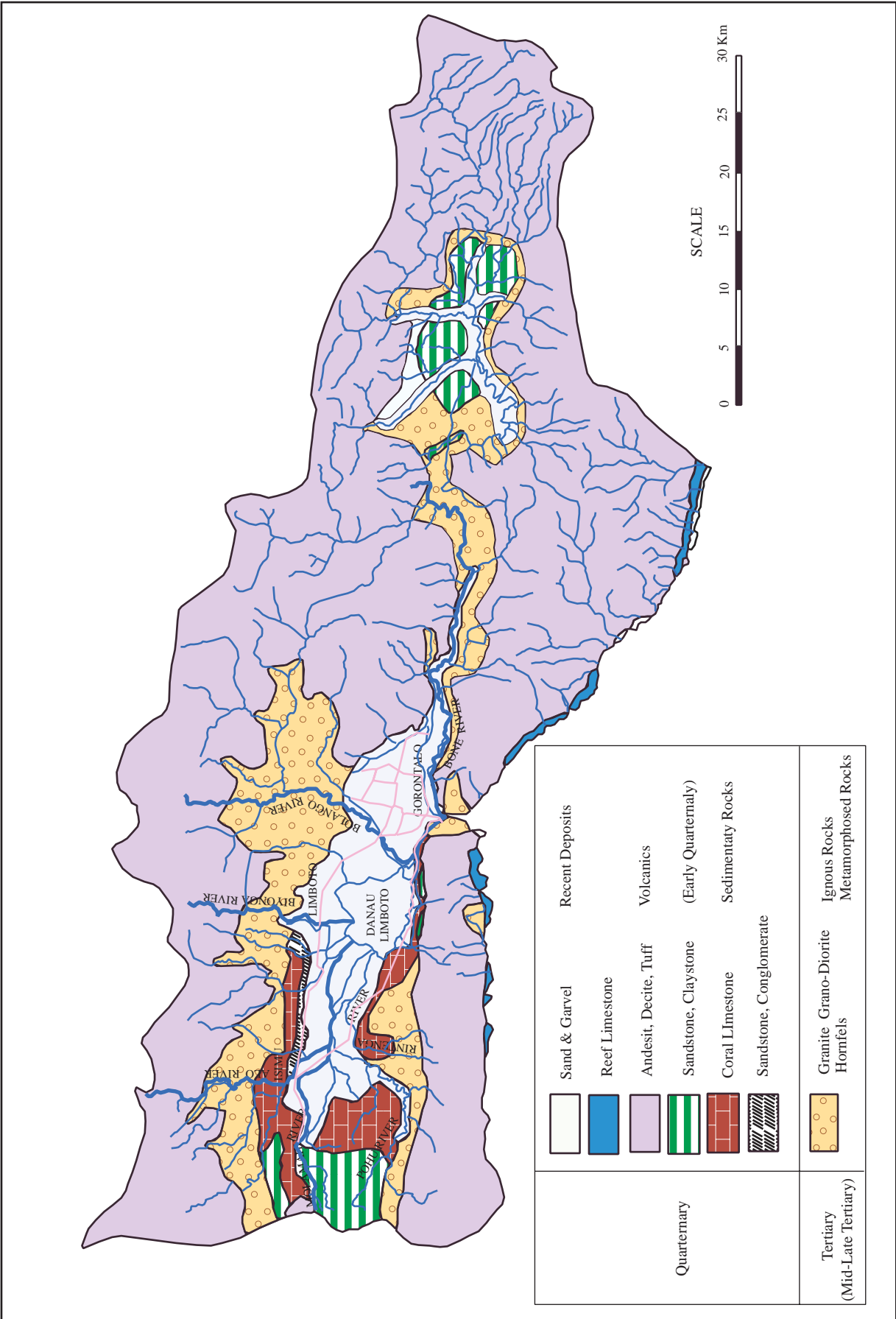


Source: JOG Map - US Army, 1967

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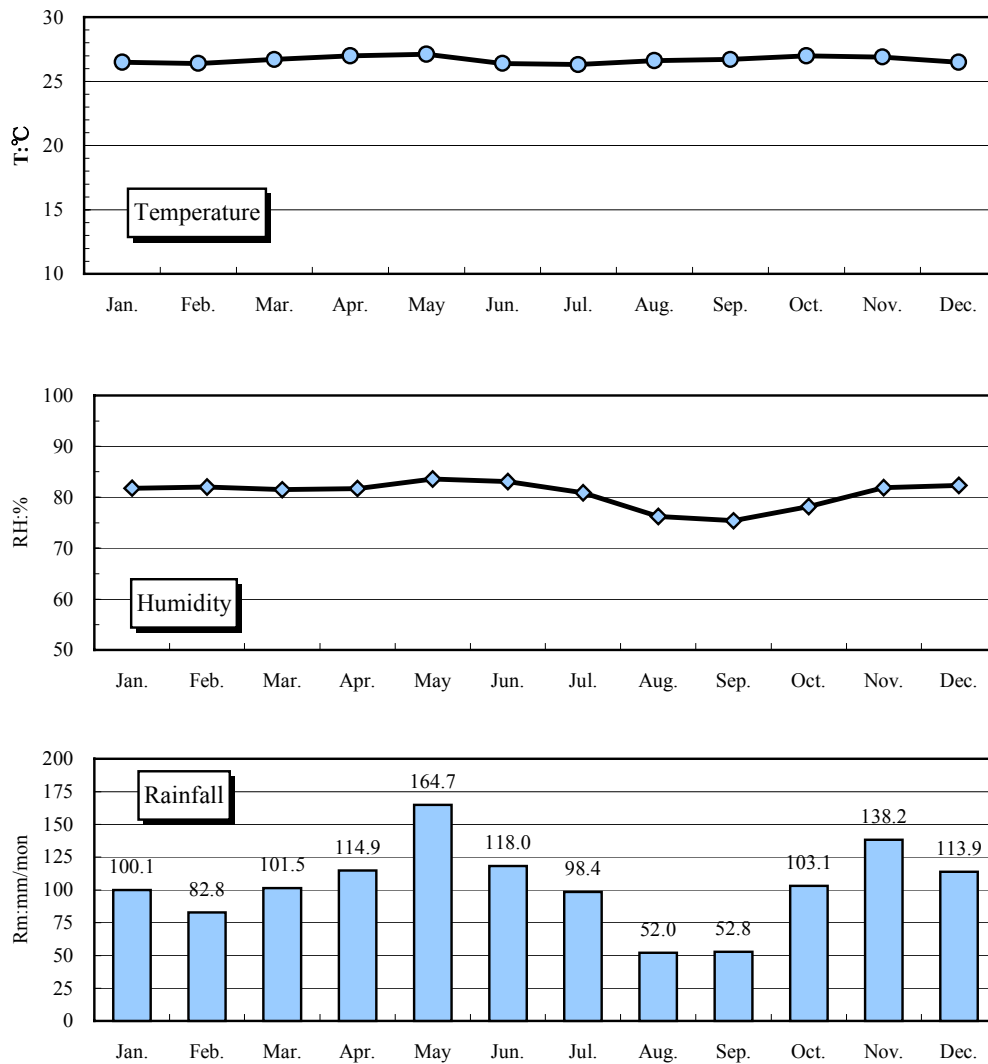
Figure 2.1
TOPOGRAPHY OF STUDY AREA



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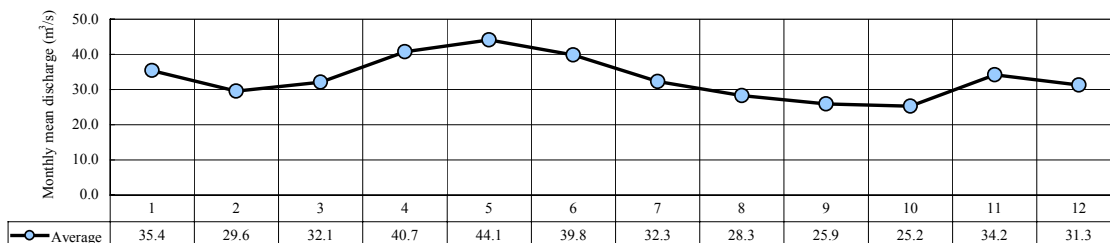
Figure 2.2
GEOLOGY OF STUDY AREA

STATION : JALALUDDIN AIRPORT



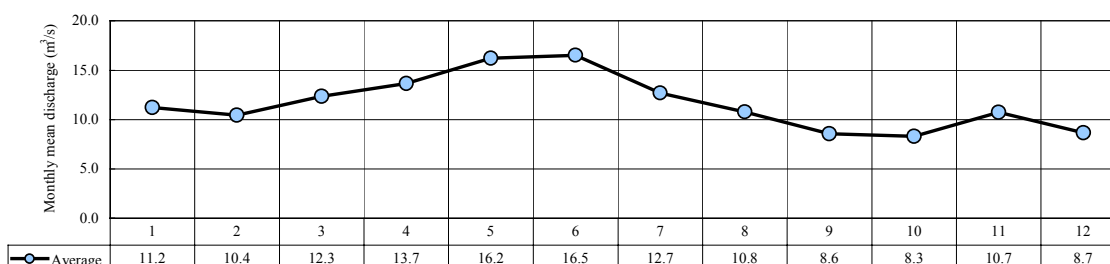
Month	Temperature (T:°C)	Humidity (RH:%)	Rainfall (Rm:mm/mon)
Jan.	26.5	81.8	100.1
Feb.	26.4	82.0	82.8
Mar.	26.7	81.5	101.5
Apr.	27.0	81.7	114.9
May	27.1	83.6	164.7
Jun.	26.4	83.1	118.0
Jul.	26.3	80.9	98.4
Aug.	26.6	76.2	52.0
Sep.	26.7	75.4	52.8
Oct.	27.0	78.2	103.1
Nov.	26.9	81.9	138.2
Dec.	26.5	82.3	113.9
Ave/Total	26.7	80.7	1240.4

Bone River: Lombongo/Alale Weir (1,060 km²)



Year	Monthly Discharge (m ³ /s)												Annual	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	m ³ /s	mm/yr
1985	-	-	28.3	29.6	38.5	34.6	33.1	42.8	40.2	42.1	62.4	48.9	-	-
1986	47.6	43.2	42.9	46.9	45.3	41.9	38.6	31.1	26.6	31.0	38.3	33.3	38.9	1157
1987	27.2	27.2	24.5	28.6	34.8	24.1	17.0	17.1	15.0	17.5	20.4	19.8	22.8	677
1988	34.2	35.1	44.5	38.9	65.4	50.7	52.3	57.5	49.7	-	-	-	-	-
1989	-	-	38.0	73.6	25.6	28.0	52.9	41.4	57.3	42.5	44.6	27.4	-	-
1990	53.7	31.3	30.4	49.0	39.5	32.7	16.5	24.1	18.5	32.6	38.3	26.4	32.8	974
1991	47.9	17.3	19.9	46.4	26.5	35.3	22.6	20.5	14.7	14.2	18.4	32.9	26.4	785
1992	23.4	17.4	14.5	14.2	51.5	39.6	26.8	15.6	11.1	19.5	25.0	36.2	24.6	731
1993	26.1	25.4	33.1	35.7	65.9	53.0	25.5	13.5	11.3	12.5	19.6	19.4	28.4	846
1994	23.0	39.9	47.1	44.2	48.0	57.9	37.8	19.2	15.1	15.2	40.6	37.6	35.5	1055
Average	35.4	29.6	32.1	40.7	44.1	39.8	32.3	28.3	25.9	25.2	34.2	31.3	33.2	989
m ³ /s/km ²	0.033	0.028	0.030	0.038	0.042	0.038	0.030	0.027	0.024	0.024	0.032	0.030	0.031	m ³ /s/km ²
mm/mon	89	67	81	100	111	97	82	71	63	64	84	79	989	mm/yr
													Cv=	0.57 %

Bolango River: Boidu Tapa/Lomaya Weir (388 km²)



Year	Month												Annual	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	m ³ /s	mm/yr
1985	-	9.2	8.4	5.4	24.3	19.4	6.8	5.2	6.6	8.5	19.6	11.3	-	-
1986	9.4	9.2	17.3	15.2	22.8	12.7	7.8	5.2	5.7	6.5	11.3	4.0	10.6	862
1987	10.9	6.3	7.1	7.2	7.5	5.7	3.0	2.2	2.3	4.3	7.2	4.1	5.7	460
1988	4.5	11.0	10.2	16.4	21.3	10.5	8.5	17.0	15.8	13.9	14.4	10.3	12.8	1043
1989	19.1	11.6	15.5	15.9	10.8	13.8	15.9	10.2	14.2	15.2	13.4	8.7	13.7	1113
1990	13.6	10.7	12.4	23.8	15.9	10.6	8.6	6.9	13.0	9.9	10.9	4.8	11.8	956
1991	13.2	7.5	6.2	12.8	16.2	15.2	6.5	4.1	2.0	1.9	3.1	7.2	8.0	649
1992	3.8	4.5	2.6	4.3	10.7	14.8	5.0	4.0	2.1	5.4	7.4	14.2	6.6	534
1993	9.6	5.2	4.5	5.2	15.9	21.5	10.7	4.2	3.4	4.0	8.7	5.5	8.2	666
1994	8.3	14.1	26.0	14.7	18.1	25.5	11.8	4.7	2.6	2.9	7.1	7.5	11.9	971
1995	17.0	14.0	13.1	13.1	17.8	26.4	33.9	47.7	20.2	14.6	15.0	11.7	20.4	1656
1996	11.3	20.3	25.7	12.8	7.0	29.4	39.4	25.4	21.1	18.7	15.3	15.4	20.2	1639
1997	13.7	11.8	11.6	30.7	22.4	9.4	7.1	3.4	2.3	2.3	6.3	7.7	10.7	870
Average	11.2	10.4	12.3	13.7	16.2	16.5	12.7	10.8	8.6	8.3	10.7	8.7	11.7	949
m ³ /s/km ²	0.029	0.027	0.032	0.035	0.042	0.043	0.033	0.028	0.022	0.021	0.028	0.022	0.030	m ³ /s/km ²
mm/mon	77	65	85	91	112	110	88	74	57	57	72	60	950	mm/yr
													Cv=	0.70 %

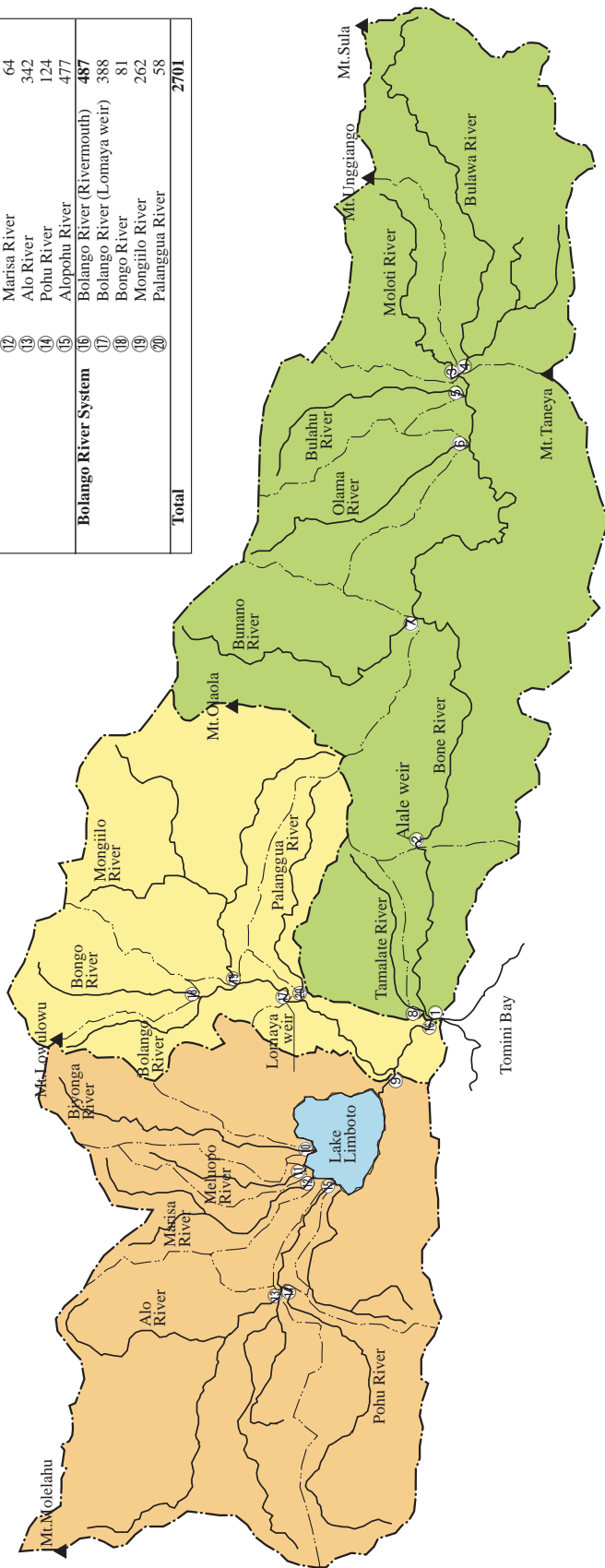
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Figure 2.4

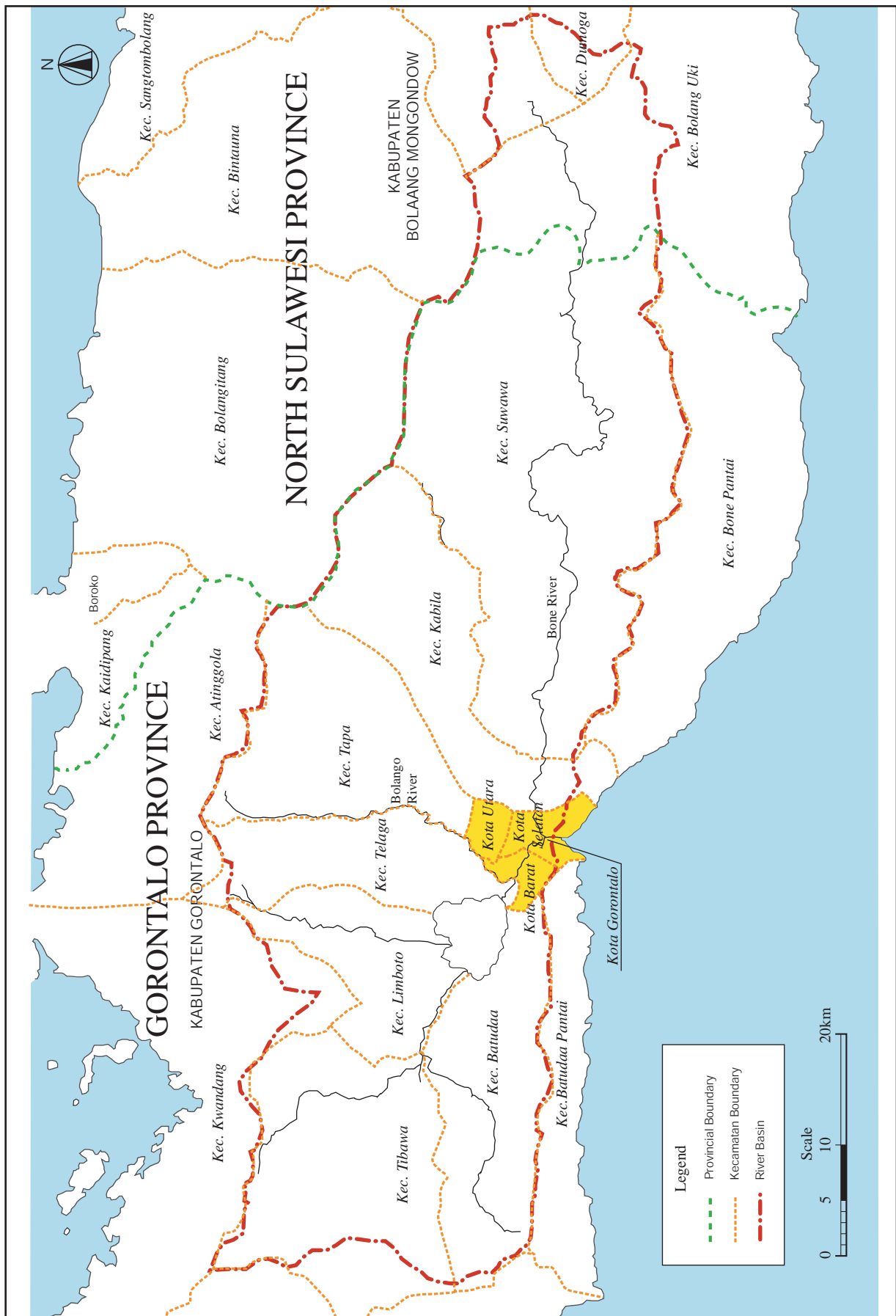
MONTHLY DISCHARGES

River System	River	Area (sq.km)
Bone River System	① Bone River (Rivermouth)	1322
	② Bone River (Alale weir)	1060
	③ Moloti River	100
	④ Bulawa River	282
	⑤ Bulahu River	73
	⑥ Olama River	73
	⑦ Bunano River	169
	⑧ Tamalate River	70
Lake Limboto System	⑨ Tapodu rivermouth	892
	⑩ Biyonga River	66
	⑪ Meluopo River	27
	⑫ Marisa River	64
	⑬ Alo River	342
	⑭ Pohu River	124
	⑮ Alophu River	477
	⑯ Bolango River (Rivermouth)	487
Bolango River System	⑰ Bolango River (Lomaya weir)	388
	⑱ Bongo River	81
	⑲ Mongtilo River	262
	⑳ Palanggua River	58
	Total	2701



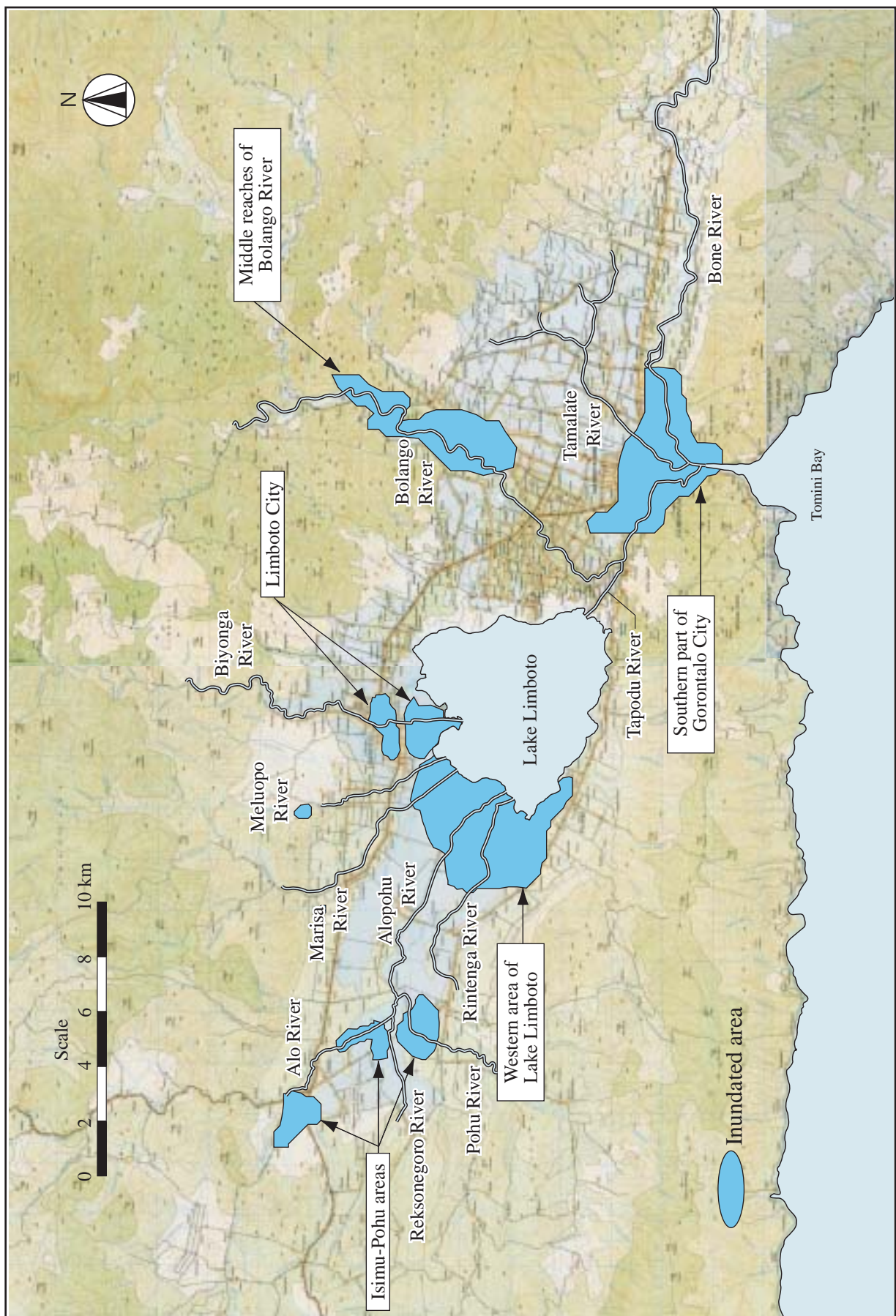
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Figure 2.5
RIVER BASIN



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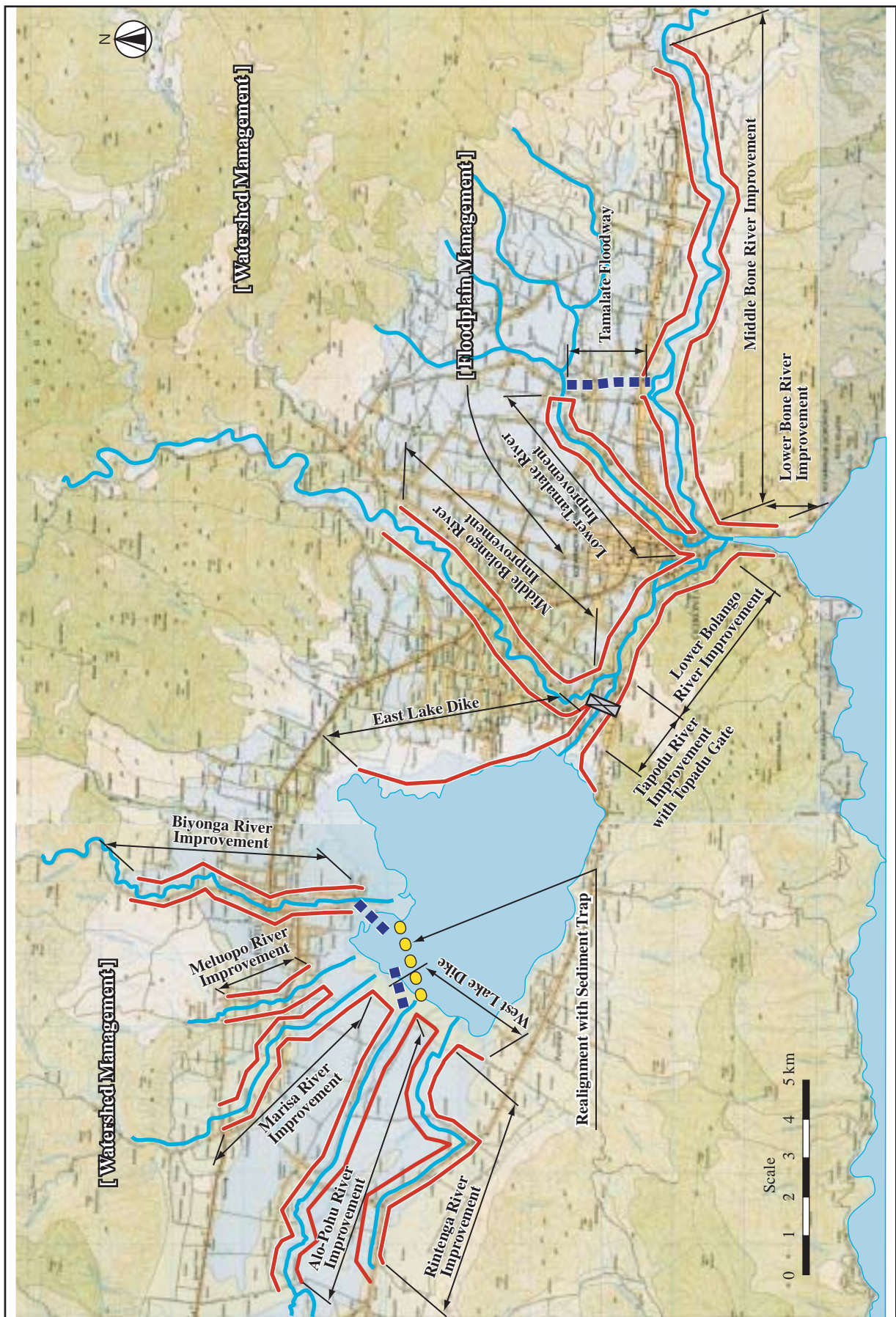
Figure 2.6
ADMINISTRATIVE BOUNDARIES OF LBB BASIN



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Figure 4.1

FREQUENTLY INUNDATED AREAS



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**Figure 4.2
FLOOD MITIGATION MASTER PLAN
FOR LBB BASIN**



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Figure 4.3
PRIORITY PROJECTS IN LBB