

X. TRANSFER OF TECHNOLOGY

- 54. The Transfer of Technology performed in the course of the Study consists of on-the-job training, technology transfer seminar and counterpart training in Japan. For closing this assignment of the JICA Study Team, a seminar was agreed by EVN to be held in the fifth field investigation scheduled in February 2000 (Draft Final Report stage) and the seminar was held in a manner of focussing of the contents of the Draft Final Report and outcomes of the Feasibility Study.**

XI. RECOMMENDATIONS

55. The Feasibility Study has proved that the Dong Nai No.3 and No.4 Combined Hydropower Project is technically feasible, economically viable and environmentally sound. Therefore, it is recommended that the Project be proceeded to the next stage of the implementation.

The first power unit of the Project is planned to be commissioned by the year 2007 and the entire implementation period after the Feasibility Study will take approximately 7.5 years at the earliest. Therefore, very careful and speedy implementation is essential for completion of the Project as planned in this Final Report.

Only essential points are briefed below for convenience of EVN.

Clearance of Various Requirements including EIA and RAP on the Side of the Government of Vietnam

56. The Project implementation may include clearance of various requirements on the side of the Government of Vietnam, the financial arrangement with lending agency, procurement of consultant(s), the additional field investigations for the detailed design, execution of the detailed design, procurement of contractors, and construction of the Project.

There will be a lot of things to be cleared with the Government organizations concerned including local authorities before final decision of the Project implementation by EVN.

Among the things, it will be of the paramount importance that all approval procedures for the Environmental Impact Assessments with the Government authorities should be completed before visit of project appraisal mission of lending agency if the Project financing is sought to a certain lending agency.

It is intended that necessary documents for the approval procedures can be prepared with this Final Report and its supporting documents attached hereto.

Detailed Design

57. The current design has been prepared as a feasibility-grade design and therefore further elaboration to grade up to the level of detailed design will be required for the Project implementation upon procurement of the consulting services.

For further elaboration, the following additional engineering works will be required at the level of detailed design:

- i) Field Investigations including topographic survey and geotechnical

investigation,

ii) **Hydraulic Model Test for spillway,**

iii) **Minor Design Adjustment of Major Structures**

Tables



Table S.1 Summary of Project Cost Estimate (Dong Nai No.3 + No.4)

(million US\$)

Description	No.3	No.4	Total
I. Base Cost			
(1) Preparatory Works (LCB)			
L-1 : Access road	4.0	5.4	9.4
L-2 : Base camp	2.0	2.0	4.0
L-3 : Power supply system	0.5	0.1	0.6
Subtotal (1)	6.5	7.5	14.0
(2) Main Construction Works (ICB)			
I-1-3/4 : Diversion Tunnel	24.7	17.5	42.2
I-2-3/4 : Main Civil Works	178.0	139.2	317.2
I-3-3/4 : Hydromechanical Works	21.2	21.1	42.3
I-4-3/4 : Hydroelectrical Works	57.9	69.6	127.5
I-5-3/4 : Transmission Line	5.1	4.7	9.8
Subtotal (2)	286.9	252.1	539.0
Subtotal (1)+(2)	293.4	259.6	553.0
(3) Engineering Service	22.0	19.5	41.5
(4) Administration	2.1	1.8	3.9
(5) Land Compensation and Resettlement	10.6	0.0	10.6
Subtotal (1) to (5)	328.1	280.9	609.0
(6) Tax	15.8	14.0	14.0
Subtotal I (Base cost)	343.9	294.9	638.8
II. Contingency			
Price Contingency	22.6	21.3	43.9
Physical Contingency	30.0	24.4	54.4
Subtotal II (Contingency)	52.6	45.7	98.3
Total Project Cost	396.5	340.6	737.1

Table S.2 Computation of Economic Internal Rate of Return (EIRR)

		(Unit: US\$ million)												
		Capital costs			O & M costs	Total costs	Economic benefits				Total benefits		B - C	
No.	Year	F.C.	L.C.	Total			Case A		Case B		Case A: Alt.Therm.	Case B: LRMC	Case A: Alt.Therm.	Case B: LRMC
1	2001	5.1	2.3	7.4		7.4				0.0	0.0	(7.4)	(7.4)	
2	2002	6.4	9.2	15.6		15.6				0.0	0.0	(15.6)	(15.6)	
3	2003	16.8	22.0	38.8		38.8				0.0	0.0	(38.8)	(38.8)	
4	2004	38.3	34.7	73.0		73.0				0.0	0.0	(73.0)	(73.0)	
5	2005	68.7	50.5	119.2		119.2				0.0	0.0	(119.2)	(119.2)	
6	2006	119.1	59.8	178.9		178.9				0.0	0.0	(178.9)	(178.9)	
7	2007	112.5	56.3	168.8		168.8				0.0	0.0	(168.8)	(168.8)	
8	2008	27.3	14.2	41.5	2.6	44.1	49.5	1.9	50.3	5.9	51.4	7.3	12.1	
9	2009	3.3	0.4	3.7	5.6	9.3	106.0	1.9	106.5	5.9	107.9	112.4	98.6	
10	2010				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	105.2	
11	2011				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
12	2012				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
13	2013				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
14	2014				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
15	2015				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
16	2016				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
17	2017				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
18	2018				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
19	2019				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
20	2020				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
21	2021				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
22	2022				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
23	2023				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
24	2024				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
25	2025				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
26	2026				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
27	2027				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
28	2028				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
29	2029			178.5	6.2	184.7	116.6	1.9	117.1	5.9	118.5	123.0	(66.2)	
30	2030				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	(61.7)	
31	2031				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
32	2032				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
33	2033				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
34	2034				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
35	2035				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
36	2036				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
37	2037				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
38	2038				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
39	2039				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
40	2040				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
41	2041				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
42	2042				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
43	2043				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
44	2044				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
45	2045				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
46	2046				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
47	2047				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
48	2048			178.5	6.2	184.7	116.6	1.9	117.1	5.9	118.5	123.0	(66.2)	
49	2049				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	(61.7)	
50	2050				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
51	2051				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
52	2052				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
53	2053				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
54	2054				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
55	2055				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
56	2056				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
57	2057				6.2	6.2	116.6	1.9	117.1	5.9	118.5	123.0	112.3	
58	2058			(124.3)	6.2	(118.1)	116.6	1.9	117.1	5.9	118.5	123.0	236.6	

EIRR = 13.1% 13.5%

Note: 1) Abbreviations:

F.C.: Foreign currency portion

L.C.: Local currency portion

O & M: Operation and maintenance costs

Alt.Therm.: Alternative thermal

Table S.3 Computation of FIRR

(Case of USc 4.5/kWh)

No.	Year	Capital costs			O&M costs	Total costs	Saleable energy (GWh)	Power rate (USc/kWh)	Financial revenue	Resources		B - C
		F.C.	L.C.	Total						tax & VAT	Current surplus	
1	2001	5.2	2.7	7.9		7.9						(7.9)
2	2002	6.6	11.8	18.4		18.4						(18.4)
3	2003	17.4	26.8	44.2		44.2						(44.2)
4	2004	40.1	42.4	82.5		82.5						(82.5)
5	2005	72.6	62.3	134.9		134.9						(134.9)
6	2006	124.6	75.7	200.3		200.3						(200.3)
7	2007	119.2	70.0	189.2		189.2						(189.2)
8	2008	28.2	17.4	45.6	2.5	48.1	757	4.5	34.1	4.1	30.0	(18.2)
9	2009	3.6	0.6	4.2	5.4	9.6	1,514	4.5	68.1	8.2	60.0	50.3
10	2010				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
11	2011				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
12	2012				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
13	2013				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
14	2014				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
15	2015				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
16	2016				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
17	2017				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
18	2018				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
19	2019				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
20	2020				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
21	2021				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
22	2022				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
23	2023				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
24	2024				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
25	2025				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
26	2026				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
27	2027				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
28	2028				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
29	2029			169.8	6.0	175.8	1,657	4.5	74.6	8.9	65.6	(110.2)
30	2030				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
31	2031				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
32	2032				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
33	2033				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
34	2034				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
35	2035				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
36	2036				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
37	2037				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
38	2038				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
39	2039				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
40	2040				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
41	2041				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
42	2042				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
43	2043				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
44	2044				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
45	2045				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
46	2046				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
47	2047				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
48	2048			169.8	6.0	175.8	1,657	4.5	74.6	8.9	65.6	(110.2)
49	2049				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
50	2050				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
51	2051				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
52	2052				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
53	2053				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
54	2054				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
55	2055				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
56	2056				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
57	2057				6.0	6.0	1,657	4.5	74.6	8.9	65.6	59.6
58	2058			(120.8)	6.0	(114.8)	1,657	4.5	74.6	8.9	65.6	180.4

Note: 1) Abbreviations:

F.C.: Foreign currency portion

L.C.: Local currency portion

2) Project construction cost excluding Transmission Line cost:

	F.C.	L.C.	Total
Civil	176.9	182.4	359.3
Metal	150.6	19.2	169.8
Others	90.0	108.1	198.1
Total	417.5	309.7	727.2

FIRR=

6.5%

Table S.4 Examination of Repayability of Project Loans (Case 1-1)

(US\$ million)

No.	Year	Power sales revenue		Loans received		Capital costs		Total sources	O & M costs	Outstanding loan principal		Repayment		Interest payment		Resources tax & VAT	Total uses	Current surplus	Corporate tax payment	Surplus after tax	Cumulative surplus	Year
		Foreign (85%)	Domestic (15%)	Foreign (85%)	Domestic (15%)	F.C.	L.C.			Total	principal	of principal	Foreign (3.5%)	Domestic (13.0%)	Foreign (3.5%)							
1	2001	6.7	1.2	7.9	5.2	2.7	7.9	7.9	2.5	72.0	4.1	52.2	27.4	6.9	20.6	20.6	7.9	0.0	0.0	0.0	0.0	2001
2	2002	15.6	2.8	18.4	6.6	11.8	18.4	18.4	5.4	69.7	8.2	17.8	54.5	13.6	40.9	61.5	18.4	0.0	0.0	0.0	0.0	2002
3	2003	37.6	6.6	44.2	17.4	26.8	44.2	44.2	6.0	64.2	8.9	8.1	8.1	0.0	0.0	8.1	44.2	0.0	0.0	0.0	0.0	2003
4	2004	70.1	12.4	82.5	40.1	42.4	82.5	82.5	6.0	68.7	8.9	31.5	19.5	0.0	0.0	31.5	82.5	0.0	0.0	0.0	0.0	2004
5	2005	114.7	20.2	134.9	72.6	62.3	134.9	134.9	6.0	60.1	8.9	31.5	18.7	0.0	0.0	31.5	134.9	0.0	0.0	0.0	0.0	2005
6	2006	170.3	30.0	200.3	124.6	75.7	200.3	200.3	6.0	58.1	8.9	31.5	17.3	0.0	0.0	31.5	200.3	0.0	0.0	0.0	0.0	2006
7	2007	160.8	28.4	189.2	119.2	70.0	189.2	189.2	6.0	48.2	8.9	31.5	16.6	0.0	0.0	31.5	189.2	0.0	0.0	0.0	0.0	2007
8	2008	34.1	6.8	39.7	38.2	17.4	45.6	45.6	6.0	47.1	8.9	31.5	15.9	0.0	0.0	31.5	45.6	0.0	6.9	20.6	20.6	2008
9	2009	68.1	3.6	72.3	3.6	0.6	4.2	4.2	5.4	72.2	8.2	17.8	54.5	13.6	40.9	61.5	4.2	0.0	13.6	40.9	61.5	2009
10	2010	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	69.7	8.9	8.1	8.1	0.0	0.0	8.1	74.6	0.0	0.0	0.0	0.0	2010
11	2011	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	64.2	8.9	31.5	20.2	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2011
12	2012	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	68.7	8.9	31.5	19.5	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2012
13	2013	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	60.1	8.9	31.5	18.7	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2013
14	2014	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	58.1	8.9	31.5	17.3	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2014
15	2015	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	56.6	8.9	31.5	16.6	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2015
16	2016	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	47.1	8.9	31.5	15.9	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2016
17	2017	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	44.3	8.9	31.5	15.1	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2017
18	2018	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	43.6	8.9	31.5	14.4	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2018
19	2019	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	41.1	8.9	31.5	13.7	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2019
20	2020	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	39.1	8.9	31.5	13.0	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2020
21	2021	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	37.0	8.9	31.5	12.3	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2021
22	2022	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	35.3	8.9	31.5	11.5	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2022
23	2023	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	32.9	8.9	31.5	10.8	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2023
24	2024	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	30.9	8.9	31.5	10.1	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2024
25	2025	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	28.5	8.9	31.5	9.4	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2025
26	2026	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	26.7	8.9	31.5	8.7	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2026
27	2027	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	24.7	8.9	31.5	7.9	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2027
28	2028	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	22.6	8.9	31.5	7.2	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2028
29	2029	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	20.6	8.9	31.5	6.5	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2029
30	2030	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	18.5	8.9	31.5	5.8	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2030
31	2031	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	16.4	8.9	31.5	5.0	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2031
32	2032	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	14.4	8.9	31.5	4.3	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2032
33	2033	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	12.3	8.9	31.5	3.6	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2033
34	2034	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	10.3	8.9	31.5	2.9	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2034
35	2035	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	8.2	8.9	31.5	2.2	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2035
36	2036	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	6.1	8.9	31.5	1.4	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2036
37	2037	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	4.1	8.9	31.5	0.7	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2037
38	2038	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	2.0	8.9	31.5	0.0	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2038
39	2039	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	0.0	8.9	31.5	0.0	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2039
40	2040	74.6	0.6	74.6	74.6	74.6	74.6	74.6	6.0	0.0	8.9	31.5	0.0	0.0	0.0	31.5	74.6	0.0	0.0	0.0	0.0	2040

Note: 1) Abbreviations: F.C.: Foreign currency portion; L.C.: Local currency portion; 2) Project construction cost.

	F.C.	L.C.	Total
Civil	176.9	182.4	359.3
Metal	150.6	19.2	169.8
Others	90.0	108.1	198.1
Total	417.5	309.7	727.2

Figures



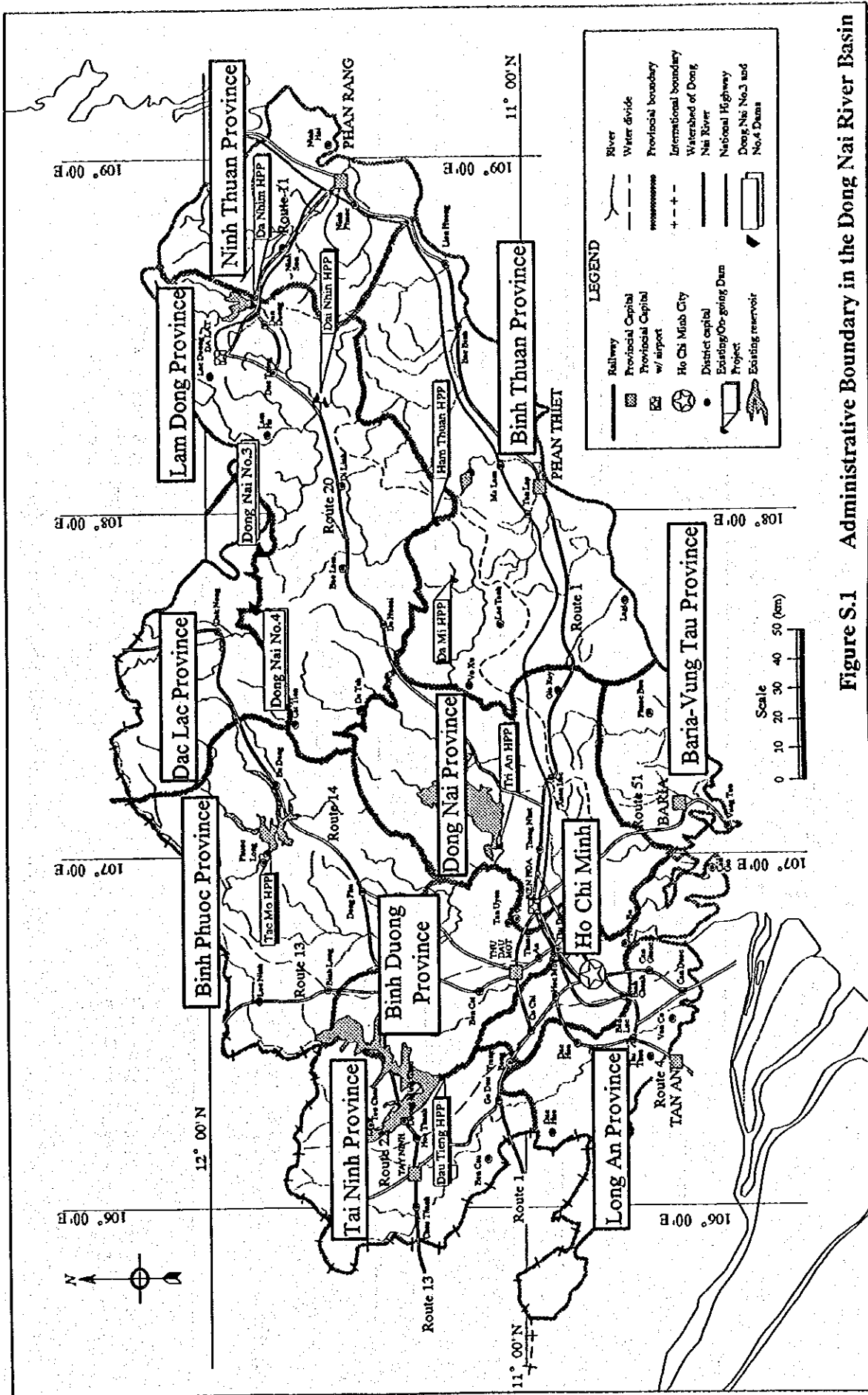


Figure S.1 Administrative Boundary in the Dong Nai River Basin

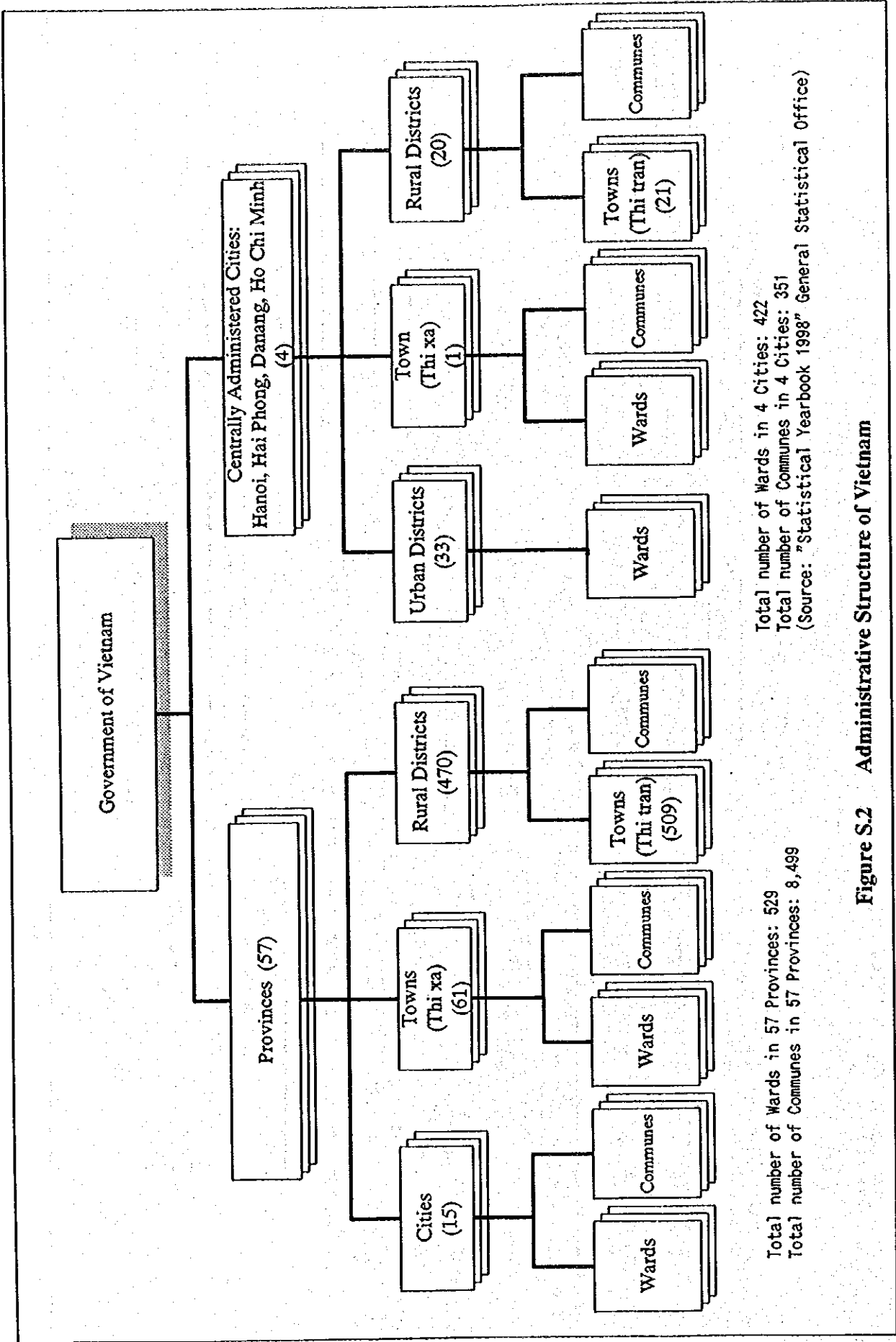
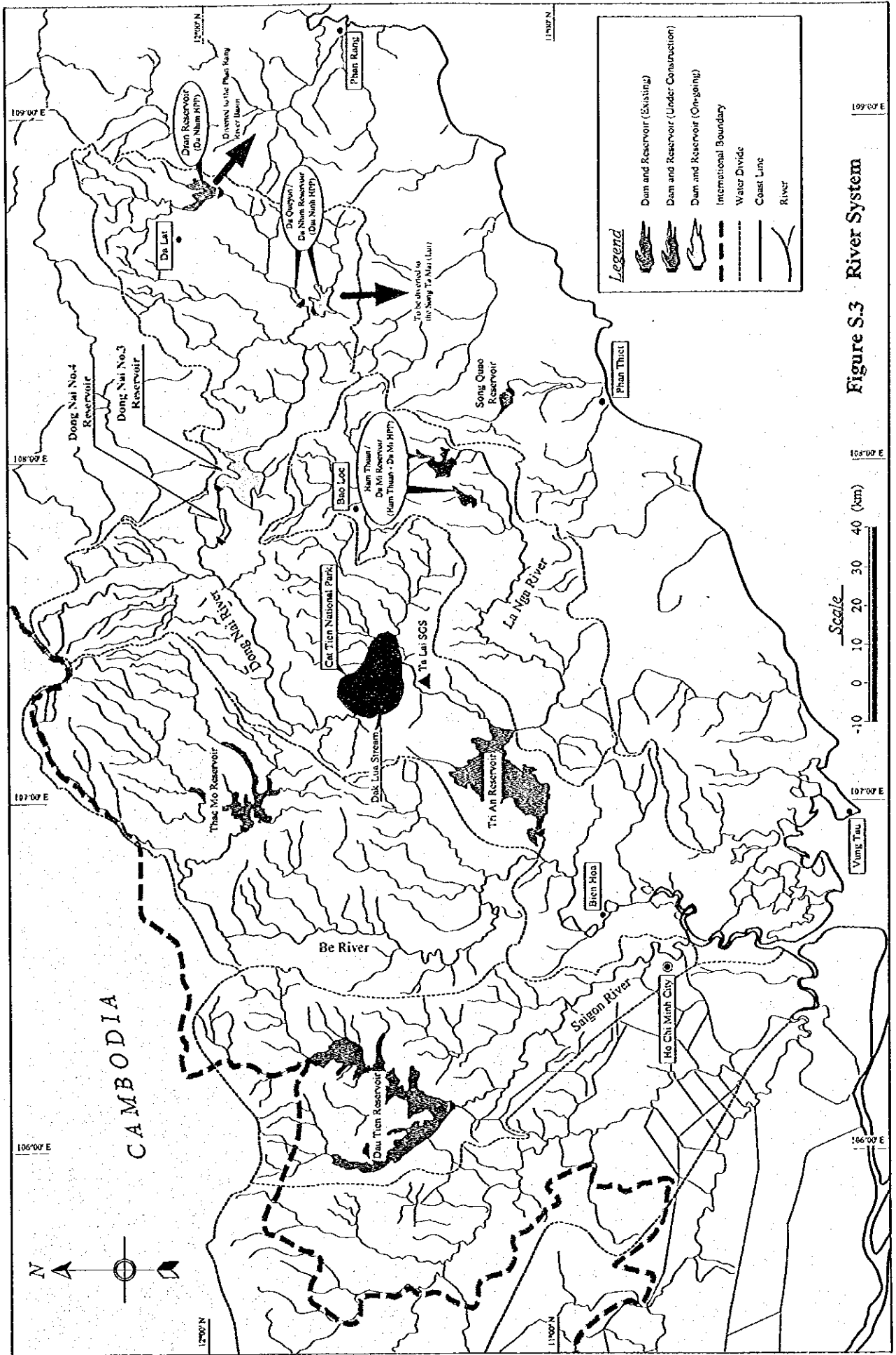
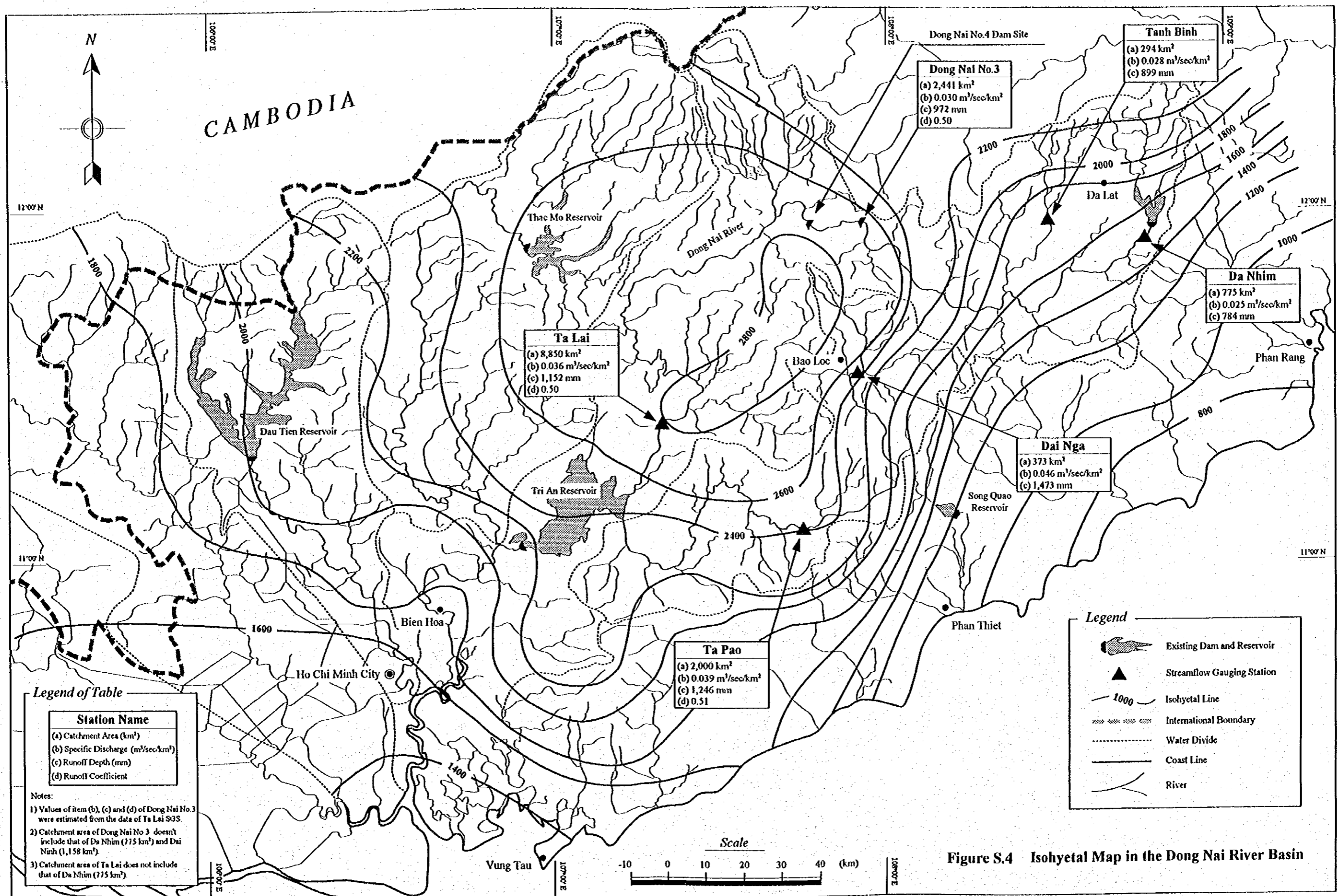
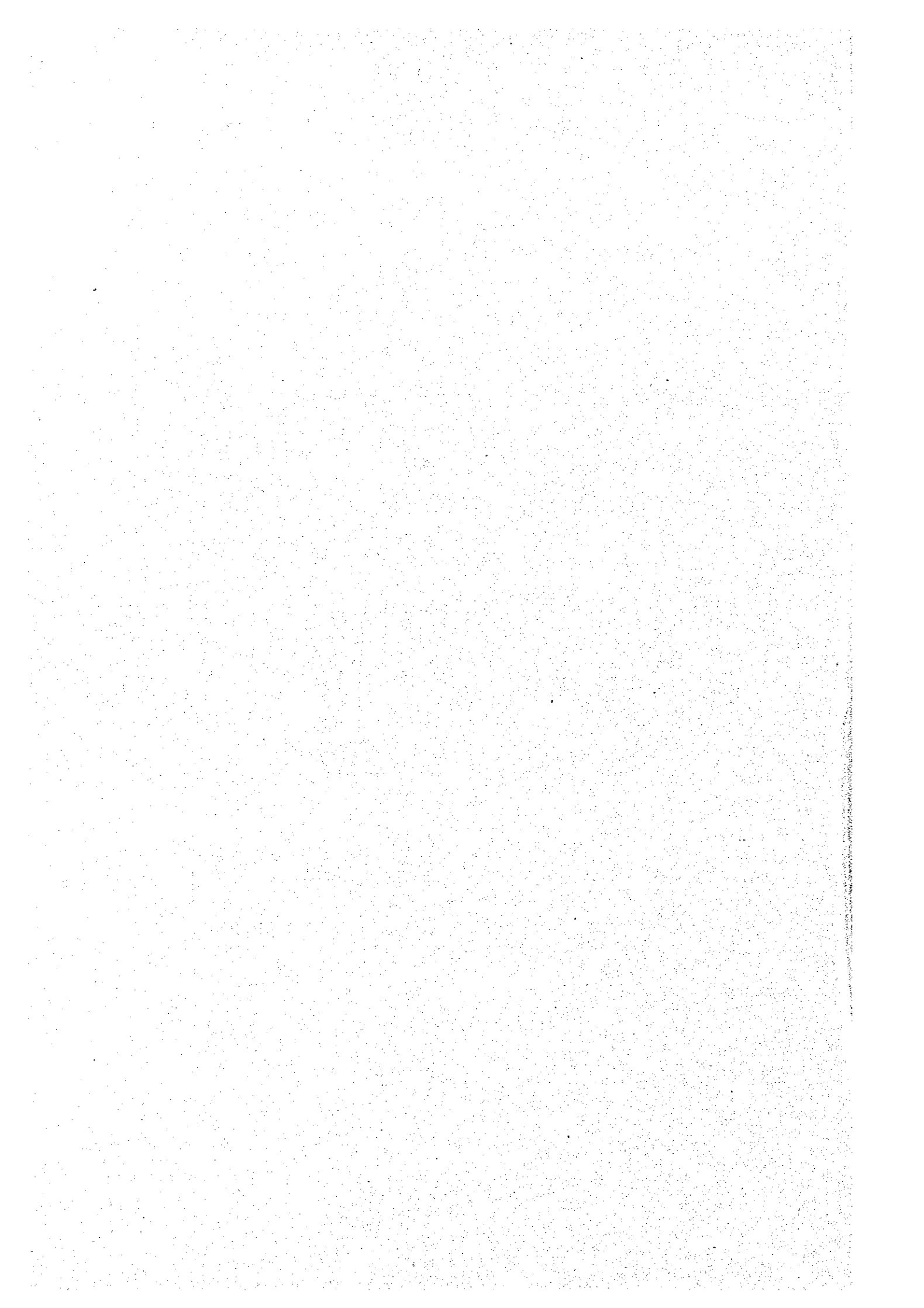


Figure S.2 Administrative Structure of Vietnam







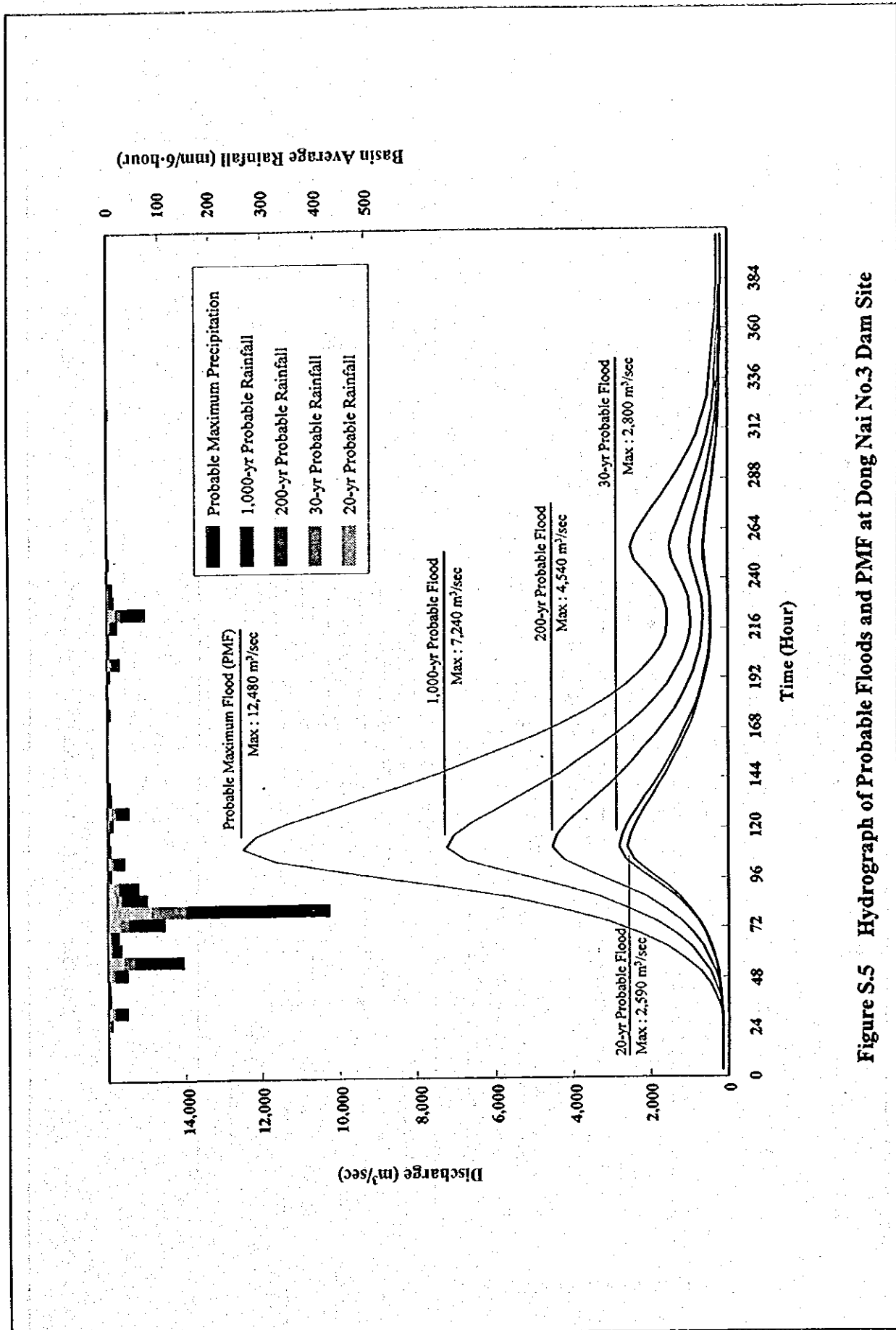


Figure S.5 Hydrograph of Probable Floods and PMF at Dong Nai No.3 Dam Site

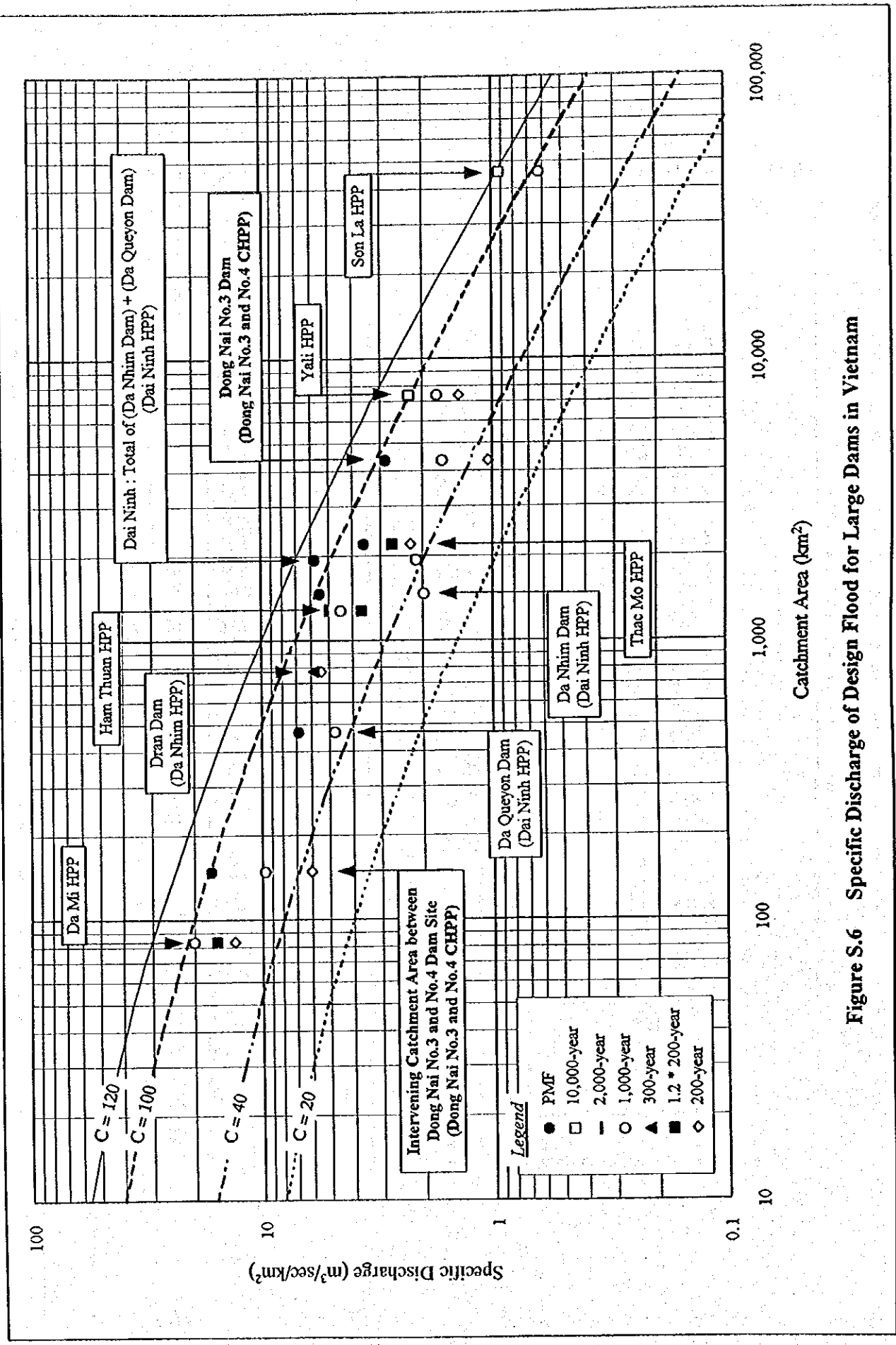


Figure S.6 Specific Discharge of Design Flood for Large Dams in Vietnam

Legend
 ■ Denudation Rates adopted in large dams in Vietnam

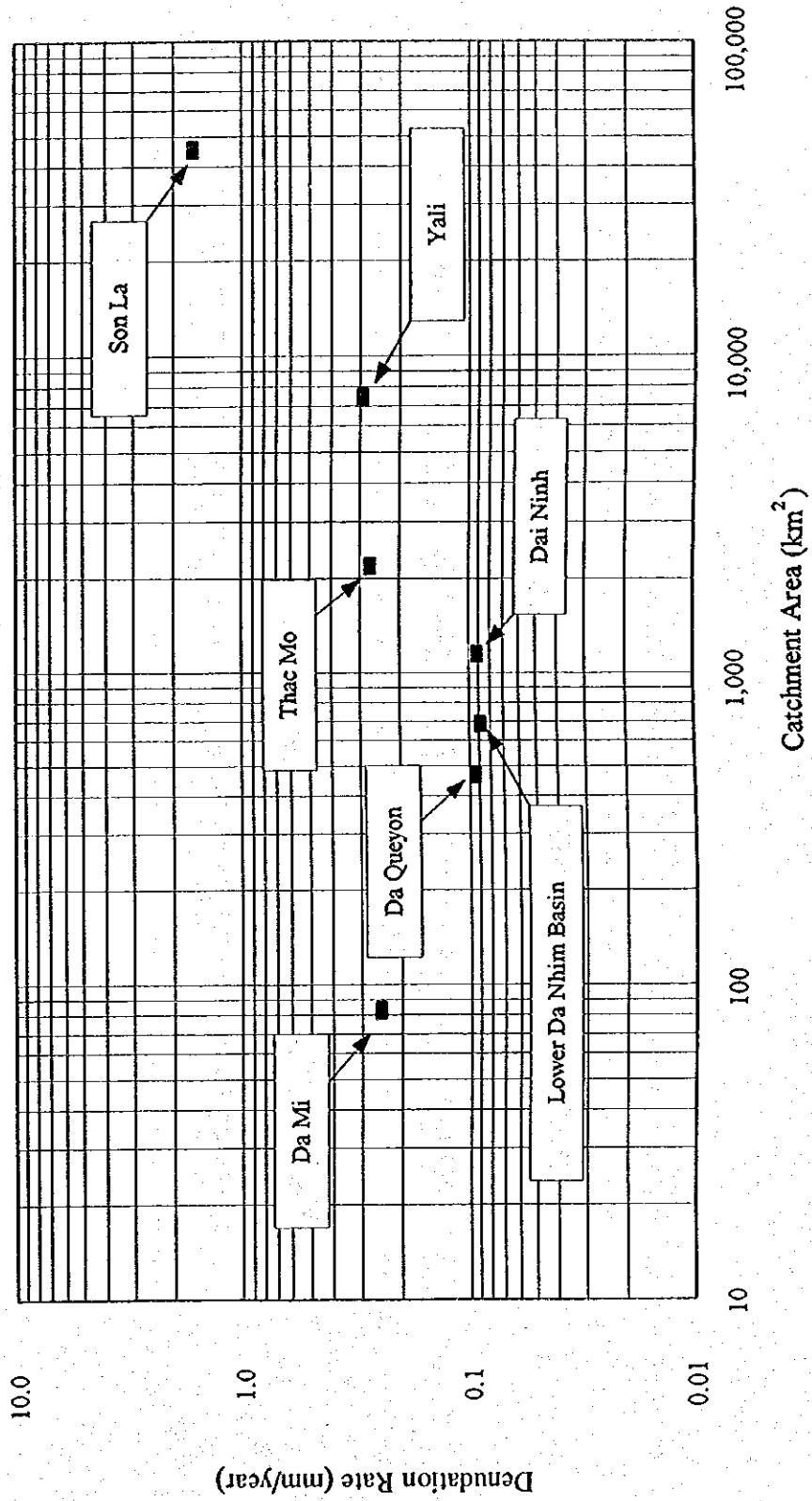
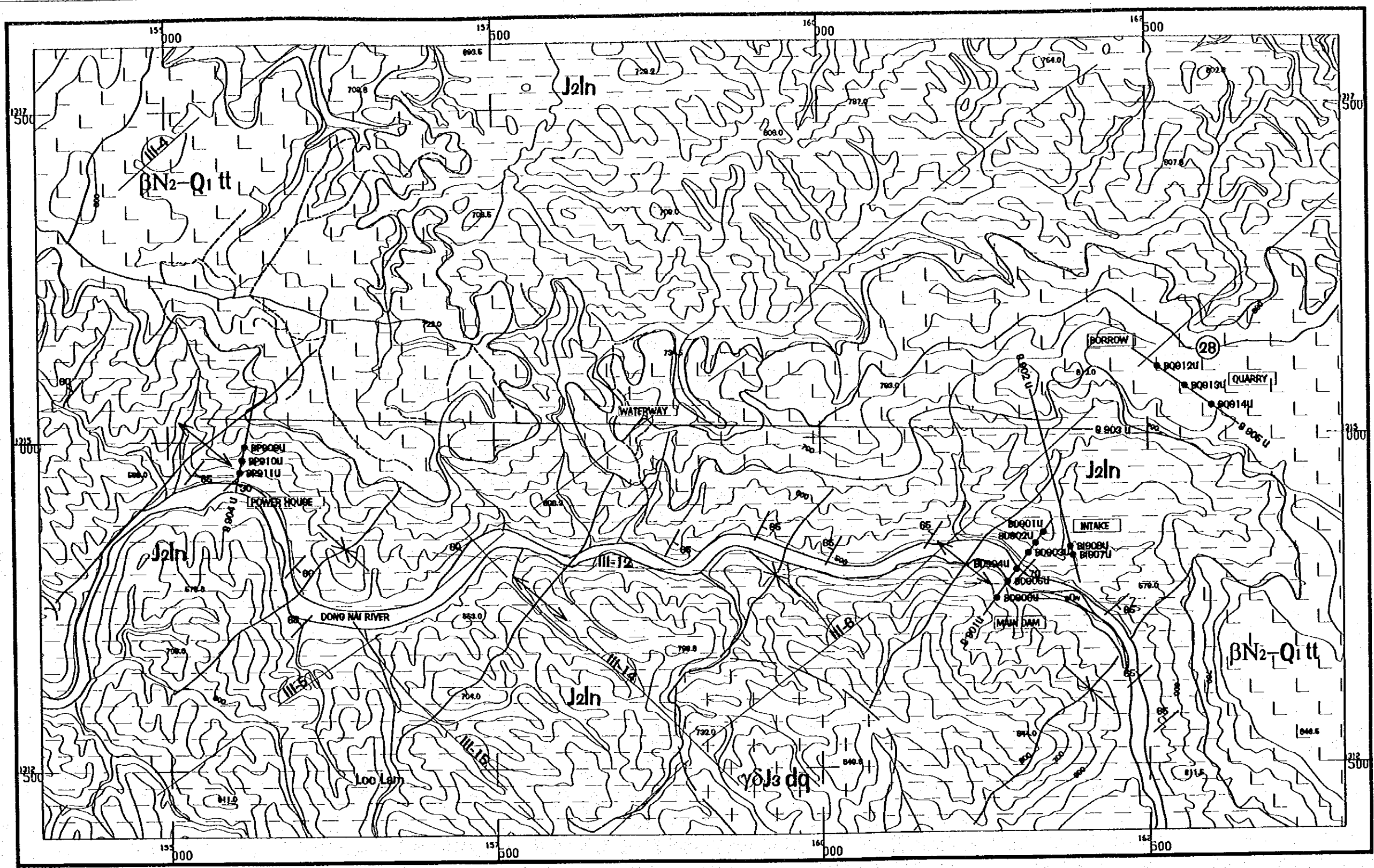


Figure S.7 Catchment Area versus Denudation Rate in Vietnam



LEGEND

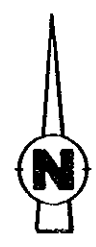
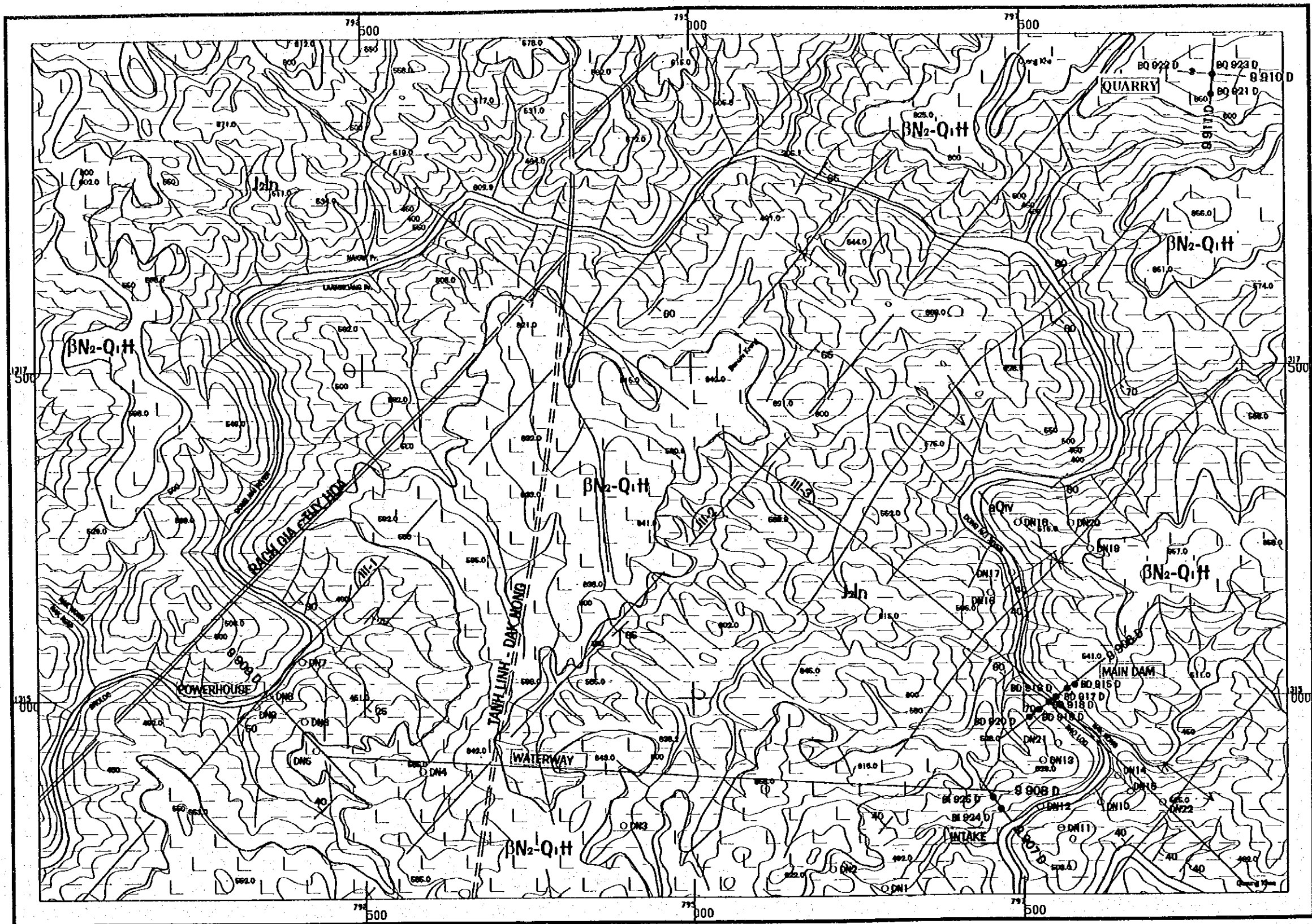


Symbol	Rock Unit (Member)	Corresponding formation in geologic map	Age
[Symbol: Dotted pattern]	Riverbed Deposit (Q ₁)	Recent	Quaternary
[Symbol: Wavy line]	(Unconformity)		
[Symbol: Dotted pattern]	(PN-Q ₁)	Tuo Trung formation	Plio-Pleistocene (Pliocene)
[Symbol: Wavy line]	(Unconformity)		
[Symbol: Dotted pattern]	Horblende granodiorite (y0J3 dq)	Dinh Quan formation	Upper Jurassic
[Symbol: Dotted pattern]	Sandstone, siltstone, shale, hornfels (J2ln)	Large formation	

- [Symbol: Dashed line] Boundary of strata
- [Symbol: Solid line with ticks] Fault
- [Symbol: Solid line with ticks and angle] Strike and dip of fault
- [Symbol: Solid line with ticks and angle] Strike and dip of sedimentary rock
- [Symbol: Dashed line with ticks] Synclinal side
- [Symbol: Dashed line with ticks] Anticlinal side
- [Symbol: Dashed line with 'S 908 U'] Seismic prospecting line
- [Symbol: Circle with 'B 903 U'] F/B Bore hole
- [Symbol: Circle with '28'] National road
- [Symbol: Dashed line] Path



Figure S.8 Geologic Map of Dong Nai No.3 Site



LEGEND

Symbol	Rock Unit (Member)	Corresponding formation in Regional Geologic Map	Age
[Stippled Box]	Riverbed-Deposit (Q ₁ H)		Quaternary
[Horizontal Line Box]	(Unconformity)		
[Stippled Box]	Basalt Lava (BN2-Q1H)	Tuu Trung formation	Mio-Pliocene (Pliocene)
[Horizontal Line Box]	(Unconformity)		
[Brick Pattern Box]	Gneiss, schist, hornfels (Lanh)	Lanh formation	Middle Jurassic

- Boundary of strata
- Fault
- Strike and dip of fault
- Strike and dip of sedimentary rock
- Structural axis
- Artificial axis
- 9 908 D Seismic prospecting line (F/D)
- DN 10 Bore hole (Pre-F/D)
- BD 915 D Bore hole (F/D)

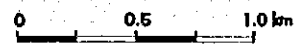


Figure S.9 Geologic Map of Dong Nai No.4 Site

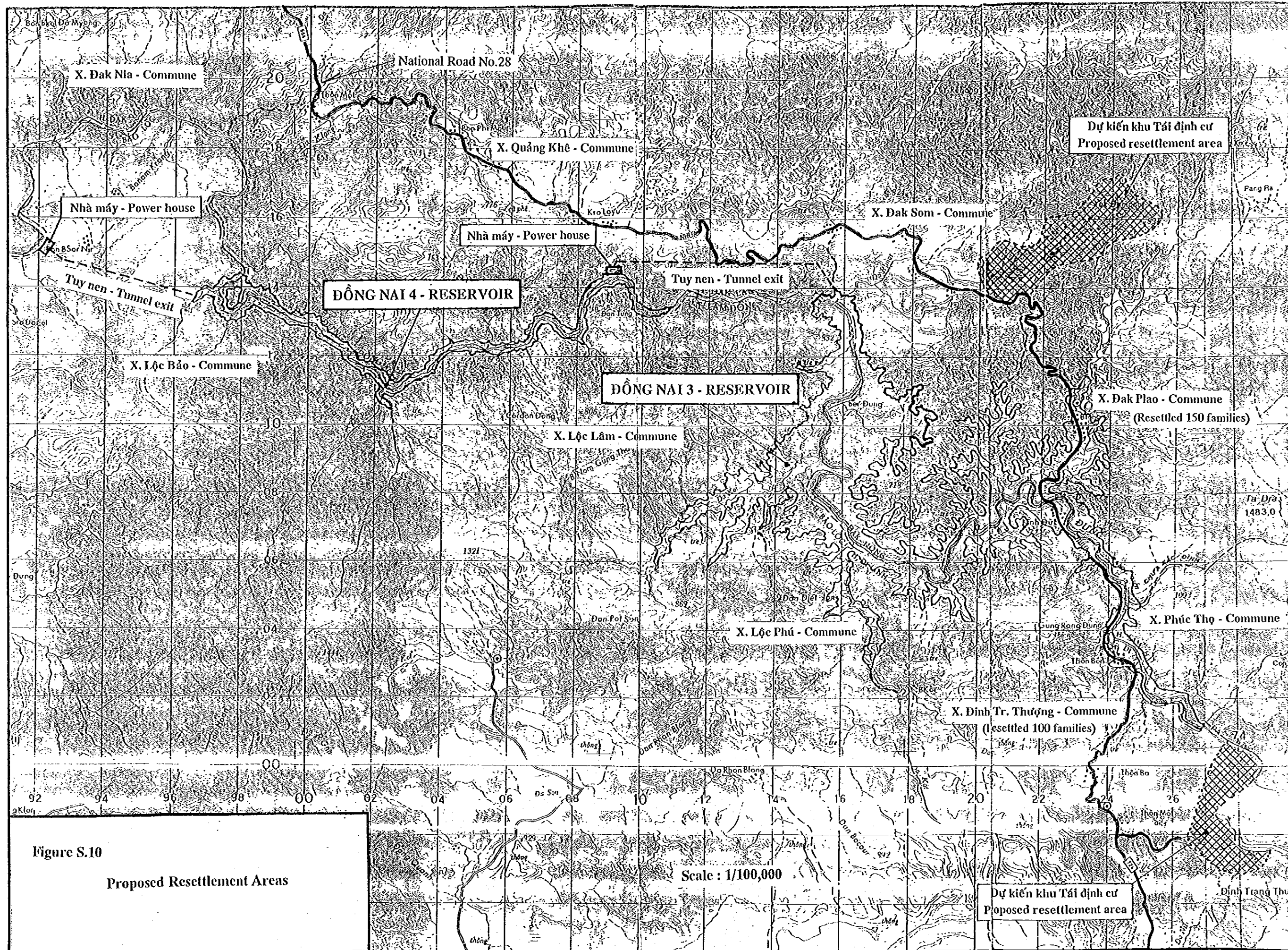
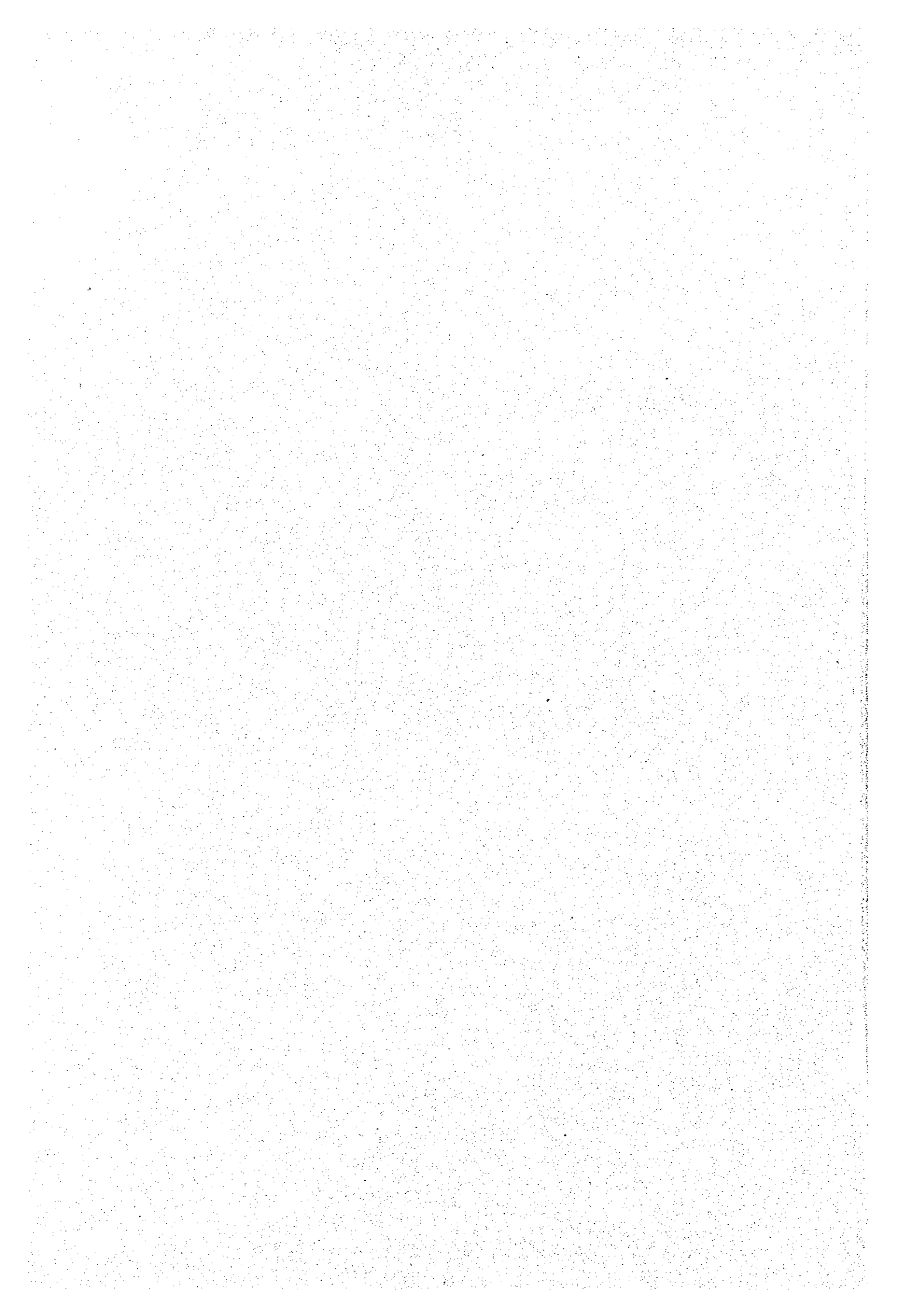
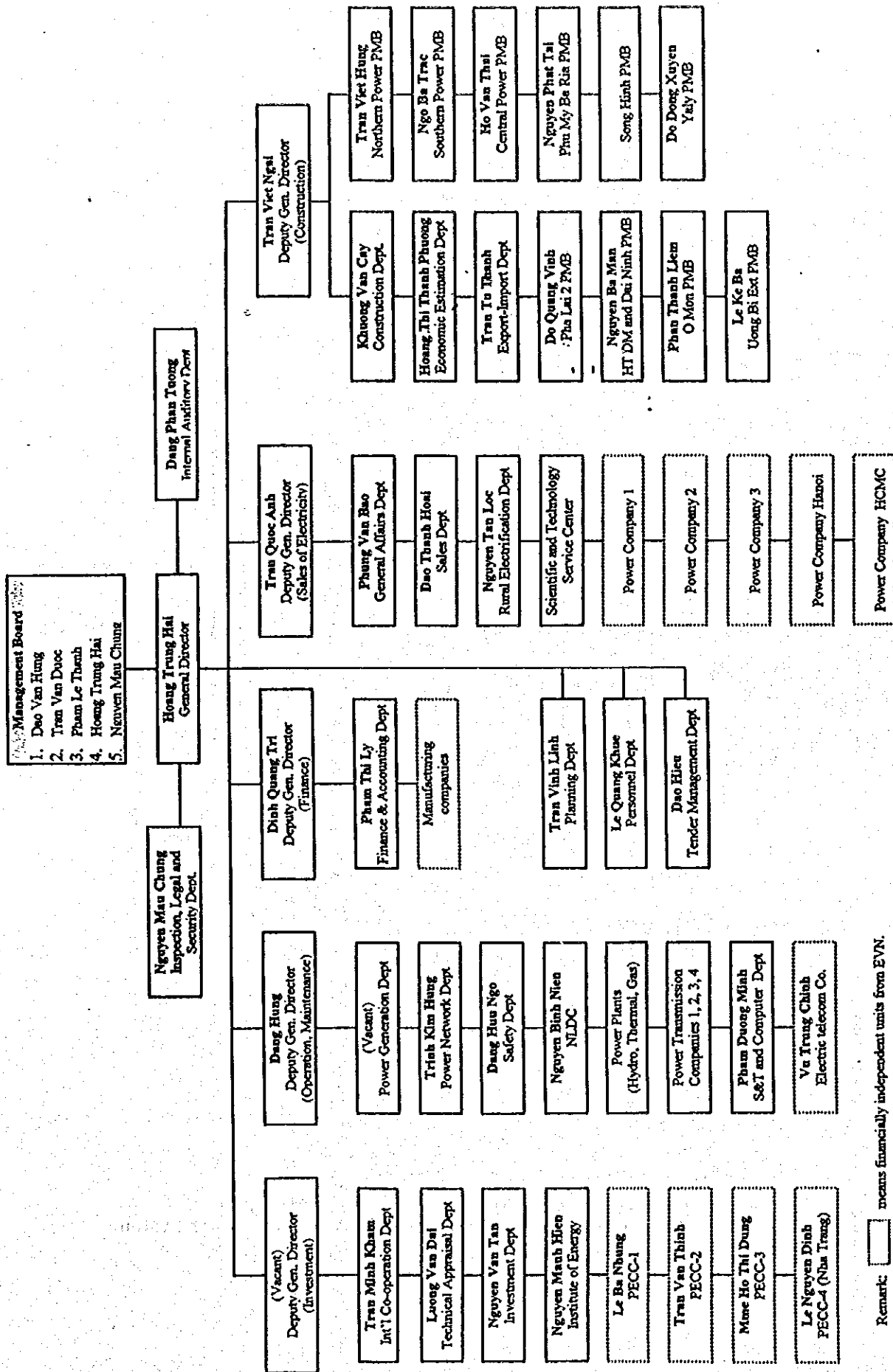


Figure S.10

Proposed Resettlement Areas





Remark: means financially independent units from EVN.

Figure S.11 Organizational Structure of Electricity of Vietnam as of July 1999

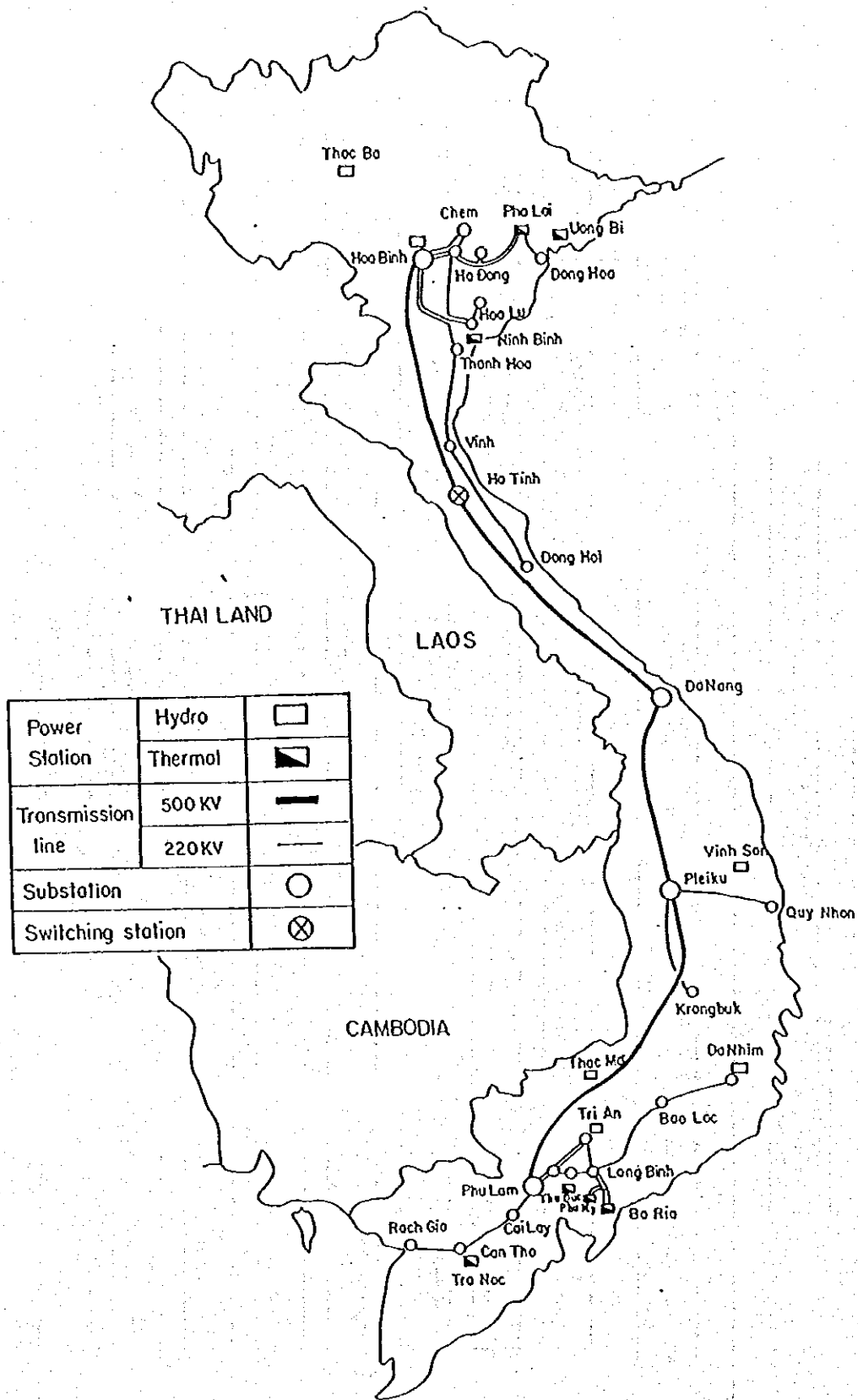


Figure S.12 Location Map of Existing 500 kV, 220 kV Power System (As of December 1998)

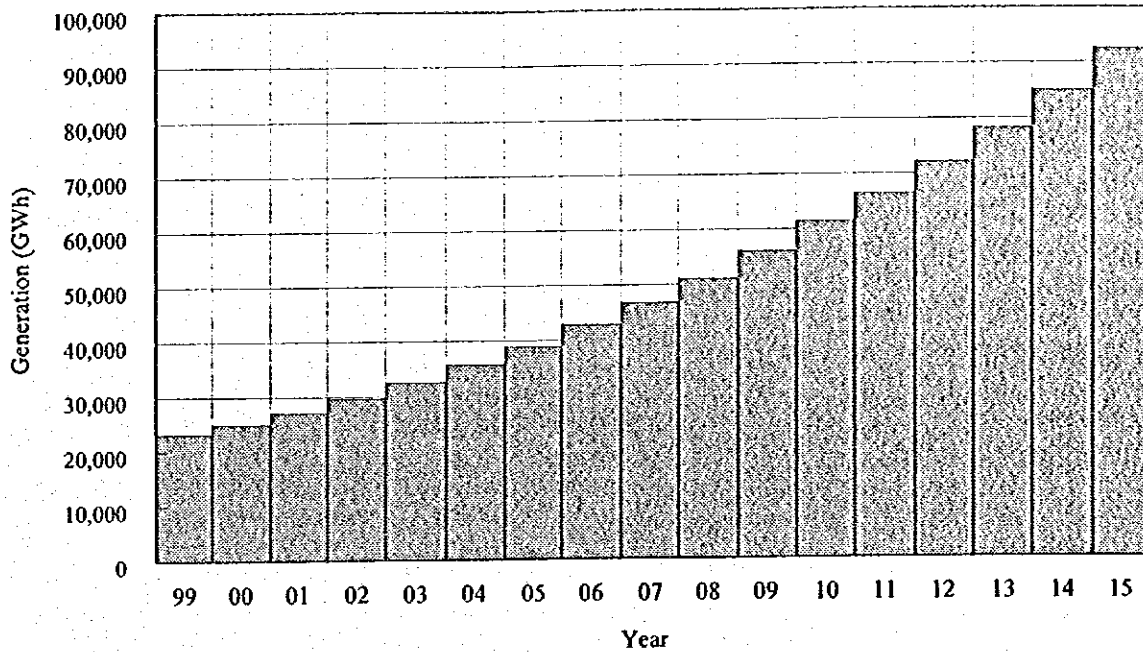


Figure S.13 Generation Forecast by the JICA Study Team

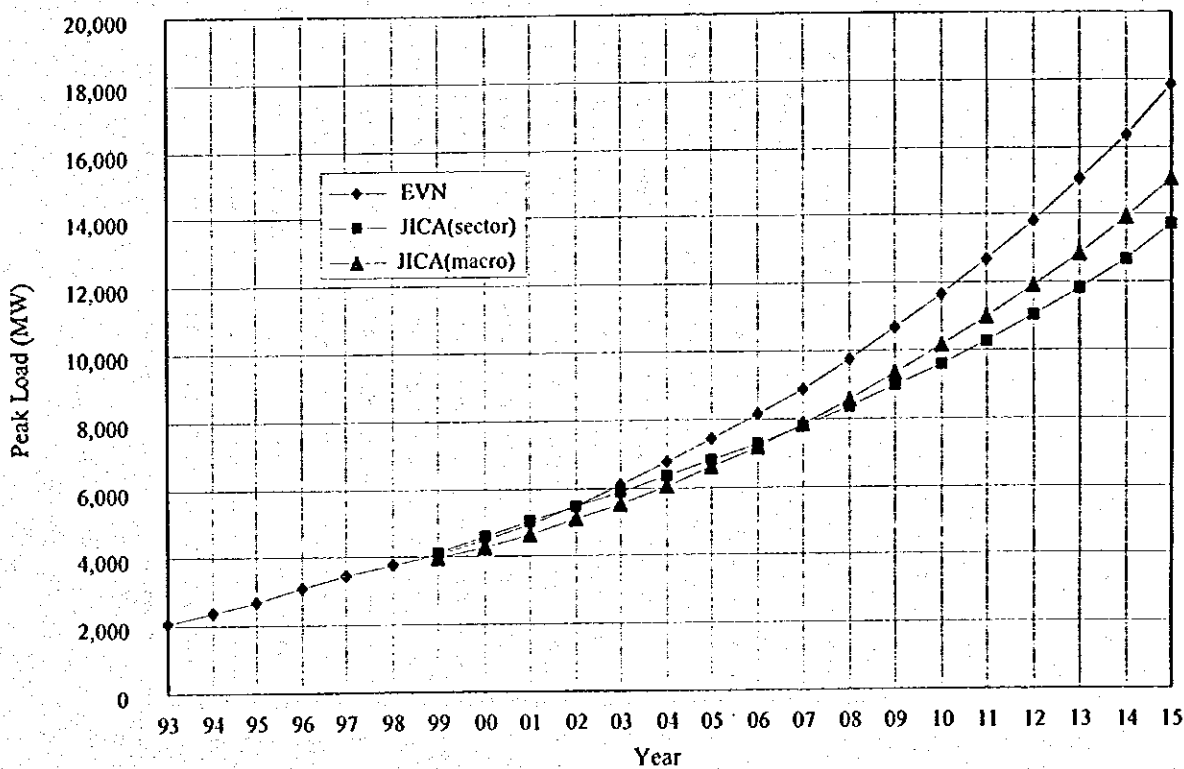


Figure S.14 Peak Load Forecast by the JICA Study Team

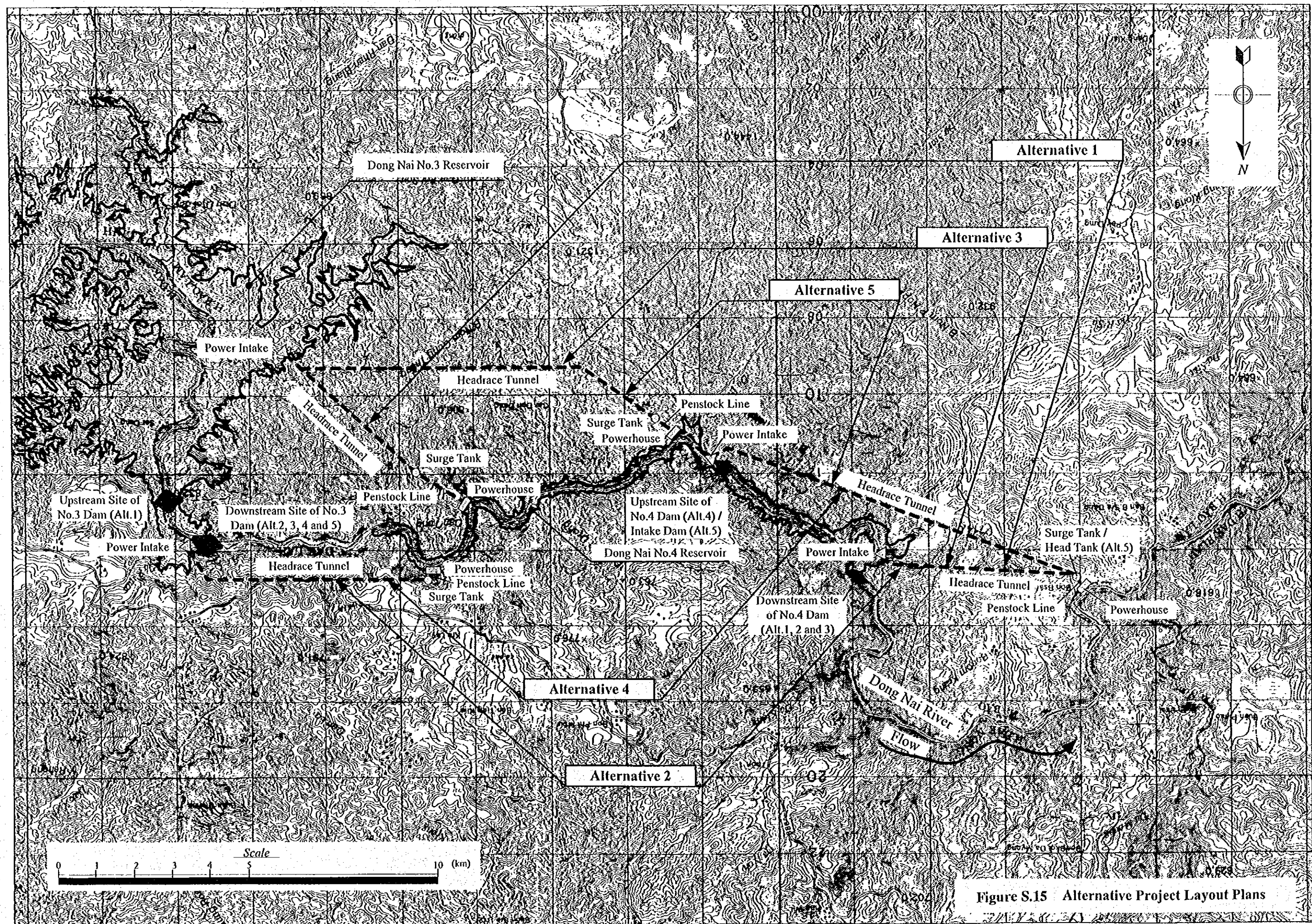


Figure S.15 Alternative Project Layout Plans