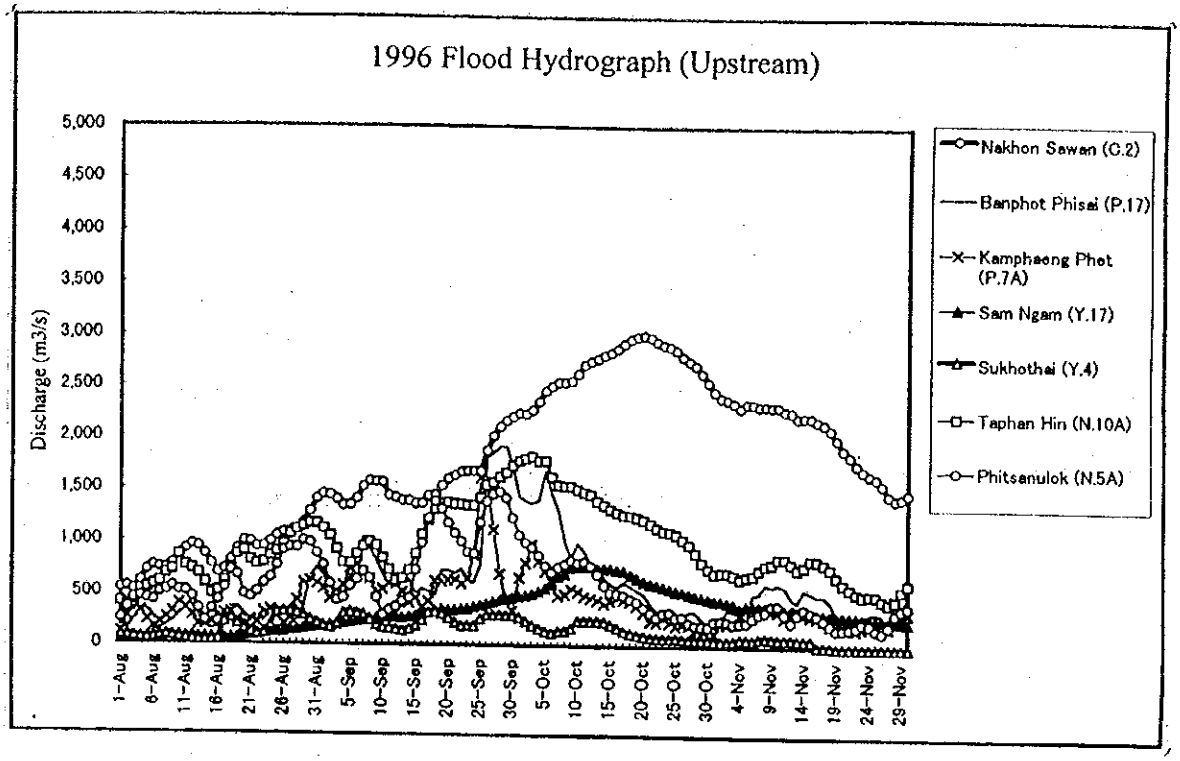
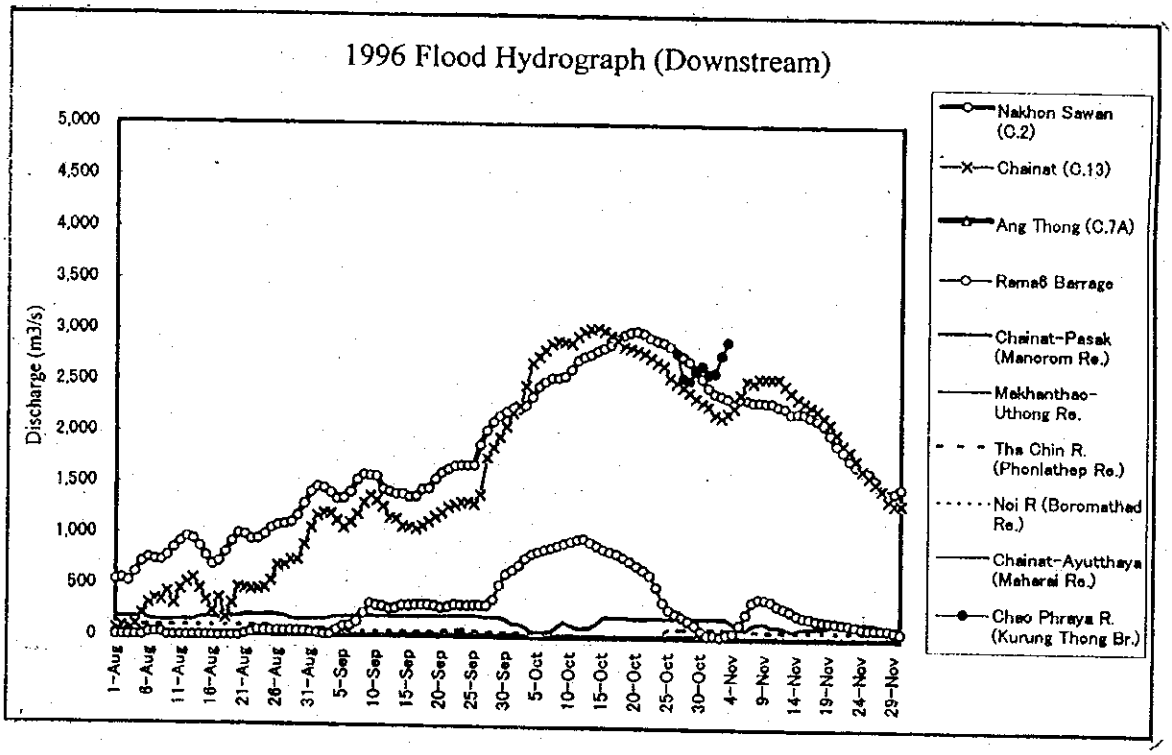
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.3.3(4/5) FLOOD HYDROGRAPHS FOR RECENT FLOOD (1995) |

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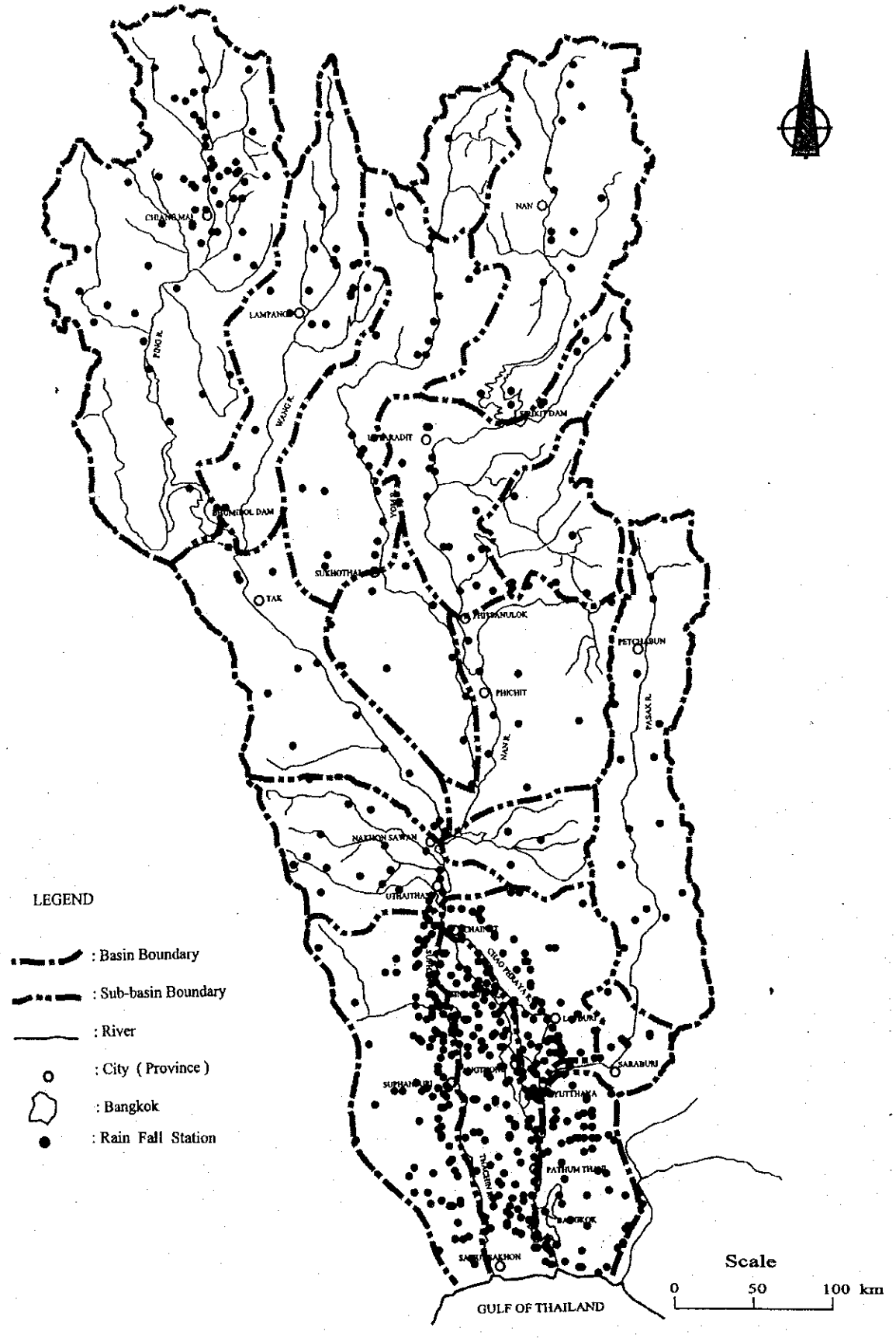
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 1.3.3(5/5) FLOOD HYDROGRAPHS FOR RECENT FLOOD (1996) |

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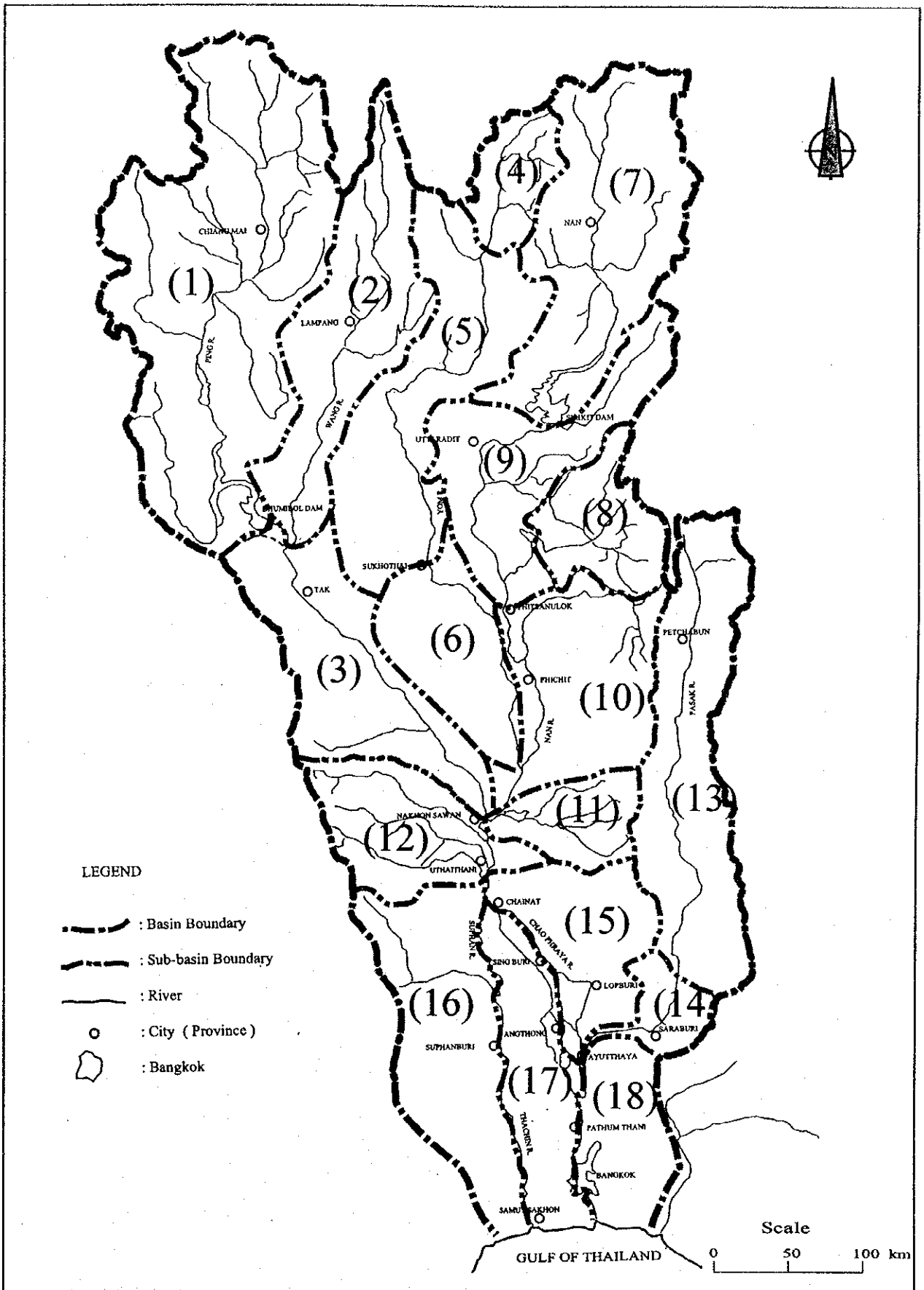
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.1.1 LOCATION OF RAINFALL STATIONS |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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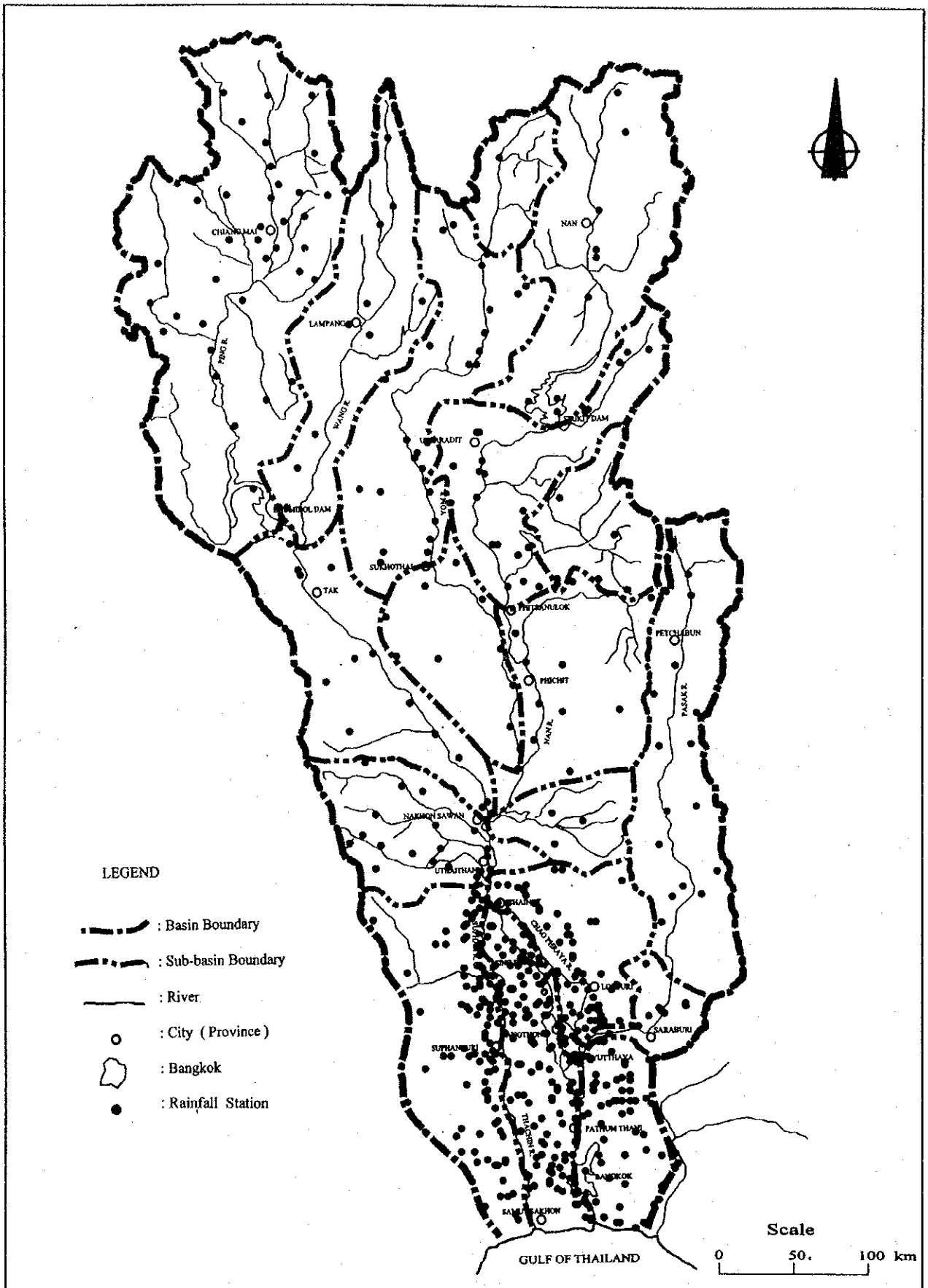
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.1.2 SUB - BASIN DIVISION |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

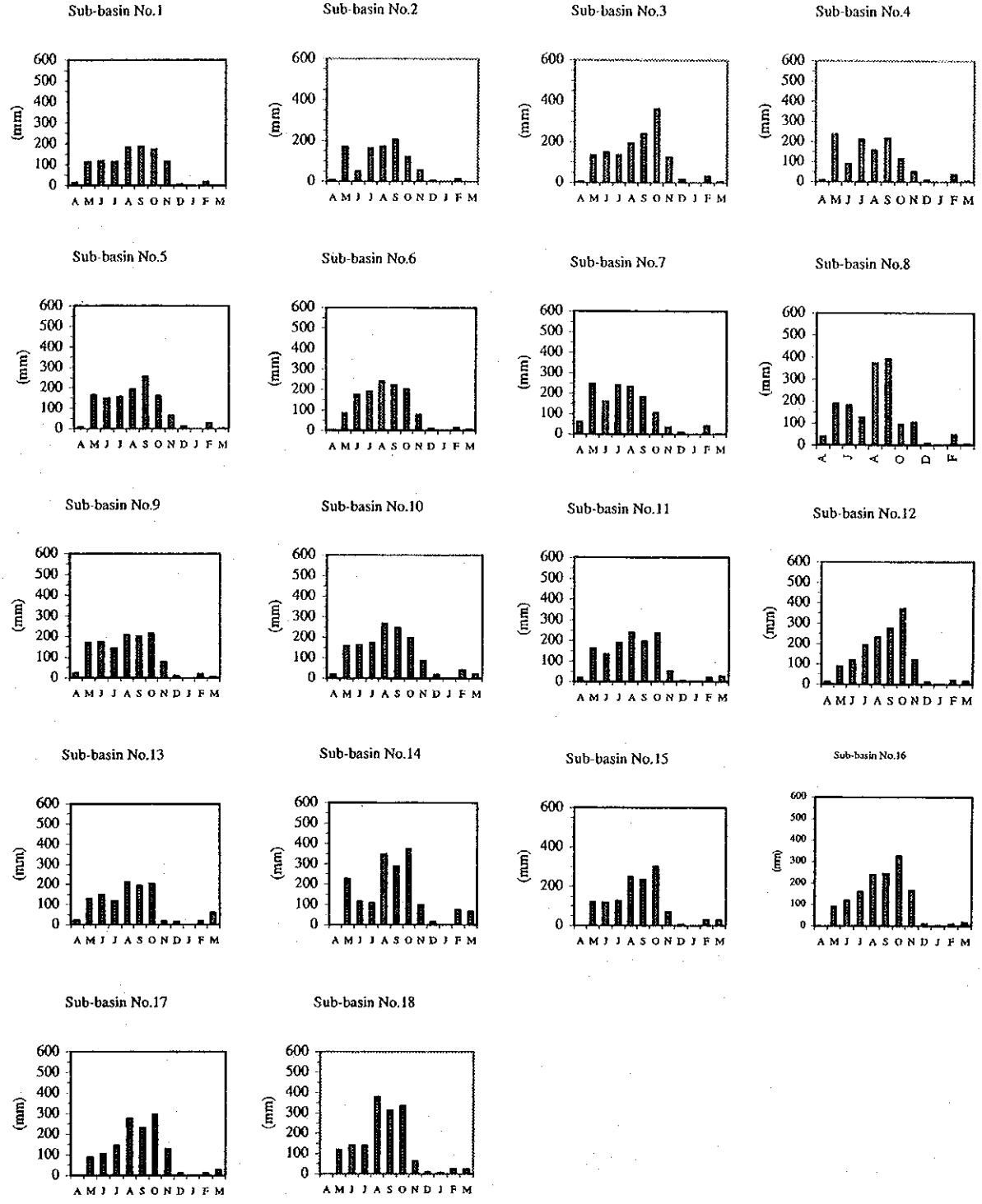



STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN

CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 2.1.3
LOCATION OF RAINFALL STATIONS USED FOR BASIN MEAN RAIN FALL CALCULATION

# 1983

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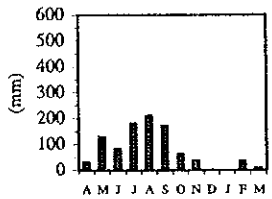
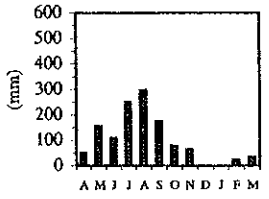
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD & INA CORPORATION | Fig. 2.1.4 (1/3)<br>MONTHLY RAINFALL BY SUB-BASIN OF TARGET FLOODS FOR CALIBRATION |

# 1995

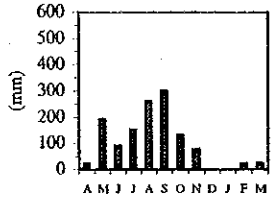
Sub-basin No.1




Sub-basin No.2




Sub-basin No.3

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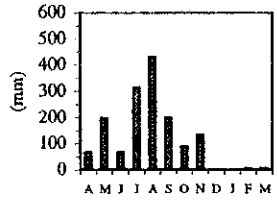


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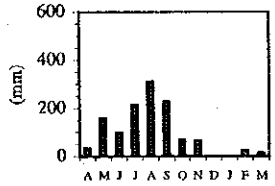
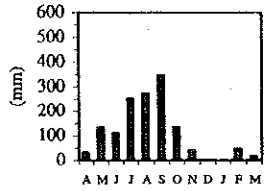
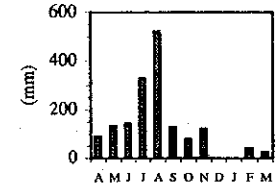


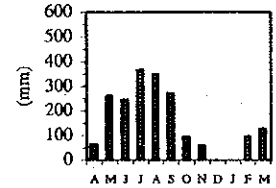

Sub-basin No.6



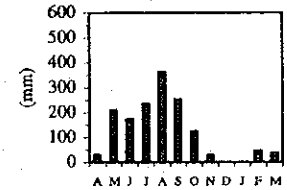

Sub-basin No.7



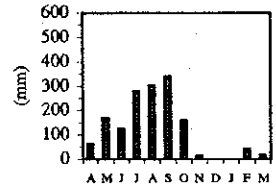

Sub-basin No.8



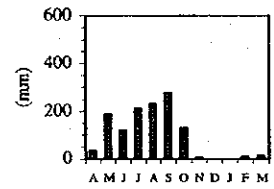

Sub-basin No.9



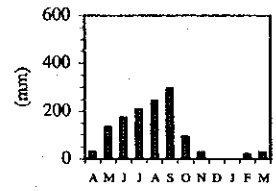

Sub-basin No.10



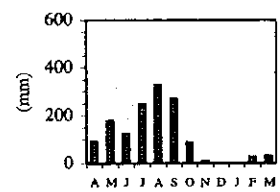

Sub-basin No11



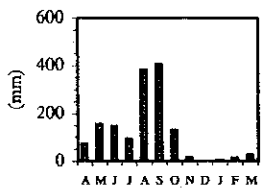

Sub-basin No.12



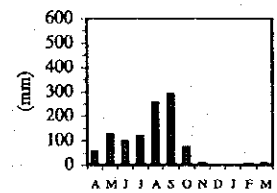

Sub-basin No.13



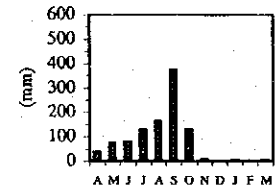

Sub-basin No.14



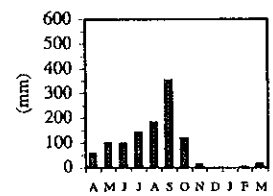

Sub-basin No.15



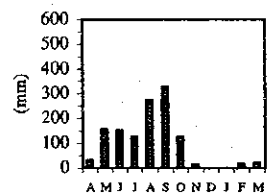

Sub-basin No.16




Sub-basin No.17




Sub-basin No.18

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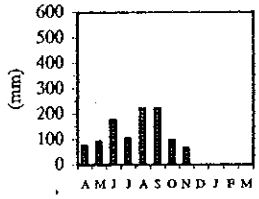
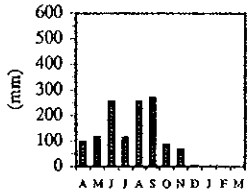
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD & INA CORPORATION | Fig. 2.1.4 (2/3)<br>MONTHLY RAINFALL BY SUB-BASIN OF TARGET FLOOD FOR CALIBRATION |

# 1996

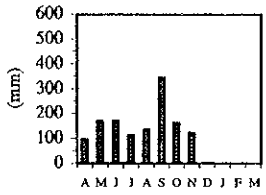
Sub-basin No.1



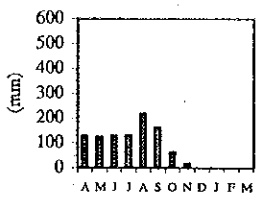

Sub-basin No.2



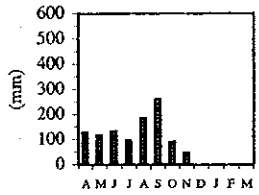

Sub-basin No.3



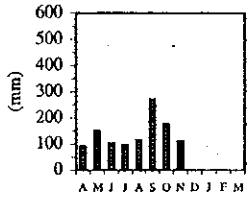

Sub-basin No.4




Sub-basin No.5




Sub-basin No.6

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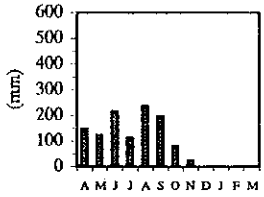
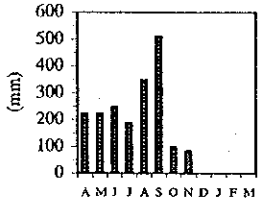
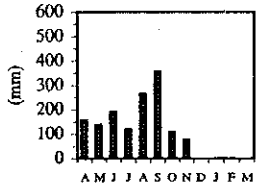


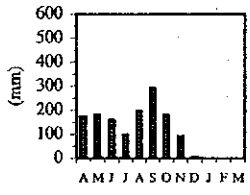

Sub-basin No.8



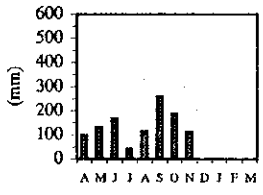

Sub-basin No.9



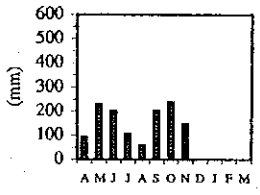

Sub-basin No.10



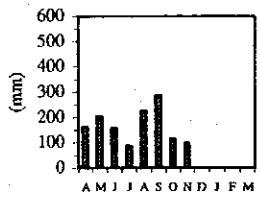

Sub-basin No.11



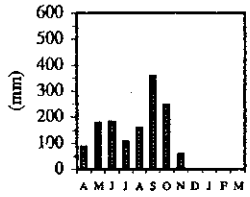

Sub-basin No.12



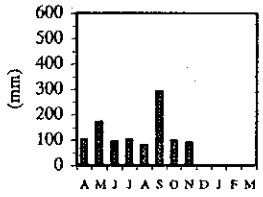

Sub-bassin No.13



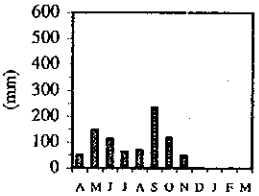

Sub-basin No,14



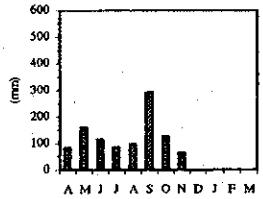

Sub-basin No.15



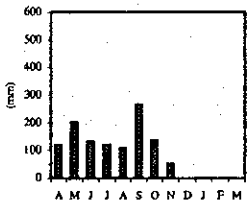

Sub-basin No.16




Sub-basin No.17




Sub-basin No.18

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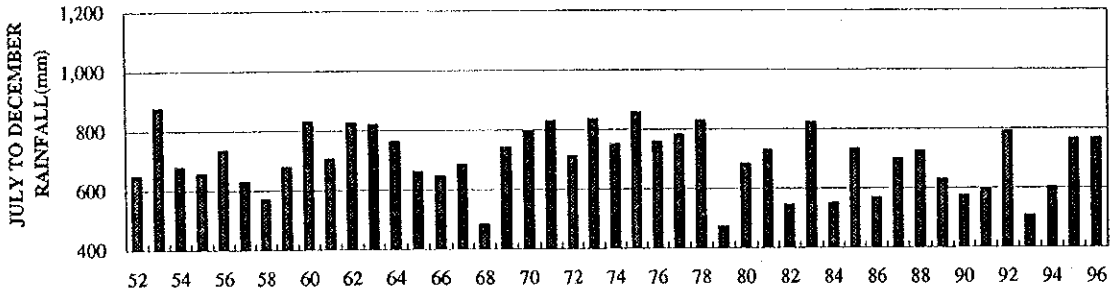
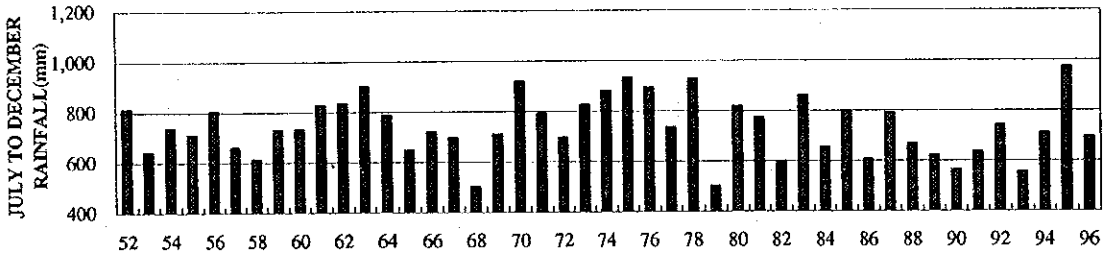
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO. , LTD & INA CORPORATION | Fig. 2.1.4 (3/3)<br>MONTHLY RAINFALL BY SUB-BASIN OF TARGET FLOODS CALIBRATION |

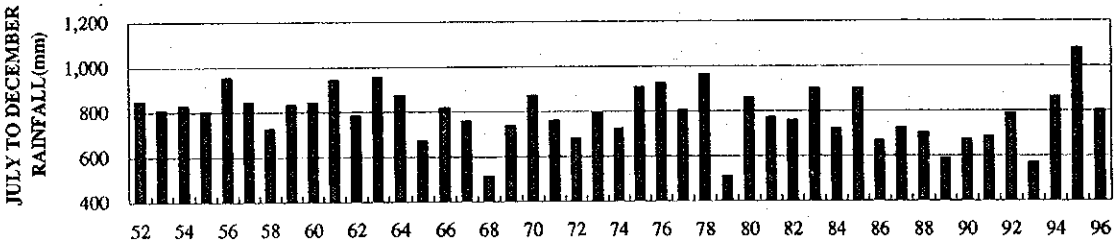
Ping River Basin (Sub-basin 1 to 3)



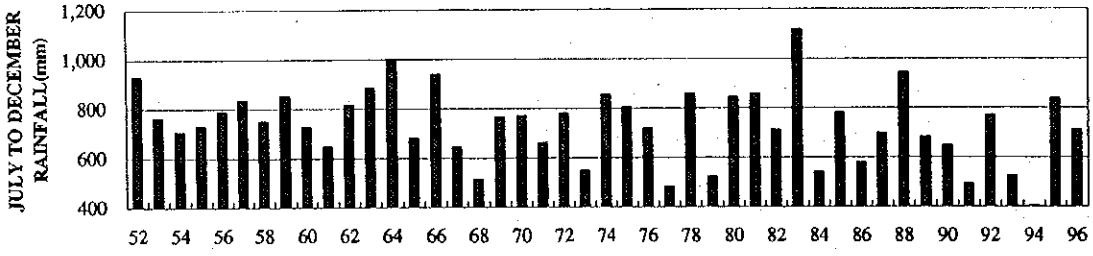

Yom River Basin (Sub-basin 4 to6)




Nan River Basin (Sub-basin 7 to 10)




Nakhon Sawan Area (Sub-basin 11 to 12)

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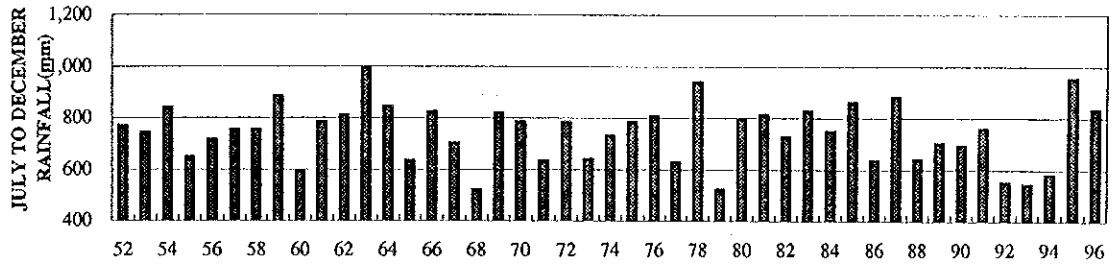
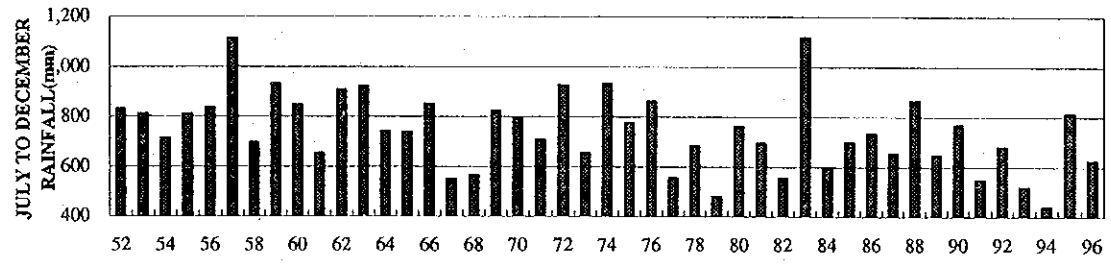
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD & INA CORPORATION | Fig.2.1.5(1/2) JULY TO DECEMBER RAINFALL FOR 45 YEARS FROM 1952 TO 1996 |

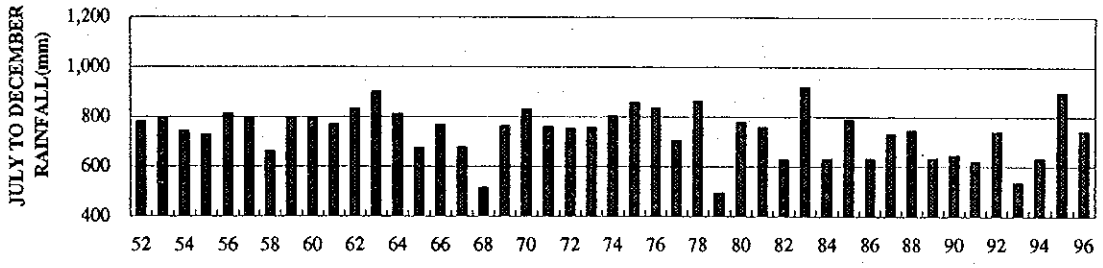
Pasak River Basin (Sub-basin 13 and 14)




Lower Central Plain (Sub-basin 15 to 18)




Entire Basin (Sub-basin 1 to 18)

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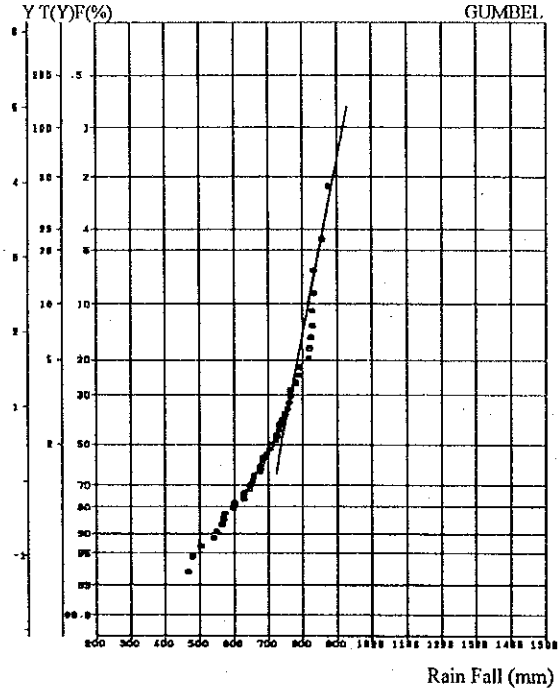
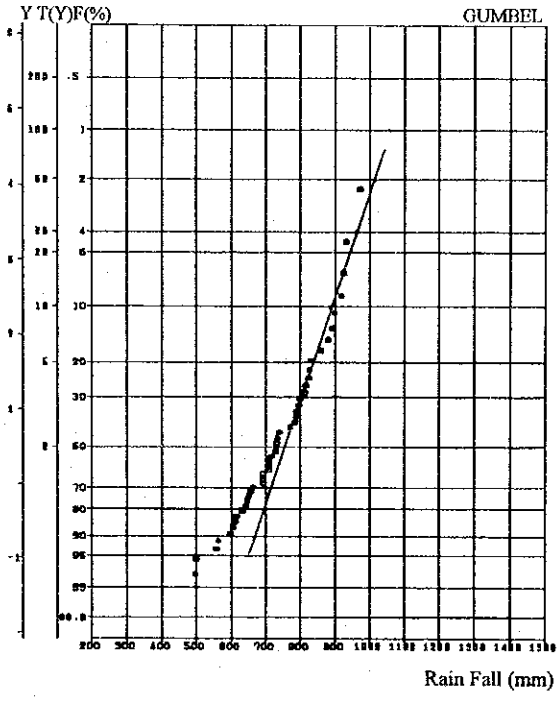
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO. , LTD & INA CORPORATION | Fig. 2.1.5(2/2) JULY TO DECEMBER RAINFALL FOR 45 YEARS FROM 1952 TO 1996 |

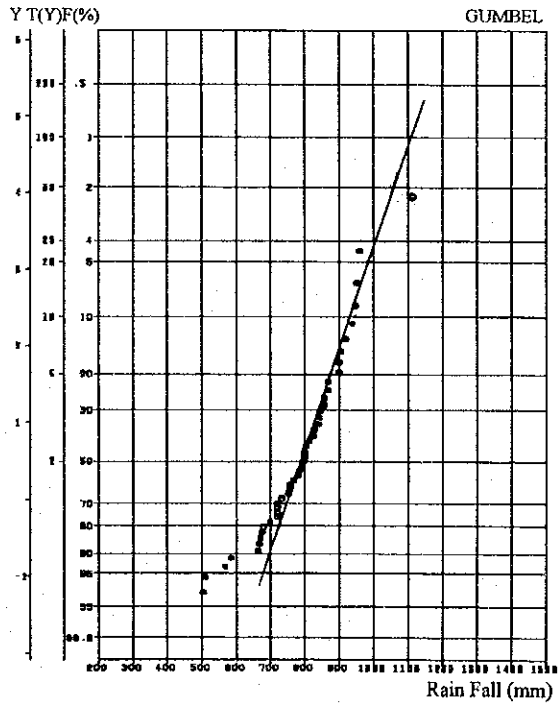
Ping River Basin



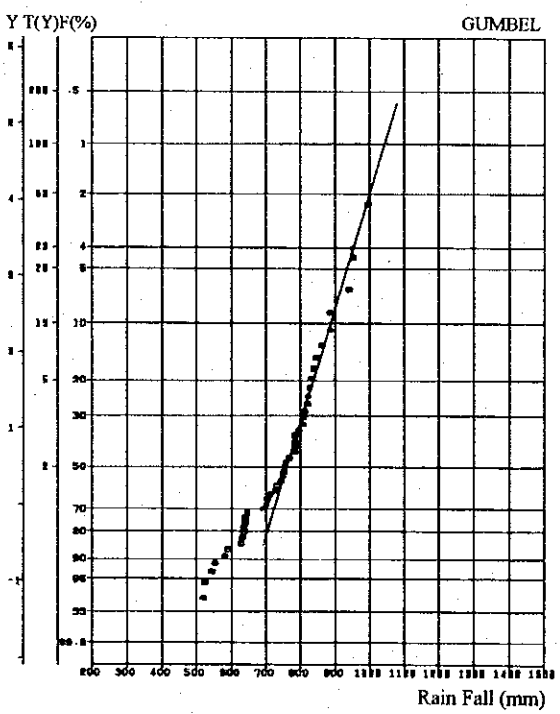

Yom River Basin




Nan River Basin




Pasak River Basin




Data Period : 1952-1996

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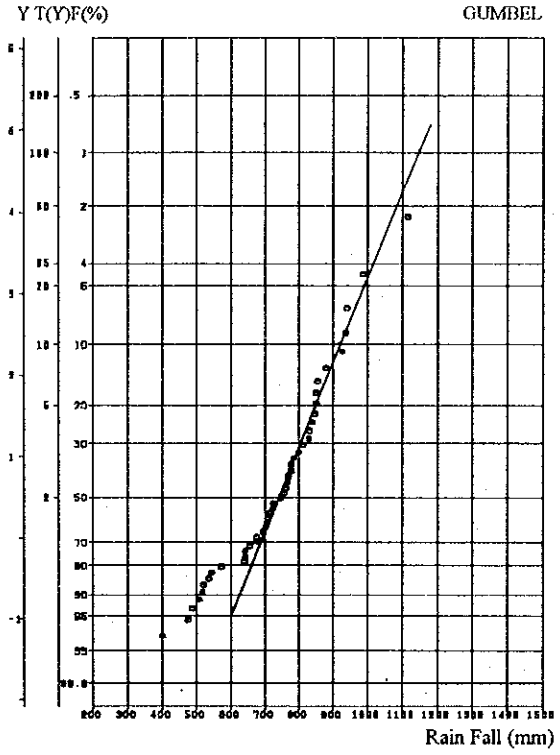
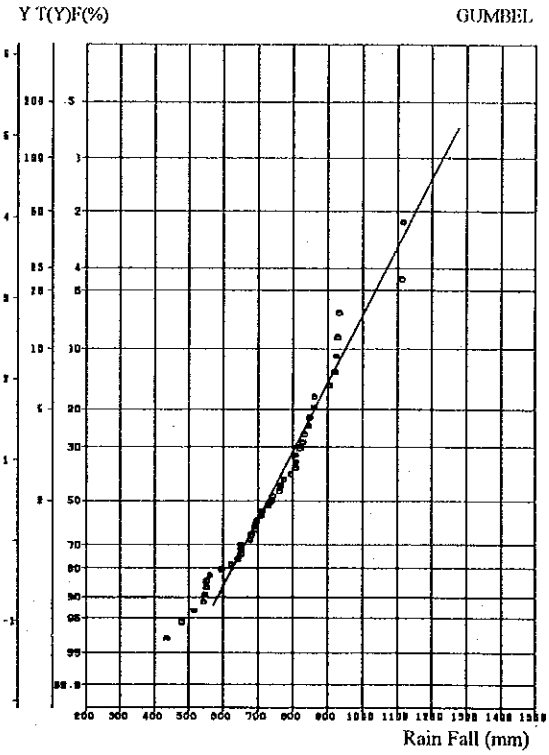
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO. , LTD & INA CORPORATION | Fig. 2.1.6(1/2)<br>PROBABLE 6-MONTH RAINFALL<br>(JULY TO DECEMBER) |

Nakhon Sawan Area

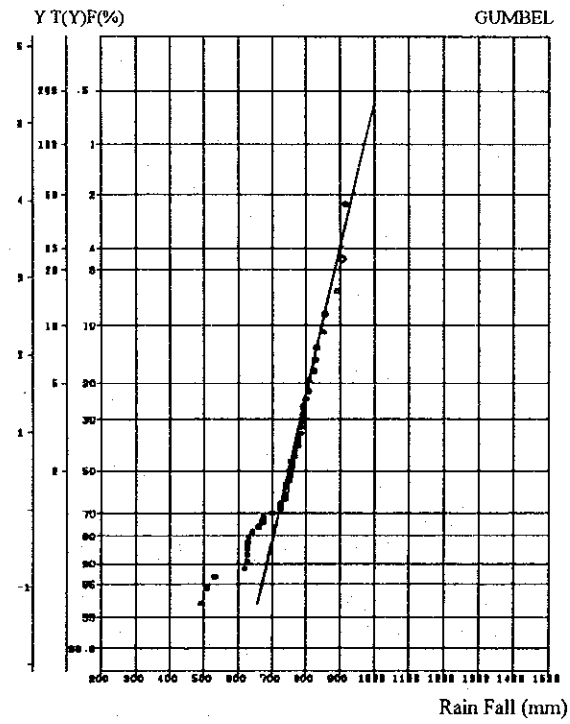



Lower Central Plain




Nakhon Sawan Area

Entire Basin




Data Period : 1952-1996

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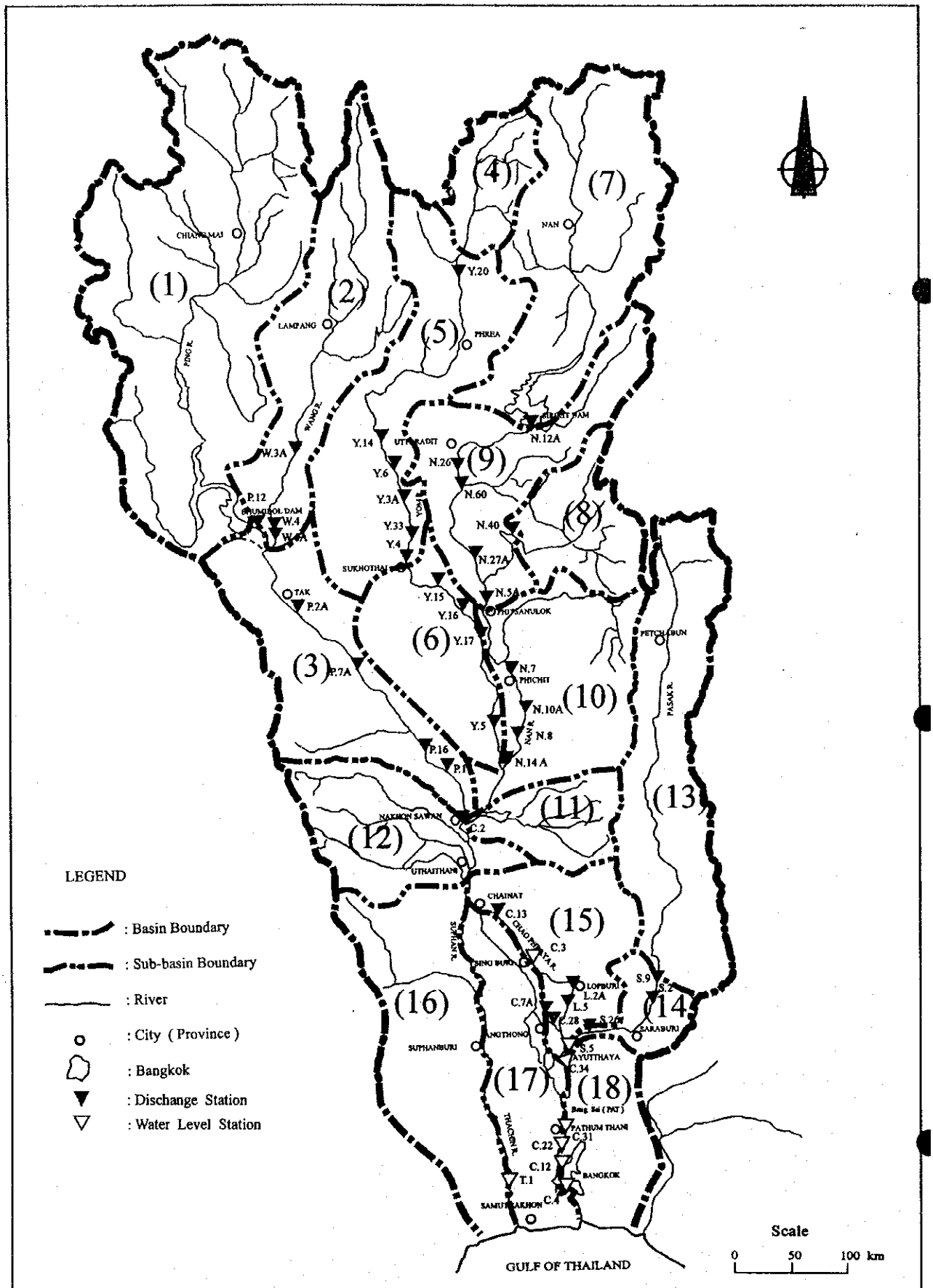
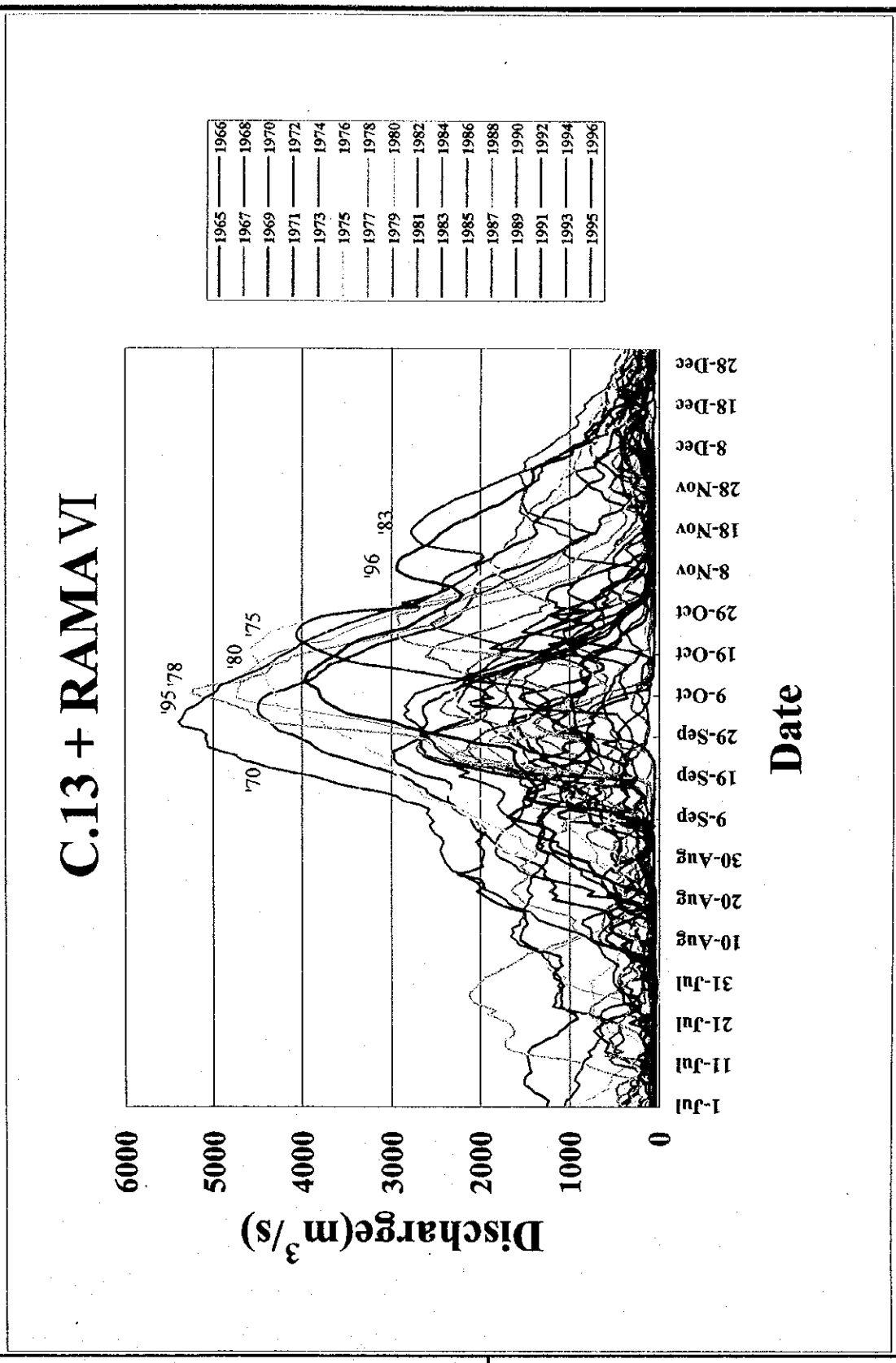
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN | Fig. 2.1.6(2/2) PROBABLE 6-MONTH RAINFALL (JULY TO DECEMBER) |
| CTI ENGINEERING CO. , LTD & INA CORPORATION | |




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

CTI ENGINEERING CO., LTD AND INA CORPORATION

Fig. 2.2.1
LOCATION OF MAJOR WATER LEVEL AND DISCHARGE STATION

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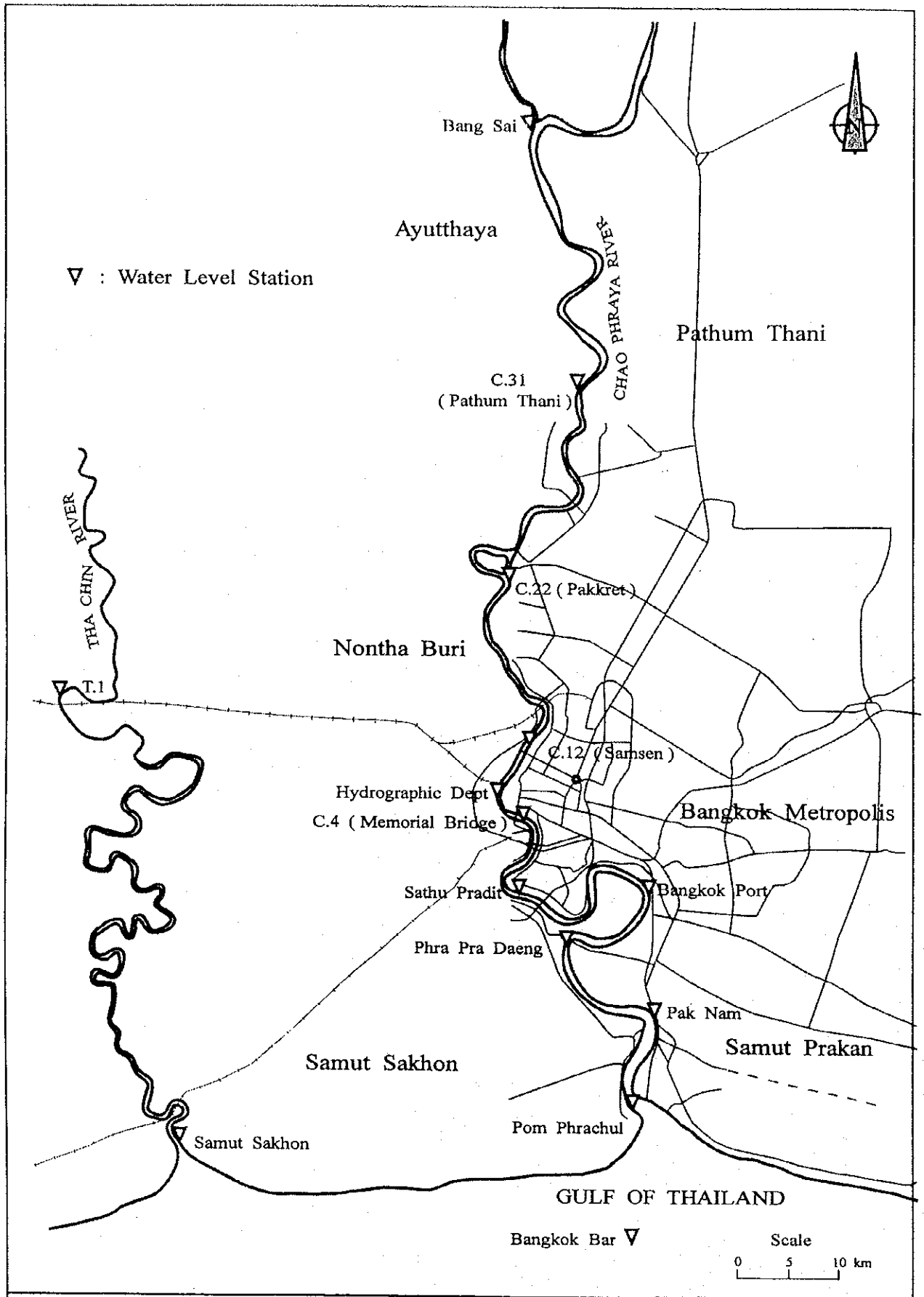
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.2.2 SYNTHETIC HYDROGRAPH FOR 32 YEARS FROM 1965 TO 1996 |
| CTI ENGINEERING CO., LTD. AND INA CORPORATION | |

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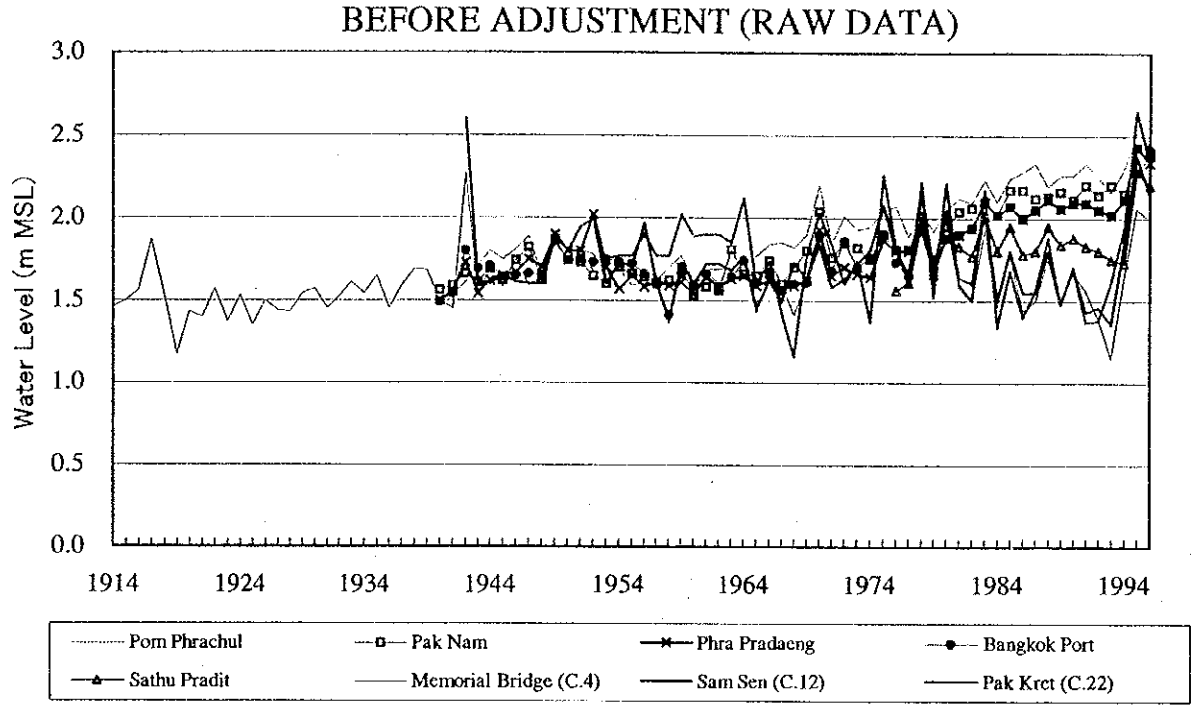
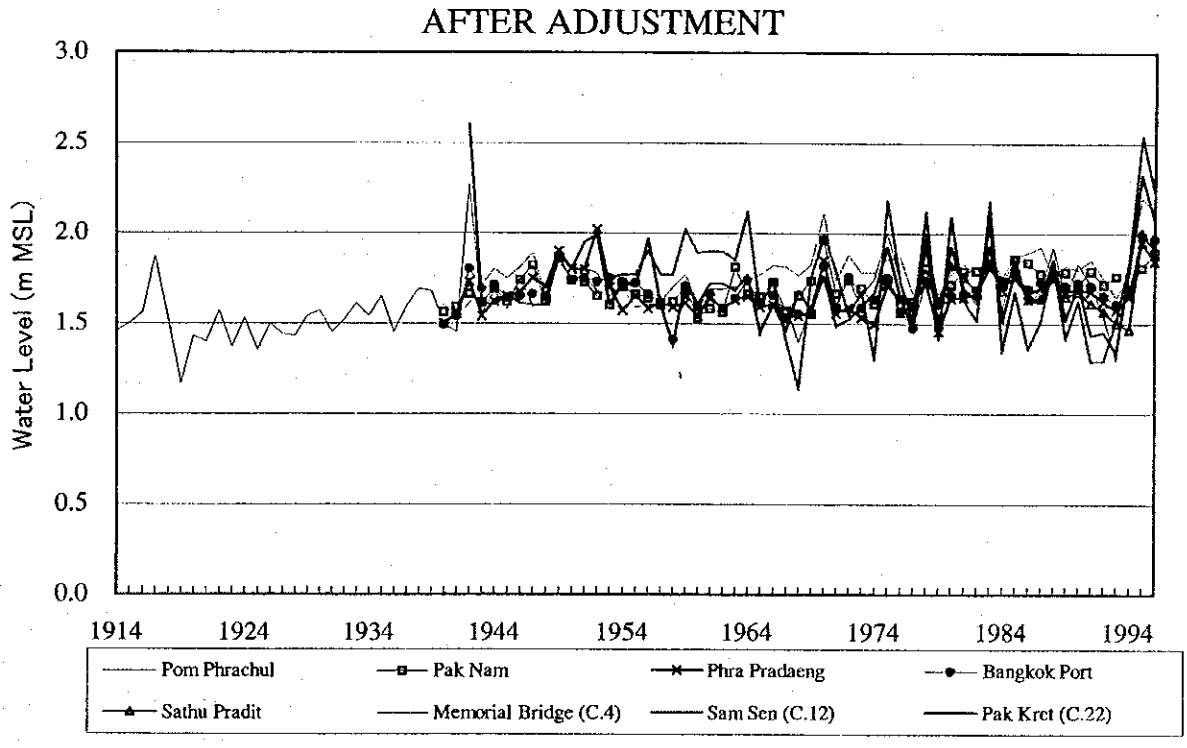
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.3.1 LOCATION OF WATER LEVEL STATIONS ON LOWER CHAO PHRAYA RIVER |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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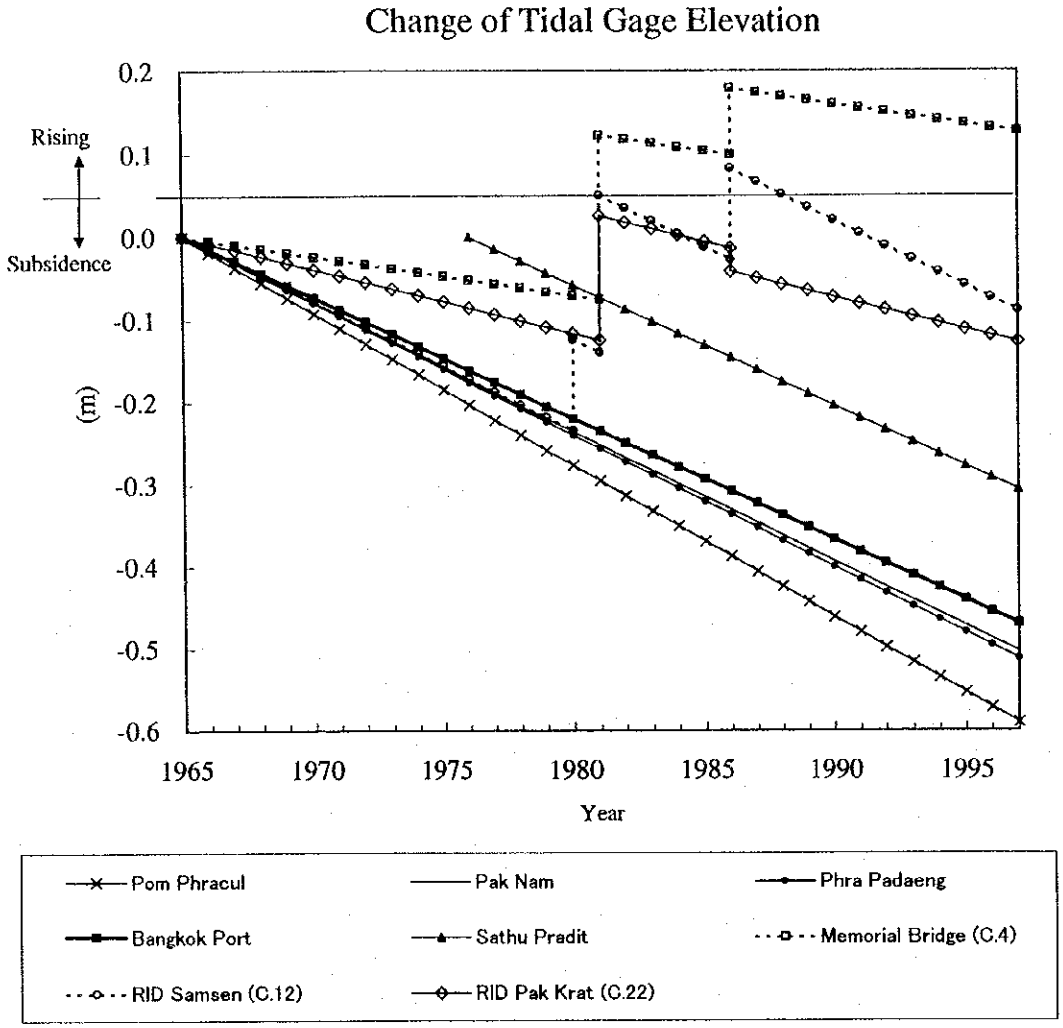
| STUDY ON ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAOPHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD & INA CORPORATION | Fig. 2.3.2 TREND OF ANNUAL MAXIMUM WATER LEVEL ON LOWER CHAO PHRAYA RIVER |

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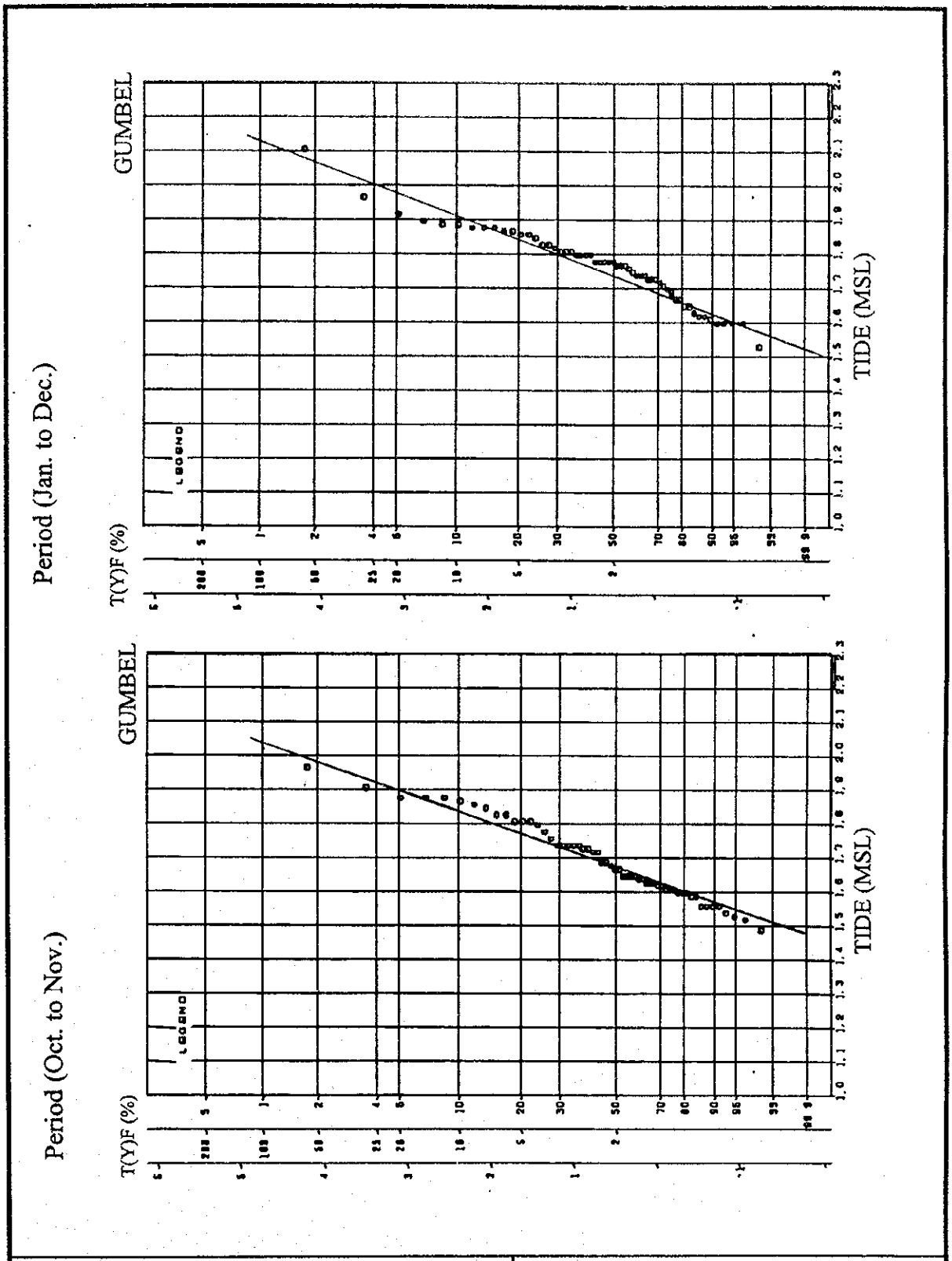
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD AND INA CORPORATION | Fig.2.3.3 ESTIMATED PAST CHANGE OF TIDAL GAGE ELEVATION |

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| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN<br>CTI ENGINEERING CO., LTD. AND INA CORPORATION | Fig. 2.3.4<br>PROBABLE MAXIMUM TIDE LEVEL AT POM PHRACHUL |


Date of LANDSAT TM Photographs

| Path – Row | Flood analysis (1995) | Flood analysis (1996) | Land use analysis (1995) |
|---|---|---|---|
| 129 – 49 | 1995.10.12 | 1996.11.15 | 1996. 2.17 |
| 129 – 50 | 1995.10.12 | 1996.11.15 | 1996. 2.17 |
| 129 – 51 | 1995.9.26 | 1996.11.15 | 1995. 12.31 |
| 130 – 48 | 1995.12.6 | 1996.11.22 | 1996. 1.23 |
| 130 – 49 | 1995.12.22 | 1996.11.22 | 1996. 1.23 |
| 130 – 50 | 1995.12.22 | 1996.11.22 | 1996. 2.8 |

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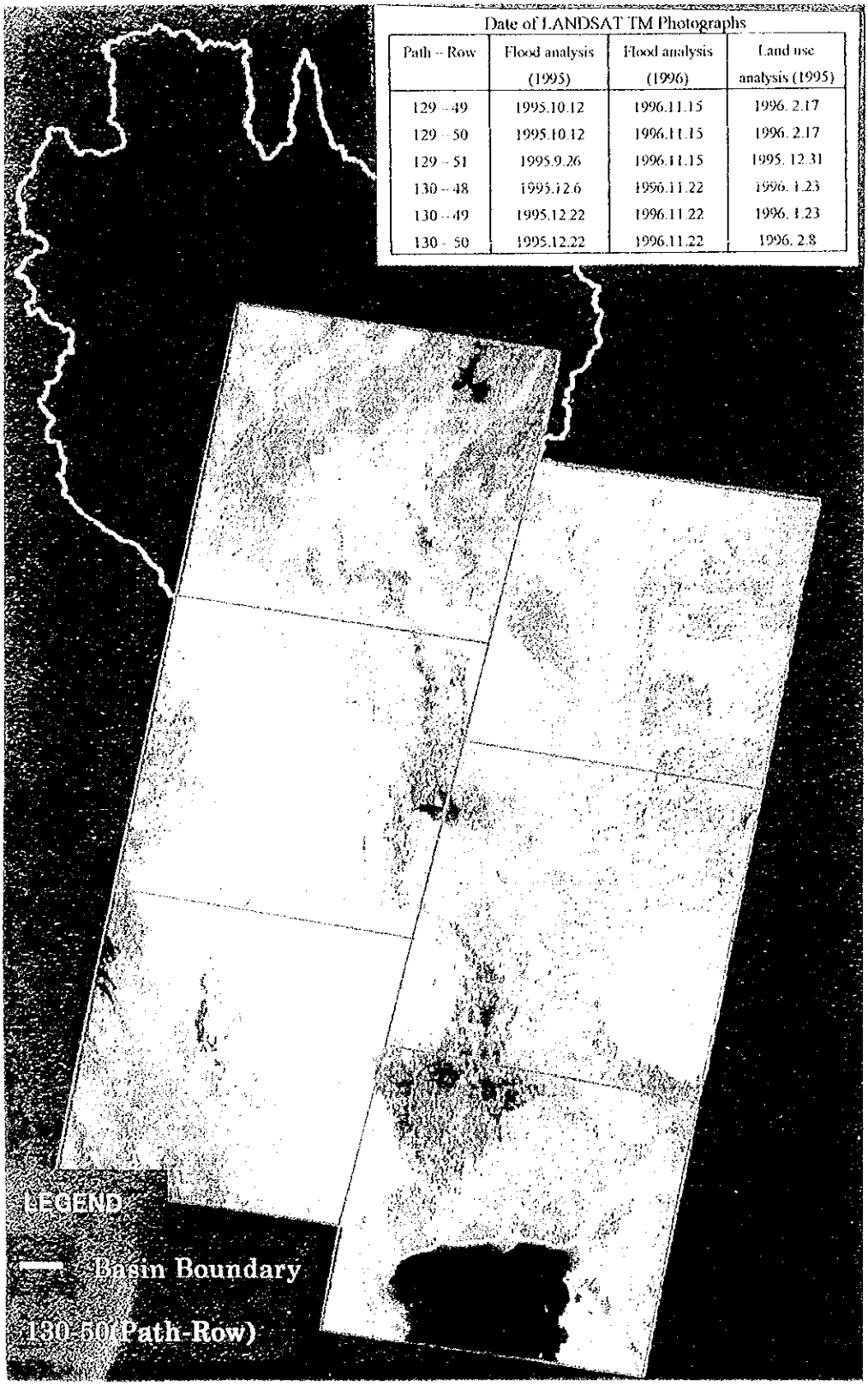
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.4.1 INDEX MAP OF LANDSAT TM DATA |
| CTI ENGINEERING CO., LTD. AND INA CORPORATION | |



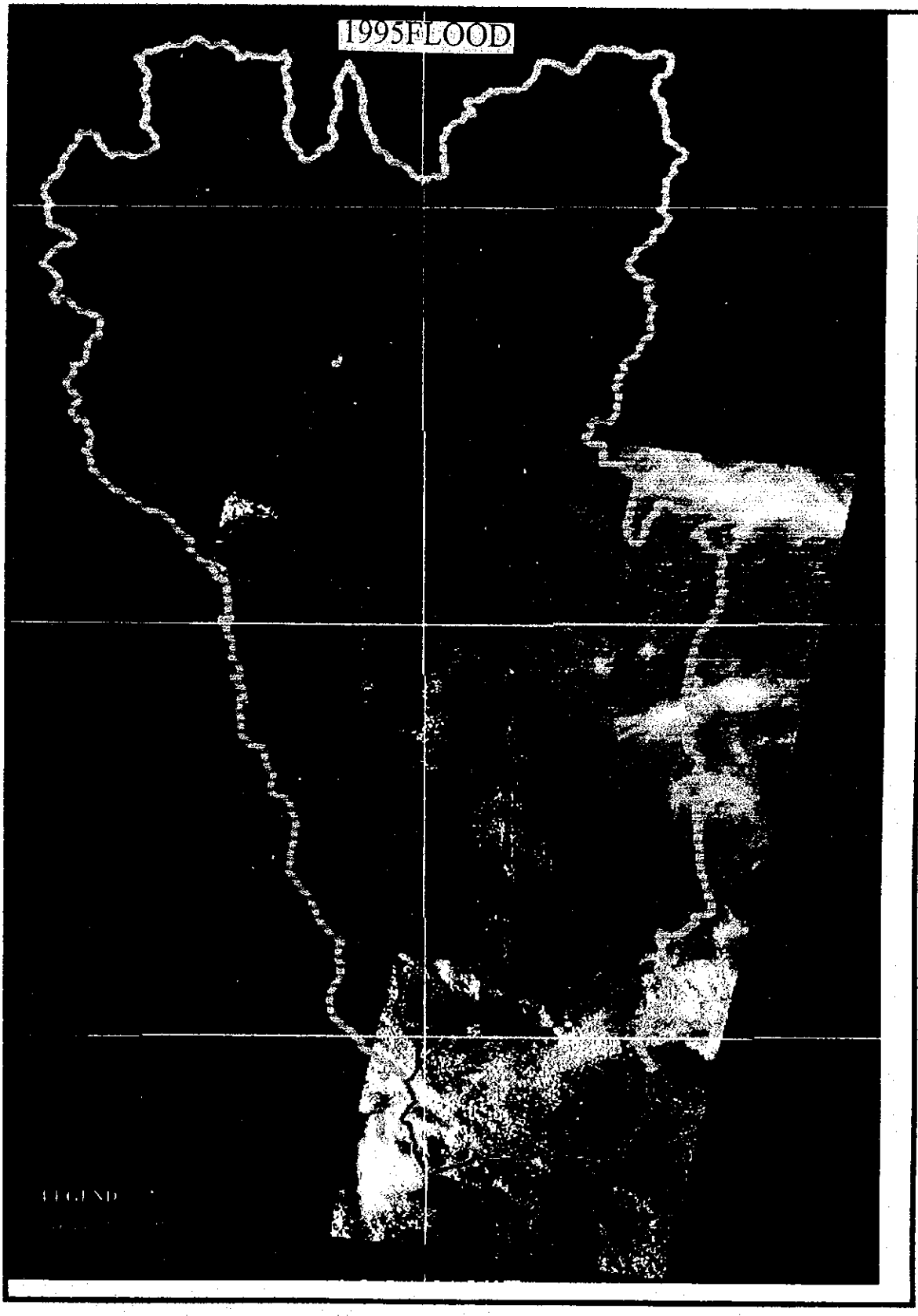

Date of LANDSAT TM Photographs

| Path – Row | Flood analysis (1995) | Flood analysis (1996) | Land use analysis (1995) |
|---|---|---|---|
| 129 – 49 | 1995.10.12 | 1996.11.15 | 1996. 2.17 |
| 129 – 50 | 1995.10.12 | 1996.11.15 | 1996. 2.17 |
| 129 – 51 | 1995.9.26 | 1996.11.15 | 1995. 12.31 |
| 130 – 48 | 1995.12.6 | 1996.11.22 | 1996. 1.23 |
| 130 – 49 | 1995.12.22 | 1996.11.22 | 1996. 1.23 |
| 130 – 50 | 1995.12.22 | 1996.11.22 | 1996. 2.8 |

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

CTI ENGINEERING CO., LTD. AND INA CORPORATION

Fig. 2.4.1 INDEX MAP OF LANDSAT TM DATA

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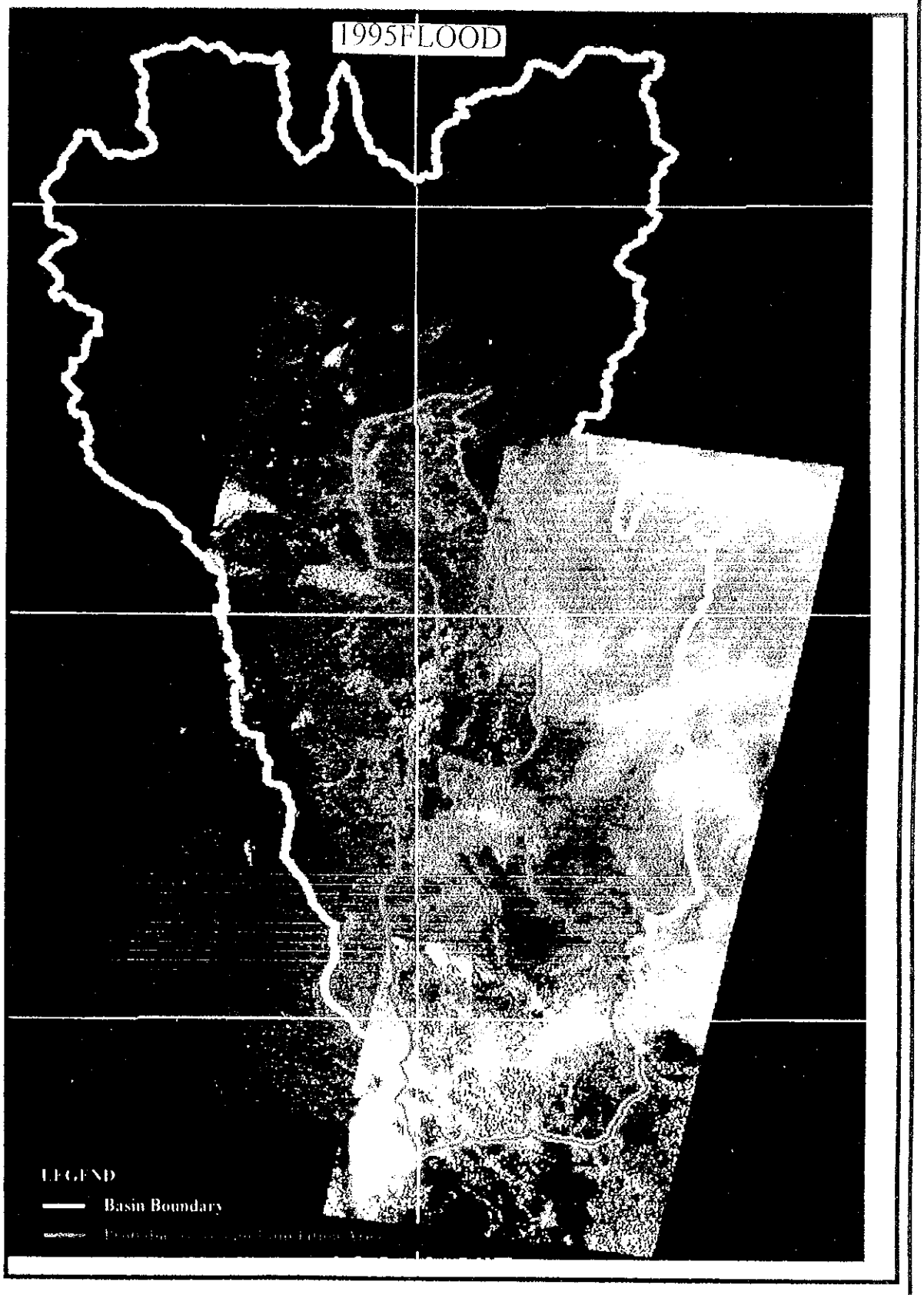
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.4.2(1/2) PROCESSED FALSE COLOR IMAGES |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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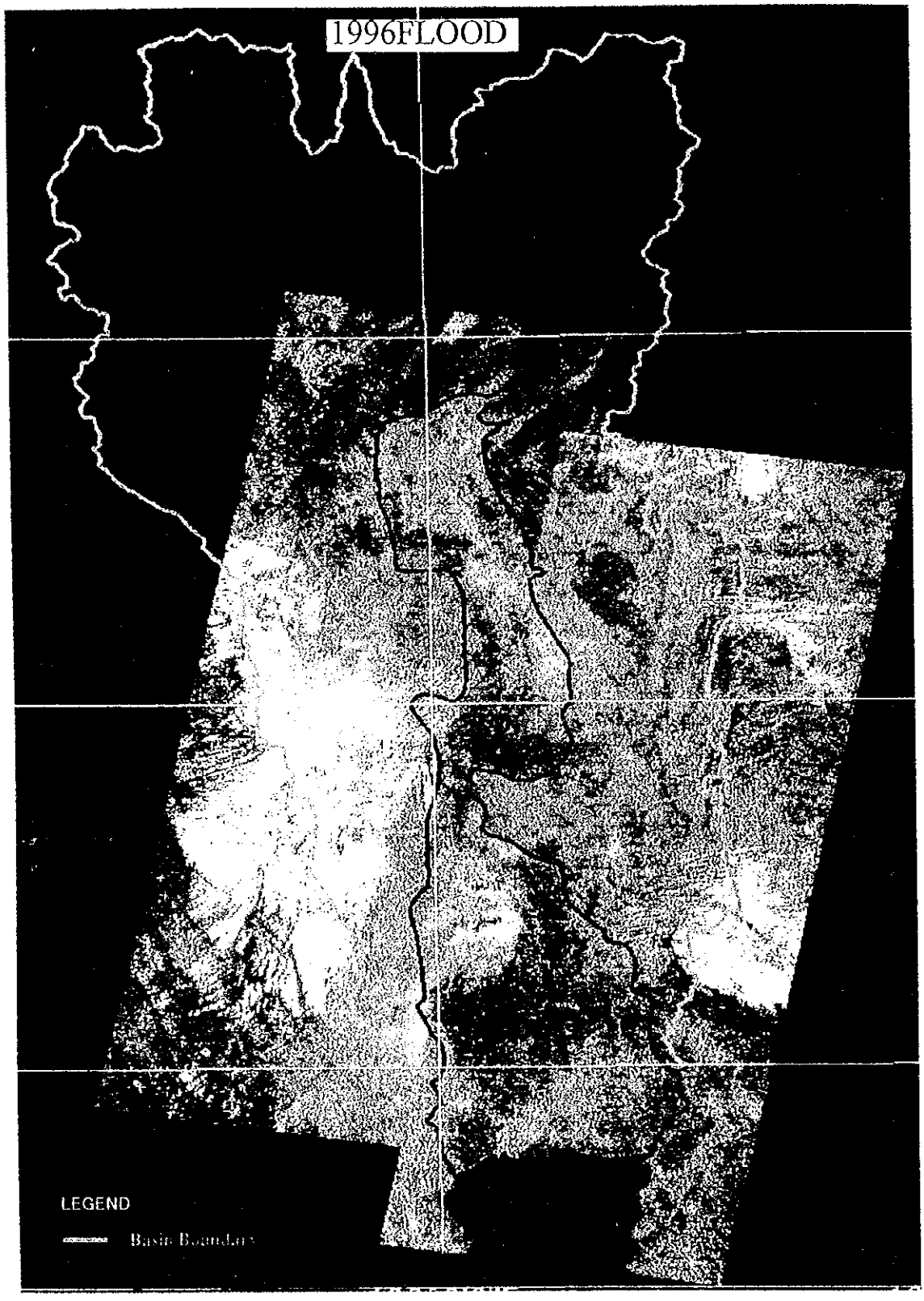
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.4.2(1/2) PROCESSED FALSE COLOR IMAGES |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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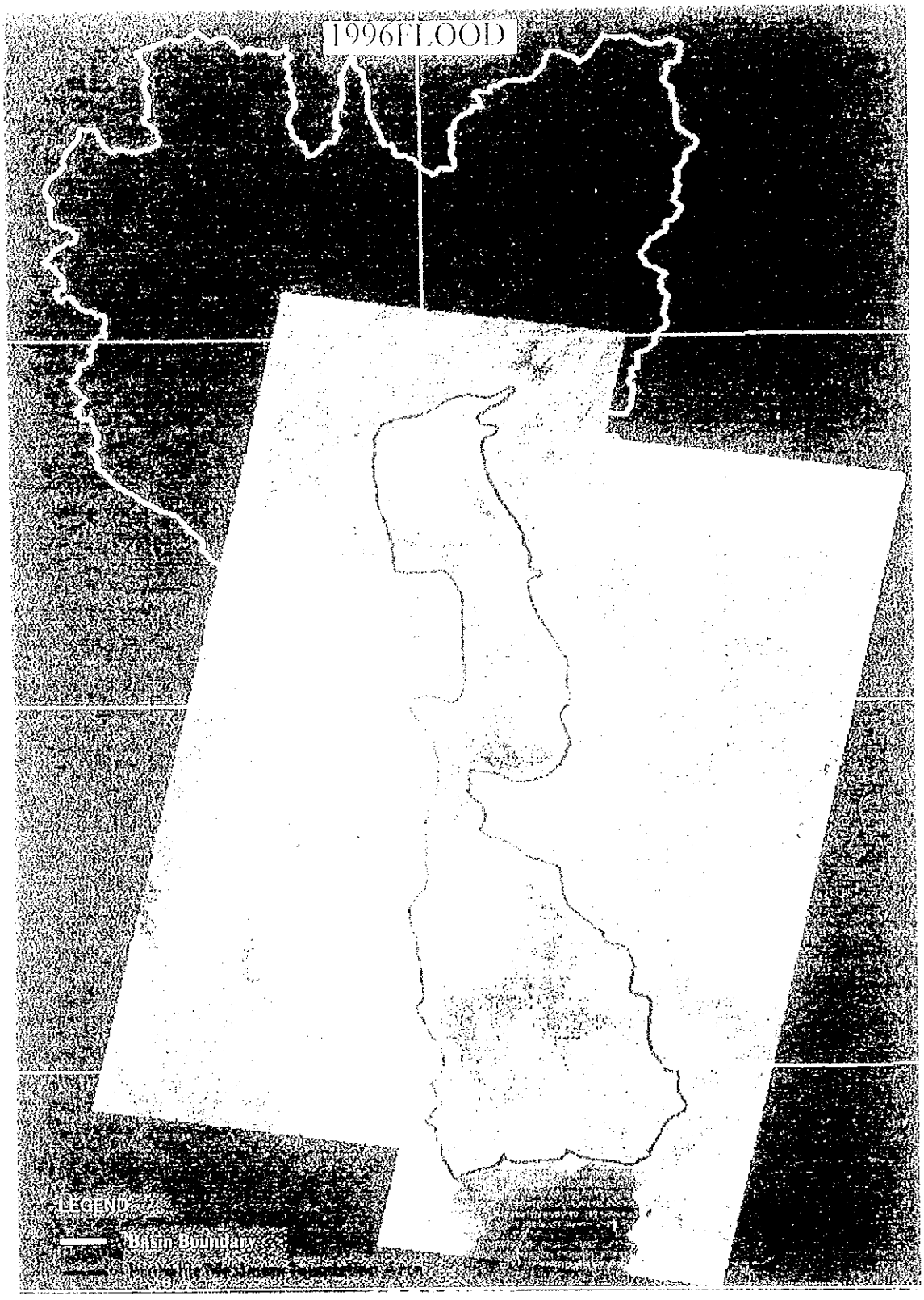
| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.4.2(2/2) PROCESSED FALSE COLOR IMAGES |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |

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| STUDY ON INTEGRATED PLAN FOR FLOOD MITIGATION IN CHAO PHRAYA RIVER BASIN | Fig. 2.4.2(2/2)<br>PROCESSED FALSE COLOR IMAGES |
| CTI ENGINEERING CO., LTD AND INA CORPORATION | |