

## 参 考 資 料

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4. Study Actiivity at P3SA, Banten
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1. MINUTES OF MEETING  
ON  
NORTH BANTEN WATER RESOURCES DEVELOPMENT

In response to the request of the Government of the Republic of Indonesia, the Government of Japan dispatched the preliminary survey team of Japan International Cooperation Agency (JICA), hereinafter referred to as "the Team", headed by Mr. M. Yanagi from December 3 to December 17, 1981.

The Team and the staff of Directorate General of Water Resources Development (DGWRD), hereinafter referred to as "the DGWRD", have discussed and exchanged their views and ideas in regard to comprehensive water resources development in North Banten and the irrigation scheme of the Kopo-Cikande-Carenang area, on December 15, 1981.

The following is the understanding between the Team and the DGWRD.

1. The importance of comprehensive water resources study including flood control aspect for formulating Master Plan is recognized.
2. In drafting Scope of Work for the comprehensive study, the Terms of Reference of North Banten water resources development submitted in 1980 and additional information obtained by the Team will be taken into consideration.
3. Simultaneous implementation of Master Plan study on comprehensive water resources development and Feasibility Study on the irrigation scheme of the Kopo-Cikande-Carenang is desirable.
4. Feasibility Study on the irrigation scheme of the Kopo-Cikande-Carenang may include stage development.
5. The basic data and information needed for estimation of future water demands will be collected by the Indonesian Government before the commencement of the study.

6. It is convenient to establish a local office for the study and further works in the North Banten area.
7. As for the preparation of the study, the Team and the DGWRD listed the items as shown in the attachment.

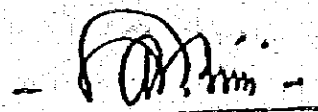
( Attachment )

1. List of items requested by the Team and the DGWRD.
2. Report of the field survey.
3. List of attendants.

December 16, 1981

  
(.....)

Mr. Minoru Yanagi  
Leader  
JICA Preliminary Survey Team  
Japan International Cooperation  
Agency

  
- Sarbini -

(.....)

Ir. Sarbini Ronodibroto  
Director  
Directorate of Planning & Programming  
Directorate General of Water  
Resources Development.

## Attachment 1

List of items requested by the Team and the DGWRD.

### A. Items requested by the Team.

1. Deep boring data of dam and weir sites  
(especially at Karfan and Gadeg sites )
2. Topographical map ( 1 : 5000 ) at dam and weir sites covering  
reservoir ends.
3. Actual photographical maps ( 1 : 5000 ) for the Kopo-Cikande-  
Carenang area.
4. Cross section ( pitch 0.5 km ) and longitudinal profile of the  
Cijung from estuary to dam sites.

### B. Items requested by the DGWRD.

- Inspection vehicles
- Hydro-meteorological equipment
- Surveying equipment
- Office and drawing equipment
- Boring machine

**Report of the Field Survey**

**JICA Preliminary Survey Team**

**16th December 1981**

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The JICA preliminary survey team headed by Mr. M. Yanagi, referred to as "the Team" hereinafter, for irrigation and water resources development in North Banten has carried out field survey in the North Banten area with particular interests in water resources development in the area and irrigation development in the Kopo-Cikande-Carenang area from 7th December to 9th December, 1981. The Team has successfully completed the three-day survey without hindrance owing to the kind cooperation and hearty help given to the Team by the Indonesian officials and the Japanese experts resident in Jakarta. The Team much appreciates their sincere assistances and considerations.

The following is the findings of the field survey implemented by the Team.

## I. Objective

The objective of the field survey is to survey the North Banten area in respect to water resources development and the projected irrigation scheme of the Kopo-Cikande-Carenang area which covers some 9,000 ha. and obtain firsthand information on those subjects.

## II. Findings

### A. Water Resources Development

1. To protect people from disasters is one of fundamental responsibilities to the modern government. Although the North Banten area has lots of rainfall, which is usually 3000-4000 mm a year in the upper region of the Ciujung, little attention has been paid to the flood control of the Ciujung. Flood damages, particularly in the areas along the lower reaches of the Ciujung and around Rankasbitung, have occurred from time to time.

It is reported by D.P.U. that in North Banten on November 10 to 16, 1981, there has been the biggest flood after World War II, flooded area about 2500 ha along the Ciujung, and more than 2500 houses have been damaged.

Therefore, it is now clear that flood control should be integrated to water resources development in North Banten, and multi-purpose dams involving flood control effects in water resources development should be planned.



2. The North Banten area is located about 100 km west of Jakarta, and one of less developed areas in West Java Province.

A big project for industrialization in the North-West district of Banten is now being proposed and the Krakatau Steel has been operating in Cilegon. High development potential in the areas in and around Cilegon area seems to be evident.

Industrial water supply plays a key role in the industrialization project and should never be neglected as well as municipal water supply in the area.

3. Several development plans have so far been proposed and a few of them are now in execution in North Banten area. In 1979, the British consultant, Bennia and Partners, carried out reconnaissance study on water resources development in North Banten which placed an emphasis on agriculture and irrigation.

From the standpoint of developing North Banten in the right direction in the future, well-balanced comprehensive study on water resources development which consists of not only agriculture but also flood control, municipal, industrial water supplies and so on is important and necessary.

## B. Irrigation

Irrigation development plays a very important role in water resources development of the North Banten area. Two measures can be considered on irrigation in the area to increase rice production. The one is the efficient usage of the existing irrigation facilities and the other dry season irrigation.

In planning dry season irrigation, the development of new water resources has to be envisaged. It is important that the irrigation plan is to be made considering the projected available supply of water resources.

As the quick increase of rice production is urgent necessity, investigation about classifying areas to be irrigated by priority would be required in parallel to the formulation of the Master Plan on water resources development in North Banten. The irrigation scheme for the Kopo-Cikandé-Carenang area of 9,000 ha is proposed by the Indonesian Government. A new reservoir is necessary to

irrigate the proposed area of 9,000 ha throughout the year.

The dam, proposed to be constructed at the Karian site, is to be large enough to effect flood control of Ciujung river, and to effectively irrigate the adjacent areas of the lower reaches of the Ciujung river in the dry season.

But from the technical and other points of view, it will take more time for the main items of the dam design to be specified. The items necessary for technical analysis are to specify irrigable areas and water requirements, the locations and geological conditions of the dam and weir sites, hydrological potentiality of the Ciberang river and so forth. It is desirable that the actual studies mentioned above are to be started as soon as possible at the same time as the formulation of the Master Plan.

### C. General Aspects of Agriculture

1. Present conditions and characteristics  
North Banten might topographically be classified roughly into plain and montane areas. Lowland paddy is grown mainly in the river basin of the Ciujung. Upland crops such as cassava, pulses and fruits are cultivated at large in the foothills of Mt. Karang.

We have had such impressions that the average size of farmholding is rather small and the considerable area of fallow lands might be seen in the dry season because of water scarcity. The availability of manpower may exceed that of jobs in North Banten during the dry season.

As the transplantation of paddy seedlings does not seem to concentrate at a time but take place from time to time, effective water management and pests and disease control might be hampered to some extent.

The average size of a farmland unit is rather small and the number of farm roads is few in North Banten. Infrastructure for effective farming has not fully been provided yet. Farming operations are implemented mainly by hand and draught animals at present. Improvement of the infrastructure will become necessary in the future with view to raising labour productivity.

We have seen a few of rice mills and collection facilities which are small in size and located in distance from fields. Such conditions would be hindering smooth collection and marketing of agricultural produce as well as smooth delivery of input materials.

## 2. Modernization of agriculture

On the basis of what has been mentioned in the previous section, the following points may be taken into consideration in order to aim at raising agricultural productivity in the future.

a; As we consider natural conditions in the Kopo-Cikande-Carenang area, rice production will continuously be promising as a main crop in the future, too. It would be expected that the provision of irrigation water to the area should be envisaged in the dry season so as to extend double cropping areas, and the intensification of land use promoted.

b; We have had such impression that efficient cropping patterns might not have been established fully, therefore we think of the necessity of planning rational cropping patterns, effective control of pests and disease and efficient water management.

c; Well-planned provisions of a network of farm roads and other infrastructure would be necessary in order to carry out farming operations more smoothly.

d; In order to promote what have been stated in the foregoing, further understanding of farmers' ideas and wishes, effective extension and research systems and the promotion of education and training for farmers to obtain efficient farming techniques would be very important let alone efficient marketing systems of necessary farm inputs and outputs.

## List of Participants in the field survey

1. Participants  
(JICA mission)

Mr. M. Yanagi	:	Leader
Mr. S. Tsuchiya	:	Cultivation/Soil
Mr. T. Kanai	:	Irrigation
Mr. N. Yasuda	:	Agro-economics
Mr. Y. Sasaki	:	Water Resources
Mr. K. Sudo	:	Coordination

## (JICA Experts)

Mr. K. Inoue	:	Dam
Mr. Y. Takano	:	River
Mr. T. Iwai	:	Irrigation

## (Counterparts)

Ir. Kuntjoro	:	
Ir. Ruchiyat	:	Hydraulics
Mr. Amron, Msc	:	Pedlogy
Ir. Paridjo	:	Agriculture/Soil
Drs. Agus	:	Hydrology
Ir. Jumpono	:	Irrigation
Ir. Agni	:	Rivers

Itinerary of the JICA Preliminary Survey Team  
(From the 3rd of December to the 17th of December 1981)

- 3 December (Thurs.) Arrived in Jakarta
- 4 December (Fri.)
- Collected information from Mr. A. Hamamori and Mr. M. Yuasa, JICA experts, about water resources development in North Banten and the proposed irrigation scheme in the Kopo-Cikande-Careng area.
  - Discussed with Mr. M. Miyamoto, resident representative, at the JICA office.
- 5 December (Sat.)
- Paid courtesy call to Ir. Mashudi, Ir. Sarbini Ronodibro and Drs. Tata Sukata.
  - Discussed the itinerary of the field survey in North Banten.
- 6 December (Sun.) Prepared for the field survey.
- 7 December (Mon.)
- Set off on the field survey.
  - Surveyed the proposed Gadeg weir site, the Karian dam site and the dam site on the Cibanten.
  - Stayed in Serang.
- 8 December (Tues.)
- Called at DPU Wilayah Pengairan Banten.
  - Visited Ciomas, Tjinanka, the Krenceng reservoir in Cilegon and Pasir Kopo.
  - Stayed in Anyer.
- 9 December (Wed.)
- Visited PROSIDA main canals and drainage canals.
  - Called at DPU Wilayah Pengairan Banten.

- Surveyed the Pamarayan weir and the Kopo-Cikande area.
- Returned back to Jakarta.
- 10 December (Thurs.) - Reviewed the field survey.
- 11 December (Fri.) - Visited Directorate of Planning and Programming and the project office of Binnie and Partners to collect information.
- 12 December (Sat.)
  - A group called at Kantor P3SA Banten in Bekasi.
  - B group discussed agriculture in Indonesia with Mr. I. Suzuki.
  - A group : Mr. Mr. Yanagi, Mr. T. Kanai and Mr. Sasaki
  - B group : Mr. N. Yasuda, Mr. T. Tsuchiya and Mr. K. Sudo.
- 13 December (Sun.) Drafted the field survey report.
- 14 December (Mon.) Discussed comprehensive water resources development in North Banten with Mr. Kuntjoro Jakti.
- 15 December (Tues.)
  - Paid courtesy call to Ir. Sujono Sosrodarsono.
  - Discussed the draft of Minutes.
- 16 December (Wed.) Exchanged signatures on Minutes.
- 17 December (Thurs.) Leaving for Tokyo.

List of attendants

Japanese Side (JICA Preliminary Survey Team)

1. Mr. T. Kanai
2. Mr. N. Yasuda
3. Mr. S. Tsuchiya
4. Mr. Y. Sasaki
5. Mr. K. Sudo

Indonesian Side ( D.G.W.R.D. )

1. Ir. Mashudi
2. Ir. S.P. Kuntjoro Yakti
3. Ir. Ruchyat Kustomi
4. Mr. A. Hamanori ( Colombo Plan Expert )
5. Mr. M. Yuasa ( Colombo Plan Expert )
6. Mr. T. Iwai ( Colombo Plan Expert )

## 2 収 集 資 料

1. Banten Water Resources Development Reconnaissance Study Vol. I, II 1979, Binnix and Partners.
2. Brief Explanation of Bonten Water Resources Development Project 1981, DPP, DGWRD.
3. Data Kebutuhan Air Industri Pada Masing-Masing Zona Industri Kimia Dasar, halaman 2 - 4, DJP.
4. Hydrological Station Map 1 : 100,000, DJP.
5. Indonesian Population and family Planning Program Through Charts and Pictures, 1980, BDK
6. Indonesian Social Developmental Atral 1930 - 1978, CBS.
7. Inventarisasi Areal Sawah per April 1981, WPB.
8. Kegiatan Study P3SA Banten - sampai dengan tahun anggaran 1981/82, DBPP, DJP.
9. Luas Tanah Menurut Penggunannya di Jawa & Madura 1979, BPS.
10. Organizational Chart of Directorate General of Water Resources Development.
11. Pengembangan Wilayah Sungai P3SA Daerah Banten, DJP.
12. Rencana Intensifikasi Padi Sawah Pengairan Dalam Rt. 1981/1982 Kabupaten Daerah Tingkat II Lebak, Pandeglang, Serang Propinsi Daerah Tingkat I Jawa Barat, WPB.
13. Pola Dasar Perencanaan Pengembangan Sumber - Sumber Air, DJP.
14. Population of Jawa & Madura - results of population registration 1978, CBS.
15. Production of Food Crops in Indonesia 1979, CBS.
16. Produksi Tanaman Bahan Makanan di Jawa & Madura 1978, BPS.
17. Report of Flood in Banten 1981, DPP, DGWRD.
18. Report of Land Capability Survey, Ciujung Watershed Serang Banten West Jawa, DTGT, DJA.
19. Regional Development Studies and Planning in Indonesia; In Bulletin of Indonesian economics studies 1979 Vol. 15 No.2 pp. 113 - 127 Australian National University.
20. Stastical Pocketbook of Indonesia 1979/1980, CBS.



21. Stastical Yearbook of Indonesia 1971, CBS.
22. インドネシア・ハンドブック1981年版, ジャカルタ・ジャパン  
クラブ法人部会
23. インドネシア共和国バンテン地区水資源開発計画調査報告書  
昭和55年3月(社)国際建設技術協会
24. 対インドネシア米増産協力 鈴木 勲
25. 海外農業開発事業事前調査報告書(フィリピン, インドネシア, タイ)  
昭和56年6月(社)海外農業開発コンサルタンツ協会
26. 海外農業開発事業事前調査報告書(フィリピン, タイ, バングラディシュ,  
スリランカ, インドネシア)昭和55年10月(社)海外農業開発  
コンサルタンツ協会

#### 略 記 名 称

BDK	: Biro Data kependudukan
BPS	: Biro Pusat Statistik
(CBS	: Central Bureau of Statistics)
DBPP	: Direktorat Bina Program Pengairan
(DPP	: Directorate of Planning and Programming)
DJA	: Direktorat Jenderal Agraria
DJP	: Direktorat Jenderal Pengairan
(DGWRD	: Directorate General of Water Resources Development)
DPU	: Departemen Pekerjaan Umum (Ministry of Public Works)
DTGT	: Direktorat Tata Guna Tanah
WPB	: Wilayah Pengairan Banten (Banten Water Resources Development Agency)

### 3. 確認した資料

- |                      |             |  |
|----------------------|-------------|--|
| ① 地形図                | 1 : 50,000  | コンター 2.5 m<br>但しオランダ時代のものを修正   |
| ② 航空写真               | 1 : 20,000  | Ciujung, Cidaran,<br>Cibanten 沿川のもの  |
| ③ Orthofotomap       | 1 : 10,000  | この航空写真の歪修正したもの 81年12月時点では<br>Cidaran 上流域(約100km <sup>2</sup> )しか完成していない。<br>コンター 5 m |
| ④ 地質図                | 1 : 2,000   | 1 mコンター及び地表地質が記入されている。<br>この図は構造物用のもので Kavian ダム, Cibanten<br>ダム Gadeg 地点のものが完成      |
| ⑤ Landcapability Map | 1 : 25,000  | Ciujung 川と Cibeveum 川間の平地部のものが<br>完了   |
| ⑥ 水文観測所位置図           | 1 : 100,000 |  |

4. STUDY ACTIVITY AT P<sub>3</sub> SA RANTEN

No.	Location/Regime	77 / 78	78 / 79	79 / 80	80 / 81	81 / 82	82 / 83	
1.	Karlan Dam Site (Ciberang river DOWN STREAM)	-to instal Automatic Water Level Recorder (AWLR) in Sajira	-to instal Climatological Station in <u>Cemari</u>  -to instal climatological Station in <u>Kady</u>	-Land use investigation with 1:100,000 scale map  -Aerophoto (1:20,000.00)	-Geological and Soil mechanic Investigation 500ha (1:2000) in Karlan Dam Site  -Topographic mapping 500ha (1:2000) in Karlan Dam Site  -Longitudinal & Cross section in AWLR Sajira  -Sediment transport analysis	-to build winch current meter installation in Ciberang river	-Geological investigation in flooded area of Karlan reservoir (1:2000)  -Topographical mapping in flooded area of Karlan reservoir  -core geological investigation on Karlan Dam Site  -Sediment Transport & water quality analysis	-routine measuring of discharge
2.	Weir Gadeq (Cibeureum)			-Aerophoto (1:20,000)	-Geological and soil mechanical investigation 200ha (1:2000) at Near Gadeq  - Survey/Topographic mapping at Gadeq Weir Site	-Longitudinal & cross section measurement  -geological and soil investigation 200ha (1:2000) at Gadeq Weir Site  -Weir Design	-Geological and Seismic investigation at Gadeq Weir Site  -Topographical mapping flooded area (1:2,000)  -Gadeq Weir model test  -Core geological investigation at Gadeq Weir Site	

No.	Location/Regime	77 / 78	78 / 79	79 / 80	80 / 81	81 / 82	82 / 83
3.	Cluyah Tunnel			-Aerophoto (1:20,000)	- Geological investigation - Teristria mapping (1:5000)		-Sediment Transport & Water Quality Analysis -Aerophoto interpretation -Core geological investigation
4.	Kopo-Cikonde-Carengang Area		-Land use survey -Land capability survey	-Land use survey & investigation 10,000 ha -land capability 10,000ha -Aerophoto (1:20,000)		-Main Canal design - Topographical mapping (1:5,000) (continued) 5,000ha	-Topographical mapping (continued) 30km. (1:5,000) -soil mechanical investigation
5.	Main Canal			Aerophoto (1:20,000)	- Topographical mapping (1:5,000) - Longitudinal & cross section survey	- Main canal design - Topographical mapping (1:5,000) (continued) 5,000ha	-Topographical mapping (continued) 30 km. (1:5,000) -Soil mechanical investigation
6.	CIDJUNG UP STREAM Small Dam and reservoir capen			-Teristria map (1:2,000)		- Topographical mapping of Ci-	

No.	Location/Regime	77 / 78	78 / 79	79 / 80	80 / 81	81 / 82	82 / 83
7.	Proposed small irrigation area & small dam Cihenyep					<ul style="list-style-type: none"> <li>leles Cimarga, Warunggunung proposed irrigated area 12:500 ha</li> <li>- Topographical survey of proposed small dam/weir on Cileles, Cimarga &amp; Warunggunung area</li> </ul>	
8.	Panikopo/Lebah Masigit Dam Site			<ul style="list-style-type: none"> <li>-Aerophoto (1:20,000)</li> <li>-Topographical mapping (1:1000)</li> </ul>	<ul style="list-style-type: none"> <li>- Sediment transport &amp; water quality analysis</li> <li>- Longitudinal &amp; cross section of AWR site in Cimant River</li> </ul>	<ul style="list-style-type: none"> <li>-Topographical mapping (1:2000) on Dam Site</li> <li>-Geological mapping (1:2000)</li> </ul>	<ul style="list-style-type: none"> <li>-measuring of discharge routine</li> </ul>
9.	Cibanten		<ul style="list-style-type: none"> <li>-to install AWIR Station</li> </ul>	<ul style="list-style-type: none"> <li>-Aerophoto (1:20,000)</li> </ul>	<ul style="list-style-type: none"> <li>- Longitudinal &amp; cross section survey</li> <li>- topographical mapping at Dam Site</li> </ul>		<ul style="list-style-type: none"> <li>-measuring of discharge routine</li> </ul>

No.	77/78	78/79	79/80	80/81	81/82	82/83
10. Cidanan		-to instal climatological station on padarincang	-aerophoto (1: 20,000) -orthophoto (1: 10,000)	(200ha) -geological & soil mechanical investigation at dam site 200 ha	-topographical mapping on proposed irrigation area (10,000) ha -to build winch current meter installation	-measuring of discharge routine

## 5. Report of flood in Banten

### I. P r e f a c e

According to the disposition from the Director of Planning and Programming, Directorate General of Water Resources Development, survey Team for Banten consists of Ir. Suharto dip.HE, Ir. Ruchikat Kustomi, and Mr. Agni from sub-project Banten.

The team have already come to the flood area, and discussed with DPU Banten after their collecting data.

This report is in general, because the inspection is very short, and the report also should sent immediately.

### II. The result of flood.

On November 10 - November 16, 1981, there are flood on Banten area, because of the overflow of Ciujung river and its branches, Ciberang and Cisemeut rivers, and flooded some of water resources areas at Serang and Pandeglang.

Because of heavy rain on Ciliman and Cilemer rivers, Teluk Lada area become flood. Some of the area on Pagelaran and it surroundings are flooded.

- Lower Ciujung river, Cikonde, Pamarayan, Kragilan districts.

Area of flooded	: 1475 ha
rice-field flooded	: 545 ha
villages	: 930 ha
Water stage	: 1 m
period	: 24 hours.

Damages :

House damage	: 105 houses
" fall down	: 26 houses
embankment damage	: 1000 m
road	: 100 m

Suggestion :

To improve crib	
To enlarge the embankment	: 1000 m
Make a new embankment	: 3000 m

- Upper Cijung and Ciberang river

Flooded area : 950 ha  
rice-field flooded : 65 ha  
villages : 200 ha  
dry-field : 888 ha  
water stage : 1 m  
period : 24 hour

Damage :

houses flooded : 2413 houses  
Ciberang river-bank fall down : 750 m  
AWLR and telemetre broken  
gorong2 rusak berat.

Suggestion :

Strengthening Ciberang river bank for protecting Lebak and Rangkasbitung city.  
Construction crib.

- Cilemer and Ciliman river ( Teluk Lada area )

Flooded area : 8315 ha  
rice-field flooded : 5365 ha  
dry-field : 950 ha  
villages : 2000 ha  
water stage : 1 - 1 1/2 m  
period : from 10 nove- 20 November 1981

Damage :

Houses flooded : 4315 houses  
Religious complex : 71 houses  
road of Pagelarang : 6 km  
Kabupaten's bridges : 4 bridges

Suggestion

Teluk Lada project programme for 1990.



- Cikoneng river

damage : Slide off Cikoneng canal along 60 m

Suggestion : remove Cikoneng canal.

### III. Reason of flood

Flood on Ciujung and Teluk Lada due to the heavy rain and high intensity of rain.

#### Flood at Ciujung

Started on 16 November 1981 at 7:00 a.m. up till 7.00 p.m., heavy rain never stop. From the data collection :

Post rain no. 260 Baros : 115 Mm

Post rain no. 37 Cimarga: 178 Mm

D/S ciujung : 60 Mm

Flood at Ciujung because of overflow of Ciujung river with his branches Ciberang and Cisimeut rivers.

From the data collection :

#### 1) Ciberang

High peilskal : 6.90 m

debit : 579 m<sup>3</sup>/sec

#### 2) Cisimeut river ( stat Leuwidamar)

High peilskal : ± 70 m

debit : 271 m<sup>3</sup>/sec

#### 3) Upper Ciberang river

high peilskal : 1.22 m

debit : ? ( difficult for monitoring )

#### 4) Ciujung river ( Rangkasbitung bridge, after Ciberang & Cisimeut)

before the AWLR tower fall down

high peilskal : 8.00 m

debit : 2250 m<sup>3</sup>/sec

#### 5) There is a dam , Pamarayang at lower Cijung river, when the flood

come all intake closed and all dam gate are opened, so that no

back water in the upstream.

From collecting data :

high peilskal : 12,60 m, 10 cm above the upstairs

debit : 2250 m<sup>3</sup>/sec

this flood is bigger than planning debit Pamarayan dam.

### Teluk Lada flood

Flood come from the overflow of Ciliman and Cilemer rivers. This flood is a routine flood.

#### 1). Pagelaran, Munjul and Cikeusik area.

From the field trip noted that the rain continue from 10 Nov to 16 Nov 1981.

Data collecting from station as follow :

a) Stat rain no 5	Menes
12 Nov. 1981	rain 150 mm
13 Nov. 1981	rain 155 mm
16 Nov. 1981	rain 160 mm
b) Stat rain no. 7	Pagelaran
10 Nov. 1981	rain 102 mm
11 Nov. 1981	rain 70 mm
13 Nov. 1981	rain 79 mm
14 Nov. 1981	rain 78 mm
16 Nov. 1981	rain 199 mm
c) Stat rain no. 26	Pandeglang
10 Nov. 1981	rain 90 mm

### IV. Suggestion of improvement

#### a) Necessity aid :

- 1) Prosidá Ciujung : 10.000 bags
- 2) PU West Java : 2.000 bags
- 3) PU Pusat (Jakarta) : 200 unit equipment

The budget about Rp. 75 million for improve eight (8) locations of damage embankment.

b) Slide off Ciberang river should improved immediately; for protecting Lebak and Rangkasbitung city

c) Improvement of Teluk Lada flooded involved in the program of Teluk Lada Project 1990.

d) To improve drainage at lower Ciujung river, may be it will be held this year according to the Prosidá Ciujung project.

At this time, if the rain on lower Ciujung about 50 mm, will make flooded on the irrigation area.

## V. Conclusion and suggestion

- 1) Flood at Serang and Rangkasbitung and its surrounding due to the overflow of Ciujung river with his branches, Ciberang and Cisemuet rivers. From the collecting data, the heavy shower is higher about 146,5 m
- 2) Monitoring pelskal data at Pamarayan dam , debit  $+ 2.250 \text{ m}^3/\text{sec}$ .
- 3) The flood in 1981 is bigger than flood on 1914 and 1942.
- 4) According to one of P.U. staff here, at upper Ciujung river, there are a forest become a coconut-palm field. That is important for monitoring the field with The Directorate of Forestry how big the field.
- 5) To improve the result of flood with crash program, short-term programe, middle term and long term program are very important.
  - a) Crash program.
    - 1) To improve damage embankment along lower Ciujung river at 8 places.
    - 2) To improve AWR /telemetre on Pamarayan dam at Cijung bridge, Rangkasbitung.
  - b) Short-term program
    - 1) To protect Rangkasbitung and Lebak cities, where those cities are around Ciujung river. PU Rangkasbitung have already proposed 82/83 fiscal year for surveying Rangkasbitung city.  
Short term program as follows :
      - a) Normalization upper Ciujung and Ciberang as plaaning.
      - b) To construct crib along Ciujung, Ciberang.
      - c) Short cut, especially up stream Rangkasbitung city.
      - d) Strengthening Ciujung slope and Ciberang.
  - c) Middle program  
At this time, no embankment at the middle of Ciujung, even in this area, there are a development village, Cinagara. That important to protect this village. This work can <sup>be</sup> done by Directorate of Rivers.
  - d) Long term program

d) Long term program

The important factor in this area is flood control, prepare water for irrigation for 34.000 ha, developed tourism. Developed Banten is most important for fulfill Krakatau steel area and PLTU Suralaya.

Banten have dam potential at upper Ciujung, Ciberang, Cisemuet and hoping that electricity for Serang, Rangkasbitung not necessary get from Bogot.

For developing Banten area will be done by Directorate of Planning and Programming.

e) Drainage lower Ciujung will be done by Prosida Ciujung

f) Flood on Teluk Lada have already programmed by Project Teluk Lada 1990.

VI. Others

On 3 December 1981 will be come Team from Japan talking about the assistance of water resources on Banten area.:

1) Basic plan for developing Banten area.

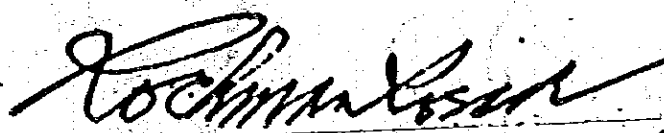
2) Future feasibility study including Cikopo, Cikonde, Carendang.

Budget Plan for  
Improvement of Ciujung Flood Control Dike

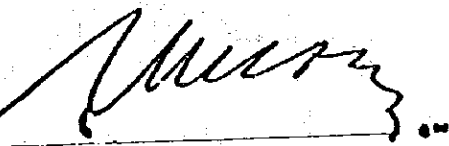
Uraian	Volume	Harga Satuan	Jumlah
<b>Pendahuluan</b>			
Pembuatan kistdam, Penonpaan Pembersihan lapangan	-	Lump sum	5.000.000,-
Penggalian dan Pembuangan bekaa2 tanggul lama	-	Lump sum	700.000,-
Penggalian dan Pembuangan bekaa2 bangunan lama	-	Lump sum	350.000,-
Penimbunan dan pemadatan tanah memakai tanah dari luar klas A2	2,110 m <sup>2</sup>	2.000	4.220.000,-
Perapian tanggul rencana dan gebalan rumput	5,450 m <sup>2</sup>	185	1.008.250,-
Pembuatan sebuah bangunan klep $\phi$ 1,500m lengkap dengan pintu			25.000.000,-
Perapian		Lump sum	700.000,-
<b>Jumlah</b>			74.958.000,-
		Dibulatkan	75.000.000,-

Mengetahui/Menyetujui  
Penimpin Sub Proyek Ciujung

Serang, 28 - November - 1981 .-  
PROYEX IRIGASI I.D.A.  
Ass. Survey & Design

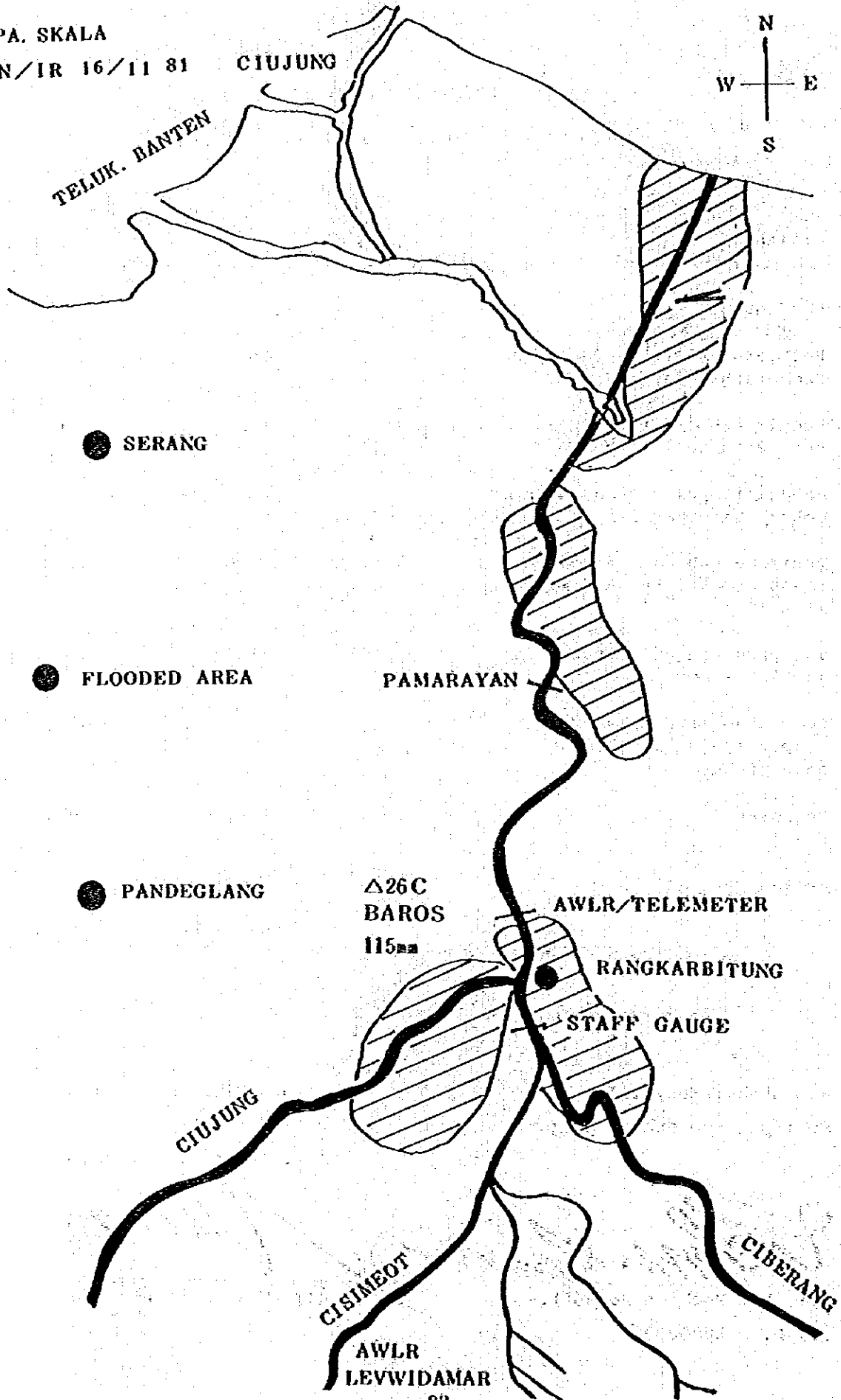


(Ir. Rd. Rochman Rosadi).-  
N.I.P. 480028327



(Ir. Umar Said).-

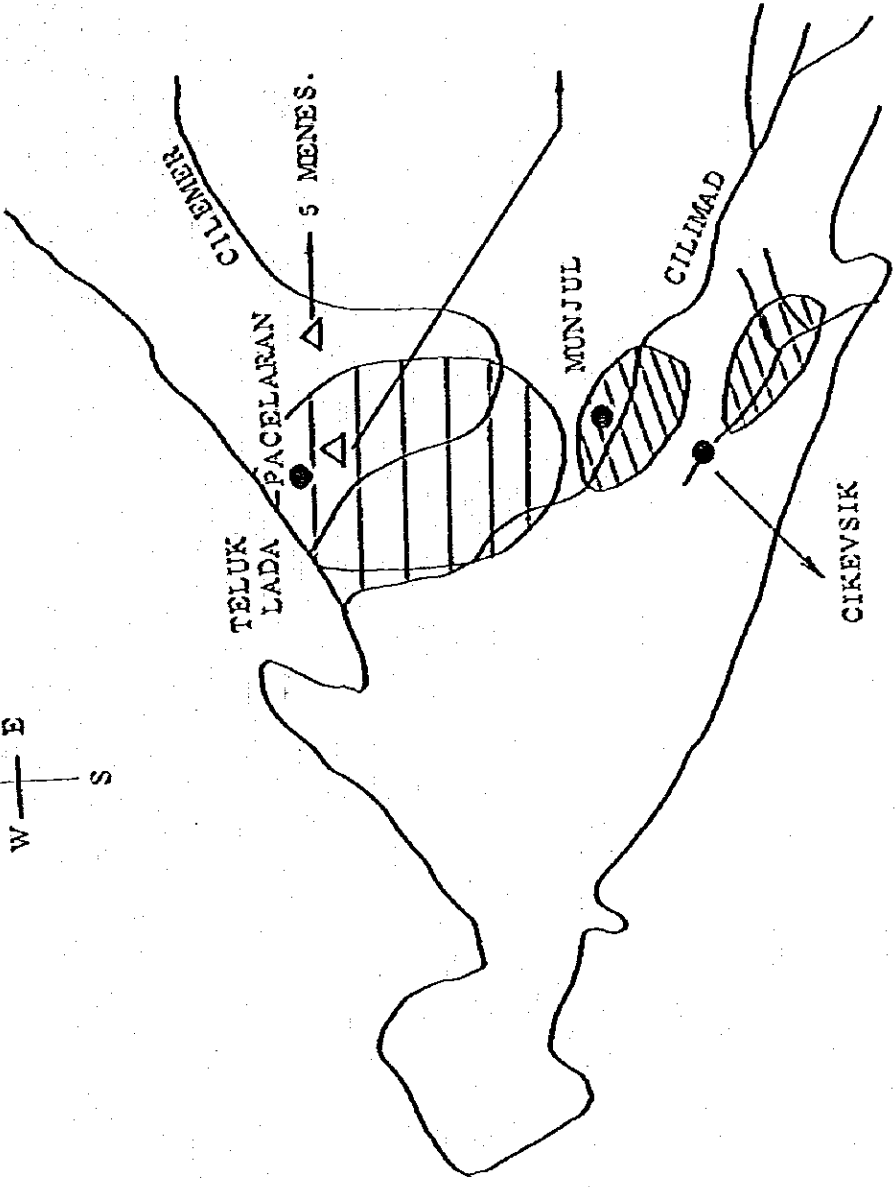
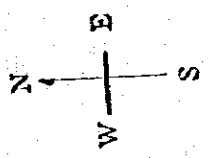
ANPA. SKALA  
BAN/IR 16/11 81





BAN/IR. TELUK LADA

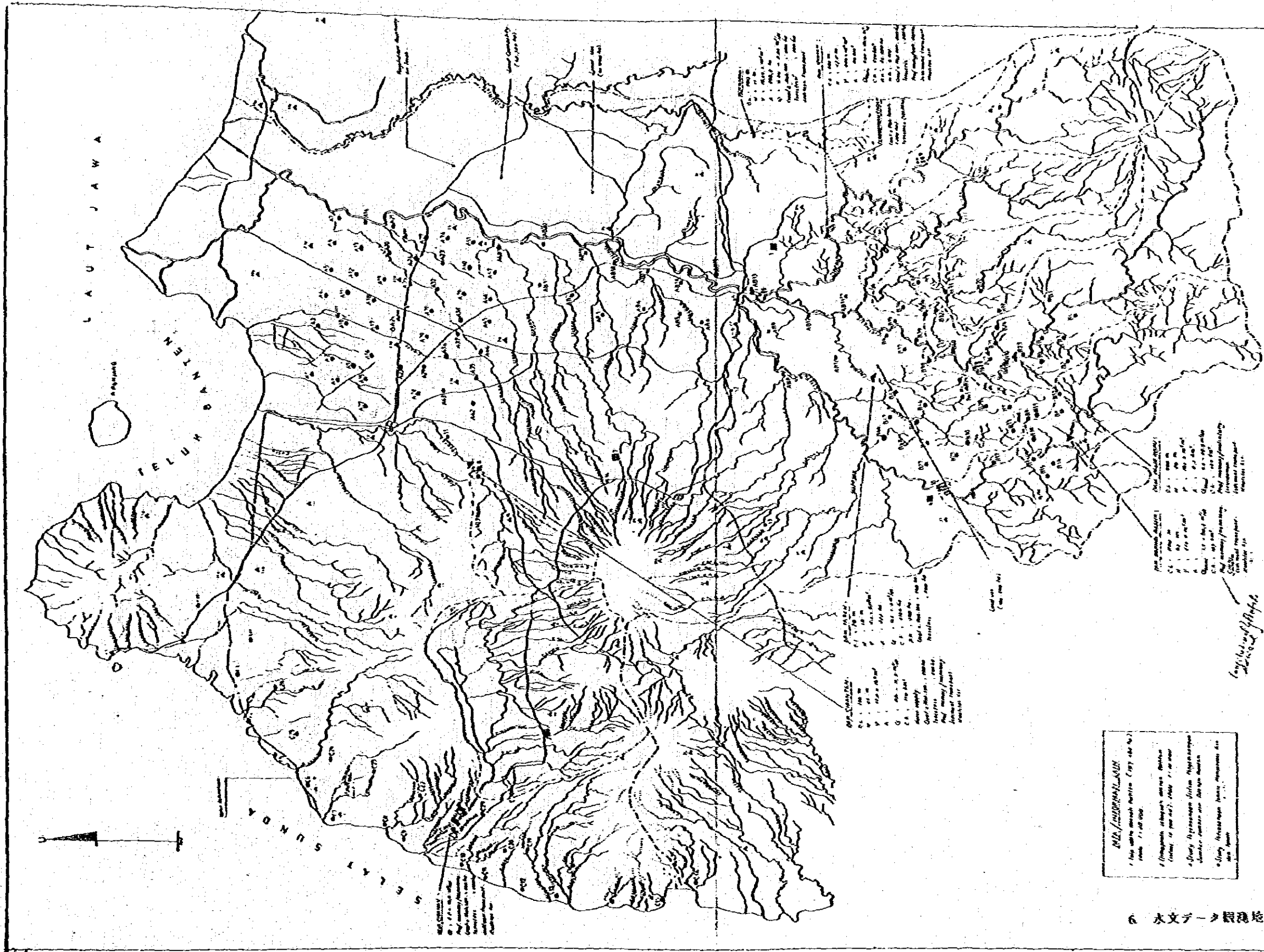
10/11 - 20/11 '81

TANPA SKALA



 FLOODED AREA  
 CURAH HOJON

26 PANDEGLANG		
△	16/11 '81	90 mm
	12/11 '81	150 mm
	13/11 '81	155 mm
	16/11 '81	160 mm
T. PAGELARAN		
	10/11 '81	102 mm
	11/11 '81	70 mm
	13/11 '81	79 mm
	14/11 '81	78 mm
	16/11 '81	179 mm



**NOTA (PENTING)**  
 1. This map is based on the Survey of the Netherlands, 1:100,000.  
 2. The map is not a true scale map.  
 3. The map is not a true scale map.  
 4. The map is not a true scale map.

**LEGENDA**  
 1. 1:100,000  
 2. 1:100,000  
 3. 1:100,000  
 4. 1:100,000  
 5. 1:100,000  
 6. 1:100,000  
 7. 1:100,000  
 8. 1:100,000  
 9. 1:100,000  
 10. 1:100,000

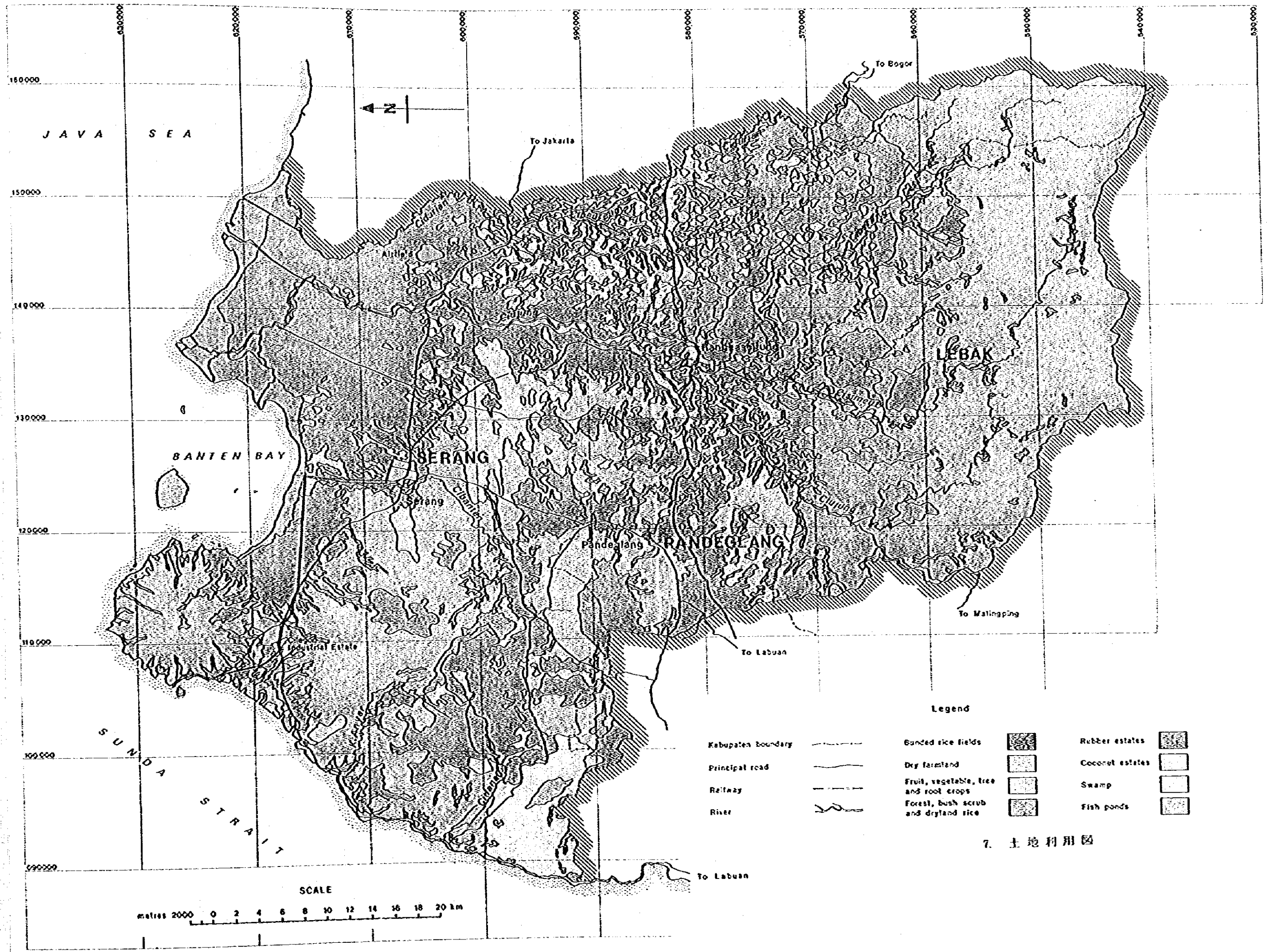
**LEGENDA**  
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 5. 1:100,000  
 6. 1:100,000  
 7. 1:100,000  
 8. 1:100,000  
 9. 1:100,000  
 10. 1:100,000

**REVISI**  
 DIREKTORAT JENDERAL PENGURUSAN  
 SURvei, KEMENTERIAN PERTANAHAN, SURvei DAN PERENCANAAN  
 PETA KOMPIUS DATA/INFORMASI  
 P.3.5.A.0.000000 BANTEN  
 TANGGAL: NOV 1981  
 DIBANJARI: [Signature]  
 DIBASTUJUI: [Signature]  
 SKALA: 1:100,000  
 DIBUAT: [Signature]

**KETERANGAN**  
 1. 1:100,000  
 2. 1:100,000  
 3. 1:100,000  
 4. 1:100,000  
 5. 1:100,000  
 6. 1:100,000  
 7. 1:100,000  
 8. 1:100,000  
 9. 1:100,000  
 10. 1:100,000

6 水文データ観測地点図 (1:100,000)



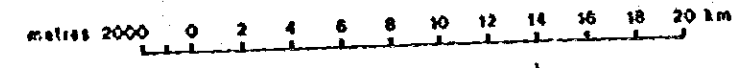


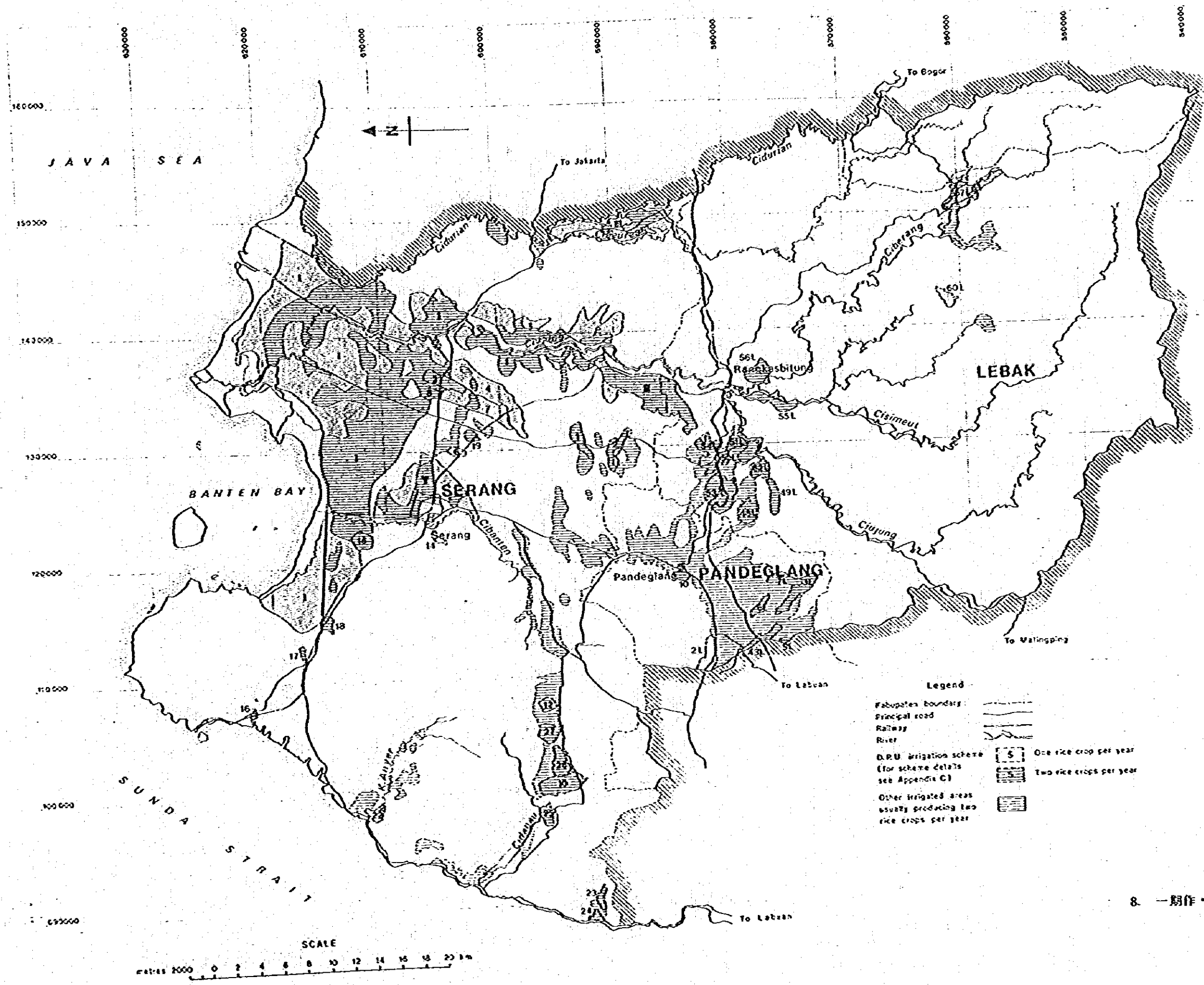
Legend

- |                    |  |                                       |  |                 |  |
|--------------------|--|---------------------------------------|--|-----------------|--|
| Kabupaten boundary |  | Banded rice fields                    |  | Rubber estates  |  |
| Principal road     |  | Dry farmland                          |  | Coconut estates |  |
| Railway            |  | Fruit, vegetable, tree and root crops |  | Swamp           |  |
| River              |  | Forest, bush scrub and dryland rice   |  | Fish ponds      |  |

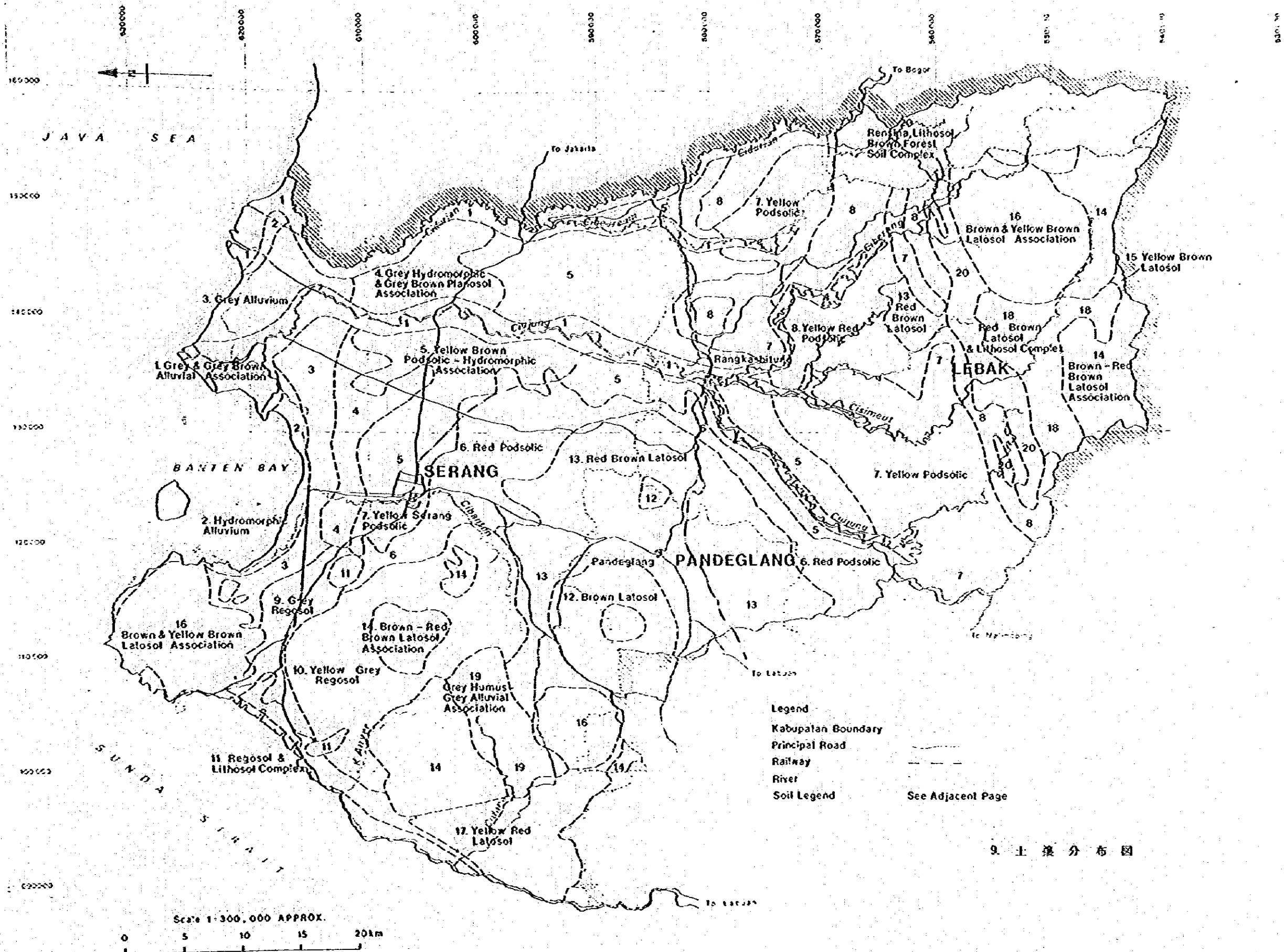
7. 土地利用図

SCALE



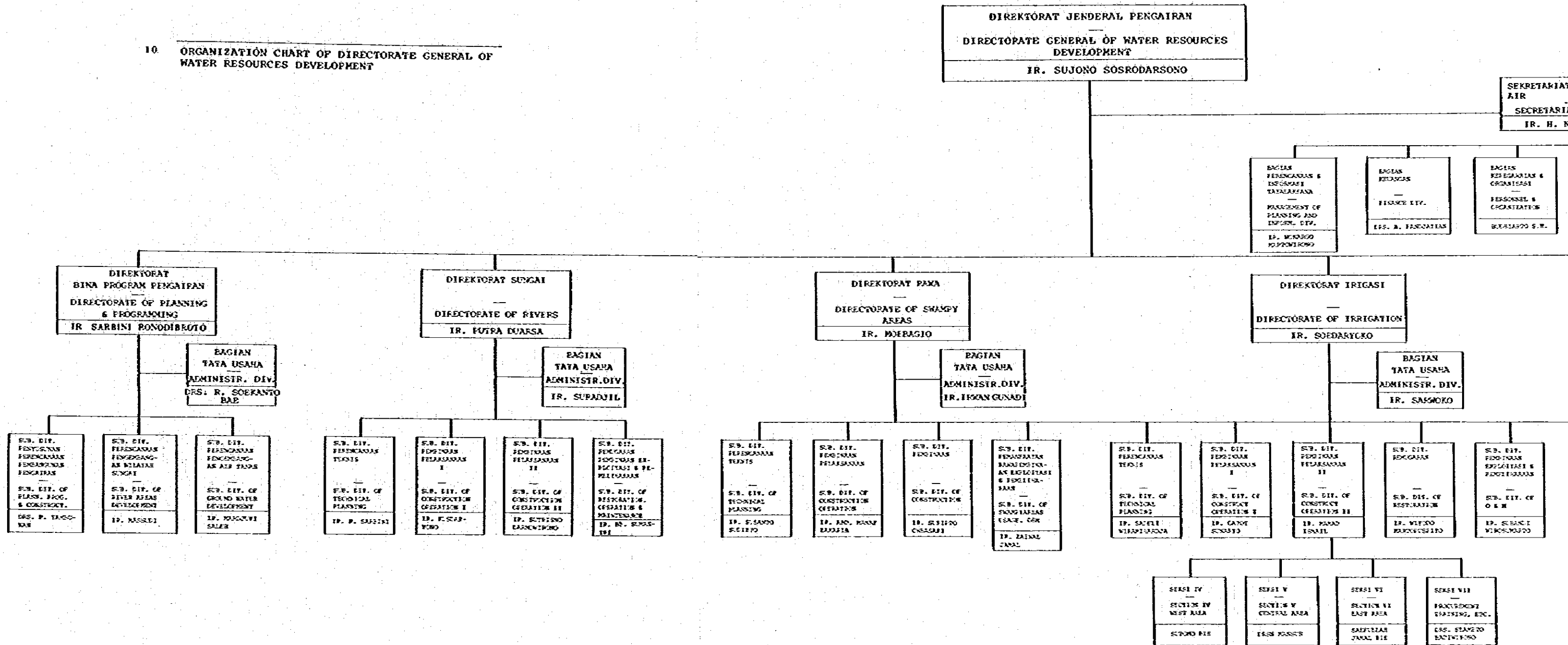


8. 一期作・二期作の分布図



9. 土壤分布圖

10. ORGANIZATION CHART OF DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT



**DIREKTORAT JENDERAL PENGAIRAN**  
**DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT**  
**IR. SUJONO SOSRODARSONO**

**SEKRETARIAT DIK. JEM. AIR**  
**SECRETARIAT OF LGWMD**  
**IR. H. NATINGOLAN**

**BAGIAN PERENCANAAN & PENGENDALIAN KUALITAS AIR**  
**MANAGEMENT OF PLANNING AND CONTROL DIV.**  
**IR. WINDUSO KUSUMADARSO**

**BAGIAN KEUANGAN**  
**FINANCE DIV.**  
**IRS. A. PANGCALAN**

**BAGIAN KEBUDAJARAN & ORGANISASI**  
**PERSONNEL & ORGANIZATION**  
**KUSUMADARSO S.W.**

**BAGIAN HUKUM**  
**LAW AFFAIRS DIV.**  
**SUCIHO S.H.**

**BAGIAN PENYUSUNAN DAN PELAKSANAAN KEBUDAYAAN**  
**BUDGET OF CULTURE AND DIV.**  
**IRS. TATA SURAJA**

**BAGIAN UMUM**  
**GENERAL AFFAIRS DIV.**  
**GUS. SURGADO**

**DIREKTORAT RAMA**  
**DIRECTORATE OF SWAMPY AREAS**  
**IR. MOERAGIO**

**DIREKTORAT IRIGASI**  
**DIRECTORATE OF IRRIGATION**  
**IR. SOEDARYONO**

**DIREKTORAT PERTAHANAN PENGAIRAN**  
**DIRECTORATE OF LOGISTICS & PROCUREMENT**  
**IR. AMIR HASAN**

**DIREKTORAT PENYELIDIKAN MASALAH AIR**  
**DIRECTORATE OF HYDRAULIC ENGINEERING**  
**IR. RACHMAT TIP. TOZJONDRO**

**BAGIAN TATA USAHA**  
**ADMINISTR. DIV.**  
**IR. IFSAN GUNAD**

**BAGIAN TATA USAHA**  
**ADMINISTR. DIV.**  
**IR. SAKSOYO**

**BAGIAN TATA USAHA**  
**ADMINISTR. DIV.**  
**IR. KASTOFO**

**BAGIAN TATA USAHA**  
**ADMINISTR. DIV.**  
**IR. WILLYHARYONO**

**SUB. DIK. PERENCANAAN TEKNIK**  
**SUB. DIV. OF TECHNICAL PLANNING**  
**IR. SUSANTO SURIYO**

**SUB. DIK. PERENCANAAN PELAYANAN**  
**SUB. DIV. OF CONSTRUCTION OPERATIONS**  
**IR. ASO. KARYA ZAFARIA**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF CONSTRUCTION**  
**IR. SUPRITO OESAHADI**

**SUB. DIK. PERENCANAAN PERENCANAAN MANAJEMEN & PENGENDALIAN AIR**  
**SUB. DIV. OF CONSTRUCTION OPERATIONS & CONTROL**  
**IR. RAHMAN JALAL**

**SUB. DIK. PERENCANAAN TEKNIK**  
**SUB. DIV. OF TECHNICAL PLANNING**  
**IR. SAKELI SUPRIATNO**

**SUB. DIK. PERENCANAAN PELAYANAN I**  
**SUB. DIV. OF CONSTRUCTION OPERATIONS I**  
**IR. GANTY SUNARYO**

**SUB. DIK. PERENCANAAN PELAYANAN II**  
**SUB. DIV. OF CONSTRUCTION OPERATIONS II**  
**IR. RUMAH ISMAIL**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF RESTORATION**  
**IR. WIPRO SUPRIATNO**

**SUB. DIK. PERENCANAAN PERENCANAAN & PENGENDALIAN**  
**SUB. DIV. OF O & R**  
**IR. S. HADI WIRNADARSO**

**SUB. DIK. PERENCANAAN PERALATAN**  
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**IR. SUWANTO HASALY**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF PROCUREMENT**  
**IR. SUWANTO**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF HYDROLOGY**  
**IR. KUSATI**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF HYDRAULIC**  
**IR. SUASTI DUNDOEN**

**SUB. DIK. PERENCANAAN**  
**SUB. DIV. OF STRUCTURES**  
**IR. LALU**

**SUB. DIK. PERENCANAAN TEKNOLOGI**  
**SUB. DIV. OF TECHNOLOGY**  
**IR. H. PANJO KUSUMADARSO**

**SEKSI IV**  
**SECTION IV**  
**WEST AREA**  
**SUDONO BIR**

**SEKSI V**  
**SECTION V**  
**CENTRAL AREA**  
**ACHMAD HASAN**

**SEKSI VI**  
**SECTION VI**  
**EAST AREA**  
**SALFELAN JALAL BIR**

**SEKSI VII**  
**SECTION VII**  
**PROCESSES TRAINING, ETC.**  
**GUS. SUWANTO KUSUMADARSO**





JICA

